The abrupt appearance of perissodactyls is one of the major biogeographic markers of the Paleocene-Eocene Boundary. The study of basal perissodactyls has been a popular research topic for over a century and has recently enjoyed a renewed interest. However, the particularly well-preserved specimens of *Cymbalophus cuniculus* from the Early Eocene of Erquelinnes have received surprisingly little recent attention, given that they arguably represent the oldest European perissodactyl. *Cymbalophus* has been regarded either as a basal equoid close to North American *Hyracotherium sandrae* or as a basal tapiromorph close to North American *Systemodon*. An entire hemimandible from Erquelinnes with p3-m2 in place represents the most complete specimen from *C. cuniculus*. This specimen moreover holds the only known lower premolars of *Cymbalophus* and we present its morphology in view of the different phylogenetic interpretations. The second perissodactyl fossil from Erquelinnes is an isolated m3 that was traditionally also attributed to *C. cuniculus*. This fossil was however found in a different and potentially older level. Various morphological aspects of this specimen are somewhat atypical of *C. cuniculus* and overlap with the morphology of *H. sandrae*. These specimens therefore highlight the variability and the gradual evolution of basal perissodactyls, and contribute to the understanding of the complex evolutionary patterns of early perissodactyls in Europe.