

Contribution to the knowledge of Triviidae (Mollusca: Gastropoda) XXIII. New fossil species in the genera *Ellatrivia* and *Trivellona*

Dirk Fehse¹ and Jozef Grego²

¹ Nippeser Strasse 3, 12524 Berlin, Germany. Email: dirk.fehse@rohde-schwarz.com

² Limbová 23, 97401 Banská Bystrica, Slovakia. Email: jozef.grego@evonik.com

ABSTRACT – Two new species of fossil Triviidae are described: *Ellatrivia goudeyi* sp. nov. from the Pleistocene of Flinders Island, Tasmania, and *Trivellona felixlorenzi* sp. nov. from the Fyansford Formation, Balcombian of Batesford Quarry, Victoria, Australia. The Pleistocene *E. goudeyi* sp. nov. fills the gap between the Miocene and Recent taxa of the genus and *T. felixlorenzi* sp. nov. fills the gap between the small sized Miocene species (about 10 mm in length) and the large sized Balcombian taxa (larger than 20 mm in length).

KEYWORDS: taxonomy, Australia, morphology, gastropods

INTRODUCTION

In our recent revision of the fossil and Recent species of the triviid genus *Ellatrivia* Iredale, 1931 (Fehse and Grego 2010), we were not aware of the interesting population of *Ellatrivia* that is preserved in the fossil deposits on Flinders Island. Only recently Christopher Goudey made samples available from that location. The Early Pleistocene specimens from the Memana Formation of Tasmania close the gap between the large number of Miocene species and the Recent taxa. No species of the Plio-/Pleistocene has been described since then. Therefore, the Flinders Island taxon is described herein as *Ellatrivia goudeyi* sp. nov.

The genus *Trivellona* Iredale, 1931 was revised by Fehse and Grego (2007) who recognised nine distinct fossil species from the Balcombian, middle Miocene of South Australia, including several small species such as *T. crassicostata* (Schilder, 1935), *T. transiens* (Schilder, 1935), *T. subtilis* (Schilder, 1935) and *T. tatei* (Schilder, 1935), some that reach a maximum of 10 mm and other large taxa such as *T. avellanooides* (McCoy, 1861), *T. daphnes* (Schilder, 1966), *T. darraghi* Fehse and Grego, 2007, *T. lochi* Fehse and Grego, 2007 and *T. kendrecki* Fehse and Grego, 2007, with sizes between 20 and 30 mm but also up to 50 mm length (Fehse and Grego 2007). We have recently examined specimens from western Victoria, Australia, that differ from other species of the genus.

The purpose of this paper is to describe these two species of Triviidae.

The specimens examined for this study are lodged in the following collections: Australian Museum, Sydney, Australia (AM); Christopher Goudey collection, Avalon,

Victoria, Australia (CGA); Dirk Fehse collection, Berlin, Germany (DFB); Felix Lorenz collection, Buseck, Germany (FL); National Museum of Victoria, Victoria (NMV); Tasmanian Museum and Art Gallery, Hobart, Tasmania (TM).

Length refers to the greatest anterior/posterior measurement. Width refers to the greatest lateral (left–right) measurement with the shell at rest on the ventrum. Height refers to the maximum globosity from the ventrum through to the dorsal extremity. Columellar respectively labral denticles at the anterior and posterior end of the parietal respectively labral lip have been counted as full teeth. The count of the dorsal ribs follows the definition by Schilder (1933, p. 288, text fig. 6).

SYSTEMATICS

Family Triviidae Troschel, 1863

Genus *Ellatrivia* Iredale, 1931

TYPE SPECIES

Triviella merces Iredale, 1924, by original designation.

Ellatrivia goudeyi sp. nov.

