

Pollen assemblages of subhumid and sclerophyllous plants and intrazonal water plants revealed by SEM pollen analysis of mid-Miocene deposits of Entrischenbrunn (Bavaria, Germany)

Hofmann, Christa-Charlotte¹; Sachse, Markus²; Huet, Benjamin³

1 Department of Palaeontology, University of Vienna, Josef-Holaubek-Platz 2, A-1090 Vienna, Austria; 2 Rümmanstraße 57, D-80804 Munich, Germany; 3 Geological Survey of Austria, Neulinggasse 38, A-1030 Vienna, Austria.

The one-meter-thick intercalated marly sediments of Entrischenbrunn represent an oxbow lake deposition within a braided fluvial system of late Langhian age (middle Miocene). The organic rich upper part of the marls, characterized by the presence of numerous plant macrofossils, have been investigated for palynomorphs with SEM for higher resolution. The palynological results reveal that many typical azonal broad leaved forest elements were present, such as *Carya*, *Fraxinus*, *Liquidambar*, *Tilia*, and unsurprisingly mirror some of the very common macro fossils, such as pollen of *Sporotrapoidites erdtmanii*, *Tricolporopollenites wackersdorfensis* (= *Hemitrapa*, and *Podocarpium*), *Platanus* sp., *Quercus* sps., and *Ulmus* sps. However, the palynoflora as well comprises floral elements not known as macrofossils or rare for this locality; i.e., several aquatic plants (*Callitriche*, *Chenopodium*, *Ludwigia*, *Lycopus/Mentha*, *Decodon* and Lythraceae, gen. indet), and a large portion of more subhumid and partly sclerophyllous plants such as *Celtis* (*C. tournefortii*-type), two *Ephedra* sps., two Mediterranean *Erica* sps, *Diospyros* "batocana-type", non-aquatic Poaceae, *Quercus* infrageneric group Ilex/Cyclobalanopsis, Sapoteae (cf. *Mimusops* /*Manilkara*/ *Madhuca*), *Sideroxylon*, *Rehderodendron*, *Royena* "fischeri-type", *Ulmus* "minor/ pumila-type", *Zelkova* "abelical serrata-type", and *Ziziphus* "mucronata-type". The high diversity of "drier subhumid plants" cannot be interpreted easily, consequently we propose three possibilities: 1. The locality had a geographically controlled localized lower precipitation, 2. Deposition in a period of lower precipitation and 3. The overall zonal vegetation consisted as well of several patches of subhumid sclerophyllous vegetation on drier grounds (e.g., pebble and sand bars in a braided system). A combination of all three is also possible.