

on Karpatian faunas.

A current FWF/DFG project yielded new data on Rupelian to Burdigalian mollusc faunas of the eastern Mediterranean. Investigations of early to middle Burdigalian sections in the Turkish Mut Basin and the Iranian Qom Basin together with comparisons with Burdigalian gastropods from the Italian Colli Torinesi also furnish evidence for a rather advanced late Lower Miocene gastropod fauna, which contribute to a large amount taxa which appear in the Paratethys during the Karpatian and Badenian, such as *Gibbula affinis*, *Gibbula buchi*, *Murex spinicosta*, and *Pleuroploca tarbelliana*. From that, neither the Karpatian migration nor the Badenian turnover necessarily was fed by an Indo-Pacific species-pool, but got its constituents largely from a well-established Mediterranean province fauna, which acted as a centre of origin in Lower Miocene times.

A detailed focus on the Austrian gastropod faunas spanning an interval from the Karpatian to the lower Badenian thus suggests an at least threefold migration wave from the Mediterranean area. The first wave took place during the Karpatian, being documented by the gastropod fauna of the Korneuburg Basin and the Laa Formation, the second wave introduced the fauna of the Grund Formation, being characterised by an acme of some "old-fashioned" Karpatian species such as *Ficus cingulata*, *Volema cornuta*, *Euthriofusus burdigalensis* and *Tudicla rusticula*. Finally, the third wave resulted in the establishment of the typical Badenian fauna, being characterised by the assemblages of the Baden Formation.

### Paleoenvironments of the Pielach Formation (Oligocene, Lower-, Upper Austria) - a case study for mollusc-based facies analysis

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The Oligocene Pielach Formation is characterised by bluish, greyish to black clay and silt with scattered coal-seams. It formed during the Kiscellian and early Egerian as a limnic, brackish and marine littoral facies of the Paratethys Sea along the Bohemian Massif in Lower and Upper Austria. The predominating NW-SE and NE-SW fault system in the southern part of the Massif caused a crystalline peninsula which extended as far south as Amstetten. A rather steep shelf formed along its western coast, whereas a flat, protected shelf developed in its eastern part. The Oligocene sea found a fissured shoreline with several small embayments, resulting in lagoonal environments and small-scale facies patterns. These patterns are reflected by a rich and well preserved mollusc fauna which reveals rapid vertical and lateral changes in composition, whilst the pelitic sediment displays an usually rather homogenous character. Additionally, these patterns document local oscillations of sea level and fluctuating freshwater influx, instead of one simple regression-transgression cycle.

The initial limnic stage cannot be detected by molluscs but is often characterised by dark clay with rooted beds. With the ingression of the sea, soon lagoonal and swampy environments established, in which a typical littoral, euryhaline mollusc fauna flourished. A rare community type in the Pielach Formation, consisting mainly of fluvial-estuarine species is the *Melanopsis impressa* - *Neritina picta* community. The scarceness of pure estuarine assemblages points to a more distal position, since the estuarine species are usually associated with taxa such as *Polymesoda convexa* and *Mesohalina margaritacea*. This composition reflects rather lagoonal conditions under weak estuarine influence, pointing to salinities between 5 and 10 ‰. The extended littoral mudflats of the lagoons were inhabited by large populations of potamidids which avoid agitated waters of exposed shorelines. These *Granulolabium*

*plicatum* - *Mesohalina margaritacea* communities pass locally into *Ostraea fimbriata*-beds. With decreasing numbers of potamidids and oysters the communities are replaced by *Mytilus aquitanicus* communities and finally by *Turritella venus* - *Pelcyora polytropa* communities. This succession marks the transition to shallow sublittoral but still protected environments which offered at least polyhaline salinities.

As documented by a temporal section during a railway tunnelling project at Melk, the described community-succession from littoral-oligohaline to littoral-mesohaline and finally sublittoral-polyhaline communities is not one-directional. Typically, the various communities can be found several times in vertical and lateral direction. Additionally, the section hardly offers the ideal ecological succession, but usually different types follow without transitional stages, indicating rapid shifts of habitats within a coastal environment, which is dominated by lagoons.

### Paleocological significance of selected mollusc assemblages during the lower to middle Pannonian in the Northern Vienna Basin

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An about 30 m thick siliciclastic section of gravel, sand, silt and clay was studied in the Northern Vienna Basin. The outcrop Pellen-dorf is situated at the north-western part of the Kronberg uplift block close to the Bisamberg fault zone, which seems to have been affecting sedimentation during the investigated time interval. During field work, focusing on the excellent flora which will be presented soon in a paper by Kovar-Eder & al., the associated mollusc faunas turned out to be of major importance for synecological reconstruction of the sedimentary environment.

The basal part of the section is formed by about 12 m fluvial gravel of the lower Pannonian Mistelbach Formation. Psammitic parts of the formation bear a synchronous allochthonous landsnail fauna, predominated by genera such as *Carychium*, *Semilimax*, *Gastrocopta* and *Acanthinula*. The good preservation of the fauna suggests a rather short transport. The actualistic approach - relying on ecological requirements of extant relatives - documents an origin from adjacent, moist habitats surrounding the rivulets. The sandy, gravelly part is overlain by 2-4 m of greyish pelits with a diverse flora. Basal layers consist mainly of stems (<1.5 cm) and of accumulated leaves of *Decodon*, whilst floating and submerged aquatic plants get abundant towards the top of the unit. The abrupt change of paleoenvironment is reflected not only in sedimentation and flora but also in the composition of the mollusc fauna. Autochthonous occurrences of anodontid bivalves and the limnic gastropods *Radix* and *Bithynia* replace the landsnail fauna of the underlying unit completely. Obviously the fluvial system was pushed back or changed its course and a zone of stagnant lakes formed along the landward side of Lake Pannon. The first ingression of the brackish waters of Lake Pannon resulted in littoral conditions and an increase of water energy. More than 10 m of interbedded and crossbedded silt and sand was deposited, lacking any anodontids. Instead of these, *Unio atavus* appears, accompanied by *Melanopsis bouei* and *Bratia escheri*. After this high energy phase a new decrease in water energy is reflected by the overlaying 5 m of dark clay. A sudden deepening of the investigation area beyond wave base (at least 10-15 m) resulted in the deposition of these pelits which bear only scattered suspension feeders, such as *Congeria partschi* and Limnocardids but lack any herbivorous molluscs. The abrupt transition from littoral facies