Figures 1A–N

MATERIAL EXAMINED

Holotype

Australia: Tasmania: from a drain on the boundary of ‘Tilbia’ and Markana Park, about 1 km E. of Wingaroo Road, Memana, Flinders Island, no date

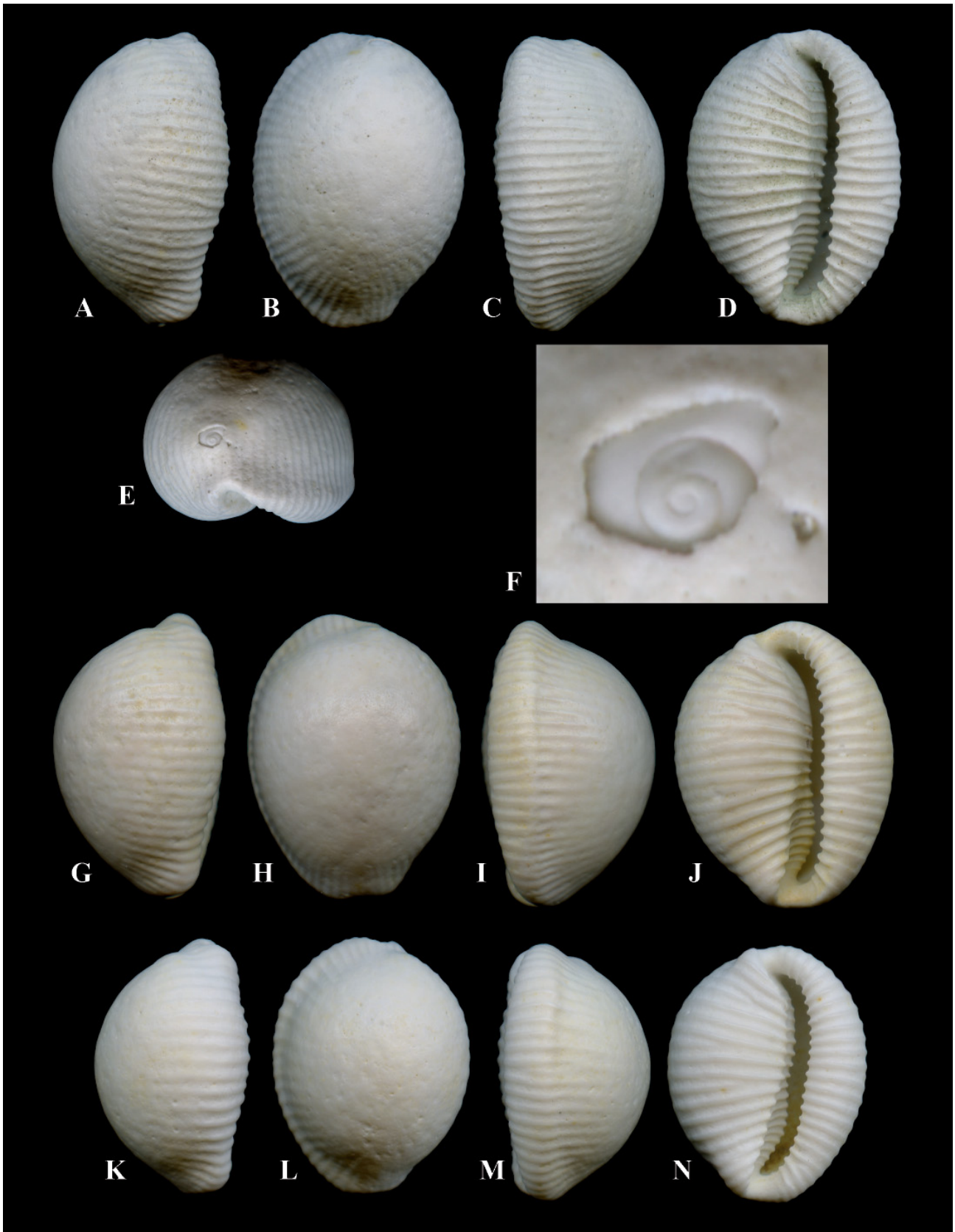


FIGURE 1 A–J, *Ellatrivia goudeyi* sp. nov. from a drain on the boundary of 'Tilbia' and Markana Park, about 1 km west of Wingaroo Road, Memana, Flinders Island, Tasmania: A–F TM Z 4713, holotype, $\times 4.3$; A left lateral, B dorsal, C right lateral, D ventral, E view of spire, F enlarged view of protoconch. G–J specimen coll. CGA, $\times 4.3$; G left lateral, H dorsal, I right lateral, J ventral. K–N *Ellatrivia goudeyi* sp. nov. from a large dam on Lot 77, 1.3 km NNW of junction of Wingaroo and Melrose Roads, Memana, Flinders Island, Tasmania: K–N specimen coll. DFB 10291, $\times 4.3$; K left lateral, L dorsal, M right lateral, N ventral.

