



# Redescription and reassignment of *Ondina semicingulata* to the Pyramidellidae, with review of the occurrence of genus *Evalea* in the Western Atlantic (Gastropoda)

Alexandre D. Pimenta<sup>1</sup>, Franklin N. Santos<sup>2</sup>, Carlo M. Cunha<sup>3</sup>

<sup>1</sup> Departamento de Invertebrados, Museu Nacional, Universidade Federal do Rio de Janeiro, Quinta da Boa Vista, São Cristóvão, 20940-040, Rio de Janeiro, Brazil

<sup>2</sup> Departamento de Educação e Ciências Humanas, Centro Universitário Norte do Espírito Santo, Universidade Federal do Espírito Santo, São Mateus 29932-540, Espírito Santo, Brazil

<sup>3</sup> Universidade Metropolitana de Santos. Ave. Conselheiro Nébias 536, 11045-002, Santos, SP, Brazil

<http://zoobank.org/>

Corresponding author: Alexandre D. Pimenta ([alexpim@mn.ufrj.br](mailto:alexpim@mn.ufrj.br))

## Abstract

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## Key Words

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*Acteon semicingulatus* Dall, 1927, previously known only by its original description is reassigned to the Pyramidellidae, in *Ondina*, based on the collecting of several new specimens along the coast of Brazil, in the same bathymetry as the type locality. Its shell shape variation is discussed and *Odostomia (Evalea) ryclea* Dall, 1927 is considered a synonymy. Other Western Atlantic species, previously allocated to other genera are transferred to *Ondina*: *Aclis striata* Verrill, 1880, *Odostomia (Iolaea) hendersoni* Bartsch, 1909, *Evalea stocki* De Jong & Coomans, 1988 and *Odostomia (Evalea) emeryi* Bartsch, 1955 based on conchological comparison to the revision by Høisæter (2014), from Northeastern Atlantic. The genus *Evalea* is considered to be absent in the Atlantic Ocean.

## Introduction

The Pyramidellidae Gray, 1840 is a notoriously rich and taxonomically complex gastropod family. It was included in the “big-five” group of the richest mollusks families by Albano et al. (2002) after extensive surveys in New Caledonia. It includes about 3,000 accepted names at the species level which are classified in around 140 accepted genera (MolluscaBase 2018).

Although recent advances and changes in the phylogenetic position of the family within Heterobranchia have been proposed (e.g. Dinapoli and Klusmann-Kolb 2010), the alpha taxonomy of several genera remains to be revised and knowledge of diversity and distribution of species is still far from satisfactory. Taxonomic stud-

ies in regions where the Pyramidellidae was poorly studied, generally reveal several new species (e.g. Peñas and Rolán 2010, in the South Pacific region). Knowledge of Pyramidellidae diversity in Brazil grew considerably after several taxonomic works (e.g. Pimenta and Absalão 2001a, b, 2002, 2004a, 2004b, Pimenta et al. 2000, 2008, 2009, 2011, Pimenta 2012), but several genera remain to be revised. Additionally, old published names should be revised in both nomenclature and taxonomy.

This is the case of *Ondina* de Folin, 1870, a genus with 20 valid species (MolluscaBase 2018), mainly from European and west African waters but so far not recorded in the Tropical western Atlantic. The nomenclature of *Ondina* was revised by van Aartsen (1984) and the Eastern Atlantic species (from Europe and Africa) were re-de-

scribed in a series of papers (e.g. van Aartsen 1987, van Aartsen et al. 1996, Peñas et al. 1996, Peñas and Rolán 1999, Warén 1991, Høisæter 2014).

During a visit to the USNM collection, the type series of *Acteon semicingulatus* was examined, which led to its reassessment in the Pyramidellidae, genus *Ondina*, as well as in the review of the previous records of the Pyramidellidae genera *Ondina* and *Evalea* in the Western Atlantic.

## Material and methods

Taxonomic identification of the new material from Brazil was based on conchological comparison with type specimens and with the recent revision by Høisæter (2014). All available material consists of dry shells; in the “Examined material” the number of shells is indicated between brackets.

For detailed examination, shells were prepared following the standard methods to preparation of micromollusc shells for SEM of Geiger et al. (2007) and observed by scanning electron microscopy at the Centro de Microscopia Eletrônica, Departamento de Invertebrados, Museu Nacional/UFRJ, with a JEOL JSM-6390LV microscope.

Measurements were made with the software ImageJ (Rasband 2012).

Institutional Acronyms: ANSP, Academy of Natural Sciences of Drexel University, Philadelphia, USA; MNRJ, Museu Nacional / Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil; USNM, National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA; YPM, Yale Peabody Museum–Invertebrate Zoology/Yale University, New Haven, Connecticut, USA; USFC, United States Fish Commission, formally known as the United States Commission of Fish and Fisheries. Shell measurements: H, shell height parallel to coiling axis; D, greatest shell width perpendicular to H; h, aperture height (maximum length parallel to coiling axis); d, greatest width of aperture (maximum width perpendicular to coiling axis).

