

Contributions to the study of the Neogene representatives of Ordo Proboscidea (Mammalia) from Eastern Europe

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SUMMARY: In recent years, remains of various proboscideans were collected from paleontological deposits. The stratigraphic position of these deposits is more definite now. The proposed biostratigraphical scheme (Table) is the result of field and bibliographical research on Neogene Proboscideans from Eastern Europe.

Within the Neogene fauna from Eastern Europe, the fossil remains of diverse forms of proboscideans are known. These proboscideans can be referred to the following families: *Gomphotheriidae*, *Mastodontiidae*, *Deinotheriidae* and *Elephantiidae*. Many questions concerning phylogeny, ecology, appearance time and stratigraphical spreading of different forms of Ordo Proboscidea from the Orient Paratethys regions are disputable till present.

At the beginning of Bessarabian, within the land fauna from Eastern Europe, the following forms of proboscideans were present: *Gomphotherium angustidens* Cuvier, *Platybelodon sp.*, *Deinotherium bavaricum* Meyer. These forms, probably, also existed in the fauna of Volhonian (upper Astaracian MN 8 biozone). Within the Hipparion fauna they can be considered as relic forms of the Anchitherium fauna.

Some proboscideans, such as *Tetralophodon longirostris* Kaup, *Zygodon turicensis* Schinz, *Deinotherium giganteum* Kaup, existed parallel with the forms mentioned in the fauna of early Vallesian from Bessarabian (MN 9 biozone). They were also widely spread in the Hipparion fauna of Turolian type.

Zygodon turicensis Schinz is also known from Central Europe in the fauna of

Astaracian. In Meotsian, *Z. turicensis* Schinz is met within the land fauna with *Mammuth borsoni* Hays. Both species belong to the same phylogenetic branch. At the beginning of Pontsian, *Z. turicensis* Schinz disappears, but *M. borsoni* Hays survives until upper Pliocene (MN 16 biozone).

One of the characteristic elements of the Hipparion fauna is *Tetralophodon longirostris* Kaup. This form from the fauna of early Vallesian (MN 9 biozone), in comparison with the forms of this species in the Hipparion fauna of Turolian type, is characterized by some archaic morphological features which bring it near to *Gomphotherium angustidens* Cuvier. It can be viewed as *G. angustidens-longirostris* intermediate form. At the beginning of Vallesian in some regions *G. angustidens* is met together with *T. longirostris*.

It is possible that *Stegotetralodon grandincisivum* Schlesinger descended from *T. longirostris* Kaup in Meotsian. Both *T. longirostris* Kaup and *S. grandincisivum* Schlesinger disappeared at the beginning of Pontsian. In Meotsian, they are met together.

In the Hipparion fauna from Eastern Europe *Choerolophodon pentelici* Gaudry et Laertet was widely spread. It appears at the beginning of Vallesian (MN 9 biozone) together with the first representatives of *Hipparion* genus.

Tab.1 - Ordo Proboscidea (Mammalia) in the Neogene of Eastern Europe: a biostratigraphical scheme.