TABLE 1 Dimensions of *Ellatrivia goudeyi* sp. nov.

Specimens (Catalogue Numbers)	Length (mm)	Width (mm)	Height (mm)	Columellar ribs	Labral teeth
TM Z 4713	11.9	8.8	6.9	16	19
NMV P316719	11.3	9.1	7.3	16	23
NMV P316718	11.5	8.3	6.8	16	21
NMV P316717	9.2	7.2	5.5	16	20
CGA	11.5	9.0	7.1	17	20
DFB 10291	10.3	8.0	6.2	15	20

TABLE 2 Dimensions of *Trivellona felixlorenzi* sp. nov.

Specimens (Catalogue Numbers)	Length (mm)	Width (mm)	Height (mm)	Columellar teeth	Labral teeth	Dorsal teeth
AMS C.468216	12.9	10.6	8.8	15	22	20
DFB 10292A	14.5	12.4	10.3	15	22	22
DFB 10292B	12.1	9.9	8.3	12	19	18
FL	12.6	9.8	8.2	15	19	20
FL	11.2	9.0	7.5	14	17	20
FL	10.9	9.0	7.6	14	20	22
FL	12.9	10.2	8.7	13	22	22
FL	12.3	9.9	8.1	13	14	20

recorded, C.J. Goudey [Memana Formation, Pleistocene] (TM Z 4713).

Paratypes

Australia: Tasmania: 1 specimen, dam on addition to lot 37, Melrose Road, 1.7 km NE. of junction of Melrose and Wingaroo Roads, Memana, Flinders Island, 5 February 1969, T.A. Darragh, D.M. Shanks and H.E. Wilkinson [Memana Formation, Pleistocene] (NMV P316719, PL1233); 2 specimens, dam on 'Brunah', Back Line Road, 2.3 km NE. of junction of Wingaroo and Back Line Roads, Memana, Flinders Island, 4 February 1969, T.A. Darragh, D.M. Shanks and H.E. Wilkinson [Memana Formation, Pleistocene] (NMV P316717 and P316718, PL1207).

Other material examined (not type specimens)

Australia: Tasmania: 1 specimen, from the type locality (CGA); 1 specimen, 1.3 km NNW. of junction of Wingaroo and Melrose Roads, Memana, Flinders

Island (DFB 10291). Both from the Memana Formation, Pleistocene.

DIAGNOSIS

Shell medium to large sized for genus, ovate. Spire barely elevated. Mid-dorsum smooth, without ribs. Ventrums convex. Labrum ventrally rounded. Outer labral margin ridged. Inner fossular margin slightly projected.

The new species differs from all fossil and Recent taxa of the genus *Ellatrivia* by its smooth dorsum (see Fehse and Grego, 2010). *Dolichupis zealandica* (Kirk, 1882) with its junior synonym *Ellatrivia flora* Marwick, 1928 from the Pliocene deposits of New Zealand (Fehse and Grego, 2010) possesses a smooth dorsum, but the shell morphology of *D. zealandica* is completely different to that of *E. goudeyi*. The most striking features of *D. zealandica* besides the smooth dorsum are the distinct dorsal hump and the sharply edged margins.