Due to the fire in the Museu Nacional, in September 2018, the non type material of *Ondina semicingulata* was destroyed.

## Systematics

### Family Pyramidellidae Gray, 1840

### Subfamily Odostomiinae Pelseneer, 1928

### Genus *Ondina* de Folin, 1870

*Ondina* de Folin, 1870: 200.

**Type species.** *Ondina semiornata* de Folin, 1872 [= *Ondina warrenii* (Thompson, 1845)] by subsequent designation (van Aartsen 1984: 134). Atlantic coast of France.

### *Ondina semicingulata* (Dall, 1927), comb. n.

Figures 1a–n, 2a–c

*Acteon semicingulatus*: Dall 1927: 19–20; Poirier 1954: 102; Marcus 1974: 319; Abbott 1974: 311.

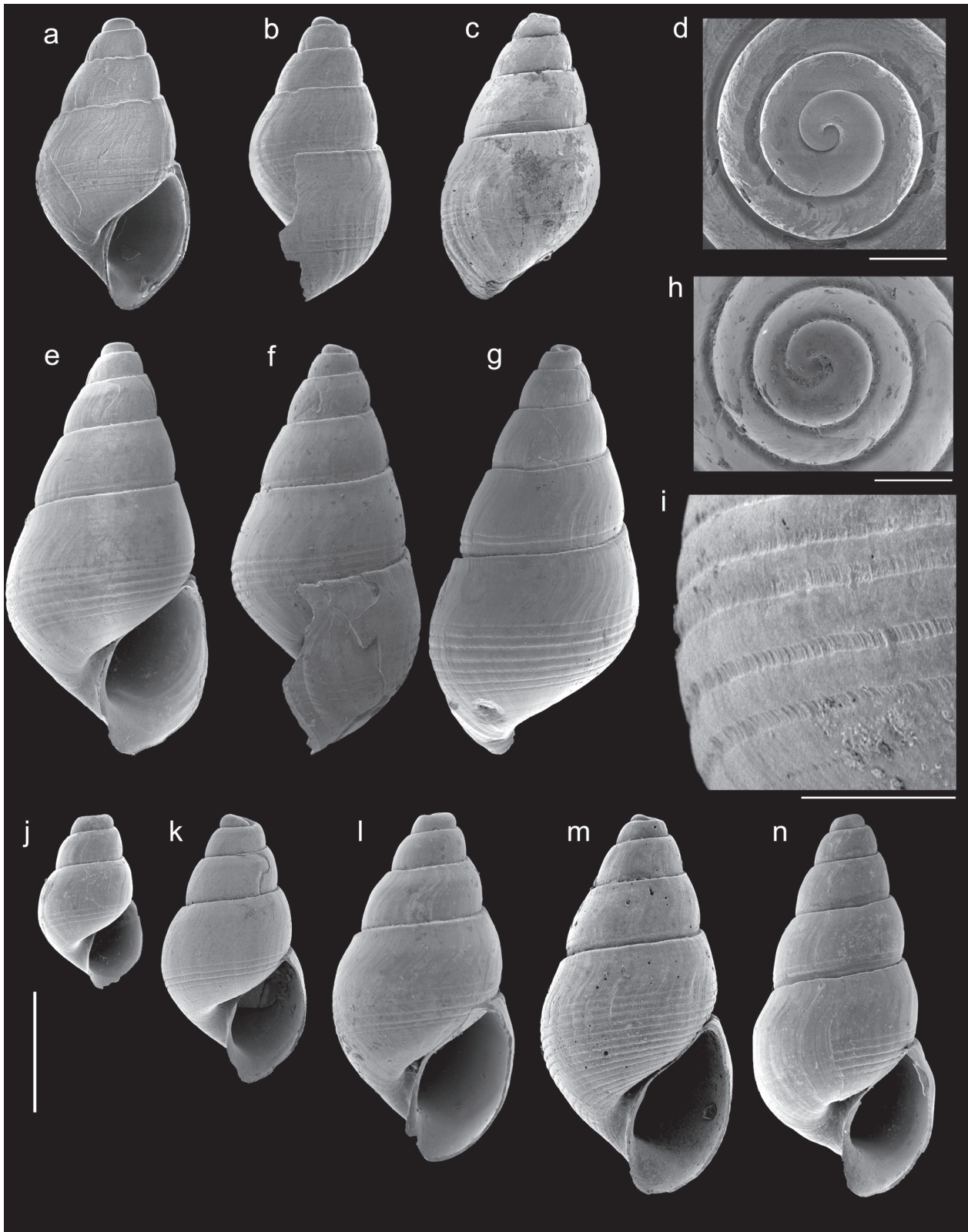
*Odostomia (Evalea) ryckea*: Dall 1927: 85. New synonym.

