



A NEW NORTH AMERICAN EARLIEST EOCENE MAMMAL ZONE AT THE BEGINNING OF THE CARBON ISOTOPE EXCURSION

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At the Paleocene/Eocene boundary, the earliest Wasatchian Wa-0 (Willwood Formation, Wyoming) succeeds the latest Clarkforkian (Cf-3), and it is recognised as containing the first modern North American mammals (Gingerich, 1989). Recently, the new Wa-M zone was mentioned to define an intermediate zone of at least 6 m thick, situated at the most negative spike of the Carbon isotope excursion (Magioncalda *et al.*, 2004) and characterised by the first occurrence of the mammalian condylarth *Meniscotherium*. During summers 2004 and 2005 the Wa-M interval has been sampled in detail for $\delta^{13}\text{C}_{\text{DOC}}$ analyses, sedimentology, micropaleontology and vertebrates. It has yielded the first mammalian concentrate levels of Polecat Bench (Northern Bighorn Basin). Screen washing of about 1500 kg from a brown mudstone paleosol, a lenticular shell bed, and a gar scale-bearing channel have permitted to determine the preliminary composition of this new mammalian zone. The fauna contains multituberculates, didelphid marsupials, nyctitheriid insectivores, hyopsodontid and phenacodontid condylarths, oxyaenid creodonts, microsypid and paromomyid plesiadapi-

forms, and rodents. The Wa-M fauna does not contain typical Eocene modern mammals such as primates or artiodactyls but contains essentially groups already known from the Paleocene. However, some taxa are peculiar. The most abundant mammal is a very small species of the hyopsodontid condylarth *Haplomytus*. Its size is smaller or just in the range of the small Wasatchian *H. speirianus*. The phenacodontid condylarth *Ectocion* is, on the contrary, of large size and belongs to the Clarkforkian species *E. osbornianus*. Among the didelphid marsupials several teeth belong to the genera *Mimoperadectes* and possibly *Peratherium* that were not known before Wa-0. The new Wa-M zone, coinciding with the warmest period of the Cenozoic, seems thus to be composed of a real transitional fauna with typical but non-modern dwarf Wasatchian mammals.

References:

Gingerich, P.D., 1989. New earliest Wasatchian mammalian fauna from the Eocene of northwestern Wyoming: Composition and diversity in a rarely sampled high-floodplain assemblage. *University of Michigan, Papers on Paleontology*