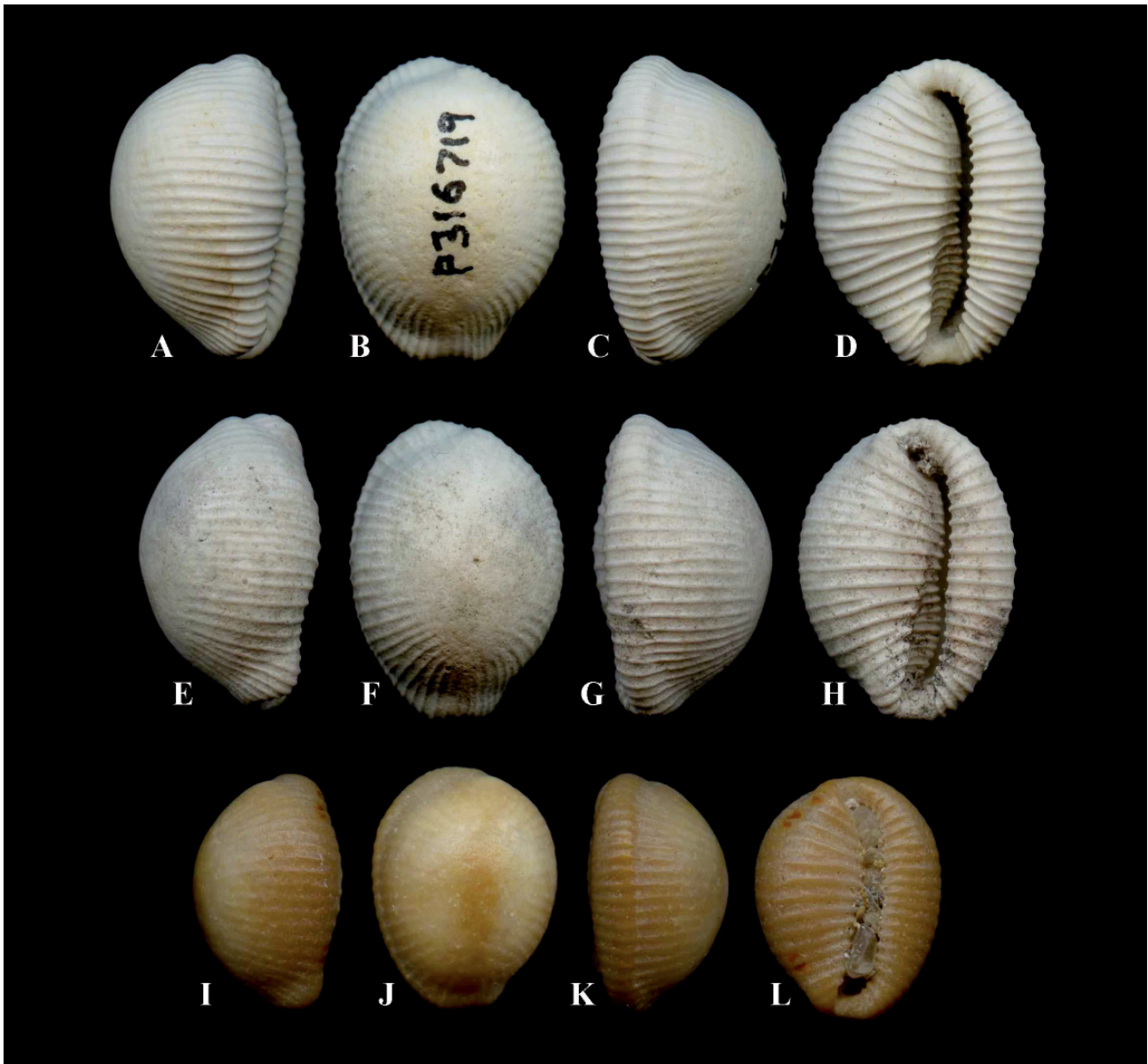


FIGURE 2 A–D, *Ellatrivia goudeyi* sp. nov. from PL1233 Dam on addition to lot 37, Melrose Road, 1.7 km NE of junction of Melrose and Wingaroo Roads, Memana, Memana, Flinders Island, Tasmania: A–D TM Z 4713, paratype, $\times 3.9$; A left lateral, B dorsal, C right lateral, D ventral. E–L *Ellatrivia goudeyi* sp. nov. from PL1207 Dam on 'Brunah', Back Line Road, 2.3 km NE of junction of Wingaroo and Back Line Roads, Memana, Flinders Island, Tasmania: E–H NMV P316718, paratype, $\times 3.9$; E left lateral, F dorsal, G right lateral, H ventral; I–L NMV P316717, shell slightly eroded, seemingly with preserved coloration, paratype, $\times 3.9$; I left lateral, J dorsal, K right lateral, L ventral.

