

Late Early Pleistocene European large mammals: a mixture of Villafranchian and Galerian (Cromerian) elements?

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In the 1980s the “end-Villafranchian” dispersal was a widely accepted model mirroring the transition from Villafranchian to Galerian (Cromerian) Eurasian mammal faunas between 1.0 and 0.9 Ma BP (AZZAROLI 1983; AZZAROLI et al. 1988). Later students doubted a short term late Early Pleistocene faunal renewing, and considered some 600 ka (ROEBROEKS & KOLFSCHOTEN 1995) or even longer (AGUSTI & MOYÀ-SOLÀ 1998). CALOI & PALOMBO (1995) discussed opportunities to re-define the Villafranchian/Galerian boundary and considered the insertion of a distinct biochron (“Protogalerian”).

Because of the scarcity of finds and localities in Europe and Western Asia most late Early Pleistocene western Palaearctic faunal communities have been interpreted as plain mixtures of “typical Villafranchian” and “typical early Middle Pleistocene” elements. The Untermaßfeld bonebed (Thuringia, Germany), which so far provided some 14,000 determinable vertebrate remains of 44 mammal species (101 taxa in total) entombed in high-flood fluvial sediments slightly younger than the base of the Jaramillo polarity sub zone (OIS 31, corresponding to the earliest part of MNQ zone 20, approximately 1.05 Ma B.P.; R.-D. KAHLKE 2000), is one of the richest faunal assemblages of this age [R.-D. KAHLKE (ed.) 1997, 2001a, 2001b with studies of numerous authors]. It can therefore confidently fill this gap in our knowledge of the European Early-Middle Pleistocene faunal communities.

A common element of the Untermaßfeld fauna is *Bison menneri*. This long-legged, slender bovid had replaced the smaller and more gracile Villafranchian *Leptobos* as well as members of the *Eobison*-group, at least in Europe. Advanced bison (*B. voigtstedtensis*, *B. schoetensacki* etc.) appeared from the Early/Middle Pleistocene (M/B-) Boundary onwards. The early roe deer *Capreolus cusa-*

noides appeared for the first time in the Untermaßfeld fauna. This species is morphologically and metrically intermediate between the Ruscinian/Early Villafranchian *Procapreolus cusanus* and the larger-sized, more modern early Middle Pleistocene *C. suessenbornensis*. Nonetheless, scarce remains from a few Middle to post-Villafranchian European sites indicate a possibly earlier appearance of *C. cusanoides*. The Untermaßfeld elk/moose *Alces carnutorum* is larger-sized than the Middle and Late Villafranchian *A. gallicus*. Although similar in height, it was quite lighter-built than the Galerian *A. latifrons*. A sympatric occurrence of *A. carnutorum* and *A. latifrons* in early Middle Pleistocene late *Mimomys savini*-faunas cannot be ruled out. The fallow-deer-sized *Cervus* s.l. *nestii vallonnetensis* likely stemmed from a Mediterranean Villafranchian stock (*Pseudodama* sensu AZZAROLI 1992). It differs from older relatives in its comparatively shorter premolar rows. Recently discovered, complete adult antlers have three tines and no palmation. Red deer is not present in the Untermaßfeld fauna, although members of this taxon first appeared in Europe slightly earlier than the M/B-Boundary. The long-legged Untermaßfeld *Eucladoceros giulii* as well as a number of other European specimens probably are the final, large-sized stage of the *Eucladoceros* lineage that originated in the Villafranchian. Its antlers, so far only known from fragments, are comb-like with long, pike-shaped tines. Some *E. giulii* lower jaws are pachyostotic. BRUGAL & CROITOR (this volume) assign this species to the probably megacerine genus *Arvernoceros*. *Praemegaceros*, a typical and widespread element of the Central European early Middle Pleistocene, is missing at Untermaßfeld.

The well recorded, very large-sized Untermaßfeld hippo, *Hippopotamus amphibius*

large cheetah *Acinonyx pardinensis pleistocaenicus* differs from European Villafranchian finds (*A. pardinensis pardinensis*) in dental features as well as in the shape of the symphysis, while it is similar to a northern Chinese cheetah of the same age. Younger European cheetahs, which are poorly documented, are smaller-sized. The discovery of an Old World cougar (*Puma pardoides*; syn. *Viretailurus schaubi*) at Untermaßfeld raised the question of the possible Eurasian or African origin of the genus. So far, fossils from twelve localities record the Early Villafranchian to early Middle Pleistocene occurrence of Eurasian cougars (HEMMER et al. in press). The species was then replaced by the leopard (*Panthera pardus*), a pantherine cat of similar size. The Untermaßfeld dirk-toothed cat is the youngest record in Europe and has to be assigned to the most advanced subspecies *Megantereon cultridens adroveri*. The late Early Pleistocene *Homotherium crenatidens*, which comprises the sexual dimorphic *crenatidens*- and *nestianum*-morphotypes, differs from the smaller-sized, Middle to Late Pleistocene, species *H. latidens*, which probably dispersed throughout the Holarctic, in the shape of the canines as well as in postcranial features.

Pachycrocuta brevirostris is well recorded by fossils as well as its bone accumulating and modifying activities, but so far no morphological differences in Eurasian Late Villafranchian to early Middle Pleistocene populations have been reported. The Untermaßfeld bear population differs from the *U. etruscus* lineage in its

peculiar premolar reduction, and shares some common features with *U. dolinensis* (GARCIA this volume). The Untermaßfeld hunting dog, *Canis (Xenocyon) lycaonoides*, differs from Late Villafranchian and earlier post-Villafranchian taxa [*C. (Xenocyon) ex gr. falconeri*] in the variable (minute or vestigial) entoconid of its lower carnassials. This tendency to reduce the entoconid in M_1 continues throughout the Middle Pleistocene. The Untermaßfeld *Canis lupus mosbachensis* is a distinct evolutionary stage of medium-sized canids. It follows the Villafranchian *C. etruscus* and differs from Middle Pleistocene *mosbachensis* dogs in its dental features and limb-bone proportions.

