Sphaerium (*Sphaerinova*) Iredale, 1924

Diagnostic features

Korniushin (2000: 45) diagnosed *Sphaerinova* as follows: "Shells small (length up to 9 mm, usually 7 to 8 mm) compared with that in nominate subgenus[i.e. *Musculium* in his classification]; beaks usually slightly shifted posteriorly, not protruding, prodissoconch sometimes separated by growth break line but never forming bean-shaped cap. Ligament externally visible, elevated in largest specimens. Siphons short, especially their fused part; dorsal retractor muscles of inhalant siphon markedly reduced and scars merged with those of posterior adductors. Outer demibranch 0.3 to 0.4 height of inner demibranch (depending on stage of development)."

Both *Sphaerium* and *Musculium* have small shells (length up to 9 mm, usually 7-8 mm) with their beaks usually slightly shifted posteriorly, not protruding, prodissoconch sometimes separated by growth break line but never forming a bean-shaped cap. The ligament is externally visible, and elevated in the largest specimens. Siphons are short, especially their fused part, and the dorsal retractor muscles of the inhalant siphon are markedly reduced, and their scars merged with those of the posterior adductors. The kidney has a broad to narrow and elongate dorsal lobe. The outer demibranch is 30-40% the height of the inner demibranch (depending on stage of development) (based on Korniushin, 2000).

According to Korniushin (2002) the autapomorphies of *Sphaerium* are (1) interlamellar septae in inner demibranch are developed on all gill filaments and (2) and there is similtaneous development of several broods (asynchronous brooding) and the released juveniles have an outer demibranch present. In *Musculium* a cap is present on the umbo and the inner cardinal tooth on the left valve is straight. *Sphaerinova* differs from *Sphaerium* in having weak upper retractors of the branchial siphon.

Diagnosis of *Sphaerium* given by Bespalyala et al. (2024): Shell large-sized (shell length in adults varies between 6 and 25 mm), rounded to ovate in shape, typically thick walled. The beaks rounded and slightly prominent or narrow, pore density varies among species. Cardinal and lateral teeth well developed. Nephridia moderately elongated. Two siphons (exhalant and inhalant) are present. The outer and inner demibranch relatively well developed.

Classification

***Sphaerium* (*Sphaerinova*)** Iredale, 1924

Class Bivalvia

Infraclass Heteroconchia

Cohort Heterodonta

Megaorder Neoheterodontei

Order Sphaeriida

Superfamily Sphaerioidea

Family Sphaeriidae

Subfamily Sphaeriinae

Genus *Sphaerium* Scopoli, 1777

Type species: *Tellina cornea* Linnaeus, 1758. Europe.

Subgenus Sphaerinova Iredale, 1943

Type species: *Sphaerium macgillivrayi* E. A. Smith, 1882 (= *Sphaerium tasmanicum* Tenison Woods, 1876)

Original reference: Iredale, T. (1943). A basic list of the fresh water Mollusca of Australia. *Australian Zoologist* 10: 188-230.

State of taxonomy

The two subgenera of *Sphaerium* that are recognised here follows Bespalyala et al. (2024), although this author had doubts about the status of *Musculium.*

Biology and ecology

Inhabit almost all types of freshwater habitats including springs, rivers, lakes, ponds, billabongs, waterholes, small creeks, drains and peat bogs. Brood young in multiple brood pouches. Suspension and deposit feeder. Live in sediment and in weeds.

Distribution

Australia, and taxa from New Zealand, India and Japan.

Further reading

Beesley, P. L., Ross, G. J. B. & Wells, A., Eds. (1998). *Mollusca: The Southern Synthesis. Parts A & B*. Melbourne, CSIRO Publishing.

Bespalaya, Y. V., Vinarski, M. V., Aksenova, O. V., Babushkin, E. S., Gofarov, M.Y., Kondakov, A. V., Konopleva, E. S., Kropotin, A. V., Mabrouki, Y., Ovchankova, N. B., Palatov, D. M., Sokolova, S. E., Shevchenko, O. V. T., Abdelkhaleq, F. T., Soboleva, A. A., Zubrii, N. A. & Bolotov, I. N. (2024). Phylogeny, taxonomy, and biogeography of the Sphaeriinae (Bivalvia: Sphaeriidae). *Zoological Journal of the Linnean Society* 201: 305-338.

Fuentealba-Jara, C., D'Elia, G., González, F. & Franco-Jaccard, C. (2017). Phylogenetic reconstruction of Sphaeriidae (Veneroida: Bivalvia) and phylogenetic position of *Pisidium chilense*. *Hidrobiológica*, 27: 115-117.

Iredale, T. (1943). A basic list of the fresh water Mollusca of Australia. *Australian Zoologist* 10: 188-230.

Lee, T. (2019). Sphaeriidae Deshayes, 1855 (1820). Pp. 197-201 *in* C. Lydeard & Cummings, K. S. *Freshwater Mollusks of the World: a Distribution Atlas*. Baltimore, John Hopkins University Press.

Korniushin, A. V. (2000). Review of the family Sphaeriidae (Mollusca: Bivalvia) of Australia, with the description of four new species. *Records of the Australian Museum* 52: 41-102.

Korniushin, A. V. & Glaubrecht, M. (2002). Morphological characters analysis, the intergroup phylogenetic relationships and possible outgroups of the family Sphaeriidae (Mollusca, Bivalvia). *Vestbuj zoologii* 36(4): 3-22.

Kuiper, J. G. J. (1983). The Sphaeriidae of Australia. *Basteria* 47: 3-52.

Lamprell, K. & Healy, J. (1998). *Bivalves of Australia, volume 2*. Leiden, Backhuys Publishers.

Lee, T. & Ó Foighil, D. (2003). Phylogenetic structure of the Sphaeriinae, a global clade of freshwater bivalve molluscs, inferred from nuclear (ITS-1) and mitochondrial (16S) ribosomal gene sequences. *Zoological Journal of the Linnean Society* 137: 245-260.

Smith, B. J. & Kershaw, R. C. (1979). *Field guide to the non-marine Molluscs of South-eastern Australia*. Canberra, A.N.U. Press.

Smith, B. J. & Kershaw, R. C. (1981). *Tasmanian Land and Freshwater Molluscs*. Hobart, University of Tasmania.

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