

Epitonium fabrizioi (Gastropoda: Epitoniidae), a New Species from Patagonia, Argentina

Guido Pastorino¹

Departamento Paleozoología
Invertebrados
Museo de La Plata
Paseo del Bosque s/n
1900 La Plata
ARGENTINA
rvpastor@criba.edu.ar

Pablo Penchaszadeh

INTECMAR
Universidad Simón Bolívar
1080 Caracas
VENEZUELA
and
Museo Argentino de Ciencias
Naturales "Bernardino Rivadavia"
Angel Gallardo 470
1405 Buenos Aires
ARGENTINA

ABSTRACT

Epitonium fabrizioi, a new species of gastropod mollusk belonging to the family Epitoniidae, is described from shallow waters of Puerto Pirámides, Chubut Province, Argentina. This new species is similar to *E. georgettinum* from the same area, which was known only from its shell. It can be distinguished from *E. georgettinum* by its smaller size, more straight profile and, by its sharper, most numerous ribs. In addition, the protoconch of the new species consists of 4.25 whorls. Its radula has only marginal teeth, each with three cusps. The outermost cusp is larger and hook-like, the central and inner cusps are shorter and similar in size. An additional, obsolete, cusp is present near the base of the teeth. The egg capsules have a mean diameter of 76 μm . The new species is compared with *E. georgettinum*, the species with which it co-occurs, and *E. albidum*.

his work was primarily from Brazil, and only marginally included representative species from Uruguay and northern Argentina.

The Magellanic area is poorly represented in molluscan faunal reports, and almost never represented in published revisions of Epitoniidae. Strebel (1905) was the last author to publish a systematic account of the Magellanic epitoniid fauna. He described one species and one variety from the Strait of Magellan.

In this paper we describe a new species of *Epitonium*, and include illustrations of its radula, operculum and protoconch. Data on eggs and egg capsules are also included.

