

A new fossil species of *Notocypraea* (Mollusca: Gastropoda: Cypraeidae) from the Roe Plains of Australia

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ABSTRACT – A new species of fossil Cypraeidae – *Notocypraea goudeyi* sp. nov. – hitherto overlooked, is described from the Bioclastic limestones of the Roe Plains, Madura district, Western Australia. The new species differs from all other fossil and recent taxa of the endemic genus *Notocypraea* Schilder, 1925 by the columellar denticles extending onto the ventrum.

KEYWORDS: taxonomy, Western Australia, Pliocene.

INTRODUCTION

Recently, Lorenz (2005) revised the living species of the cypraeid genus *Notocypraea* Schilder 1925 on his website. He informed me that a comprehensive revision on the genus is in preparation. *Notocypraea* is endemic to the temperate waters of southern Australia and Tasmania. The fossil record of *Notocypraea* reaches back to the Miocene of Victoria (Schilder, 1935), with numerous taxa. For a long time, Pliocene *Notocypraea* from the Roe Plains of Western Australia were not considered as distinct taxa. These specimens are usually identified as *N. angustata* (Gmelin, 1791), occasionally as *N. comptonii* (Gray, 1847) or even as *N. piperita* (Gray, 1825). An in-depth examination of a wide range of specimens has led the author to conclude that there are at least two fossil species currently unassignable to any recent taxa. The common species has been described recently as *N. darraghi* Fehse, 2010. During the preparation of the manuscript only one specimen of the second new taxa was available. Therefore, a description was postponed. Dr. Felix Lorenz and Mr. Chris Goudey made sufficient material available, so that now the description of *Notocypraea goudeyi* sp. nov. is possible.

Abbreviations of specimen repositories: DFB, collection of Dirk Fehse, Berlin, Germany; FL, collection of Felix Lorenz, Buseck, Germany; WAM, Western Australian Museum, Perth, Australia.

SYSTEMATICS

Family Cypraeidae J.E. Gray 1824

Subfamily Cypraeovulinae Schilder 1925

Tribe Cypraeovulini Schilder 1925

Genus *Notocypraea* Schilder 1925

TYPE SPECIES

Cypraea piperita J.E. Gray, 1825, by original designation. Recent, Port Lincoln, South Australia.

DIAGNOSIS

Notocypraea and *Cypraeovula* Gray, 1824 are closely related according to the molecular systematics and they are the only genera within the subfamily Cypraeovulinae (Meyer 2003: 410). Both are “endemic clades found today in southern Australia and southern Africa, respectively” and they are known by their intracapsular larval development (Meyer 2003: 425). Shells of *Notocypraea* are Cypraeid-like while they are Ovulid-like in *Cypraeovula*. The dentition in *Notocypraea* is regular and fine with a narrow aperture while dentition in *Cypraeovula* is irregular and coarse with a wide aperture.

***Notocypraea goudeyi* sp. nov.**

Figures 1A-P

2010 *Notocypraea* sp.; Fehse: pl. 2, fig. 4.**MATERIAL EXAMINED*****Holotype***

Australia: Western Australia: Roe Plains, Madura district (WAM 10.31). Bioclastic limestones of the Roe Calcarene, late Pliocene.

Additional specimens

Australia: Western Australia: 2 specimens collected with the holotype (DFB 5251); 3 specimens, collected with the holotype (FL).

DIAGNOSIS

Small-sized, somewhat fragile, slightly pyriform, with spaced, weak apertural dentition; labral denticles continued as short folds onto ventrum; 17-21 columellar teeth¹, 19-23 labral teeth, the latter exceeding usually the former; maximum globosity at the posterior third; apex covered by callus.

