

A new species of *Epitonium* (*Librariscala*) (Gastropoda: Epitoniidae) from French Polynesia

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KEYWORDS. Tuamotu Archipelago, Epitoniidae, *Librariscala*, intertidal.

ABSTRACT. *Epitonium boutetorum* n. sp, from Rangiroa Atoll, Tuamotu Archipelago, is described and compared with its closest congener, *Epitonium parvonatrix* Kilburn, 1985, as well as with *E. millecostatium* (Pease, 1861), *E. cophinodes* (Melvill, 1903), *E. sykesi* (Melvill & Standen, 1904), *E. zatrephe* (Melvill, 1910 and *E. alizonae* (Melvill, 1912).

INTRODUCTION

The molluscan fauna of French Polynesia has been of great interest to professional and amateur collectors throughout the years because of its richness and the characteristic composition of many geographically restricted species. This is presumably due to the relative geographic isolation and the variety of habitats, from high volcanic islands to low coral atolls. Already in 1933 Dautzenberg and Bouge recorded more than 1000 species, and by 2009 Tröndlé and Boutet more than doubled that number, listing in their publication 2373 species. This list was compiled from local collectors as well as several major institutions, and included 32 species of Epitoniidae.

More recently, for the last seven years Robert Gourguet and Jean Letourneux have been investigating the molluscan fauna of the region. Their findings are based on first hand collecting, by them and other collectors from the area, and have not relied on institutional material other than those already collected during the dredging campaigns realized by the Muséum national d'Histoire naturelle, Paris, from 1997 to 2010. As of now they have registered roughly 2500 species. Of these, 35 are epitoniids. However, in a number of cases their findings do not match the epitoniids listed by Tröndlé & Boutet, and some of the species defy specific identification. Future count for the family will presumably be rather higher than either of the two counts suggest.

One reason that the malacofauna of French Polynesia has increased exponentially is the focus of many collectors on the micro-mollusks. In 2005 I was in the Tuamotu Archipelago for a rather short visit and decided to take a closer look at the micro-mollusks. This led to the documentation of approximately 120 species (García, 2007), many of which had not been reported from the area. And of the 34 epitoniid findings reported by Gourguet and Letourneux (pers. communication), more than 50% are under 10 mm. Therefore, it is not surprising that the micro-epitoniid described herein has come to light. I feel confident

that other undescribed species from French Polynesia will come to light in the future.

SYSTEMATICS

Family **EPITONIIDAE** S. S. Berry, 1910

Genus *Epitonium* Röding, 1798

Type species: *Turbo scalaris* Linnaeus, 1758 (by subsequent designation Suter, 1913)

Epitonium boutetorum n. sp.

Fig. 1A-H

Diagnosis. Shell white, shiny only in axial interspaces, narrowly pyramidal, up to 7.2 mm in length. Protoconch of three white whorls. Teleoconch of approximately 7 strongly convex, shouldered whorls; last whorl with a narrow, sharp basal depression. Sculpture consisting of dense axial costae, variable in number from 20 to 42 per whorl, and sculptured on top with numerous secondary axial threads. Spiral sculpture of strong interstitial threads that become weaker when crossing over axial costae, developing numerous, uneven, pimple-like projections as they cross axial threads.

Type material. Holotype MNHN IM-2000-30768 length 5.5 mm, width 2.2 mm, Avatoru, Rangiroa Atoll, French Polynesia, 14.944°S, 147.705°W. Four paratypes: Otepipi, Rangiroa Atoll, French Polynesia. Paratype 1, 6.6 mm, USNM 1283128 paratypes 2 (5.5mm) and 3 (4.6 mm), Michel Boutet collection; paratype 4 (3.3 mm) MNHN IM-2000-30769

Type locality. Avatoru, Rangiroa Atoll, Tuamotu Archipelago, French Polynesia, 14°56'38" S – 147°42'18" W.

Distribution. Rangiroa Atoll, Tuamotu Archipelago, French Polynesia

Habitat. On exposed reef flat, under rock.