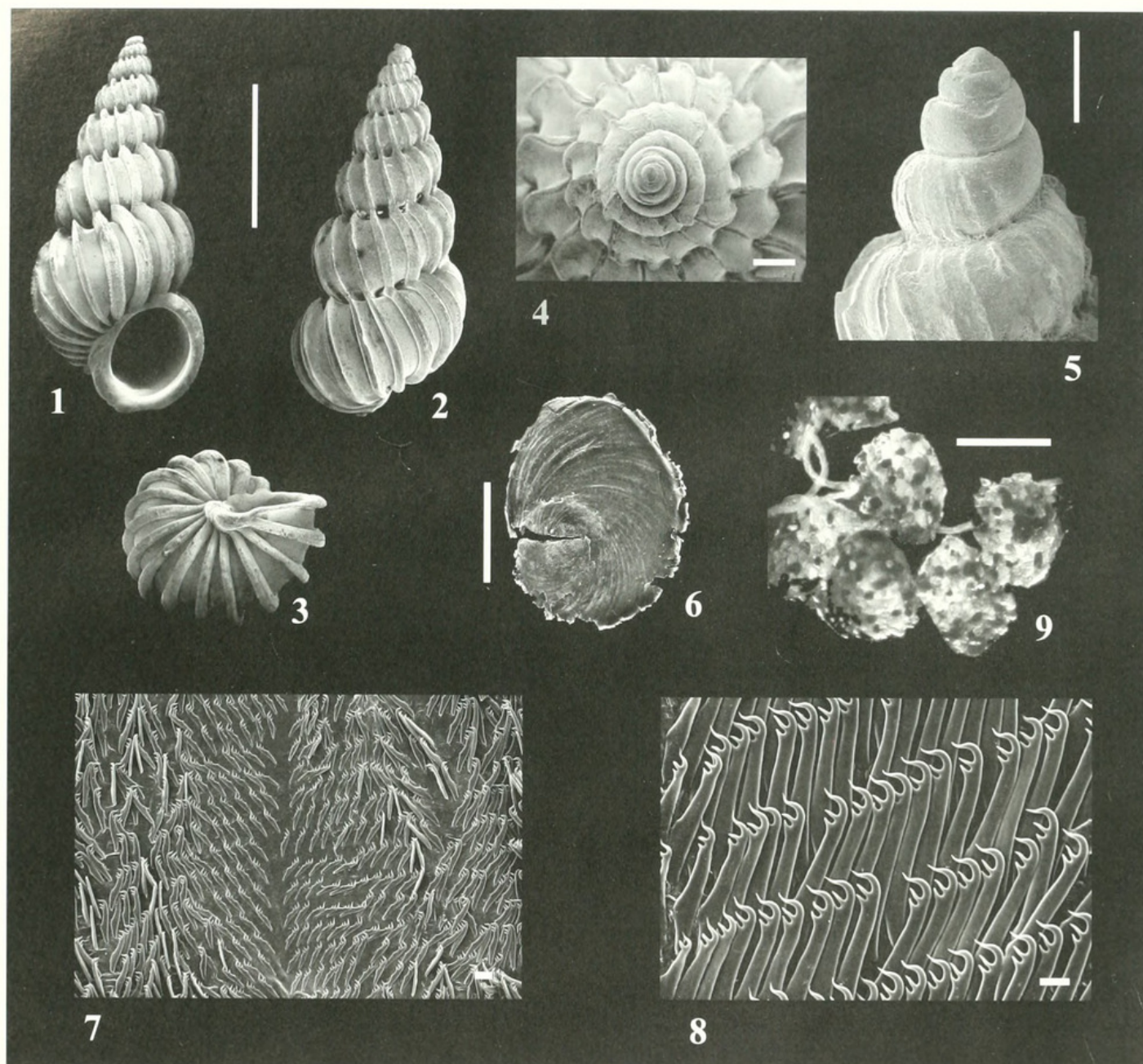
INTRODUCTION

Most recent papers about the family Epitoniidae deal with species from the northern hemisphere (Caribbean: Robertson, 1983a, 1983b, 1994a, 1994b; northeastern Pacific: DuShane, 1974, 1979; northeastern Atlantic: Bouchet and Warén, 1986). An exception is the work of Kilburn (1985) who studied representatives of the family from South Africa and Mozambique, and provided a good account of the subgenera living in that area. In their classic and comprehensive work, Clench and Turner (1951, 1952) reported most of the known western Atlantic species. Rios (1994) included a complete list of the approximately 30 species of Epitoniidae known from northern South America, together with illustrations and distribution ranges. However, the material examined in

MATERIALS AND METHODS

Specimens of *Epitonium fabrizioi* were collected from tidepools near Puerto Pirámide, Chubut, Argentina (42°34'S, 64°17'W) in November, 1995, during spring (lower low water) tides, and near Punta Loma (42°49'S, 64°53'W) in February, 1996 (see Map 1). This species was found only in the intertidal zone around the pedal discs of sea-anemones (genus *Bunodactis*?) on which they probably feed. In several cases, more than one specimen was found on the same sea-anemone. Several animals were dissected and the radulae were prepared for the SEM observation. The protoconch whorls were counted following the method of Jung (1986). Institutional abbreviations used are: ANSP, Academy of Natural Sciences of Philadelphia; MACN, Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires, Argentina; MHNG, Muséum d'Histoire naturelle de Genève, Switzerland; MLP, Departamento Zoología Invertebrados, Museo de La Plata, La Plata, Argentina; USNM, National Museum of Natural History, Smithsonian Institution.

¹ Current Address: Department of Invertebrate Zoology, Division of Mollusks, National Museum of Natural History, Smithsonian Institution, Washington, DC 20560, USA.



Figures 1–9. *Epitonium fabrizioi* new species. 1–3. Holotype, MLP 5402. Scale bar = 5 mm. 4. Apical view, MLP 5333. Scale bar = 200 μ m. 5. Protoconch, MLP 5333. Scale bar = 250 μ m. 6. Operculum of holotype. Scale bar = 5 mm. 7. Radula of holotype in general view. Scale bar = 20 μ m. 8. Detail of marginal teeth. Scale bar = 10 μ m. 9. Egg capsules. Scale bar = 1 mm.