Notocypraea goudeyi n. sp. differs from *N. darraghi* Fehse, 2010 found in the same area, and all recent species of the genus by the columellar teeth extending towards the middle of the ventrum. In all other *Notocypraea*, the columellar teeth are restricted to the apertural margin and extended only towards the columella to form a fossula or a peristome. The new species is also distinguished from the recent *Notocypraea* – *N. subcarnea* (BEDDOME 1897), *N. declivis* (SOWERBY 1870), *N. piperita* (GRAY 1825), *N. angustata* (GMELIN 1791), *N. comptonii* (GRAY 1847), *N. pulicaria* (REEVE 1846) – by the position of the dorsal hump situated at the posterior third.

DESCRIPTION

Small sized for genus; somewhat fragile, slightly pyriform; length exceeds width and height; terminals elongated, anterior more than posterior; posterior terminal tip deeply indented, anterior tip almost blunt; dorsum elevated with subit at posterior third; ventrum convex with straight terminals; posterior ventral callosity obscured; protoconch and apex covered by callus; aperture oblique, almost straight, posteriorly curved, of same width over entire length; anal and siphonal canals deeply indented, bordered by projecting callus; labral denticles 21 in average, irregular, weak to moderately strong, spaced, continued as weak, short folds onto labrum; columellar denticles 20 in average, fine, close-set, becoming stronger towards fossular section, continued as short folds onto ventrum, columella and fossula; inner labral margin slightly sinuous, posteriorly curved; outer labral margin callused, edged; columella curved, even, narrow, tapering steeply inwards; parietal lip slightly callused, slightly indented, posteriorly curved; fossula slightly concave, very narrow, inner edge slightly protruded; terminal ridge strong.

Coloration not preserved.

VARIATION

There are two variations distinguishable by the degree of dorsal inflation (compare Table 1 ratio W/L). The dentition varies from weak to slightly strong. Labral folds and posterior ventral callosity vary in their extensions. Labral dentition more or less close-set.

Dimensions

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

¹ Columellar teeth are counted without terminal ridge

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

Specimens (catalogue nos.)	Length in mm	Width in mm	Height in mm	Columellar teeth	Labral teeth	W/L in %
WAM 10.31	16.9	11.2	8.9	21	19	66
DFB 5251-1	19.5	13.8	11.3	22	21	70
DFB 5251-2	15.6	10.5	8.1	20	22	67
FL	17.1	10.2	8.4	22	23	60
FL	15.6	9.5	7.4	17	20	61
FL	6.9	9.9	7.8	20	23	59

