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Contributions to the knowledge of the Eratoidea IV. A new species from Tuamotu, French Polynesia

(Mollusca, Gastropoda)

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A recently discovered species of the genus *Eratoena* Iredale, 1935 from Tuamotu, French Polynesia is described as *Eratoena gourgueti* spec. nov. The new species is thoroughly compared with its congener *Eratoena schmeltziana* (Crosse, 1867) and other similar species like *Eratoena corrugata* (Hinds, 1844). The new species is distinguished by its slender, almost cylindrical shell, the fine dentition and the protruded fossular margin. Some remarks concerning the identification of Eratoidea in general are given. Eratoidea are marine prosobranch gastropods that are closely related to the Triviidae but differ from the latter by their shell morphology. Their shell shape is marginellid-like but lacks columellar folds.

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Introduction

Eratoidea and its sister-group Triviidae are assigned to the superfamily Trivioidea. They are related to the families Velutinoidea and Cypraeoidea. Trivioidea share with the Velutinoidea and also with the Capulidae an echinospira larvae, but their nervous system, radula, outer animal morphology besides other features are related to the Cypraeoidea. The marginellid-like shell separates them from their sister group Triviidae which possesses a cypraeid-like shell. Eratoidea are a fairly small group of marine prosobranch gastropods with approximately 140 fossil and recent species in all temperate and warm seas. They have usually a minute shell and their biology is largely unknown. Animals have been observed to feed on ascidians, compound tunicates, gorgonians, algae, etc. (Vayssière 1927; Abbott 1974; Lucas-Nunnink 1988).

In 1933 Schilder published a monograph on the Eratoidea where he defined conchological features to distinguish species as the presence and appearance of a dorsal sulcus as well as the granulation. Since

Cate's review (1977) on the Eratoidea no author took account to this group of marine gastropods. Unfortunately, Cate adopted only those distinguishing features. Drivas & Jay (1986) examined a larger series of specimens of *Eratoena sulcifera* (Sowerby, 1832) from Reunion and published their results as a "revision of the subgenus *Eratoena* Iredale, 1935". They could observe that the presence and appearance of a dorsal sulcus and the granulation varies considerably within *E. sulcifera*. Drivas & Jay concluded all described species of *Eratoena* – *E. corrugata* (Hinds, 1844), *E. nana* (Sowerby, 1859), *E. schmeltziana* (Crosse, 1867), *E. smithi* (Schilder, 1933) and *E. capensis* (Schilder, 1933) – are just synonyms of *E. sulcifera*. They did not consider any other conchological features.

This paper will not discuss the validity of those and recently described taxa (Drivas & Jay 1986; Cossignany & Cossignany 1997) because it would be out of proportion. A monograph on Eratoidea is still in preparation. However, it could be observed on all species that the appearance of the dentition – denticles on the labral and parietal lip – in general, and

of the ventral folds in detail, besides other features clearly distinguish species within the Eratoidea.

Recently, Jean Letourneux and Robert Gourguet made samples of Eratoidea from Tuamotu available for study. Already on the very first sight several cylindrical specimens hit in the eye. No similar shaped species are known so far. Therefore, it is justified to describe this species as *Eratoena gourgueti* spec. nov. The new species is assigned to the genus *Eratoena* because the whole shell morphology fits well with the type species of the genus.

Abbreviations

DFB	collection Dirk Fehse, Berlin, Germany
JLT	collection Jean Letourneux, Tuamotu, French Polynesia
ZSM	Zoological State Collection, Munich, Germany
LT	number of labral teeth
CT	number of columellar teeth
L	length
W	width

Taxonomy

Trivioidea Troschel, 1863
 Eratoidea Schilder, 1925
 Eratoinae Schilder, 1925

Eratoena Iredale, 1935

Type species: *Ovulum corrugatum* Hinds, 1844, by monotypy.

Diagnosis. Shell small, pyriform, more or less minutely wrinkled throughout; spire elevated; dorsal sulcus often well defined; columellar and labral dentition numerous and well-defined. Dorsal colouration white or light red but more often light green with anterior tip usually red.

Remarks. Eight fossil and nine living species of the Indian Ocean, Indo-Pacific and Pacific are assigned to the genus.

