

# SPECTACULAR INSIGHTS INTO ESTUARINE TO SHALLOW MARINE SEDIMENTS OF THE KARPATIAN (LOWER MIOCENE) IN THE KORNEUBURG BASIN (LOWER AUSTRIA)



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The Korneuburg Basin in Lower Austria, about 18 km north of Vienna, is a ca 20 km long and at most 7 km wide asymmetric pull-apart basin formed within the Alpine-Carpathian thrustbelt during last Alpine movements in the Karpatian (late Early Miocene). During the construction of the S1 motorway south of Stetten a ca 1.8 km long section between the Tradenberg tunnel and the city of Korneuburg was geologically documented in detail (fig. 1). A flysch-elevation in the area of profile E (fig. 1) divides the section in an eastern (profiles A, F) and a western part (profiles G, D, D1, B, C1, C) causing an increasing number of faults in the Miocene sediments towards the

vicinity of the flysch. In the western part constantly 20° to 30° westward dipping marl, marly silts and fine to medium sands, in some parts with intercalations of lignite and coaly clay were cropping out, whereas in the eastern part the westward dipping of similar sediments is changing to an eastward nearby the flysch high.

Rich fossil content documents sedimentation in mudflats, coastal swamps and shallow sublittoral settings within an estuary.

Autochthonous Lower Miocene nannofossils represented by stratigraphical important forms like *Helicosphaera ampliaperta* Bramlette et Wilcoxon, 1967, *H. carteri* (Wallich 1877) Kamptner 1954, *Reticulofenestra excavata* Lehotayova, 1975, *Sphenolithus cf. heteromorphus* Deflandre 1953, indicating nannoplankton Zone NN4 (Martini 1971).

The mollusc fauna documents changing environmental conditions along the sampled transect. Nearby terrestrial habitats and freshwater influence are indicated by planorbids, hydrobiids and *Melanopsis impressa*. An enormous biodiversity with more than 650 taxa was documented from these paleoenvironments, allowing also precise climatic reconstruction from palynologic data: within subtropical climatic conditions intertidal to very shal-

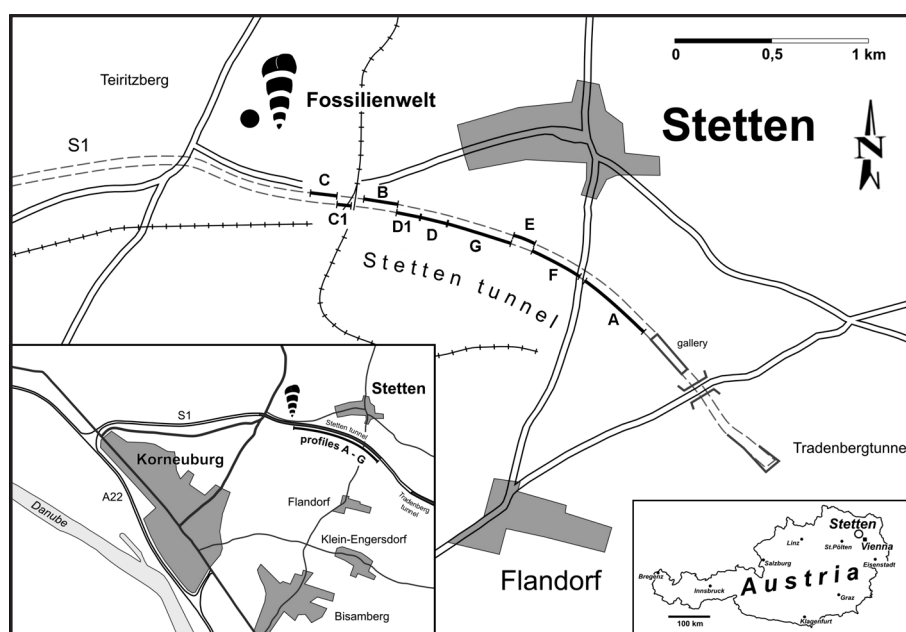


Fig. 1: Position of the investigated sections (A–G) in the Korneuburg Basin. The new project of the Vienna Museum (NHM) “Fossilienwelt” is indicated.

low subtidal marine environments and brackish water with *Agapilia pachii*, *Granulolabium plicatum*, *Terebralia bidentata*, *Crassostrea gryphoides*, and *Perna aquitanica*; whereas deeper subtidal and fully marine conditions are documented by *Turritella*, *Nassarius*, *Anadara*, muricid gastropods, or venerids.

Foraminiferal assemblages are dominated by benthic foraminifera and document brackish to shallow marine paleoenvironments. Most frequent genera are *Ammonia*, *Aubignyna* and elphidiids. Quiet water assemblages are indicated by higher portions of *Caucasina* and *Nonion*. The found assemblages enable us to trace sea level changes within the sections. They correspond largely to those described earlier by Rögl (1998).

A complete measurement by hand-held gamma-log spectral analysis detected throughout the succession prominent, highly significant periodicities with stratigraphic distance ranging from 12 m to 25 m, which have been interpreted as 21-kyr-precession signal. This indication for astronomical forcing allows further discussion of a reliable age-model for this section of the Korneuburg Basin.

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