

Ancient elephants of West Siberia

P.A. Kosintsev, A.A. Vorobiev

Institute of Ecology, Ekaterinburg, Russia - kpa@ipae.uran.ru, alex@ipae.uran.ru

SUMMARY: In the territory of West Siberia, including the Ural Mountain region, there are more than 250 sites with Plio-Pleistocene elephant remains. An inventory of sites and of identified taxa is given below, together with the geographical distribution.

1. SITES AND TAPHONOMY

In the territory of West Siberia, including the Ural Mountain region, there are more than 250 sites with Plio-Pleistocene elephant remains. Overall, these sites can be grouped into three main types: (i) alluvial sites, (ii) caves and (iii) archaeological sites. Skeletal materials recovered from these sites are primarily post-cranial elements and various fragmented parts. Loose teeth usually occur only in small quantities and complete mandibles are very rare. Thirteen complete and partial skeletons (excluding those found at archaeological sites), one mummified corpse, and one frozen carcass have been recovered from alluvial sites.

1.1 Alluvial Sites

There are more than two hundred such sites situated within the plain area of West Siberia. The ages of these sites date from the Late Pliocene to the end of the Late Pleistocene. The amount of bones recovered from these areas is quite variable and ranges from one to a few thousand. Two depositional sites are known where the quantity of mammoth remains recovered represents several thousand bones and more than ten individuals. The degree of preservation of the skeletal remains also varies from fragmentary to complete skeletons. A substantial number of these bones have been found in disturbed contexts, while some have been found *in situ*.

1.2 Caves

There are twenty such sites situated in the mountainous area of the Urals. The age of all of the sites falls within the middle of the second half of the Late Pleistocene. The quantity of bones recovered from one site can range from one to a few hundred. The degree of preservation of the bones ranges from fragmentary to whole individual elements. All bones were found *in situ*.

1.3 Archaeological Sites

There have been ten such sites found that have contained mammoth bones. The ages of these sites range from the Mousterian period (one site) to the Upper Paleolithic (nine sites). The archaeological sites are represented by two main types: (i) caves and (ii) open sites. From the settlements associated with grottos a few bones have been recovered, while complete mammoth skeletons have been recovered from the open sites. The number of skeletons ranges from one to more than ten at some sites and all skeletal elements were found *in situ*. All settlements found within open locations are thought to represent sites utilized for the butchery of mammoth carcasses. It is possible that the mammoths found there died of natural causes.