Liltved (2000) accepted only the genus *Erato* Risso, 1826 for all the recent Eratoid species that are similar to the Cypraeidae and Triviidae. Meyer (2003, 2004), however, has confirmed a much greater diversity in genera within the Cypraeidae. Similar results were found in the family Ovulidae (Schiaparelli et al. 2005) and in Triviidae, the sister family of the Eratoidea (Simone 2004; Fehse & Grego 2009a,b). There are no molecular systematic data for the Eratoidea available at the moment but the zoogeography alone implies a greater diversity of genera by geographical isolation (Schilder 1943, 1959, 1961, 1969). It is already confirmed by their shell morphology. Similarly, the genus *Erato* – type species *Voluta cypraeola* Brocchi,

1814 – is only used for European fossil and recent species (Schilder & Schilder 1971). Species of *Erato* have generally a larger shell. Some *Erato* species might have a pustulated but never wrinkled shell and the pustules are restricted usually to the posterior part of the shell. A dorsal sulcus is obscured or absent in almost all species (Fehse & Landau 2002a,b, 2003; Fehse & Grego in press). Furthermore, the only living species of the genus *Erato* – *E. voluta* (Montagu, 1803) – is uniformly coloured and lacks, therefore, a different coloured anterior tip.

Eratoena gourgueti spec. nov.

Pl. 1, Figs 1, 2; Pl. 2, Fig. 1

Types. Empty shells were dived in depths of 5-35 m in rubble at all mentioned localities. – Holotype: Off barrier reef of the atoll of Makemo, Tuamotu, French Polynesia; length: 4.0 mm; width: 2.3 mm; height: 1.8 mm; LT 30; CT 21 (ZSM, coll. No. 20091000). — Paratypes: No. 1: barrier reef of the atoll of Makemo, Tuamotu, French Polynesia; length: 3.7 mm; width: 2.1 mm; height: 1.6 mm; LT –; CT – subadult (DFB, No. 9233); No. 2: Off Motu Otepi, Rangiroa, Tuamotu, French Polynesia; length: 3.7 mm; width: 2.0 mm; height: 1.5 mm; LT 25; CT 19 (DFB, No. 9234-1); No. 3: Off Motu Otepi, Rangiroa, Tuamotu, French Polynesia; length: 3.1 mm; width: 1.8 mm; height: 1.4 mm; LT –; CT – subadult (DFB, No. 9234-2); No. 4: Off Motu Otepi, Rangiroa, Tuamotu, French Polynesia; length: 3.3 mm; width: 2.0 mm; height: 1.6 mm; LT 22; CT 18 (JLT). Further paratypes in collection DFB, J. Letourneux and R. Gourguet.

Description

Shell small, fragile, slender, elongated, almost cylindrical with a short, conical spire. Protoconch consisting of 1-1½ whorls with a very small nucleus. Suture indistinct and only visible through the translucent shell. Junction with teleoconch not clearly defined. Teleoconch comprising 2½-3 flat-sided whorls. Body whorl about 95 % of total height, slender, elongated, almost cylindrical, with the maximum diameter almost centrally. Dorsum finely granulated, rounded, with an incised dorsal sulcus and not constricted behind the anterior extremity. Aperture very narrow and straight, 85-90 % of total height. Labrum weakly thickened, almost straight, bearing up to 30 fine and equal denticles on the inner margin, which do extend onto the lip as very fine folds. Siphonal canal short, rounded and straight. Columella smooth, slightly sinuous, bordered internally by a weak carinal ridge. The ridge is slightly stronger in the fossular area and slightly protruding. Parietal lip roundly thickened, bearing up to 21 weak denticles. The most anterior 2-4 denticles are developed into