SYSTEMATICS

Family Epitoniidae Berry, 1910

Genus *Epitonium* Röding, 1798

Epitonium fabrizioi new species
(Figures 1–9)

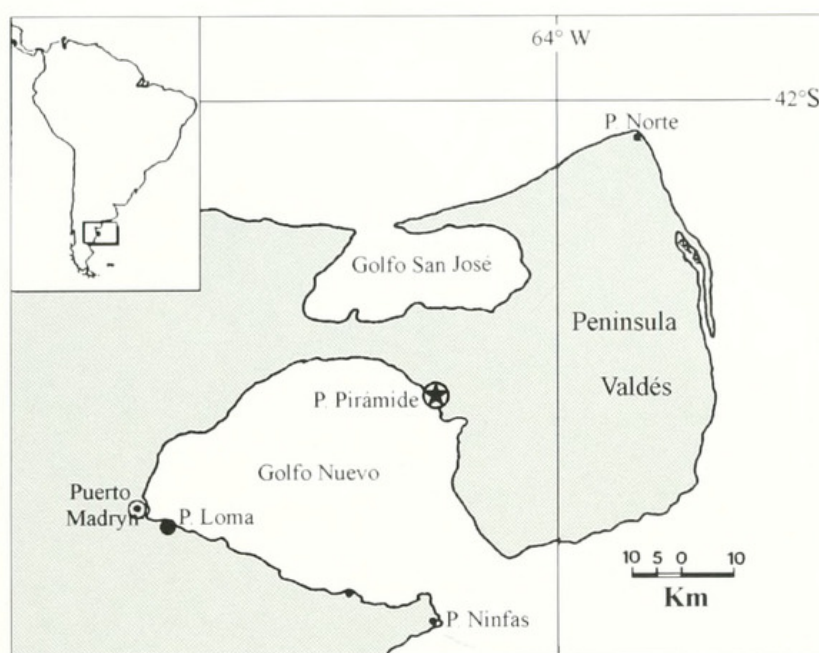
Epitonium albidum (d'Orbigny, 1842).—Clench and Turner, 1951: pl. 114, fig. 3 only.

Epitonium georgettina (Kiener, 1839).—Scarabino, 1977:183, pl. 2, fig. 8.

Epitonium georgettinae (Kiener, 1839).—Pastorino, 1995:8, pl. 2, fig. 10.

Description: Shell small, up to 13 mm length, chalky, thin, opaque. Protoconch (worn in all but one specimen)

consisting of 4.25 whorls and measuring 485 length \times 390 μ m width. Protoconch whorls smooth under SEM, transition to teleoconch not very sharp. Teleoconch with 8 gently convex, smooth whorls. Spire angle 40°, profile straight. Suture crossed by termination of axial ribs (fenestrate). Axial ornamentation consisting of very sharp ribs, up to 18 on last whorl, but usually 13–14 (Table 1). Axial ribs slightly oblique in relation to shell axis, with irregularly defined edges near suture, and remnants from breakage in the rest. Axial ribs gently reflected on last whorl. All ribs perfectly aligned with overlapping ribs from preceding whorl; attachment erect. Aperture oval, peristome with one layer, forming a gentle basal expansion (auriculate). Columellar callus weakly developed. Umbilicus closed.



Map 1. Records of *Epitonium fabrizioi* (★ = type locality).

Operculum oval, paucispiral, thin, translucent, brownish, entire surface covered by growth lines.