The new species lacks both features and is, therefore, easily distinguishable from *D. zealandica*.

DESCRIPTION

Shell medium to large sized, lightweight, ovate. Spire barely elevated, covered by callus and 2 to 4 terminal ribs. Body whorl somewhat elongated, ovate, rounded, approximately 90% of total shell height; anterior terminal slightly produced, tip blunt; posterior terminal somewhat obscured, tip slightly indented. Anal canal almost obscured. Dorsum evenly rounded, elevated, mid-dorsum completely smooth with no sulcus or

depression. Margins and terminal collars numerous and finely ribbed to a various degree. Ventrum convex, with terminal collars straight. Aperture relatively narrow, straight, abapically strongly curved. Labrum narrow, straight and broadened at its mid-portion, curved anteriorly and posteriorly, posteriorly slightly projected, rounded on ventrum, bearing on its inner margin 19 to 23 fine denticles. Outer margin of the lip angularly callused with a sharp ridge on shoulder. Siphonal and anal canals following shell profile; bordered adapically and abapically by weak ventral side walls. Columella narrow, straight, curved posteriorly,

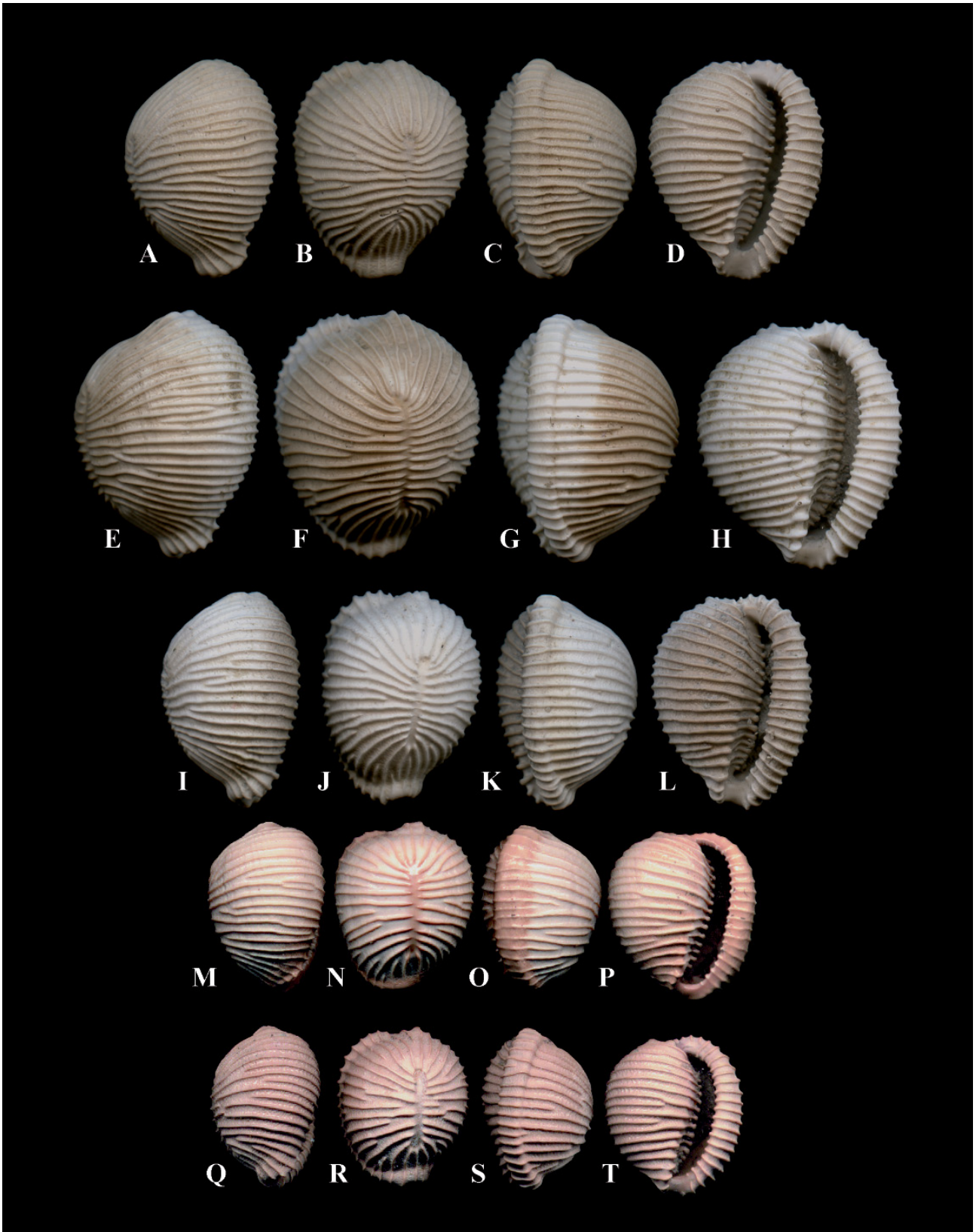


FIGURE 3 A–L, *Trivellona felixlorenzi* sp. nov. from Batesford Quarry, Australian Portland Cement Ltd., Batesford, Victoria, Australia: A–D AMS C.468216, holotype, $\times 2.9$; A left lateral, B dorsal, C right lateral, D ventral. E–H specimen coll. DFB 10292A, $\times 2.9$; E left lateral, F dorsal, G right lateral, H ventral. I–L specimen coll. FL, $\times 2.9$; I left lateral, J dorsal, K right lateral, L ventral. M–T *Trivellona tatei* (Schilder, 1935) from Clifton Bank, 'Clifton property', Yulecart via Hamilton, Victoria, Australia; Lower beds of Muddy Creek Marl, Balcombian, Miocene: M–T specimen coll. JGS, $\times 2.9$; M left lateral, N dorsal, O right lateral, P ventral. Q–T specimen coll. JGS, $\times 2.9$; Q left lateral, R dorsal, S right lateral, T ventral.

