

# THE EXTINCTION AND RECOVERY OF PLEUROTOMARIIDA (GASTROPODA) ACROSS THE PERMIAN–TRIASSIC – HOW TAXONOMIC AND ECOLOGICAL STUDIES IMPROVE OUR KNOWLEDGE

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Pleurotomariida (slit-band gastropods) have the longest fossil record among living gastropods and represents one of the most diverse and abundant gastropod groups in the Middle and Late Palaeozoic. Gastropods including Pleurotomariida declined at the end-Permian mass extinction event. Previous diversity studies of gastropods were hampered by outdated and wrong generic assignments. We studied globally distributed important Late Palaeozoic genera (e.g., *Worthenia*, *Glabrocingulum*) from the Upper Carboniferous of the USA and revised all Pleurotomariida from the Carnian (Upper Triassic) St. Cassian Formation (Italy). We documented the early shell characters and ontogenetic development of several taxa for the first time. These new shell characters are found informative in inferring evolutionary relationships. Apart from few Lazarus taxa, the Triassic Pleurotomariida studied so far do not belong to the Palaeozoic genera as assumed by previous studies. The species and generic diversity of Pleurotomariida ranging through the Permian–Triassic interval was calculated by using the Permian data from the Paleobiology database and a global Triassic gastropod database consisting 2177 nominate species. The species and generic diversity of Pleurotomariida increased especially in the Anisian and peaked in the Carnian. However, they failed to recover fully, also in comparison to other gastropod groups, especially caenogastropods. Although many new pleurotomariida genera first appeared in the Carnian, few of those genera crossed the Carnian-Norian boundary. This suggests an interruption of recovery within the Carnian, likely during the Carnian Pluvial Episode. Pleurotomariida is the most abundant gastropod group in surface collections from the Virgilian (uppermost Carboniferous) Finis Shale (Texas, USA) but their abundance is lower when bulk samples are investigated. Their abundance in post-Carnian assemblages is much lower than in Middle Triassic and Late Paleozoic assemblages.