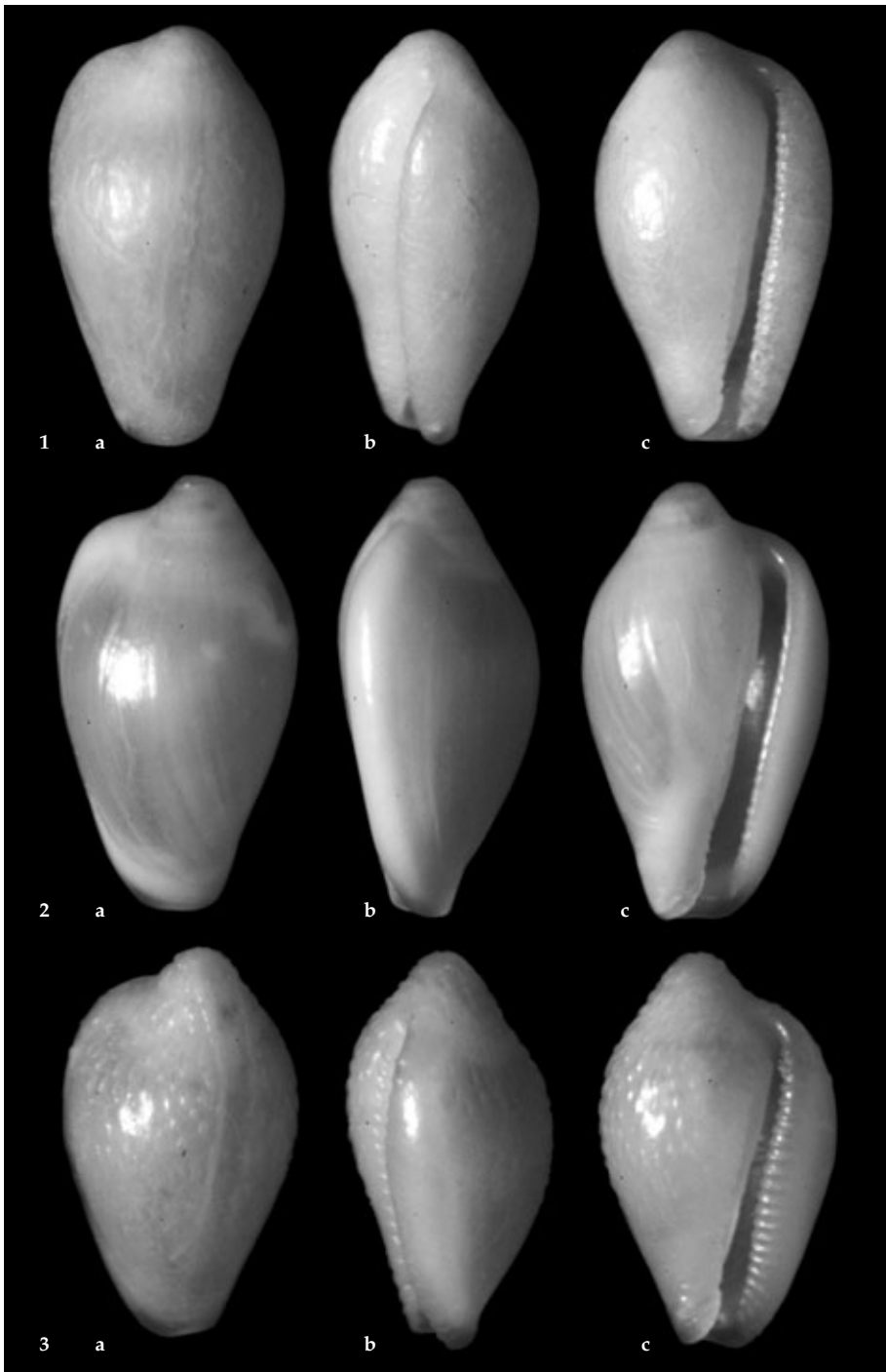


Plate 1.

1. *Eratoena gourgueti* spec. nov., Holotype, ZSM, coll. No. 20091000.
2. *Eratoena gourgueti* spec. nov., Paratype 1, DFB, coll. No. 9233, subadult. Off Makemo, Tuamotu, on barrier reef.
3. *Eratoena schmeltziana* (Crosse, 1867), DFB, coll. No. 9232. Off Tiarei, Tahiti; collected on reef.