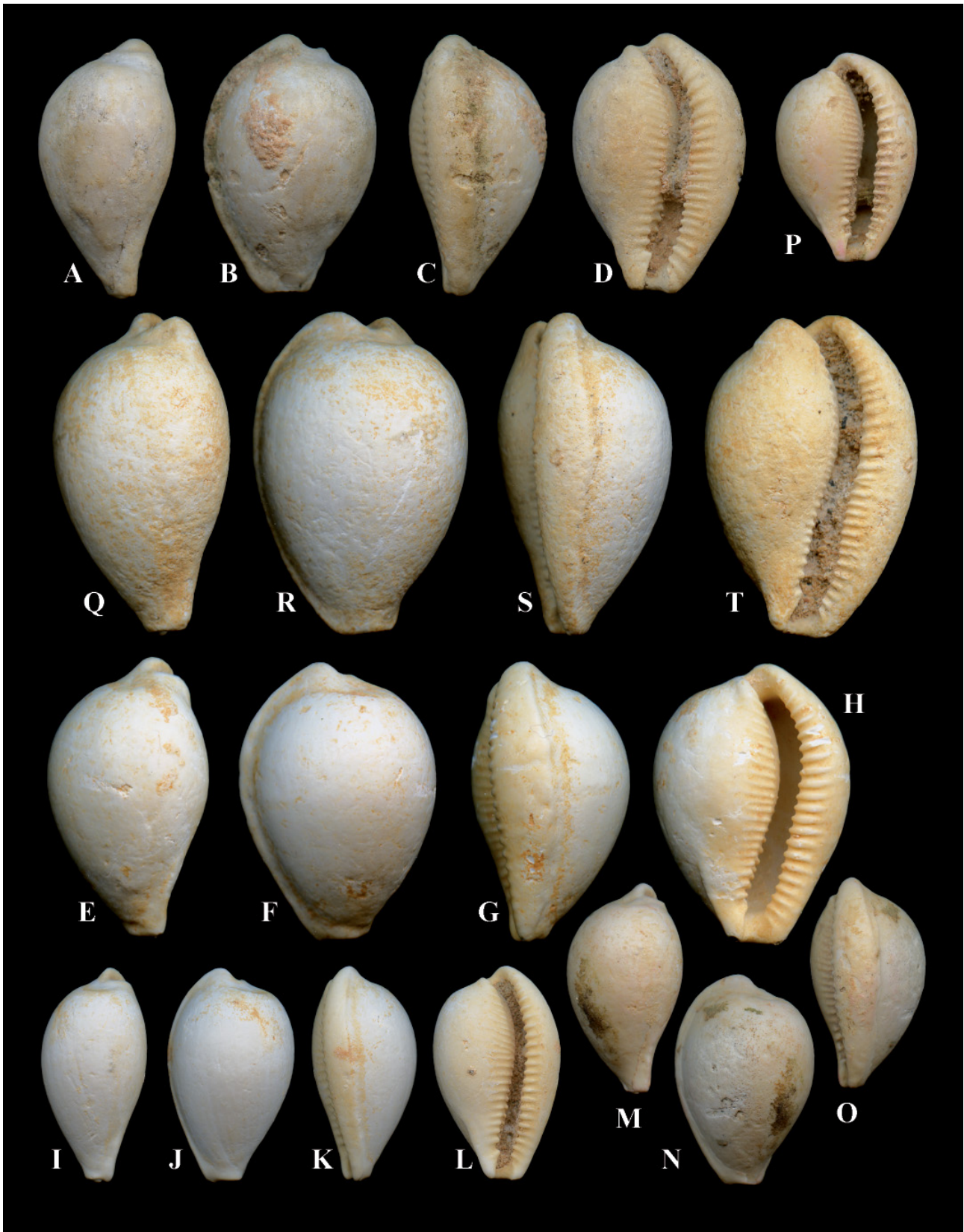


FIGURE 1 A–P, *Notocypraea goudeyi* sp. nov. from Roe Plains, Madura district, Western Australia: A–D WAM 10.31, holotype, $\times XX$; A left lateral, B dorsal, C right lateral, D ventral. E–G specimen coll. DFB 5251-1, $\times XX$; E left lateral, F dorsal, G right lateral, H ventral. I–L specimen coll. FL, $\times XX$; I left lateral, J dorsal, K right lateral, L ventral. M–P specimen coll. DFB 5251-2, $\times XX$; M left lateral, N dorsal, O right lateral, P ventral. Q–T, *Notocypraea darrahi* Fehse, 2010 from Roe Plains, Madura district, Western Australia: WAM 10.01, holotype, $\times XX$; Q left lateral, R dorsal, S right lateral, T ventral.

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 terminal fold is excluded from the columellar teeth.

ETYMOLOGY

This species is named in honor of Mr. Chris Goudey of Avalon, Victoria, who supplied the type material.

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REFERENCES

- Fehse, D. (2010): New Species of fossil Cypraeoidea from Europe and Australia (Mollusca: Gastropoda). *Palaeontographica*, Abteilung A, **292** (1-3): 1-19.
- Lorenz, F. (2005): Taxonomic notes on two poorly known species of *Notocypraea* (Gastropoda: Cypraeidae). *Visaya* **1** (5): 16-21.
- Meyer, C.P. (2003): Molecular systematics of cowries (Gastropoda: Cypraeidae) and diversification patterns in the tropics. *Biological Journal of the Linnean Society* **79**: 401-459.
- Schilder, F.A. (1935): Revision of the Tertiary Cypraeacea of Australia and Tasmania. *Proceedings of the Malacological Society of London* **21** (6): 325-355.

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