

## Zonal subdivision of continental deposits of Middle-Late Pliocene of East Europe (based on small mammals)

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Regional biostratigraphic zones, based on small mammal assemblages, were recently proposed for the Quaternary of south Eastern Europe (PEVZNER et al. 2001). As an expansion of this work, a detailed biostratigraphic zonation scheme has been devised for the Middle and Late Pliocene continental deposits from this region (Figs. 1, 2).

*mys hintoni-pusillus* and *Pitymimomys inceptor-pitymyoides*). The evolutionary stages within each lineage were defined mainly on a progressive increase in hypsodonty.

Boundary criteria and estimates of their age, faunal content and type and reference localities are presented for each zone. Boundary ages were inferred using palaeomagnetic

MNR1	concurrent range zone (CRZ) of <i>Borsodia</i> ex gr. <i>newtoni-arankoides</i> and <i>Mimomys pliocaenicus</i>	Type locality (TL): Psekups Other relevant Eastern European localities include Liventsovka 1-4
MNR2	CRZ of <i>Borsodia praehungarica cotlovinensis</i> and <i>Mimomys praepliocaenicus</i>	TL: Kryzhanovka 3 Other relevant localities include Etulya 3
MNR3	CRZ of <i>Borsodia praehungarica praehungarica</i> and <i>Mimomys hintoni livenzovicus</i>	TL: Veselovka Other relevant localities include Kryzhanovka 2
MNR4	CRZ of <i>Mimomys polonicus</i> and <i>Borsodia novoasovica</i> .	TL: Simbugino Other relevant localities include Kushkuna, Akkulaevo 1, Apastovo
MNR5	CRZ of <i>Mimomys hajmackensis</i> and <i>Borsodia novoasovica</i>	TL: Shirokino Other relevant localities include Volna
MNR6	CRZ of <i>Mimomys hajmackensis</i> and <i>Pitymimomys inceptor</i>	TL: Ripa Skortselskaya Other relevant localities include Dolinskoe, Uryv 2, Korotoyak 2

Fig. 1  
Definition of MNR Zones.

The analysis of geology and taxonomic composition of vole assemblages from the northern Black Sea region, the Sea of Azov region, the Northern Caucasus, the Volga Region and the south Urals, has led to the recognition of six (MNR1-6) (MNR = Mammal-Neogene-Russian Plain) concurrent range zones (CRZ) in arvicolines from four evolutionary lineages (namely, *Borsodia-Protagurus*; *Mimomys hajmackensis-pliocaenicus*; *Mimo-*

data, as well as on the basis of mollusc faunas from localities with intercalated marine deposits.

All the defined units are correlated to reference localities in Central Europe and to some sites in North-western Europe. These correlations show that many of the above zones are traceable to the western limits of Central Europe, at least.