Description. Holotype (Fig. 1A-F) 5.5 mm in length, narrowly pyramidal, (width/length ratio 0.40). Protoconch white, damaged, remaining last whorl small (310 μ m). Transition to teleoconch marked by appearance of axial and spiral elements. Teleoconch of approximately 6.25 strongly convex, shouldered whorls; first whorl approximately 75 % larger than last protoconch whorl; following whorls proportionately increasing in size; last whorl with a narrow, basal depression delineated by relatively sharp angle in axial costae (Fig. 1F). Suture shallow, crossed by axial elements (Fig. 1E). Axial sculpture of strong, tubular, prosocline costae of uneven width, becoming somewhat thinner apically as costae cross suture; costae sculptured with secondary axial threads (Fig. 1D); approximately 32 costae on first whorl, increasing to approximately 42 on penultimate whorl and 40 on last whorl. Spiral sculpture of strong interstitial threads (Fig. 1C); approximately 50 threads on last whorl; threads weakening as they go up axial costae (Fig. 1C), creating an overall pattern of uneven pimple-like projections (Fig. 1E). Umbilicus closed (Fig. 1F). Aperture sub-circular; peristome complete; outer lip strengthened by a moderate varix that becomes narrower, and only slightly reflexed, at parietal wall (Fig. 1F). Shell white, shiny between axial costae only.

Smallest paratype (Fig. 1G) with a conical protoconch of three smooth, white whorls (Fig. 1H); width 375 μ m. Largest paratype 6.6 mm in length, with 6.5 teleoconch whorls.

Discussion. The subgenus *Libriscala* was erected by Kilburn (1985) for those epitoniid species with dense, tubular axial costae with interstitial spiral threads. I follow Kilburn in using this taxon, which describes well the new species.

As it happens with many epitoniids with dense axial costae, the number of costae per whorl is more variable than in species with only a few. This is the case with the specimens representing the type series, which vary from a low count of 20 axial costae for some whorls in paratype 3 to 42 in the holotype. This is in part due to the variability in the thickness of the costae. Paratype 4 (Fig. 1G-H) has a slightly wider protoconch than the holotype, but this is probably due to erosion in the holotype protoconch. Otherwise, the 4 paratypes follow the description of the holotype. The rough top of the axial costae may be characteristic of the species, as not a single un-eroded costa was

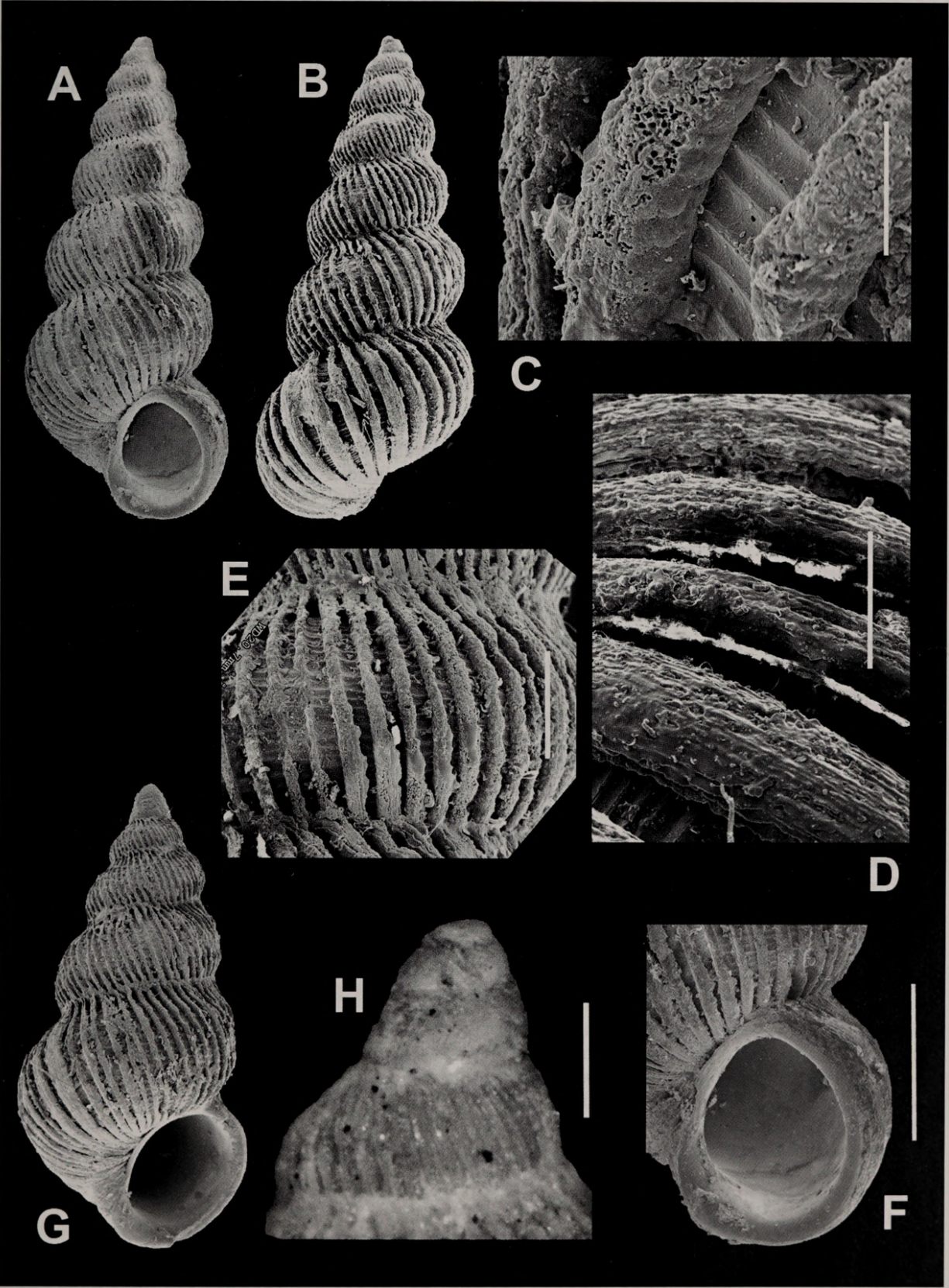
detected in the series. This may be due in part to the crossing of thin axial and spiral threads on top of the costa, which makes the top more vulnerable to erosion. Although the largest paratype measures 6.6 mm, Mr. Jean Tröndlé, a well-known student of the molluscan fauna of French Polynesia, has in his collection a specimen that measures 7.2 mm and has 7 teleoconch whorls (pers. com.).