**Type material.** *Ondina semicingulata* – Syntypes: USNM 107913 [5 shells], from type locality; *Odostomia (Evalea) ryckea* – Holotype: USNM 108365, R/V Albatross, sta. 2415, off Georgia (30°44' N 79°26' W, 805.2 m depth) depth, on broken coral, coarse sand and broken shell bottom).

**Type locality.** R/V Albatross, sta. 2668, off Fernandina, Florida [Cumberland Island, off Georgia], (30°58'30"N, 79°38'30"W, 538 m depth).

**Material examined.** The syntypes and: Off Barbados: 183 m depth, USNM 87264, [1], Blake Expedition; Upper Pliocene (Lower Pinecrest) of Sarasota Co., Florida, USA: Harry Lee Private Collection [1]; Brazil: Amapá state: off Cape Orange, (4°27'54.0"N, 49°58'05.0"W, 160 m depth), MNRJ 26217, [2], R/V Sartro 25 coll., 13/x/2000; off Maracá Island, (2°21'00.0"N, 48°29'54.0"W, 72 m depth), MNRJ 27809, [2], R/V Columbus Iselin coll., 22/x/1991; Ceará state: off Camocim, (2.089S, 41.084W, 390 m depth): MNRJ 27823, [9]; MNRJ 27830, [1], R/V Natureza coll., 30/x/2001; Rio Grande do Norte state: off Touros, (4.861S, 35.134W, 384 m depth), MNRJ 27821, [7], R/V Natureza coll., 24/xi/2001; off Sibaúma, (6.234S, 34.876W, 510 m depth), MNRJ 27834, [2], R/V Natureza coll., 26/x/2001; Bahia state: off Itacaraé, (14.482S, 38.901W, 278 m depth), MNRJ 28264, [1], R/V Natureza coll., 02/vii/2001; off Salvador, (13.238S, 38.578W, 316 m depth), MNRJ 26258, [1], R/V Astro Garoupa, 25/vi/2002; Santa Catarina state: off Itajaí, (26°38'44.9"S, 46°51'54.2"W, 150 m depth), MNRJ 15318, [3], ii/2004.

**Redescription.** Shell small, thin, up to 3.2 mm, width ~50% of length; oblong ovate to biconical; color translucent white; spire regularly conical, ~30° angled, ~40% of shell length. Protoconch heterostrophic, helicoidal, with about one smooth whorl, intorted, oriented ~180° to teleoconch axis, immersed into first teleoconch whorl, with no visible nucleus; width about 210 µm; transition with teleoconch weak, hardly discernible. Teleoconch up to four stepped whorls, each whorl slightly convex, last whorl somewhat globose; suture deep, forming a narrow furrow. Axial sculptured absent, except for growth lines; spiral sculpture with very narrow spiral grooves of variable distribution and number; usually restricted to the periphery, near the area of implantation of the outer lip, extending anteriorly up to about 1/3 of last whorl and on the base; young shells with three-four very thin furrows; some adult shells with up to 20 furrows covering all base surface and extending anteriorly on last whorl more than half of its length, but not reaching anterior suture; adult shells with visible furrows just above suture; spiral furrows covered by microscopic axial threads. Aperture



**Figure 1.** Shells of *Ondina semicingulata*. **A.** Syntype (USNM 107913), in apertural view; **B.** same in lateral view; **C.** same in ventral view; **D.** same, detail of protoconch in apical view. **E.** From Rio Grande do Norte state (MNRJ 27821), in apertural view; **F.** same, lateral view; **G.** same, adaperatural view; **H.** same, detail of protoconch in apical view; **I.** same, detail of sculpture. **J.** From Brazil, Amapá state (MNRJ 27809), shell #1 in apertural view; **K.** same, shell #2 in ventral view. **L.** From Brazil, Bahia state, MNRJ 28264, in apertural view. **M.** From Brazil, Amapá state (MNRJ 26217), in ventral view. **N.** From Brazil, Rio Grande do Norte state (MNRJ 27834), in apertural view. Scale bars: whole shells (vertical bar): 1 mm; details (horizontal bar): 200  $\mu$ m.

elliptical-oblong, length about half of last whorl length, anteriorly elongated-rounded, posteriorly narrow and somewhat acute. Columellar margin slightly concave, without tooth. Outer lip thick. Umbilicus deep and wide, ranging from circular to wide chink.

**Geographic distribution.** USA: Florida (type locality); Barbados (present study); Brazil: Amapá, Ceará, Rio Grande do Norte, Bahia and Santa Catarina states (present study).