| Period Epoce | NEOGENE | | | | | | | | | | Fossiliferous sites |
|--|--|--|-----------------|---------------|---------------|----------|-------|----------------|-------|-----------|---------------------|
| | Miocene | | | | | Pliocene | | | | | |
| | Sarmatian | | | Meotian | | Pontian | | Kimerian | | Acchiagal | |
| Levels of East Parathetis | Volho- nian | Basara- bian | Cher- sonian | Infer- ior | Super- ior | | | Moldo- vian | ? | Haprovian | |
| Biozones (Mein, 1990) | MN 8 | MN 9 | MN 10 | MN11 | MN 12 | MN 13 | MN 14 | MN 15 | MN 16 | MN 17 | |
| Mln. Years | ±11 | | 7-6.6 | | | 5 | | | | 1,65 | |
| Family Gomphotheriidae I. <i>Platybelodon</i> sp. II. <i>Choerolophodon pentelici</i> III. <i>Gomphotherium angustindens</i> IV. <i>Tetralophodon longirostris</i> V. <i>Stegotrabelodon grandincisivum</i> VI. <i>Anancus arvernensis</i> s.l. VII. <i>Anancus brevirostris</i> VIII. <i>Anancus progressor</i> IX. <i>Anancus alexeevae</i> Family Mastodontidae X. <i>Zygodolophodon turicensis</i> XI. <i>Mammut borsoni</i> s.l. XII. <i>Mammut praetypicum</i> XIII. <i>Mammut obliquephus</i> Family Deinotheriidae XIV. <i>Deinotherium bavaricum</i> XV. <i>Deinotherium giganteum</i> XVI. <i>Deinotherium gigantissimum</i> Family Elephantidae XVII. <i>Archidiskodon rumanus</i> XVIII. <i>Archidiskodon gromovi</i> XIX. <i>Palaeoloxodon</i> sp. Tip I XX. <i>Palaeoloxodon</i> sp. Tip II | I _____ II _____ III _____ IV _____ V _____ VI _____ VII _____ VIII _____ IX _____ X _____ XI _____ XII _____ XIII _____ XIV _____ XV _____ XVI _____ XVII _____ XVIII _____ XIX _____ XX _____ | I. Hirova II. Calfa, Otovasca, Varnita, Bujor II, Borslav, Tiraspol, Tanacu, Pitucea, Ciobrucu, Staraiu Cubanca, Raspopeni. III. Jethocamenca, Tanacu. IV. Otovasca, Poesești, Taraclia, Drăguseni, Grebenichi, Tanacu, Novoelzavetovca, Novaia Kametovca, Novoucraina, Cerevicinoc, Cimștia. V. Tanacu, Novoucraina, Cerevicinoc. VI. Fărlădeni, Cădita Prut, Lozovo, Drăguseni Noi, Milești, Cîsmichioi, Etulia, Valeni, Musait, Dermonji, Budă, Lucești, Gavanoasa, et alii. VII. Dermeș, Cahul, Erenca, Coseachin, Dorus, Stoina. VIII. Gavanoasa. IX. Liventovca, Psecups, Tâmbal, Malgobec, Sablinsoc, Salcia (?). X. Lăpușna, Boghicensi, Săndremi, Novoelzavetovca, Cimștia, Belca, Leordoiaia, Tocilovo. XI. Recca, Sîpca, Drăguseni Noi, Secăreni Micluceni, Milești, Lozovo, Bravnea, Păulești, Tulucești. XII. Balta, Fărlădeni. XIII. Romanovca, Cahul, Baitalâ et alii. XIV. Calfa, Gromi. XV. Ialoveni, Calfa, Isacovo, Raspopeni, Taraclia et alii. XVI. Mânzari. XVII. Cernătești, Tulucești, Liza. XVIII. Fărlădeni, Salcia, Râpa Șortescu, Liventovca, Flăpăr, Mocerăi Caltari, Gobiocova Balca. XIX. Orodela. XX. Salcia, Furculești. | | | | | | | | | |

This form, possibly, migrated from Southern Europe and Anterior Asia. In these regions it is also met within the fauna of upper Astaracian.

At present, it is possible to distinguish an archaic form of *Choerolophodon pentelici* Gaudry et Lartet, which is characteristic of the fauna of early Vallesian, and more progressive, more specialized one, which is met in the fauna of Meotsian.

In the fauna of early Vallesian, *Deinotherium giganteum* Kaup is met together with *D. bavaricum* Meyer.

The representative of the genus *Platybelodon* recently discovered in the settlement Hirova, Republic of Moldova (paleomagnethical determined age is about 11 mln.) is the relictive form of the *Anchitherius* fauna (Lungu, Obada, 2001 a, b).

At the end of Bessarabian (MN 9 biozone), in the fauna of early Vallesian disappear the following forms: *Platybelodon* sp., *Deinotherium bavaricum* Meyer, *Gomphotherium angustindens* Cuvier. This event was, probably, bound up with the change of landscape-climatic conditions in Eastern Europe.

Tetralophodon longirostris Kaup,

Choerolophodon pentelici Gaudry et Lartet, *D. giganteum* Kaup were characteristic of the fauna of late Vallesian (MN 10 biozone) within Chersonian. It is to be mentioned that *D. giganteum* Kaup reaches gigantic sizes similar with those of *D. gigantissimum* Stefanescu is a synonym of *D. giganteum* Kaup.

In the fauna of Meotsian, next to the mentioned forms, appear the following new forms of proboscideans: *M. borsoni* Hays, *S. grandincisivum* Schlesinger, which prove to be much more sopecialized.

The validity of *Mammut praetypicum* and *M. obliquephus* is a particular problem.

At the Meotsian-Pontsian boundary in Eastern Europe takes place the change of landscape-climatic conditions, which caused disappearing *T. longirostris* Kaup, *S. grandincisivum* Schlesinger, *Z. turicensis* Schinz, *Ch. pentelici* Gaudry et Lartet in the land fauna and appearing some new forms.

As for the Elephantidae family the validity of *Archidiskodon rumanus* Stefanescu species, the most ancient elephant in Europe, was successfully confirmed and it emphasized the necessity of spotlighting a neotype and a stratotype for

“Scortselian” faunistic complex. The validity of *A. gromovi* Garutt et Alexeeva was confirmed, and two archaic types of forest elephants – *Palaeoloxodon* sp. type I (for MN 16 biozone) and *Palaeoloxodon* sp. type II (for MN 17-18 biozones) – were made evident.

In recent years, diverse forms of proboscideans were collected from the deposits of land fauna. The stratigraphic position of these deposits is more definite now. These facts are the basis of concretizing in the fauna of proboscideans from Eastern Europe.

The proposed biostratigraphical scheme (Tab. 1) is an analysis result of field and bibliographical research on Neogene Proboscideans from Eastern Europe. The bibliographical sources used in the research are quoted here.

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