

# Carboniferous and Permian Leaiioidea (Branchiopoda: Conchostraca) from Australia: Taxonomic Revision and Biostratigraphic Implications

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**ABSTRACT.** A taxonomic revision of Australian leaioid faunas has reduced, by synonymy, the known Early Carboniferous taxa to three species viz., *Hemicycloleia andersonae* (Tasch, 1979), *H. grantragicus* (Tasch, 1979) and *Rostraleia carboniferae* (Tasch, 1979); and the known Late Permian taxa to three species viz., *Hemicycloleia mitchelli* (Etheridge, 1892), *H. discoidea* (Mitchell, 1925), and *H. deflectomarginis* (Tasch, 1979). The revision establishes a consistent taxonomic nomenclature to facilitate comparisons with extra-Australian leaiid species, and their correlations. Particular attention is paid to the correlation of the Late Permian leaioid and estheriid faunas of the Newcastle Coal Measures (NCM) of the Sydney Basin, with those of the Lebedevian of the Lower Tungus and Nordvik Basins, northern Siberia, which in turn, indicate a correlation (Lozovsky, 1998) with the Late Tatarian Vjatian (Luptug member) horizon of the Russian Platform. We speculate that the conchostracans may have lived in estuaries and ephemeral relict water bodies along a coastal plain, and that their eggs were dispersed either by wind, by minor marine incursions, or by both of these processes. Such marginal marine influences could partly explain the widespread distribution of Mitchell's Late Permian (Tatarian) conchostracan species.

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The Conchostraca are small branchiopod crustaceans with a weakly mineralised bilaterally compressed shell, in which the valves are joined by a ligament in a simple elevated fold. Post-Palaeozoic species appear to have lived in a lacustrine milieu, as do extant species; but some Palaeozoic species may have been adapted to brackish paralic

environments (Webb, 1979; Chen & Shen, 1985). Like the Ostracoda, they are potentially useful biostratigraphic and palaeoecologic indicators. The Leaiioidea are easily distinguished from other superfamilies of Conchostraca on the basis of valves bearing up to five radial carinae, which first appear in the ontogeny on the umbo, and in later growth