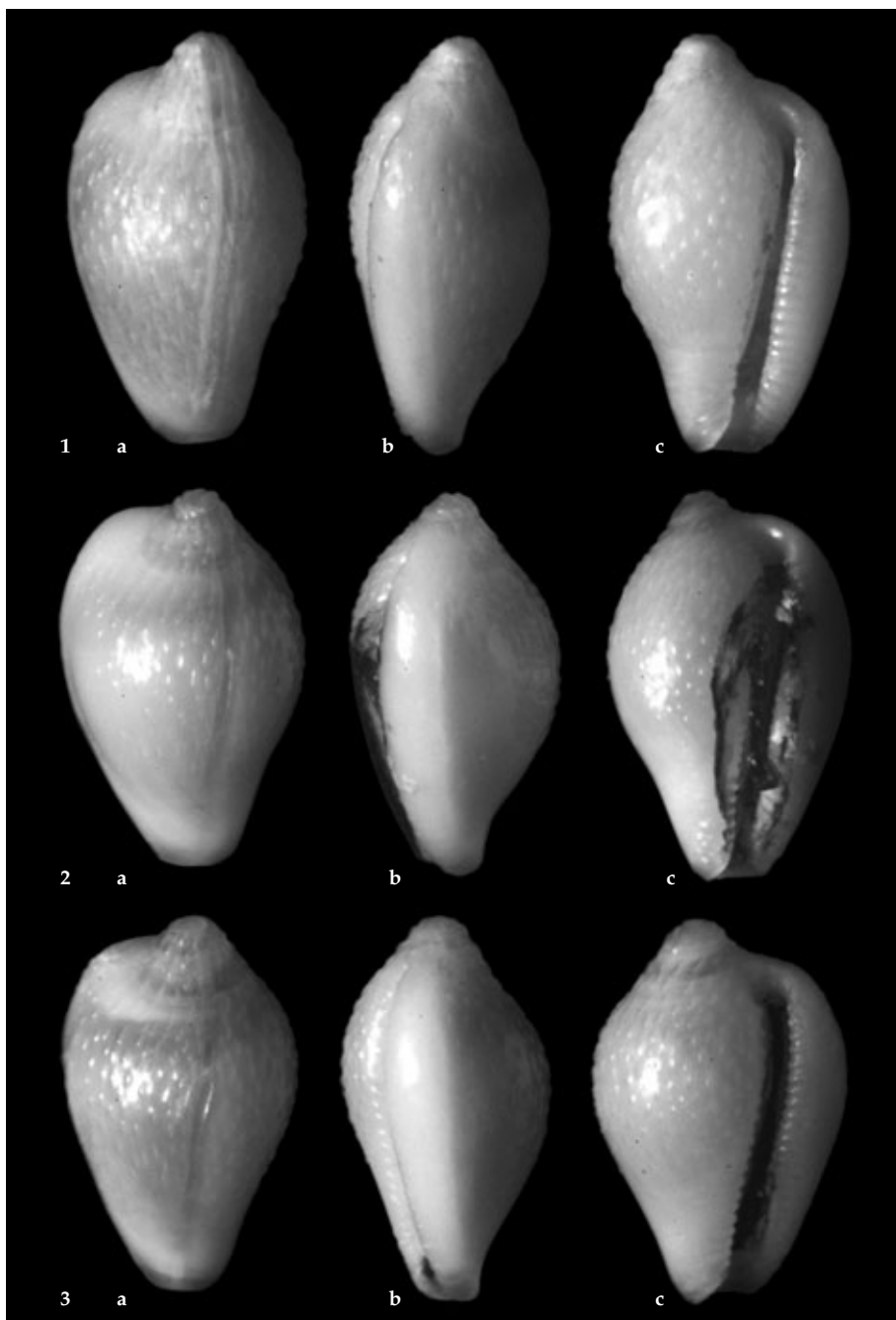


Plate 2.

1. *Eratoena gourgueti* spec. nov., Paratype 2, DFB, No. 9234-1, granulated variety, Off Motu Otepipi, Rangiroa, Tuamotu.

2. *Eratoena schmeltziana* (Crosse, 1867), DFB, coll. No. 5445. Off Apdoiti, Raiatea Isl., Society Isls, French Polynesia, at 5-10 m in rubble.

3. *Eratoena schmeltziana* (Crosse, 1867), DFB, coll. No. 6093. Off Miri-Miri, Raiatea Isl., Society Isls, French Polynesia; dredged at 10-12 m in rubble sand.

unusually short folds, which run obliquely across the ventrum. Fossula marked by a weak concavity. Terminal ridge simple and strong running along the border of the siphonal canal.