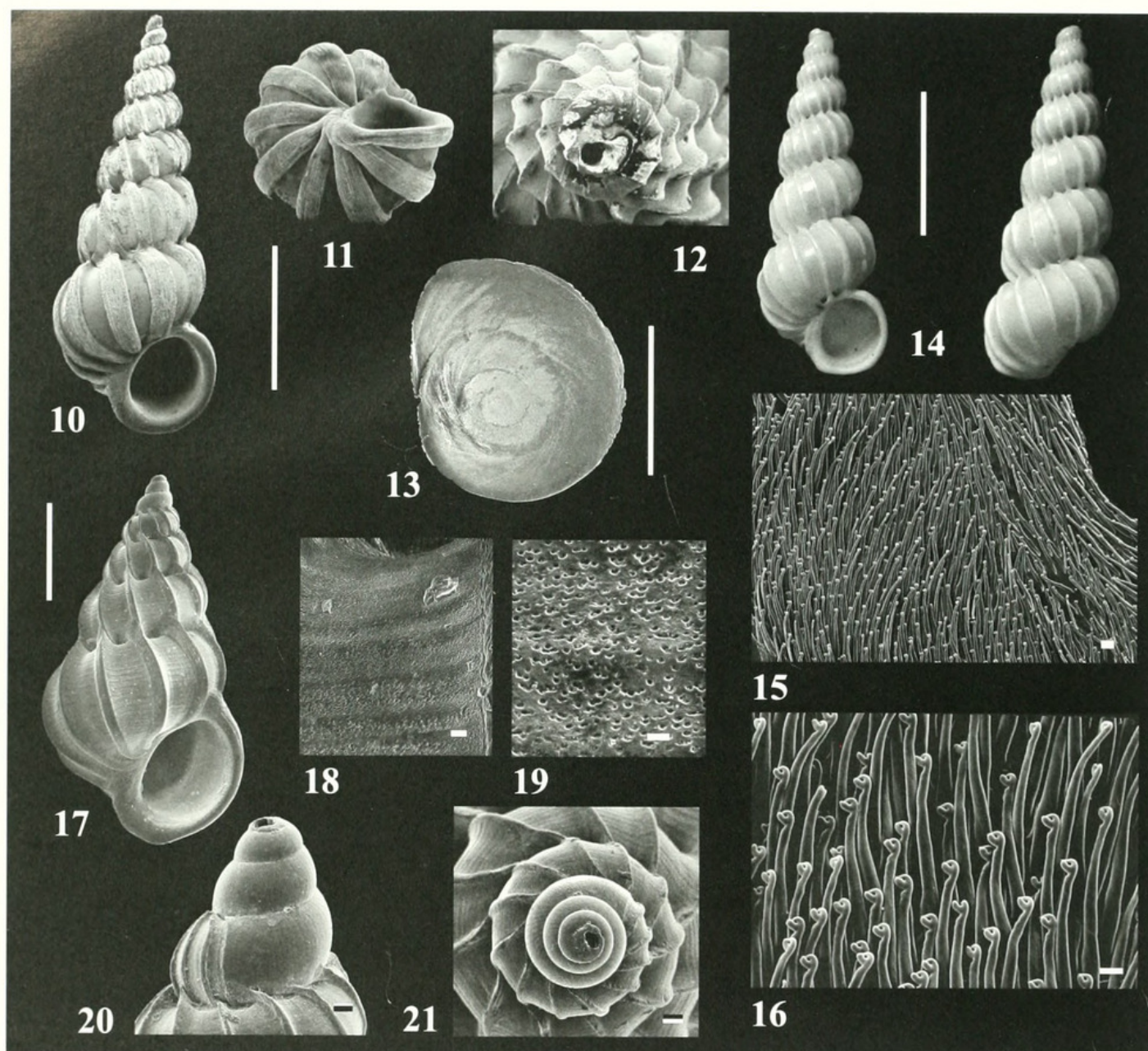
Radula lacking central and lateral teeth, but with numerous tricuspid marginal teeth, identical in shape. Outermost cusps large and hook-like, central and inner

cusps similar in size and shorter. Secondary cusp present centrally on teeth near base.

