

## Werner E. Piller and the mussel shrimps – boon and bane close to each other

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“Ostracods? But these are the most stupid animals in the world!” (pers. comm. of a late professor for geology at the KFU, 1998). One who never believed in this statement is Werner E. Piller (WEP) and despite “the bane of ostracods” (pers. comm. of a Viennese colleague to WEP), he promoted ostracodology in Austria in various ways. Ostracods or mussel shrimps are usually millimetre-sized crustaceans with a bivalved carapace settling every aquatic environment today. Since their calcitic valves are easily preserved during fossilisation, they are known from the Ordovician system onwards with tens of thousands species described. Hence, these animals (and their fossils) hold a huge potential for (palaeo-)ecological, (palaeo-)biogeographic and biostratigraphic applications, some of the key interests of WEP. Already during his doctoral thesis in the 1970s, WEP got in touch with mussel shrimps. Although these Mesozoic forms were indeterminable, he recognised them as an important faunal element. In the early 1980s, his work for the “Österreichische Donaukraftwerke AG” offered a unique chance to sample middle Miocene, marine sediments from numerous exploration cores drilled for the planned but never realised power plant at Hainburg. Unfortunately, a PhD-thesis dealing with the ostracods from these cores failed due to an unforeseen loss of the microfossils, which ended the promising career of the student. Anyway, the work on these fossils initiated an amicable collaboration with the zoologist Dan L. Danielopol (DLD; formerly Limnological Institute, OEAW), completely in line with WEP’s interdisciplinary, always challenging thinking. Joint marine biological and geological excursions (Adriatic Sea, Romania), several scientific works and the organisation of conferences and workshops arose from this cooperation, which constantly aimed to bridge the gap between palaeontology and neontology. In the late 1990s, MG got the opportunity to restudy the ostracods of Hainburg. By providing up-to-date research facilities (e.g., FEG-SEM) and stimulating discussions, this dissertation could be – fortunately – completed. While the systematic part of this thesis was published monographically, the palaeoecological conclusions lie still in the drawer. At the beginning of the new millennium, deposits and biota of late Miocene Lake Pannon on the doorsteps of Graz and Vienna became a major topic of a loose working group (Limnological Institute Mondsee, Natural History Museum Vienna, University of Graz, Universalmuseum Joanneum) mainly linked by the inspiring mind of WEP. The simultaneous logging of various biotic and abiotic data (e.g., molluscs, ostracods, pollen, dinoflagellates, geometric morphometrics, sedimentology, gamma-/kappa-log, TOC, TS) down to a mm-scale by using i.a. the “Piller corer” (DLD) resulted in temporally highly resolved insights into the evolution of long-lived Lake Pannon. Skilled in that way at home, we (WEP, MG and students) started to investigate the Miocene ostracod radiation in western Amazonia’s so-called Lake Pebas as a contemporaneous counterpart of Lake Pannon on the opposite side of the world (Brazil, Colombia, Peru). Sedimentological, taxonomical and geochemical observations brought novel information to the phylogeny of Pebasian ostracods (e.g., revision of known taxa and new species), the palaeoenvironment of the Pebas wetland (e.g., there is no long-lived lake) and palaeobiogeography (e.g., linkage through fluvial pathways with the Caribbean). However, due to the “bane of ostracods” only one student involved in the Lake Pannon and Lake Pebas projects finished his master thesis, while three PhD candidates miscarried. Moreover, the whole samples from one expedition got lost in Peru. Nevertheless, by using pastime, an amateurish sampling in an abandoned channel yielded the first recent ostracods described from western Amazonia at all. This lucky strike launched a follow-up project about recent Neotropical ostracods with one postdoc (Claudia Wrožyna) and one PhD-student

(note: the latter quitted the doctoral programme shortly before finalisation). Environmental data obtained during fieldwork (Florida, Jamaica, Dominican Republic, Mexico, Panama, Colombia, Brazil), the chemistry of the host water and ostracod shells as well as traditional and geometric morphometrics-based taxonomy were successfully combined to explore the intraspecific variability of selected taxa. As such basic research is essential for the interpretation of fossil ostracods, it mirrors again the efforts of WEP to use the present – in this case ostracods – to decrypt the past.



Fig. 1: Miocene Amazonian ostracods in their full splendor.

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