**Remarks.** Except for the features of soft parts, absent in the type specimens of *Acteon semicingulatus*, all characteristics agree with the diagnose provided by Høisæter (2014) for *Ondina*, including the oblong-ovate shell, oblong aperture and intorted protoconch. In comparison to the Eastern Atlantic species, which usually have more elongate shells, *O. semicingulata* has a wider shell, with biconical general shape. The original allocation in *Acteon* is rejected since *Acteonids* have a solid shell, with columellar tooth and rounded protoconch (Valdés 2008).

Høisæter (2014) discussed the high variability of the surface of the shell, being smooth or with variable incised spirals. According to this author, in a single species, the spirals may cover uniformly the whole shell, they may be confined to the lower half of each teleoconch whorl or the shell may be smooth and shiny.

*Ondina semicingulata* (Figures 1a–n, 2a–c) is strongly sculptured with spiral furrows (Figure 1i) restricted to the anterior 1/3 to half of the whorls. On earlier whorls, these lines are visible only above suture (Figure 1e–g), but on the last whorl, they are visible also below the periphery of whorl (Figure 1e), extending to the base (Figure 1g). The amount of lines on the last whorl (including the base) is variable, both ontogenetically and between shells with the same number of whorls.

Figure 1j–n illustrates shells of *O. semicingulata* in a growth series. The amount of spiral lines and strength of the spiral sculpture increase from shells of younger specimens (Fig. 1j–k) to adult ones (Fig. 1l–n). Besides these three adult specimens, with same number of whorls, exhibit variation in the sculpture, covering almost entire last whorl of the shell in Figure 1m.

*Odostomia (Evalea) rycklea* with type locality off Georgia is here considered a synonymy name of *Ondina semicingulata*, since it has identical shell shape and protoconch. Despite the eroded shell surface of the holotype (Figure 2a–c), the original description (Dall 1927) states the presence of spiral lines in the teleoconch whorls.

### *Ondina striata* (Verrill, 1880), comb. n.

Figure 2d–h

*Aclis striata*: Verrill 1880: 377; 1882: 528, pl. 58, fig. 13; Johnson 1989: 66, pl. 11, fig. 7.

*Odostomia (Menestho) striata*: Bartsch 1911: 435.

**Type material.** Lectotype (designated by Johnson 1989: 66): YPM 15757, missing; paralectotype: USNM

44820, USFC sta. 873, 183 m depth, off Newport, Rhode Island.

**Type locality.** Bay of Fundy, near Eastport, Maine, Verrill coll. 1868.

**Material examined.** Photographs of the paralectotype and of: USFC sta. 863, 33 m, Vineyard Sound, Rhode Island: YPM 15704 [1]; ANSP 102517 [1].

**Geographic distribution.** USA: Rhode Island (type locality), Maine.

**Remarks.** *Aclis striata* was described (Verrill 1880) based on two shells: from shallow water in the Bay of Fundy; and from deep-water off Newport, Rhode Island, by the USFC. Two years later, Verrill (1882) referred to the same two shells, adding station number information (USFC sta. 873) to the the deep-water shell. In this work, Verrill (1882: pl. 58, fig. 13) presented the drawing of a shell without indicating which one of the two syntypes.