Egg masses always found near (but not attached to) adults. Egg masses composed of 180–320 egg capsules attached to each other by tough elastic string as in other

Table 1. *Epitonium fabrizioi*. Shell measurements and number of axial ribs per whorl. Numbered column headings refer to whorl number. Dashes indicate worn ribs on that whorl.

| Shell No | Length | Width | Teleoconch whorls | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|----------|--------|-------|-------------------|---|----|----|----|----|----|----|
| 1 | 10.92 | 5.30 | 5.5 | — | — | 16 | 15 | 15 | | |
| 2 | 11.7 | 5.9 | 6.5 | — | 13 | 13 | 13 | 13 | 14 | |
| 3 | 15.01 | 6.92 | 6.5 | — | — | 14 | 14 | 14 | 15 | |
| 4 | 6.89 | 3.32 | 5.5 | — | 13 | 13 | 13 | 14 | | |
| 5 | 13.22 | 6.07 | 6.5 | — | 13 | 13 | 13 | 13 | 15 | |
| 6 | 12.10 | 5.85 | 6.5 | — | 13 | 13 | 13 | 13 | 14 | |
| 7 | 8.68 | 4.45 | 6 | — | — | 14 | 14 | 14 | 14 | |
| 8 | 13.05 | 6.54 | 6.5 | — | — | 12 | 12 | 13 | 15 | |
| 9 | 7.89 | 4.1 | 6 | — | — | 12 | 12 | 13 | 14 | |
| 10 | 12.91 | 6.14 | 6 | — | — | 14 | 14 | 13 | 15 | |
| 11 | 12.27 | 5.56 | 6 | — | 13 | 13 | 13 | 13 | 14 | |
| 12 | 12.57 | 6.15 | 6.5 | — | 14 | 12 | 14 | 14 | 15 | |
| 13 | 9.18 | 4.49 | 6.5 | — | 13 | 12 | 13 | 13 | 14 | |
| 14 | 10.66 | 5.30 | 7 | — | — | — | 15 | 15 | 15 | 16 |
| 15 | 9.72 | 4.92 | 6.5 | — | 13 | 14 | 14 | 14 | 15 | |
| 16 | 11.78 | 5.76 | 5.5 | — | — | 14 | 13 | 14 | | |
| 17 | 10.94 | 5.14 | 5.5 | — | — | 14 | 14 | 15 | | |
| 18 | 6.37 | 3.20 | 6.5 | — | — | — | 14 | 13 | 14 | |
| 19 | 9.10 | 4.77 | 5.5 | — | 14 | 14 | 14 | 15 | | |
| 20 | 10.52 | 5.01 | 6.5 | — | — | 14 | 14 | 14 | 16 | |
| 21 | 10.17 | 4.95 | 6.5 | — | — | — | 14 | 14 | 16 | |
| 22 | 9.23 | 4.54 | 6.5 | — | 13 | 13 | 13 | 13 | 14 | |
| 23 | 8.48 | 4.57 | 5.5 | — | — | 15 | 15 | 16 | | |
| 24 | 11.50 | 5.36 | 6.5 | — | — | — | 15 | 15 | 16 | |
| 25 | 9.96 | 5.08 | 7 | — | — | — | 14 | 14 | 17 | 18 |



Figures 10–16, 17–21. *Epitonium georgettinum* (Kiener, 1839). **10–12.** Apertural, basal, and apical views, MLP 5404, Puerto Pirámides. Scale bar = 5 mm. **13.** Operculum of a 24.72 mm length specimen. Scale bar = 10 mm. **14.** *Scalaria georgettina*, paralectotype, MHNG 983/111/2, “Ocean Atlantique”. Scale bar = 10 mm. **15.** Radula of the specimen shown in Figures 10–12. Scale bar = 20 μ m. **16.** Detail of the radula. Scale bar = 10 μ m. **17–21.** *Epitonium albidum* (d’Orbigny, 1842). **17, 18.** USNM 439556, Baie Anglaise, Haiti. **17.** Apertural view. Scale bar = 1 mm. **18.** Detail of the shell surface. Scale bar = 10 μ m. **19.** Detail of the same area under higher magnification. Scale bar = 2 μ m. **20.** Protoconch. Scale bar = 40 μ m. **21.** Apical view. Scale bar = 40 μ m.

species of same genus. Largest egg capsules examined measured 1.35×1.1 mm ($n=20$; $x=1.19 \times 0.94$; $SD=0.080 \times 0.069$). Egg capsules pyramidal or polyhedral in shape and covered with sand grains. Number of eggs per capsule ranged 69–141 ($n=10$; $x=123.9$; $SD=20.12$). Uncleaved eggs measured 76 μ m in diameter.

