

Review of the Family Sphaeriidae (Mollusca: Bivalvia) of Australia, With the Description of Four New Species

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ABSTRACT. The sphaeriid fauna of Australia includes 17 species and subspecies, seven of them belonging to *Musculium* and ten to *Pisidium*. Subgeneric classification of *Sphaerium problematicum* Gabriel and identity of *Cyclas egregia* Gould are not defined. Most of the species are endemic, but one species found near Adelaide is probably an introduced *Musculium lacustre* (Müller). All native *Musculium* species are allotted to the subgenus *Sphaerinova*; three subgenera of *Pisidium* are represented (*Afropisidium* and *Odhneripisidium* by one species each and *Euglesa* by eight species). Two anatomically distinct and probably monophyletic groups are distinguished in *Euglesa*. Four species are described as new: *Musculium quirindi* n.sp., *Pisidium (Odhneripisidium) australiense* n.sp., *P. (Euglesa) ponderi* n.sp. and *P. (E.) centrale* n.sp. Descriptions of shell and anatomy as well as the data on distribution and ecology are given for each species and an identification key is provided. Some phylogenetic and zoogeographical implications are discussed.

KORNIUSHIN, ALEXEI V., 2000. Review of the family Sphaeriidae (Mollusca: Bivalvia) of Australia, with the description of four new species. *Records of the Australian Museum* 52(1): 41–102.

The family Sphaeriidae includes the smallest freshwater bivalves (length of adult shell is from 2 to 20 mm). The group is distributed worldwide and inhabits almost all types of freshwater habitats including those (springs, small creeks and peat bogs) where no other bivalves can survive. Therefore, its investigation is important for not only understanding the structure and history of the fauna, but they may be also used in monitoring environmental conditions in some countries. At the same time, sphaeriids remain a group poorly studied in faunistic and taxonomic aspects because of their small size, cryptic mode of life (in bottom sediments) and scarcity of reliable diagnostic characters.

The first sphaeriid named from Australia, *Cyclas egregia*, was described by Gould (1846), but this species has remained dubious until now. The group was reviewed last

century in Tasmania by Tenison Woods (1876) and checklisted for the whole continent by E.A. Smith (1883). South Australian and Victorian sphaeriids were reviewed in the 1930's (Cotton & Godfrey, 1938; Gabriel, 1939). Several poorly described species and a genus from New South Wales were added by Iredale (1943b). The list of Australian freshwater molluscs published in the same year (Iredale, 1943a) included 16 species of Sphaeriidae allotted to three endemic genera. Another species from South Australia was described by Cotton (1953).

Iredale and Cotton regarded the Australian sphaeriid fauna as endemic at the generic level and rather diverse. Most of the species were attributed to limited geographic areas. However, these authors failed to provide reliable diagnostic characters and their work has been strongly