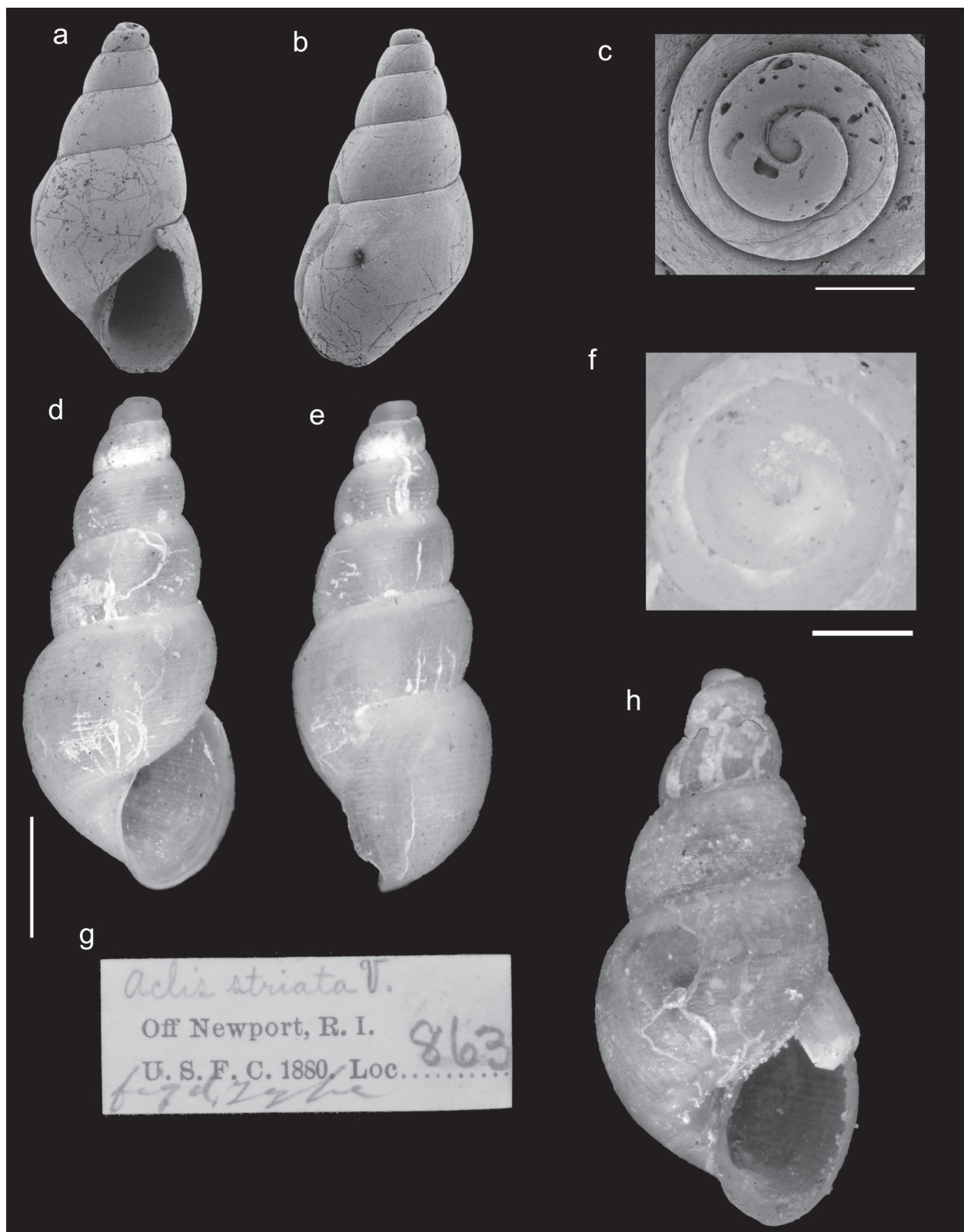
The type material of *Aclis striata* was studied by Johnson (1989: 66, pl. 11, fig. 7), who designated and figured the lectotype (YPM 15757, from the Bay of Fundy), and listed YPM 15704, from USFC sta. 873, as a paralectotype (but see comments below about its type status). After searching the YPM Molluscan Collection (E. Lazo-Wasen pers. comm.), it was noticed that the lectotype was missing (the vial was empty) and the label of the supposed paralectotype YPM 15704 (Figure 2h) mentions ‘USFC sta. 863’ (which is a shallow water station in the Vineyards Sounds, 33 m depth).

According to Johnson (1989: 15), Verrill sent the samples (types and other specimens) of the species described by himself to the National Museum of Natural History (USNM), keeping nevertheless, some duplicate specimens with him, which he later sold to YPM (Lazo-Wasen pers. comm.). Thus, it seems that the two original syntypes of *Aclis striata* were split by Verrill between the USNM and the YPM collections.

This is corroborated by the original label of USNM 44820 (Figure 2g) that states: “*Aclis striata* V. Off Newport, R. I. U.S.F.C. 1880”. This label has a hand-written indication of “figd. type” that corresponds to Verrill’s calligraphy (E. Lazo-Wasen pers. comm.); such “figd. type” (Figure 2d–e) matches perfectly the figured syntype by Verrill (1882: pl. 58, fig. 13), and thus, it must be considered the paralectotype from deep-water (USFC sta. 873), while the missing lectotype (figure in Johnson 1989: pl. 11, fig. 7), by the other hand, is a smaller shell.

Thus, the shell YPM 15704 (Figure 2h), considered by Johnson to be a paralectotype has no type status. As indicated by its label, it was dredged by USFC is sta. 863, in which an additional shell (ANSP 102517) was also collected.

The only remaining question is the reference to USFC sta. 863 in the original label of specimen USNM 44820 (Figure 2g). We believe that such information was mistakenly inserted by someone later since it has a different



**Figure 2.** **A.** Shell of *Odostomia (Evalea) ryckea*, holotype (USNM 108365) in ventral view; **B.** same, in adapertural view; **C.** same, detail of protoconch in apical view. **D.** Shell of *Ondina striata*, paralectotype (USNM 44820), in apertural view; **E.** same, in adapertural view; **F.** same, detail of protoconch in apical view. **G.** Original label of USNM 44820, showing a hand-written indication of “figd. type” by A. E. Verrill.; **H.** *Ondina striata*, a non-type shell (YPM 15704) erroneously indicated as lectotype by Johnson (1989). Scale bars: whole shells (vertical bar): 1 mm; detail (horizontal bar): 200  $\mu$ m.

handwriting and Verrill (1880, 1882) did not list material from that station.