tapering steeply inwards, bordered internally by a weak carinal ridge. Parietal lip roundly edged, anteriorly ridged, bearing 15 to 17 coarse ribs, which continue onto the carinal ridge. Fossula concave, not clearly delimited from the rest of the columella. Inner fossular edge slightly protruding.

ETYMOLOGY

The name of the species honours Mr Christopher J. Goudey.

Genus *Trivellona* Iredale, 1931

TYPE SPECIES

Trivellona excelsa Iredale, 1931, by original designation.

Trivellona felixlorenzi sp. nov.

Figures 2, A–L

MATERIAL EXAMINED

Holotype

Australia: Victoria: Batesford Quarry, Australian Portland Cement Ltd., Batesford (AMS C.468216). Fyansford Formation, Balcombian, Middle Miocene.

Other material (not type specimens)

Australia: Victoria: 2 specimens, collected with holotype (DFB 10292A/B); 5 specimens, collected with holotype (FL).

DIAGNOSIS

Shell medium sized for genus, ovate. Spire slightly elevated. Ventrums strongly convex. Labrum ventrally, angularly rounded, anteriorly flattened. Outer labral margin ridged. Inner fossular margin not projected.

This species differs from *Trivellona daphnes* (Schilder, 1966), *T. darraghi* Fehse and Grego, 2007, *T. lochi* Fehse and Grego, 2007 and *T. kendricki* Fehse and Grego, 2007 by their generally larger shell (*T. daphnes* 20–25 mm; *T. darraghi* 19–49 mm; *T. lochi* 25–32 mm; *T. kendricki* 22–33 mm v. *T. felixlorenzi* 10–15 mm) and they lack a dorsal sulcus that is well developed in the new species. Only *T. avellanoides* has a similar developed dorsal sulcus but the new species is also distinguished by its smaller size (*T. avellanoides* 16–24 mm v. *T. felixlorenzi* 10–15 mm), the shape of the aperture, the stronger, differently shaped labrum, more close-set ribs and the more elongated anterior terminal.