Type locality: Puerto Pirámides, Chubut Province, Argentina ($42^{\circ}34'S$, $64^{\circ}17'W$).

Type material: Holotype, MLP 5402; 10 paratypes, USNM 880252; 1 paratype, MLP 5333; 4 paratypes, ANSP A18860; 10 paratypes MLP 5403; all from the

type locality, G. Pastorino coll., November 1995; MLP 5333, 1 specimen (protoconch), from near Punta Loma, Chubut Province, Argentina, $42^{\circ}49'S$, $64^{\circ}53'W$, J. Mermoz coll., February 1996.

Other material examined: Five specimens, MACN unnumbered, from near Punta Loma, Chubut Province, Argentina, $42^{\circ}49'S$, $64^{\circ}53'W$, J. Mermoz coll., Feb. 1996.

Etymology: Dedicated to Fabrizio Scarabino, young malacologist and friend, who called our attention to the new species.

Table 2. *Epitonium georgettinum* (Kiener). Shell measurements and number of axial ribs per whorl. Numbered column headings refer to whorl number. Dashes indicate worn ribs on that whorl.

| Shell No | Length | Width | Teleoconch whorls | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|--------|-------|-------------------|---|----|----|----|----|----|----|----|----|
| 1 | 31.13 | 10.64 | 9 | — | — | 16 | 16 | 16 | 14 | 13 | 13 | 14 |
| 2 | 24.75 | 8.90 | 8.5 | — | 14 | 13 | 12 | 13 | 12 | 13 | 14 | |
| 1 | 26.73 | 9.72 | 9.5 | — | — | 13 | 15 | 13 | 13 | 12 | 12 | 13 |
| 4 | 20.81 | 8.33 | 9 | — | 13 | 13 | 12 | 13 | 12 | 12 | 11 | 12 |
| 5 | 18.02 | 6.73 | 9 | — | — | 12 | 12 | 12 | 11 | 10 | 11 | 11 |
| 6 | 14.79 | 5.86 | 8 | — | — | 13 | 12 | 13 | 12 | 12 | 12 | |

DISCUSSION

Epitonium georgettinum (Kiener, 1839) is the most similar species to *E. fabrizioi*. It also occurs in the littoral zone in the Puerto Pirámides area, where it lives near sea anemones on hard substrate, but, unlike *E. fabrizioi*, it can also be found on sandy bottom.

The type specimens of *Epitonium georgettinum* (MNHG 983/111/1–3) were illustrated by Clench and Turner (1951, Pl. 117, fig. 1). Figure 14 herein represents one of the paralectotypes (MHNG 983/111/2). The main conchological differences between *E. georgettinum* and the new species is the profile of the shell, which is straighter in *E. georgettinum*, and the whorls, which are more convex and detached in this latter species. The ribs in *E. fabrizioi* are sharper, thinner, and increase in number with growth (Tables 1, 2). *Epitonium georgettinum* has a multispiral, thick, and opaque operculum (Figure 13), whereas that of *E. fabrizioi* is paucispiral, thin, and translucent (Figure 6). The radula of *E. georgettinum* is also distinct. It has one sharp terminal cusp per marginal tooth, and two blunt cusps, one almost obsolete (Figures 15–16).

The eggs and egg capsules of these two species are quite similar (Pastorino and Penchaszadeh, in press). However, based on the material available, *E. fabrizioi* has smaller egg capsules, each containing fewer eggs although egg diameter is nearly identical to that in *E. georgettinum*. Bell (1985) has indicated the larval life-span and size in *E. ulu* Pilsbry, 1921 (26 days; 3 whorls, 390 μ m). The larger number of protoconch whorls and size of *Epitonium fabrizioi* (4.25 whorls, 485 \times 390 μ m) suggests that *E. fabrizioi* spends more time than *E. ulu*

in the planktotrophic larval stage. In comparison with other known species of *Epitonium*, the new species has the largest protoconch (Table 3).