The small size and dense, tubular axial costae separate *Epitonium boutetorum* from most Indo-Pacific epitoniids. It is most similar to the South African *Epitonium (Libriscala) parvonatrix* Kilburn, 1985, from which it differs in its smaller size, in having axial costae that have secondary axial threads, and a spiral ornamentation that crosses the axial elements. Also, *E. boutetorum* contrasts the dull-white axial costae with the shiny interspaces. *Epitonium (Libriscala) millicostatum* (Pease, 1861), a widely spread species, is wider (narrowest width/length ratio 0.61), has almost twice as many axial costae, has an umbilicus, and grows larger.

Epitonium boutetorum is also similar to *Epitonium cophinodes* (Melvill, 1904), a species first reported from 156 fathoms (= 285 m) off the coast of Oman (Melvill, 1904: 53). Since then, it has also been reported from "deep water" in eastern Arabia (Bosch et al., 1995: 106), and from off Kii Peninsula, Japan (Nakayama, 2003: 88). The new species differs from *E. cophinodes* by having more convex teleoconch whorls, axial costae with secondary axial threads, and spiral ornamentation that crosses the axial costae.

Epitonium sykesi (Melvill & Standen, 1904), from the Gulf of Oman, may also be confused with the new species; however, *E. sykesi* has less convex whorls, different axial structure, and lacks spiral ornamentation. *Epitonium zatrephes* (Melvill, 1910), from the Indian Ocean, has six whorls at 9 mm, half as many axial costae as *E. boutetorum*, and spiral ornamentation confined to axial interspaces. *Epitonium alizonae* (Melvill, 1912), a more elaborately sculptured species from the Indian Ocean, grows larger, has less convex whorls, a brownish apex, fewer, differently structured axial costae, and fewer spiral threads limited to the interspaces. Although this taxon has appeared elsewhere as *Epitonium alizonum* (Kaicher, 1981; WoRMS, 2015), Melvill named it for a lady (1912: 242). This erroneous emendation was first reported by Brown and Neville (1907: 36).

Figure 1 A-H. *Epitonium (Libriscala) boutetorum* n. sp. **A-F.** Holotype MNHN IM-2000-30768 length 5.5 mm, width 2.2 mm, Avatoru, Rangiroa Atoll, Tuamotu Archipelago, French Polynesia, 14.944°S, 147.705°W. **A-B.** Ventral and dorsal views. **C.** Close-up of spiral sculpture (scale bar= 100 μ m). **D.** Close-up of axial sculpture showing secondary axial threads (scale bar= 200 μ m). **E.** Close-up of penultimate whorl showing pimple-like pattern (scale bar= 500 μ m). **F.** Aperture showing basal depression and labral construction (scale bar= 1 mm). **G-H.** Paratype 4, MNHN IM-2000-30769 length 3.3 mm (scale bar of protoconch= 200 μ m), Otepihi, Rangiroa Atoll, Tuamotu Archipelago, French Polynesia.