*Ondina striata* was originally described as belonging to *Aclis* due to its spiral striae and was later transferred to the Pyramidellidae genus *Odostomia* (*Menestho*) by Bartsch (1911: 435) without any comments on this taxonomic rearrangement. The species has all features that characterize the genus *Ondina* (Høisæter 2014) and is very similar to the type species of the genus.

***Ondina hendersoni* (Bartsch, 1909), comb. n.**

Figure 3a, b

*Odostomia* (*Iolaea*) *hendersoni*: Bartsch 1909: 101, pl. 13, fig. 43.

**Type material.** Holotype: USNM 203813.

**Type locality.** Woods Hole, Massachusetts.

**Material examined.** Photographs of the holotype.

**Geographic distribution.** USA: Massachusetts (type locality).

**Remarks.** The holotype of *Ondina hendersoni* (Figure 3a, b) matches the general features of the genus *Ondina*, being however, larger with more globose whorls. The typical spiral lines of the genus are very numerous in the figured holotype and especially evident on the lower half of the teleoconch whorls.

This species was recorded from Texas by Odé (1994) as *Amoura* cf. *hendersoni* but the drawing of the shell (Odé 1994: 48, fig. 4) exhibits a slender shell, with few spiral lines above suture, which resembles *O. stocki* (see below).

***Ondina stocki* (De Jong & Coomans, 1988), comb. n.**

Figure 3c–e

*Evalea stocki*: De Jong and Coomans 1988: 124, pl. 6, fig. 655.

?*Amoura hendersoni* auct. non Bartsch 1909: Gundersen (1998: 13, figured).

?*Amoura* cf. *hendersoni* auct. non Bartsch 1909: Odé (1994: 39, fig. 4).

**Type material.** Holotype: ZMA.MOLL. 138319 [original publication indicates ZMA 3.87.105]; two paratypes: ZMA.MOLL. 138320.

**Type locality.** Curaçao/Aruba [according to Jong and Coomans (1988: 124), the holotype was selected from mixed material from those two localities].

**Material examined.** Photographs of the types.

**Geographic distribution.** Curaçao/Aruba (type locality).

**Remarks.** *Ondina stocki* (Figure 3c–e) was originally described in *Evalea*, based on a sample of shells from Aru-

ba/Curaçao; the original illustration is a simple drawing that precludes a precise generic allocation, but the photographs of the holotype (Figure 3c) and of a young and an adult paratypes (Figure 3d–e) clearly shows that this species belong in the genus *Ondina*. The shell shape is similar to *Ondina hendersoni*, but the shell is narrower, and the spiral grooves are less numerous.

Lee (2009) recorded *Evalea stocki* from Jacksonville Beach, Florida, (USA) based on a young specimen. The author, in the same work, referred to a color illustration of that species, published by Gundersen (1998), but named by Gundersen (1998) as *Amoura hendersoni*. The figured shells from Sanibel Island in Gundersen (1998) and that from Jacksonville in Lee (2009) clearly can be ascribed to the genus *Ondina*, but the images provided by the authors as well as the drawing of *Amoura* cf. *hendersoni* by Odé (1994), do not allow a precise separation between *O. stocki* or *O. hendersoni*. Also, the simple drawing of *Amoura* cf. *hendersoni* from Texas in Odé (1994) does not allow a conclusive identification, in spite of the pattern of spiral grooves resembling that found in *O. stocki*.

Therefore, we consider that the only confirmed occurrence of *O. stocki* is that restricted to the type locality area.

***Ondina emeryi* (Bartsch, 1955), comb. n.**

*Odostomia* (*Evalea*) *emeryi* Bartsch, 1955: 84, pl. 17, fig. 1.

*Evalea emeryi*: Odé and Speers (1972: 11, figs 13–14); Tunnel Jr. et al. (2010: 364, figured); Rosenberg et al. (2009: 672).

*Amoura emeryi*: Odé (1994: 40, fig. 5).

**Type material.** Holotype: USNM 561672 (Bartsch 1955: pl. 17, fig. 1); paratype: ANSP IP 31335. All from type locality.

