

The earliest mammoths in Europe

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The earliest dated elephantid remains in Europe appear to be those from the Dacic Basin, Romania, correlated by RADULESCO & SAMSON (1995, 2001) to the Triversa faunal unit of Italy (mammalian biozone MN16a), and placed by palaeomagnetic data in the middle Gauss subchron, ca. 3.5-3.0 Ma B.P. This material includes an incomplete lower M₃ from Tulucești – the holotype specimen of *Elephas antiquus rumanus* ȘTEFĂNESCU, 1924 – and a complete upper M³ from Cernătești. Until recently the holotype was believed to be lost, leading LISTER & ESSEN (2003) to propose the Cernătești specimen as the neotype of *E. rumanus*. However, the holotype specimen has now been rediscovered by HvE in Bucharest. LISTER & ESSEN (2003) indicated that metrically, the molars from Cernătești and Tulucești form a homogeneous group with those from the Red Crag (Fig. 1) and Montopoli, which taken together is distinctly more primitive than the type sample of *Mammuthus meridionalis* from the Upper Valdarno, Italy (ca. 2.0-1.77 Ma B.P.). The early group has 8-10 plates in M3 (excluding talons and platelets), while typical *M. meridionalis* has 12-14, rarely 11 or 15 (see also LISTER & SHER 2001, fig. 3). Material from some other localities may be referable to the 'rumanus group' (LISTER & ESSEN 2003; MARKOV & SPASSOV 2003; PALOMBO & FERRETTI in press). In the absence of cranial material, referral of the Dacic material to *Mammuthus* is provisional; moreover, existing samples are too small to be sure whether there was any evolutionary transformation or replacement between the earlier Romanian, and later Italian and British, samples. On available evidence we provisionally ascribe the Romanian material to *Mammuthus rumanus* and the Montopoli and Red Crag samples to *Mammuthus* cf. *rumanus* (LISTER et al. in press).

MAGLIO (1973) had divided *Mammuthus meridionalis* into three informal chronological

and morphological groups, each named after a locality where key material was found: the 'Laiatico Stage', 'Montevarchi Stage' and 'Bacton Stage'. He included in the early, Laiatico Stage, the Montopoli remains here referred to *M. cf. rumanus*, as well as remains from some other localities which we believe to be of uncertain morphology and/or age (LISTER & ESSEN 2003 and in prep). PALOMBO & FERRETTI (in press) provisionally retain the Montopoli material as an early form of *M. meridionalis*, although like us they recognise its morphology as more primitive than that of the typical form.

Another name which has gained currency for the earliest European mammoths is *Mammuthus gromovi*, coined by ALEXEEVA & GARUTT (1965) for remains from the Khapry Faunal Complex, in the south of European Russia and now dated to MN17, ca. 2.6-2.2 Ma (TITOV 2001). These remains are therefore intermediate in age between those here referred to *M. cf. rumanus* and typical *M. meridionalis*. The mammoths were regarded as more primitive than *M. meridionalis* on the basis of molar morphology, cranial proportions, and the presence of a supposed atavistic fourth true premolar (P4) in one skull (ALEXEEVA & GARUTT 1965). However, measurements on the type sample of *M. gromovi* from Khapry show that in the key features of plate formula and hypsodonty index, it shows no significant difference from typical *M. meridionalis*, with 12-14 full plates in M3 (DUBROVO 1989; LISTER 1996; LISTER & SHER 2001; LISTER & ESSEN 2003). In addition, recent research by MASCHENKO (2002) has discounted the presence of a true P4, regarding the element in question as an abnormal second deciduous premolar (dP2) in one individual. In lamellar frequency and enamel thickness, the Khapry teeth seem slightly more primitive on average than *M. meridionalis* from the Upper Valdarno (LISTER

1996, LISTER & ESSEN 2003), but to a degree consistent with intraspecific variation.

Dentally, therefore, the type material of *M. gromovi* appears synonymous with *M. meridionalis*. Regarding skulls, there is a difference between primitively low-peaked crania at sites such as Liventsovka (Khapry faunal complex, ca. 2.6-2.2 Ma B.P., '*M. gromovi*') and Chilhac (ca. 2.0 Ma B.P.) on the one hand, and the higher-peaked type *M. meridionalis* crania from Italy (ca. 2.0-1.77 Ma B.P.), on the other (AZZAROLI 1977; BOEUF 1983; TITOV 2001). PALOMBO & FERRETTI (in press), however, point out that the Upper Valdarno sample includes at least one skull of morphology similar to that of Liventsovka and Chilhac. On this basis, the evidence for the existence of '*M. gromovi*' as a taxon

distinct from *M. meridionalis* seems weak on craniological as well as dental grounds. By the same token, LISTER & ESSEN (2003) discounted the extension of the name *M. gromovi* to dental specimens such as those from Montopoli (e.g. AZZAROLI 1977), since this material, here referred to *M. cf. rumanus*, is both older and more primitive than the type sample of *M. gromovi* from Khapry.

We therefore provisionally envisage two mammoth taxa in the Pliocene to Early Pleistocene of Europe, *Mammuthus rumanus* (and *M. cf. rumanus*) in the interval ca. 3.5-2.6 Ma B.P., and *M. meridionalis* ca. 2.6-0.8 Ma B.P. Whether the transition between them represents an *in situ* evolutionary transformation, or a replacement from outside, is at present unknown.

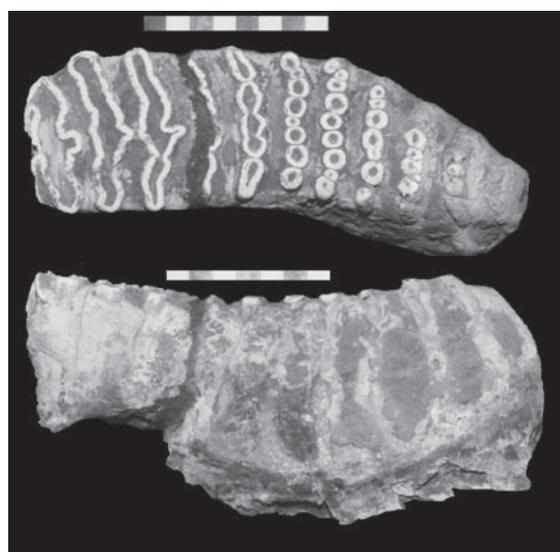


Fig. 1

Left lower third molar of *Mammuthus cf. rumanus* from the Red Crag of Falkenham, Suffolk, England (Ipswich Museum R.955-12.10), in occlusal and lateral views. The tooth has a plate formula of x10p where x is an anterior talon and p is a posterior 'platelet', with 10 full plates inbetween, the fourth damaged. Scale units 1 cm.

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