Epitonium albidum (d'Orbigny, 1842) is similar in shell shape, but its protoconch shows a delicate (visible under SEM) ornamentation that contrasts with that in the new species (Figure 20). In addition, the entire surface of the teleoconch in *E. albidum* shows a characteristic pitted microsculpture (visible under SEM; Figures 18, 19). This character is not typical of the genus *Epitonium* and may support a new generic allocation for *E. georgettinum*, as suggested by Bouchet and Warén (1986) for *E. albidum*. In contrast, *E. fabrizioi* lacks this type of microsculpture. Robertson (1983b) pointed out that Clench and Turner's (1951) Argentinean record of *E. albidum* from Bahia San Blas was zoogeographically anomalous. Their illustration (Clench and Turner, 1951; Plate 114, fig.3) represents a specimen of *E. fabrizioi*.

Kilburn (1985) proposed a subgeneric arrangement for the South African species of Epitoniidae. He did not consider, however, that radular morphology could provide reliable taxonomic characters to his arrangement. If we followed Kilburn's classification, *E. fabrizioi* could be allocated in the subgenus *Hirtoscala* Monterosato, 1890. However, *E. fabrizioi* does not have coronate lamellae and a duplicate peristome that are characteristic of that subgenus.

Including *E. fabrizioi*, there are 5 named species of Epitoniidae living in the Magellanic province. Keen (1971) illustrated 76 Epitoniidae from the tropical eastern Pacific; Kilburn (1985) cited 80 species from southern Africa and Mozambique; Rios (1994) recorded 30

Table 3. Measurements of protoconchs of *Epitonium* species in relation to the adult size (in mm).

| <i>Epitonium</i> species | Protoconch Whorls | Adult size | Protoconch size length-width | Source |
|--------------------------|-------------------|------------|------------------------------|--------------------------|
| <i>E. millicostatum</i> | 2.7 | 9.7 | 0.5 | Robertson, 1981 |
| <i>E. equinaticosta</i> | 3.5–5 | 9.5 | 0.9–0.3 | Robertson, 1983a & 1994b |
| <i>E. albidum</i> | 4 | 8–15 | 0.4 | Robertson, 1983b |
| <i>E. phymanthi</i> | 3.2–3.4 | 16.9 | 0.42–0.5 | Robertson, 1993 |
| <i>E. worsfoldi</i> | 4.1–4.2 | 25.3 | 0.52–0.54 | Robertson, 1993 |
| <i>E. ulu</i> | 3 | 13 | 0.39 \times 0.30 | Bell, 1985 |
| <i>E. fabrizioi</i> | 4.25 | 13 | 0.48 \times 0.39 | this paper |

from Brazil, while Díaz-Merlano and Puyana-Hegedüs (1994) listed 22 from the Colombian Caribbean. Based on published records of the known distribution of Epitoniidae this family is more speciose in tropical than in temperate and cold regions.

ACKNOWLEDGMENTS

Special thanks are due to J. Mermoz, who provided specimens of *Epitonium* from Punta Loma. Yves Finet, Muséum d'Histoire naturelle de Genève, Switzerland, kindly sent photographs of the paralectotype of *Epitonium georgettinum*. M. G. Harasewych, National Museum of Natural History, Smithsonian Institution, gave good advice on early stages of the manuscript. Two reviewers improved considerably the original manuscript. This work was made possible by an external fellowship granted by the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Argentina, to G. P. and a grant from Fundación Antorchas, Argentina to P. P.