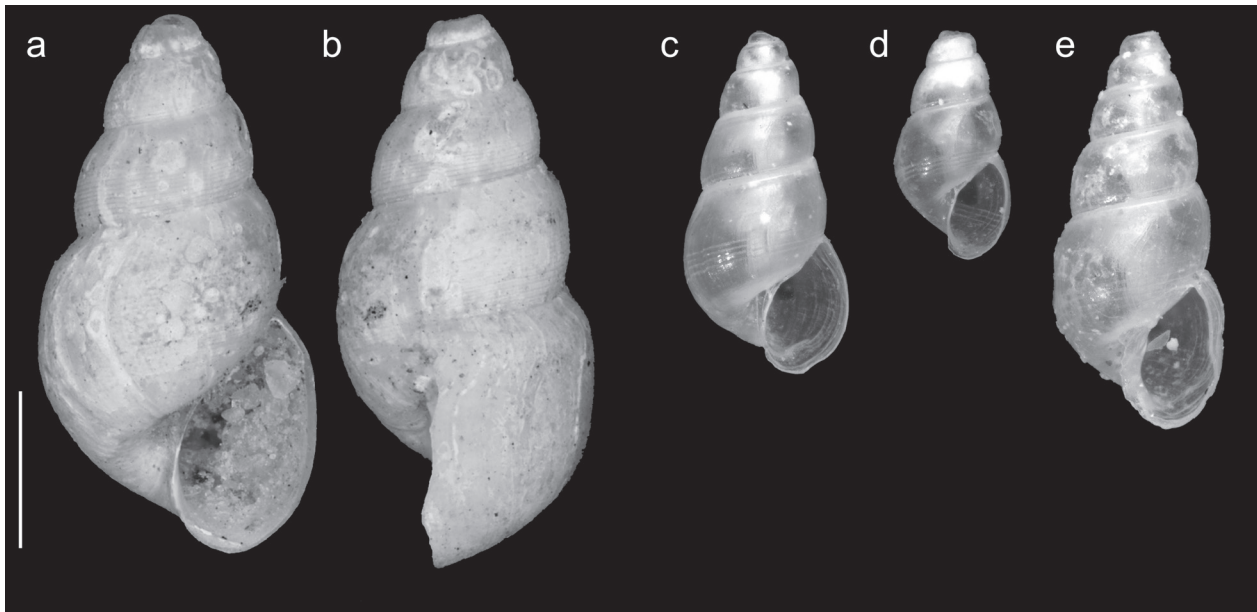
**Type locality.** Pliocene of North St. Petersburg, Florida (type locality); Texas (Odé and Speers (1972), Odé (1994), Tunnel Jr. et al. (2010), Rosenberg et al. (2009).

**Remarks.** This species was originally described from the Pliocene of Florida and later recorded from the Gulf of Mexico by Odé and Speers (1972), Odé (1994), Tunnel Jr. et al. (2010) and Rosenberg et al. (2009).

**Geographic distribution.** USA: Pliocene of Florida (type locality);

## Discussion

Knowledge of species richness, geographic distribution and accurate taxonomic status of marine molluscan fauna from Brazil is still far from satisfactory. Traditionally, the marine molluscan diversity was compiled in catalogues (e.g. Rios 1994, 2009), with the main purpose of working as identification guides, with a brief description of each taxa, and an image. Despite the recent contributions to the Brazilian molluscan diversity (e.g. Pimenta et al. 2004a),



**Figure 3.** **A.** Shell of *Ondina hendersoni*, holotype (USNM 203813) in apertural view; **B.** same, in lateral view. **C.** Shell of *Ondina stocki*, holotype (ZMA.MOLL. 138319) in apertural view [photo: Naturalis, Jeroen Goud. **D.** *Ondina stocki*, paratype (ZMA.MOLL. 138320), smaller shell in apertural view; **E.** same, bigger shell in apertural view. Scale bar: 1 mm.

several taxa remain poorly known, and the revision of genera usually gives rise to the discover of new records and/or new species (e.g. Fernandes and Pimenta 2011). This is especially true to the marine micromollusks, as discussed by Pimenta and Geiger (2015).

In the last two decades, the Pyramidellidae species richness from Brazil raised from 35 previously recorded species (Rios 1994) to 94 species, including several new species, after the works by Pimenta (2012), Pimenta and Absalão (2001, 2002, 2004a, 2004b), Pimenta et al. (2008, 2009, 2011). Nevertheless, there is still many species of this family to be described, especially from deep-water (Pimenta pers. obs.).

On the other hand, acteonids also lack dedicated studies in the Western Atlantic, where few works have been published (Rehder 1939, Marcus 1972, 1974, Cunha 2011, Zelaya et al. 2011). Interestingly, recent studies have revealed new genera (Bouchet 1975, Salvador and Cunha 2016) and species (Smriglio and Mariottini 1996, Valdés 2008, Cunha and Simone 2018) from around the world.

For both families, re-examination of type material is imperative and in the case of *Acteon semicingulatus*, its reassignment to the Pyramidellidae revealed the first record of the genus *Ondina* in the Western Atlantic.