European late Early Pleistocene faunal assemblages do not appear as combinations of “older” (Villafranchian) and “younger” (early Middle Pleistocene) elements. The evolutionary stages of most large mammal taxa of the 1.2 to 0.9 Ma BP interval are markedly different from those of late Villafranchian and Galerian communities. The backdrop to the formation of this specific “Epivillafranchian” or “Protogalerian” faunal communities was the onset of a global period of increased climatic variability. The remarkable faunal turnover that led to the early Middle Pleistocene setting started at the very end of the late Early Pleistocene (early to middle Galerian transition, sensu PALOMBO this volume) around 0.9 Ma BP (see the “Middle Pleistocene revolution” of HORÁČEK et al. this volume; MAZZA this volume).

- AGUSTI, J. & MOYÀ-SOLÀ, S. (1998): The Early Pleistocene mammal turnover in Spain: evidence against an “End-Villafranchian” event. In: T. VAN KOLFSCHOTEN & P.L. GIBBARD (eds.), *The Dawn of the Quaternary. Proceedings of the SEQS-EuroMam symposium 1996.* – Meded. Nederl. Inst. Toegep. Geowetensch. TNO, **60**: 513-519; Haarlem.
- AZZAROLI, A. (1983): Quaternary mammals and the „end-Villafranchian“ dispersal event – a turning point in the history of Eurasia. – *Palaeogeogr., Palaeoclimat., Palaeoecol.*, **44**: 117-139; Amsterdam.
- AZZAROLI, A. (1992): The cervid genus *Pseudodama* n. g. in the Villafranchian of Tuscany. – *Palaeontogr. Ital.*, **79**: 1-14; Pisa.
- AZZAROLI, A., GIULI, C. DE, FICCARELLI, G. & TORRE, D. (1988): Late Pliocene to early mid-Pleistocene mammals in Eurasia: faunal succession and dispersal events. – *Palaeogeogr., Palaeoclimat., Palaeoecol.*, **66**: 77-100; Amsterdam.
- BRUGAL, J.-P. & CROITOR, R. (this volume): New insights concerning Lower Pleistocene cervids and bovids in Europe: dispersal and correlation.
- CALOI, L. & PALOMBO, M.R. (1995): Late Early Pleistocene mammal faunas of Italy: Biochronological problems. – *Il Quaternario, Ital. Journ. Quatern. Sci.*, **8** 2: 391-402; Roma.
- GARCIA, N. (this volume): New results on the remains of Ursidae from Untermaßfeld: comparisons with *Ursus dolinensis* from Atapuerca and other Early and Middle Pleistocene sites.
- HEMMER, H., KAHLKE, R.-D. & KELLER, T. (2003): *Panthera onca gombaszoegensis* (KRETZOI, 1938) from the Early Middle Pleistocene Mosbach Sands (Wiesbaden, Hessen, Germany) – A contribution to the knowledge of the variability and history of the dispersal of the jaguar. – *N. Jahrb. Geol. Paläont. Abh.*, **229** 1: 31-60; Stuttgart.
- HEMMER, H., KAHLKE, R.-D. & VEKUA, A.K. (in press): The Old World puma – *Puma pardoides* (OWEN, 1846) (Carnivora: Felidae) in the Lower Villafranchian (Upper Pliocene) of Kvabebi (East Georgia, Transcau-

casia) and its evolutionary and biogeographical significance. – N. Jahrb. Geol. Paläont. Abh.; Stuttgart.

HORÁČEK, I., LOŽEK, V. & FEJFAR, O. (this volume): The Middle Pleistocene revolution and the Central European vertebrate and mollusc fossil record.

KAHLKE, R.-D. (ed.)(1997a, 2001a, 2001b): Das Pleistozän von Untermaßfeld bei Meiningen (Thüringen). Teil 1-3. – Monogr. Römisch-Germanisches Zentralmuseum, **40** 1: I-VI, 1-418, pls. 1-67; **40** 2: I-VIII, 419-698, pls. 68-131, 1 app.; **40** 3: I-VI, 699-1030, pls. 132-151, 15 app.; Bonn (Dr. Rudolf Habelt GmbH).

KAHLKE, R.-D. (2000): The Early Pleistocene (Epivillafranchian) Faunal Site of Untermassfeld (Thuringia, Central Germany). Synthesis of New Results. In: D. LORDKIPANIDZE, O. BAR-YOSEF & M. OTTE (eds.), Early Humans at the Gates of Europe. Proceedings of the first international symposium. Dmanisi, Tbilisi (Georgia) Septembre 1998. – Etud. Rech. Archéol. Univ. Liège, **92**: 123-138; Liège.

MAZZA, P.P.A. (this volume): Response of Italian Late Neogene and Quaternary mammals to climatic and vegetational changes.

PALOMBO, M.R. (this volume): The evolution of herbivore and carnivore guilds in Italy from the Late Neogene to the Late Pleistocene.

ROEBROEKS, W. & KOLFSCHOTEN, T. VAN (1995): The earliest occupation of Europe: a reappraisal of artefactual and chronological evidence. In: W. ROEBROEKS & T. VAN KOLFSCHOTEN (eds.), The Earliest Occupation of Europe. Proceedings of the European Science Foundation Workshop at Tautavel (France), 1993.: 297-315; Leiden (Univ. Leiden).