Shell colour translucent white with a light red clouding and a broad transverse white band on the dorsum. Anterior labral tip red, anterior ventral tip very indistinct red.

Variation: The dorsal sulcus is not developed in juvenile specimens and the shell is smooth. Subadult specimens are covered with more callous where the sulcus is already incised and the granulation slightly developed. Matured shells show a deeply incised sulcus, the granules and the dentition are fully developed. The number of labral teeth varies between 22 and 30 and the number of columellar teeth between 18 and 21. The ratio width to length is in average 58 % but varies between 55 % and 61 %.

No information is available on external morphology and radula.

Etymology. In honour to Robert Gourguet, Tuamotu, who provided sufficient material to describe this taxon.

Distribution. The new species is confirmed by paratypes in the author's collection besides the type locality also from Rangiroa, Tuamotu; Pt. Venus, Tahiti; Marpi, Saipan and Periki, Jawa, Indonesia.

Discussion

All in the following mentioned species could be studied by type specimens (e.g. Cate 1977) and by hundreds of specimens from various localities in the author's collection.

The slender, almost cylindrical shell, the fine dentition and the protruded fossular margin distinguishes *Eratoena gourgueti* spec. nov. already from all species in the genus *Eratoena* (see Fig. 1). The shoulder on the side of the labrum is almost perpendicular to the apex. Furthermore, the labrum of *E. gourgueti* is straight and describes an angle around 80° with the shoulder while it is rounded in its congener *E. schmeltziana* (Pl. 1, Fig. 3; Pl. 2, Figs 2, 3). The latter possesses a pear-shaped shell (ratio W/L: 65 % to 72 %) and fewer (LT 20-22; CT 17-20), stronger denticles, the anterior ventral folds are elongated and very strong and the anterior tip shows on either side bright red dots. *Eratoena corrugata* (Hinds, 1844) is much more pyriform with fewer (LT 19-22; CT 15-17) and stronger denticles. The status of *E. corrugata* needs to be clarified because it is based on a worn lectotype, in which the ventral folds are not preserved. The larger central Indo-Pacific *E. nana* (Sowerby, 1859) and *E. pagoboi* (Cossignani & Cossignani, 1997) are also distinctly

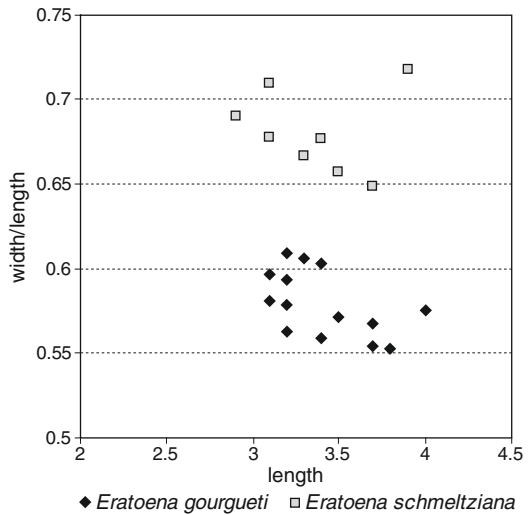


Fig. 1. Comparison of the shell morphology of *E. gourgueti* spec. nov. and its congener *E. schmeltziana*.

pyriform with fewer (*E. nana*: LT 17-21, CT 15-17; *E. pagoboi*: LT 19-21, CT 16-18), coarser denticles and much stronger ventral folds. In *E. nana* is usually the whole anterior tip reddish and in *E. pagoboi* it is greenish. The other central Indo-Pacific species – *Eratoena septentrionalis* (Cate, 1977) and *Eratoena grata* (Cossignani & Cossignani, 1997) – are more squatly pyriform with strongly developed granulation, dentition and labral and ventral folds. The east African species – *E. capensis*, *E. smithi* and *E. sulcifera* – differ in a similar way and by their greenish shell from *E. gourgueti* spec. nov. In *E. smithi* are, furthermore, the labral folds much more developed and in *E. capensis* are the ventral folds much more numerous (12 vs. 4-5 in *E. sulcifera*) than in *E. sulcifera* and the new species.

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