A species similar to *E. boutetorum* and identified as *Epitonium* cf. *symmetricum* was figured by Orr in her studies on the littoral mollusks of the Cocos- Keeling Islands (1967: 117)

Etymology. Named for Michel and Hélène Boutet, of Papara, Tahiti, French Polynesia. With his wife's support Michel has assiduously worked for decades to bring to light, through his own collecting and publications, the molluscan fauna of the area. He collected the five specimens of the type material of the new species.

ACKNOWLEDGEMENTS

My thanks to Michel Boutet, who collected the specimens and donated some of the type material, to Robert Gourguet and Jean Letourneux who shared important information and images on French Polynesian Epitoniidae, and to Bruce Neville and José Leal, who provided requested literature. I also thank Jean Tröndle who reviewed the manuscript and provided additional information, and Roland Houart, who also reviewed the manuscript. Joseph L. Richards, Biology Department, University of Louisiana at Lafayette, produced the SEM images.

REFERENCES

- Bosch, D.T., Dance, S.P., Moolenbeek, R.G. & Oliver, P.G. 1995. *Seashells of Eastern Arabia*. Motivate Publishing, Dubai, 296 pp.
- Brown, L. & Neville, B. 2007. Catalogue of the recent taxa of the families Epitoniidae and Nystiellidae (Mollusca: Gastropoda) with a bibliography of the descriptive and systematic literature. *Zootaxa* 1: 011-188.
- Dautzenberg, P. & Bouge, J. L. 1933. Les mollusques testacés marins des établissements Français d'Océanie. *Journal de Conchyliologie* 77: 41-108, 145-326, 351-469.
- García, E. F. 2007. *Micro-mollusks from the Tuamotu*

Archipelago, French Polynesia. Accessed through Jaxshells at <http://www.jaxshells.org/emiliog.htm>.

- Kaicher, S.D. 1981. *Card Catalogue of World-wide Shells. Epitoniidae, Part II*. Published by the author, St. Petersburg, Cards (i-ii) + 3028-3133.
- Kilburn, R.N. 1985 The family Epitoniidae (Mollusca: Gastropoda) in southern Africa and Mozambique. *Annals of the Natal Museum* 27(1) 239-337.
- Melville, J.C. 1904. Descriptions of twenty-three species of Gastropoda from the Persian Gulf, Gulf of Oman, and Arabian Sea, dredged by Mr. F.W. Townsend, of the Indo-European Telegraph Service, in 1903. *Proceedings of the Malacological Society of London*, 6, 51-60, pl. 5.
- Melville, J.C. 1912. Descriptions of thirty-three new species of Gastropoda from the Persian Gulf, Gulf of Oman, and North Arabian Sea. *Proceedings of the Malacological Society of London*, 10, 240-254, pls. 11-12.
- Melville, J.C. & Standen, R. 1904. The genus *Scala* (Klein) Humphrey, as represented in the Persian Gulf, Gulf of Oman, and North Arabian Sea, with descriptions of new species. *Journal of Conchology*, 10(11), 340-351, pl. 7.
- Nakayama, T. 2003. *A Review of Northwest Pacific Epitoniids (Gastropoda: Epitoniidae)*. Backhuys, Leiden, vii + 143 pp, 20 pls.
- Orr Maes, V. 1967. The Littoral Marine Mollusks of Cocos- Keeling Islands (Indian Ocean). *Proceedings of the Academy of Natural Sciences, Philadelphia* 119: 117, pl. 8. fig.B
- Tröndlé, J. & M. Boutet. 2009. Inventory of Marine Molluscs of French Polynesia. Smithsonian Institution Press. *Atoll Research Bulletin* 570: 1-87.
- WoRMS. 2015. *Epitonium alizonum* (Melville, 1912). In: MolluscaBase (2015). Accessed through: World Register of Marine Species at <http://www.marinespecies.org/aphia.php?p=taxdet&id=523777> on 2015-06-01



Garcia, Emilio Fabian. 2016. "A new species of Epitonium (Librariscala) (Gastropoda: Epitoniidae) from French Polynesia." *Novapex : trimestriel de la Société belge de malacologie* 17(1), 5–8.

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