



## **Coxiella E. A. Smith, 1894**

### **Diagnostic features**

Shell: small, elongate conical but usually decollate. Dextral. Protoconch paucispiral. Whorls very rounded to rather flattened at the whorl periphery with deeply impressed sutures. Aperture oval with a slight varix in adults. Columella narrow. Umbilicus closed to narrowly open. Sculpture smooth or with fine spiral threads. Operculum initially centrally paucispiral thence concentric to the outer edge. Has a smear of calcareous material.

The foot is short and lacks a posterior pedal gland. There are no accessory tentacles. There is a pedal crease and suprapedal fold of the foot. Snout long and bi-lobed, there is a deep furrow (omniphoric groove) on each side of the head. Tentacles moderately long. Eyes are on pronounced swellings at the base of the tentacles with dense clusters of yellow and white glands above each eye. Radula has a central tooth with pronounced basal cusps. Cusps of all teeth few and large. Ctenidium normal but somewhat reduced with numerous filaments. The osphradium is about half the length of the ctenidium. The kidney is large and sac-like. The female reproductive system is diaulic – the sperm duct and pallial oviduct have separate openings to the mantle cavity. These openings are near the anterior end of the mantle. Right lateral edge of bursa separated from spermathecal duct and has its opening in the mantle cavity. The spermathecal duct arises posteriorly from the bursa. The pallial gonoduct of females is separated into a distal capsule gland and a proximal albumen gland. Males have a simple penis with a single duct and no appendages.

### **Classification**

***Coxiella*** E. A. Smith, 1894

*Class* Gastropoda

*Infraclass* Caenogastropoda

*Order* Littorinida

*Suborder* Rissoidina

*Superfamily* Truncatelloidea

Family Tomichiidae

Genus *Coxiella* E. A. Smith, 1894

Type species: *Truncatella striatula* Menke, 1843

Original reference: Smith, E. A. (1894) On the land-shells of Western Australia. *Proceedings of the Malacological Society of London*, 1: 84-99.

Type locality: Menke's type is unknown, however a specimen labelled as a type from Lake Ursula and Lake Bagdad, Rottnest Island, Western Australia is located in the Australian Museum.

### State of taxonomy

Lawrie et al. (2023) have undertaken an assessment of this group and recognised four clades within what was previously treated as a single genus, *Coxiella*. They did not formally name the clades or provide names for some new species in that paper but will do so in a forthcoming publication. Hence, in the meantime, we follow Macpherson (1957) who provided the previous taxonomic treatment of this group.

### Biology and ecology

Inhabits salt lakes and coastal salt marshes. These amphibious snails move in a step-like progression when out of water, using their snout in combination with their foot. They exhibit intermittent reproduction and direct development. Eggs are deposited singly in capsules coated in sand or mud.

### Distribution

Southern Australia from central Victoria and Tasmania to central western Western Australia.

### Notes

*Coxiella* may be extremely abundant at some localities with the empty shells forming pink 'tide lines' around the shores of some salt lakes. There is evidence that *Coxiella* once had a more extensive distribution in eastern Australia with, for example, numerous shells found in core samples taken from Lake George near Canberra.

Previously included in Pomatiopsidae, recent molecular studies have shown that this genus, together with two other genera, one from South America and the other from Africa, should be separated as a distinct family.

### Further reading

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

Davis, G. M. (1979). The origin and evolution of the gastropod family Pomatiopsidae, with emphasis on the Mekong River Triculinae. *Academy of Natural Sciences of Philadelphia Monographs* 20: 1-120.

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

Lawrie, A. D. A., Chaplin, J., Kirkendale, L., Whisson, C., Pinder, A., & Mlambo, M. C. (2023). Phylogenetic assessment of the halophilic Australian gastropod *Coxiella* and South African *Tomichia* resolves taxonomic uncertainties, uncovers new species and supports a Gondwanan link. *Molecular Phylogenetics and Evolution*, 184: 107810.

Macpherson, J. H. (1957). A review of the genus *Coxiella* Smith, 1894, *sensu lato*. *Western Australian Naturalist* 5: 191-204.

Smith, B. J. (1992). Non-marine Mollusca. Pp. i-xii, 1-408 in W. W. K. Houston. *Zoological Catalogue of Australia*, 8. Canberra, Australian Government Publishing Service.

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.

Wilke, T. (2019). Pomatiopsidae Stimpson, 1865. Pp. 126-130 in C. Lydeard & Cummings, K. S. *Freshwater Mollusks of the World: a Distribution Atlas*. Baltimore, John Hopkins University Press.

Williams, W. D. & Mellor, M. W. (1991). Ecology of *Coxiella* (Mollusca, Gastropoda, Prosobranchia), a snail endemic to Australian salt lakes. *Palaeogeography, Palaeoclimatology, Palaeoecology* 84: 339-355.

---

To cite this resource: **Ponder, W. F., Hallan, A., Shea, M. E., Clark, S. A., Richards, K., Klunzinger, M. W., and Kessner, V. 2023. Australian Freshwater Molluscs. Revision 2.**

[https://keys.lucidcentral.org/keys/v3/freshwater\\_molluscs/](https://keys.lucidcentral.org/keys/v3/freshwater_molluscs/)

To contact the authors for comment or suggestions, please email: [fwmollusc@gmail.com](mailto:fwmollusc@gmail.com)

Copyright © 2023. All rights reserved. The Australian Museum.

