

Crossing epoch and international boundaries:
The earliest Eocene Erquelinnes mammal fauna
from the Mons Basin and its correlation

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144

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In 1880, the fluvial “Upper Landenian” deposits (Tienen Formation) of the Erquelinnes sand quarry in the southern part of the Mons basin near the Belgian-French border yielded their first mammal fossil, a well preserved jaw of a primitive perissodactyl. By 1927, about 40 mammal specimens had been found at Erquelinnes and had been attributed to *Adapisorex*, ‘*Protomomys*’, *Paramys*, *Plesiadapis*, *Arctocyonides*, *Hyracotherium*, *Coryphodon* and ‘*Oxyaena* or *Miacidae*’. By that time however, the Erquelinnes fauna had already been eclipsed by the contemporaneous Dormaal fauna from northeastern Belgium, which yielded thousands of specimens and has since become the international MP7 reference level for the earliest Eocene of Europe. Meanwhile, attention for the Erquelinnes fauna has been limited to passing mentions of referred specimens in the formal descriptions of the new plesiadapiform *Platychoerops georgei* and of the miacid carnivoran *Gracilocyon solei*.

Here we present an updated faunal list for the complete Erquelinnes mammal fauna. We show that also hyaenodontids, mesonychids, hyopsodontids, and dichobunid artiodactyls are present, and some of the earlier identifications are corrected or detailed further. This update of the Erquelinnes mammal fauna almost doubles its diversity, and strengthens the correlation with the Dormaal MP7 reference fauna.

The results of the $\delta^{13}\text{C}_{\text{org}}$ analysis of the strata underlying and coeval with the fluvial unit containing the Erquelinnes mammal fauna seem to independently support the faunal correlation and earliest Eocene age Sedimentological observations and $\delta^{13}\text{C}_{\text{org}}$ analysis recently obtained in fluvial and lignitic sediments from the nearby Avesnois area in northern France (Quesnel et al, this meeting) moreover allow the correlation of the “Upper Landenian” fluvial deposits from the Belgian Erquelinnes locality with those of the “Sparnacian” in France.

Remaining faunal differences between Erquelinnes and Dormaal are most likely the result of subtle differences in depositional environments and thus in taphonomic bias except, possibly, for the perissodactyl jaw collected in 1880. This specimen was not collected from the basal gravel bed of the Erquelinnes Sand Member like all other specimens, but from the overlying, cross-stratified sands. Its morphology is unlike that of the perissodactyl found in the basal gravel bed at Erquelinnes or of any other Dormaal aged perissodactyl. Instead, it matches *Cymbalophus cuniculus* from slightly younger deposits in the London Basin. The perissodactyl jaw from Erquelinnes therefore either indicates an earlier first appearance for *Cymbalophus*, an unexpectedly long phase of deposition for the Erquelinnes Sand Mbr, or a combination of both.