LITERATURE CITED

- Bell, J. L. 1985. Larval growth and metamorphosis of a prosobranch gastropod associated with a solitary coral. Proceedings of the Fifth International Coral Reef Congress 5:159–163.
- Bouchet, P. and A. Warén, A. 1986. Revision of the Northeast Atlantic bathyal and abyssal Aclididae, Eulimidae, Epitoniidae (Mollusca, Gastropoda). Bollettino Malacologico, Supplemento 2:498–523.
- Clench, W. J. and R. D. Turner. 1951. The genus *Epitonium* in the western Atlantic (Part I). Johnsonia 2(30):249–288.
- Clench, W. J. and R. D. Turner. 1952. The genus *Epitonium*, (Part II), *Depressiscula*, *Cylindriscala*, *Nystiella* and *Solutiscala* in the western Atlantic. Johnsonia 2(31):289–356.
- Díaz-Merlano, J. M. and M. Puyana-Hegedüs. 1994. Moluscos del Caribe Colombiano. Un catálogo ilustrado. Fundación Natura, Bogotá, 291 pp., 78 pls.
- DuShane, H. 1974. The Panamic-Galapagan Epitoniidae. The Veliger 12(Supplement):1–84.
- DuShane, H. 1979. The family Epitoniidae (Mollusca: Gastropoda) in the northeastern Pacific. The Veliger 22(2): 91–134.
- Jung, P. 1986. Neogene paleontology in the northern Dominican Republic. 2. The genus *Strombina* (Gastropoda: Columbellidae). Bulletin of American Paleontology 324:1–42.
- Keen, M. 1971. Seashells of Tropical West American, Second Edition. Stanford University Press, Stanford, 626 pp.
- Kilburn, R. N. 1985. The family Epitoniidae (Mollusca: Gastropoda) in southern Africa and Mozambique. Annals of the Natal Museum 27(1):239–337.
- Pastorino, G. 1995. Moluscos costeros Recientes de Puerto Pirámide, Chubut, Argentina. Academia Nacional de Ciencias, Córdoba, Miscelánea, 93:1–30.
- Pastorino, G. and P. Penchaszadeh. In press. On the egg capsules of *Epitonium georgettinum* (Kiener, 1839) (Gastropoda: Epitoniidae) from Patagonian shallow waters. The Veliger.
- Rios, E. C. 1994. Seashells of Brazil. Editora da Fundação Universidade do Rio Grande. Rio Grande, 328 pp.
- Robertson, R. 1981. *Epitonium millicostatum* and *Coralliophila clathrata*: two prosobranch gastropods symbiotic with Indo-Pacific *Palythoa* (Coelenterata: Zoanthidae). Pacific Science 34(1):1–17.
- Robertson, R. 1983a. Observations on the life history of the wattletrap *Epitonium echinaticostum* in the Bahamas. The Nautilus 97(3):98–103.
- Robertson, R. 1983b. Observations on the life history of the wattletrap *Epitonium albidum* in the West Indies. American Malacological Bulletin 1(1):1–12.
- Robertson, R. 1994a. Protoconch size variation along depth gradients in a planktotrophic *Epitonium*. The Nautilus 107(4):107–112.
- Robertson, R. 1994b. Two new tropical western Atlantic species of *Epitonium*, with notes on similar global species and natural history. The Nautilus 107(3):81–93.
- Scarabino, V. 1977. Moluscos del Golfo San Matías (Provincia de Río Negro, República Argentina). Inventario y Claves para su identificación. Comunicaciones de la Sociedad Malacológica del Uruguay 4(31–32):177–285.
- Strebel, H. 1905. Beiträge zur Kenntnis der Mollusken-fauna der Magalhaen-Provinz. 3. Zoologischen Jahrbüchern. Abteilung für Systematik, Geographie, und Biologie der Tiere 22(6):575–666.



1998. "Epitonium fabrizioi (Gastropoda: Epitoniidae), a new species from Patagonia, Argentina." *The Nautilus* 112, 63–68.

View This Item Online: <https://www.biodiversitylibrary.org/item/34210>

Permalink: <https://www.biodiversitylibrary.org/partpdf/40006>

Holding Institution

MBLWHOI Library

Sponsored by

MBLWHOI Library

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: Bailey-Matthews National Shell Museum

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.