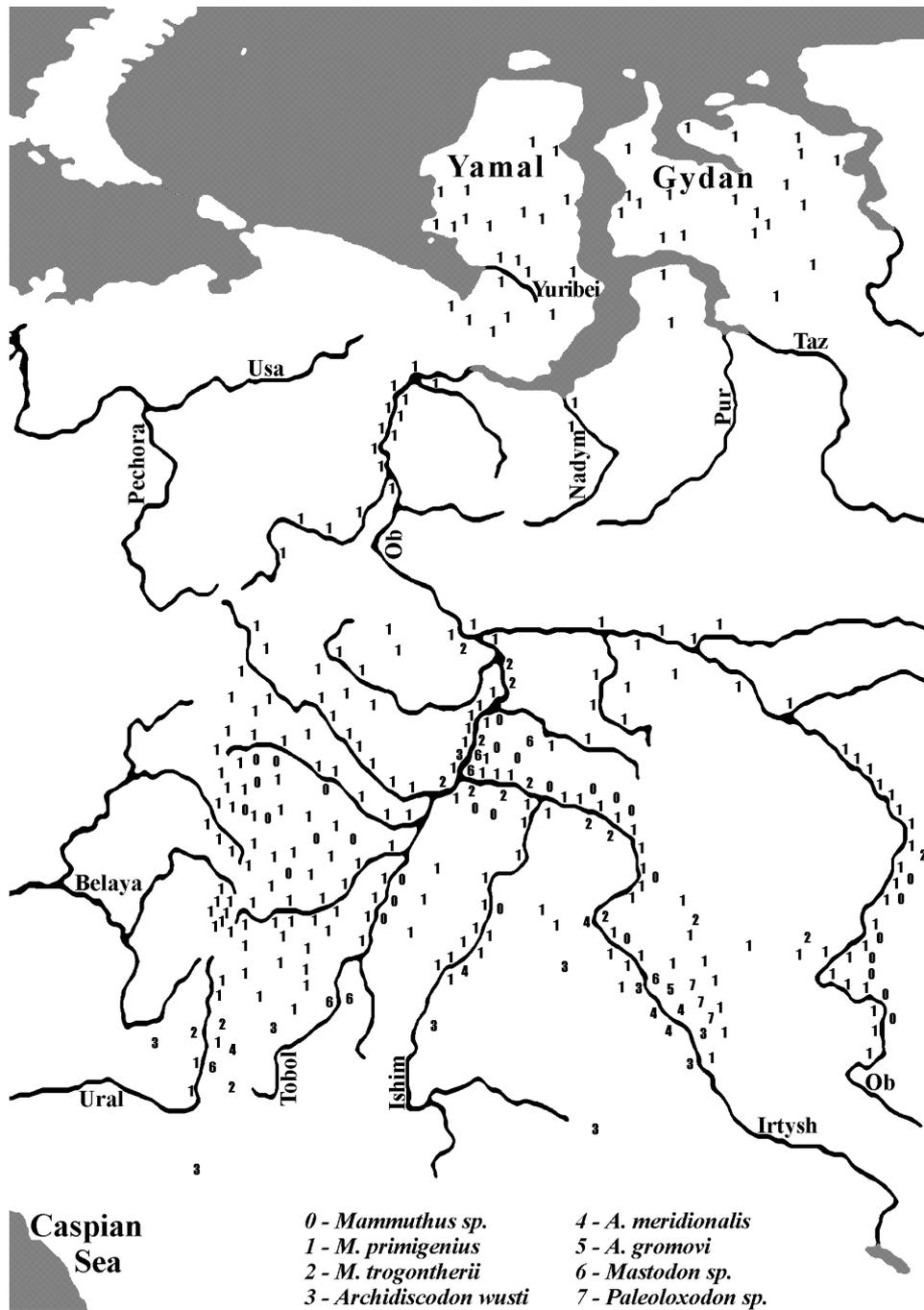


Fig.1 - Distribution map of sites with Plio-Pleistocene elephant remains from West Siberia and the Ural Mountain Region, with an indication of the number of identified taxa.

2. SPECIES REPRESENTATION

Palaeoloxodon sp.:

There are a few loose teeth (Zhylkibaev 1975) recovered from three alluvial sites (Fig. 1).

Archidiskodon gromovi Garutt & Alexeeva 1965:

There is one find (Zhylkibaev 1975) recovered from an alluvial site (Fig. 1).

Archidiskodon meridionalis (Nesti 1825):

There are four sites (all alluvial) where finds of this species have been recovered (Fig. 1), representing loose teeth and a partial skeleton (Zhylkibaev 1975; Yahimovich 1965).

Mammuth borsoni (?) (Hays 1934):

There have been a number of loose teeth recovered from six alluvial sites (Kozhamkulova & Kostenko 1984; Yahimovich 1965). Teeth from three northern sites (Fig. 1) have been recovered from mixed contexts associated with river activity.

Mammuthus trogontherii (Pohlig 1885):

There have been 3 partial skeletons, 3 mandibles and more than 20 loose teeth and bones from the post-cranial skeleton (Vangengeim & Sher 1972; Zhylkibaev 1975; Borodin *et al.* 1998; Shpanskii 2000; Yahimovich 1965) recovered from twelve alluvial sites (Fig. 1).

Mammuthus primigenius (Blumenbach, 1799):

There are 9 partial and complete skeletons, more than 10 mandibles, more than 100 loose teeth and more than 10,000 post-cranial skeletal bones recovered from alluvial sites. There are 3 mandibles, 10 loose teeth and more than 400 post-cranial skeletal bones recovered from caves and grottos. There are more than 10 complete and partial skeletons, a few loose teeth and more than 1000 post-cranial skeletal bones recovered from settlement sites. The bones recovered represent individuals of all age categories, from embryos to advanced old age. In addition, tooth remains have been recovered that represent all evolutionary stages of this species from early to late forms.

Two depositional areas are known where more than just skeletal material has been recovered. One site contained the mummified remains of a mammoth and the other site a

frozen carcass. The settlement sites are situated in West Siberia and in the Ural Mountain region.

Mammuthus sp.:

There are a few separate teeth from twenty alluvial sites situated south of 61° N. The structure of these teeth is intermediate between *M. trogontherii* and *M. primigenius* (possibly referable to *Mammuthus chosaricus*, Dubrovo 1966).