Among the smaller Miocene species of *Trivellona* only *T. tatei* (Schilder, 1935) has a similar dorsal sulcus. *Trivellona transiens* (Schilder, 1935) possesses just smooth area on mid-dorsum, and *T. subtilis* (Schilder 1935) has a depression. *Trivellona tatei* differs from the new species by its usually smaller size (*T. tatei* 8–12 mm v. *T. felixlorenzi* 10–15 mm), the coarser, more irregular and distant ribs, the inner adaxial carinal ridge is lesser developed and semicircular, and the anterior terminal is shorter.

DESCRIPTION

Shell medium sized, lightweight, somewhat fragile, ovate. Spire slightly elevated, covered by 3 to 4 terminal ribs. Body whorl somewhat pyriform, globose, rounded, approximately 85% of total shell height; anterior terminal produced, tip blunt; posterior terminal slightly so. Anal canal and posterior terminal tip almost obscured. Dorsum evenly rounded, elevated, completely covered by 18 to 22 fine ribs with a mid-dorsal, more or less sharp demarcated sulcus that bisects or depresses the ribs. Ventrums strongly convex, with terminal collars straight. Aperture relatively narrow, slightly curved. Labrum narrow, curved, posteriorly barely projecting, roundly keeled on ventrum, anteriorly flattened, bearing on its inner margin (14) 17 to 22 fine denticles. Outer margin of the lip slightly, angularly callused with a sharp ridge on shoulder. Siphonal and anal canals following shell profile; bordered adapically and abapically by weak ventral side walls. Columella fairly narrow, straight, tapering steeply inwards, bordered internally by a strong, slightly sinuous carinal ridge. Parietal lip somewhat callused, angularly rounded, anteriorly ridged, bearing 12 to 15 ribs, which continue onto the carinal ridge, where they are T-shaped. Fossula shallow, not clearly delimited from the rest of the columella. Inner fossular edge not protruding.

ETYMOLOGY

The name of the species honours Dr Felix Lorenz who supplied the type material.

ACKNOWLEDGEMENTS

Many thanks to Alison Miller from the Australian Museum for her kind cooperation and to Alan Beu for his helpful suggestions to improve the manuscript. We are grateful to David Holloway and the Museum of Victoria for their loan of specimens.

REFERENCES

- Fehse, D. and Grego, J. (2007). Contributions to the knowledge of Triviidae (Mollusca: Gastropoda). XVIII. New species of the genus *Trivellona* (Mollusca: Gastropoda) from the Miocene of Australia. *Records of the Western Australian Museum* **24**: 205–213.
- Fehse, D. and Grego, J. (2009). *Revision of the genus Trivellona Iredale, 1931 (Mollusca: Gastropoda: Triviidae). Allied Cowries. Contribution to the knowledge of Triviidae.* Grafon: Nagykovácsi, Hungary. 160 pp.
- Fehse, D. and Grego, J. (2010). Contributions to the knowledge of the Triviidae. XVI. Revision of the genus *Ellatrivia* Iredale, 1931 with the description of a new species (Mollusca: Gastropoda). *Visaya* **3**: 21–61.
- Ludbrook, N.H. (1978). Quaternary Molluscs of the Western Part of the Eucla Basin. *Geological Survey of Western Australia, Bulletin* **125**: 1–286.
- Schilder, F.A. (1935): Revision of the Tertiary Cypraeaacea of Australia and Tasmania. *Proceedings of the Malacological Society London* **21**: 325–355.
- Schilder, F.A. (1966): Neue fossile Cypraeaacea und Triviacea aus Australien. *Archiv für Molluskenkunde* **95**: 269–274.