3. DISTRIBUTION OF TAXA

M. primigenius was distributed over the entire territory of West Siberia and the Ural Mountain region. Bones of the most ancient species (*M. trogontherii* and genus *Archidiskodon*) have been found only south of 61° N. This situation results from the fact that north of 61° N the early Middle Pleistocene (Q_r-Q_{ii}) deposits are, with rare exceptions, deeply buried under late Pleistocene (Q_{iii}) deposits. However, south of 61° N, early Middle Pleistocene (Q_r-Q_{ii}) and Pliocene deposits are exposed on the surface at many sites. In this way the distribution of proboscidean finds is very much controlled by the particular geological features of West Siberia.

4. EVOLUTION AND EXTINCTION

In West Siberia, south of 61° N, the remains of all species of the evolutionary line *Archidiskodon-Mammuthus* have been found. This situation makes it possible to speak of an unbroken evolutionary line for this particular group of elephants. In the south of West Siberia are found the remains of another evolutionary line of elephants, which is related to *Palaeoloxodon* and parallels the *Archidiskodon-Mammuthus* lineage.

Twenty-nine radiocarbon dates (Sulerzhitskii 1995; Sokolov 1982) have been undertaken on mammoth bones recovered from West Siberia and twelve radiocarbon dates have been provided on bones from other species. Two of the mammoth samples gave a date of 50,000 BP, while the others lie within the interval 41,900 BP to 9600 BP. Analysis of the geographical

distribution of the dates shows that in West Siberia the area occupied by mammoth decreased from south to north. Most of the latest dates (10,350±50 BP; 10,000±70 BP; 9730±100 BP; 9600±300 BP) are from the northern part of West Siberia (Yamal Peninsula and Gydan Peninsula). Therefore, it appears that mammoth became extinct in West Siberia at approximately 10,000 BP.

5. MAMMOTH AND HUMAN INTERACTION

Mammoth bones have been found in three archaeological cave sites. Two such sites have yielded a few mammoth bones, while a third site has produced many bones from one individual (Kuzmina 1975). On the basis of indirect data (i.e. geology and geomorphology), one may suggest that this particular individual died of natural causes and was subsequently butchered by humans.

Two more archaeological sites are situated at mammoth bone deposition areas related to river activity. At six sites that contain faunal materials, mammoth bones are not present. This fact suggests that ancient humans in West Siberia and the Ural Mountain region rarely hunted mammoths, however they utilized mammoth carcasses as a food resource.

6. ACKNOWLEDGEMENTS

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7. REFERENCES

- Borodin, A.V., Kosintsev, P.A., Zinoviev, E.V., Trofimova, S.S., Nekrasov, A.E. 1998. Palaeoecological investigations of the landscape inhabited by the early Middle Pleistocene mammoth *Archidiskodon trogontherii* from Chembakchino, Western Siberia. *Mededelingen Nederlands Instituut voor Toegepaste Geowetenschappen TNO*. 60: 343-352.
- Kozhamkulova, B.S. & Kostenko, N.N. 1984. *Extinct Animals of Kazakhstan*. Alma-Ata: Nauka.
- Kuzmina, I.E. 1975. Some Data Concerning Mammals of the Middle Ural in the Upper Pleistocene. In V.I. Gromov & I.K. Ivanova (eds.), *Bulletin of the Commission for Research of the Quaternary Period*, 43: 63-77. Moscow: Nauka.
- Shpanskii, A.V. 2000. Ungulates of the Middle-Late Neo-Pleistocene of the Southeast Region of the West Siberian Plain (Stratigraphic Significance, Palaeoecology and Palaeozoogeography). Ph.D. Dissertation, Tomsk State University. Unpublished.
- Sokolov, V.E. (ed.) 1982. *Yuribeisky mammoth*. Moscow: Nauka.
- Sulerzhitskii, L.D. 1995. Characteristics of Radiocarbon Chronology of the Woolly Mammoth (*Mammuthus primigenius*) of Siberia and north of Eastern Europe. In G.F. Barishnikov (ed.), *Investigation of Pleistocene and Recent Mammals*, 263: 163-183.
- Vangengeim, E.A. & Sher, A.V. 1972. Siberian Equivalents of the Tiraspol faunal complex. In I.K. Ivanova & N.A. Konstantinova (eds.), *Geography and Fauna of the Lower and Middle Pleistocene of Europe*: 245-255. Moscow: Nauka.
- Yahimovich, V.L. (ed.) 1965. *Anthropogen of the South Ural*. Moscow: Nauka.
- Zhylkibaev, K.Zh. 1975. *Ancient Elephants of Kazakhstan*. Alma-Ata: Nauka.