#### On the occurrence of *Ondina* in the Western Atlantic

The most complete and recent account on the taxonomy of *Ondina* was provided by van Aartsen (1987), Waren (1991) and Høisæter (2014), based on European species. Høisæter (2014) figured the type species *Ondina semionata* de Folin, 1870 (= *Ondina warreni*) and discussed the intraspecific variation found in the genus.

According to the works by van Aartsen (1987), van Aartsen et al. (1998), Peñas et al. (1996), Peñas and

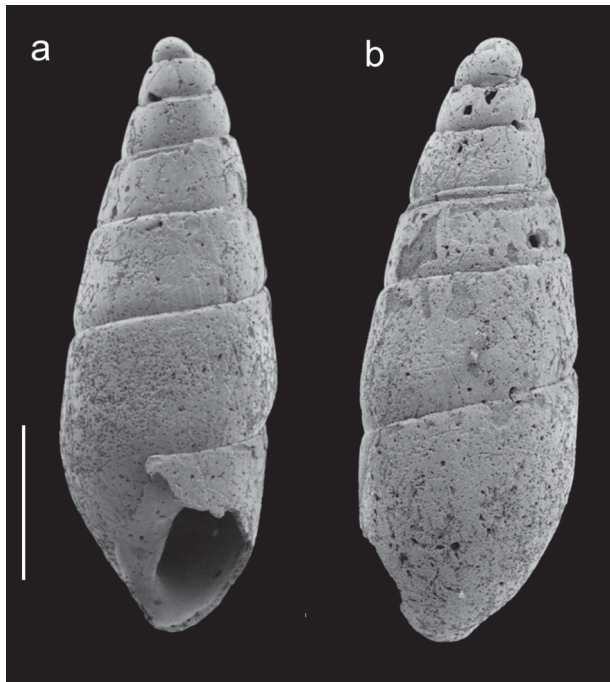
Rolán (1999), Warén (1991), and Høisæter (2014), *Ondina* is mainly distributed in the Eastern Atlantic, both in temperate and tropical latitudes, including the Northern European Seas, the Lusitanian, the Mediterranean Sea and West African Transition Provinces, while a single species is known from the temperate northern Pacific, in the coast of Japan (Hori and Fukuda 1999).

The present records of *Ondina semicingulata*, *O. emeryi*, *O. stocki* and *O. hendersoni* in the western Atlantic broadens the distribution of the genus including geographical areas that go from Georgia (north-western Atlantic) and south Brazil (south western Atlantic), which gives the genus a wider latitudinal range in the western Atlantic when compared to its distribution in the eastern part of the Atlantic. *Ondina semicingulata*, besides presenting a wider distribution in the western Atlantic, also presents a larger bathymetric range from 72–500 m depth. *Ondina mosti* van Aartsen, Gittenberger & Goud, 1998 is the only eastern Atlantic species with similar bathymetry (119–405 m), while the other species are restricted to littoral and continental shelf depths (Aartsen et al. 1998).

#### Evaluation of the occurrence of *Evalea* in the Western Atlantic

Aartsen (1987) evaluated the generic allocation of several European odostomids species previously included in *Evalea* and based on the absence of a well-developed columellar tooth, transferred them to *Ondina*. This criterion was followed by Høisæter (2014).

According to Aartsen and Menkhorst (1996: 51–52), *Evalea* was confused by Nordsieck (1972), most likely because of the lack of an illustration of the type species *Odosstomia (Evalea) elegans* A. Adams, 1860. Aartsen and Menkhorst (1996: fig. 11) designated a neotype for



**Figure 4.** A. Shell of *Odostomia fernandina*, holotype (USNM 108053) in apertural view; B. same, in adapertural view. Scale bar: 1 mm.

the type species of *Evalea* which shows a shell with coarse spiral striae covering all whorls and a visible columellar tooth.

According to MolluscaBase (2018), *Evalea* has 18 species and it is not present in European waters (e.g. East Atlantic and Mediterranean), being restricted to the Pacific coast of Japan, New Zealand, Indian South Africa, and to the western Atlantic.

In the present work, an attempt was made to evaluate the presence of *Evalea* in the western Atlantic by checking the previous species recorded in that genus and comparing them to the type species as illustrated by Aartsen (1996). According MolluscaBase (2018), the following species are recorded from the western Atlantic: *Evalea fernandina* (Bartsch, 1927), *E. ryclea* (Bartsch, 1927), *E. emeryi* (Bartsch, 1955), and *E. stocki* De Jong & Coomans, 1988; besides that, Odé (1994) recorded an additional taxon as “*Evalea* sp. indet. A”.

As demonstrated above, *Evalea stocki*, *E. ryclea* (= *O. semicinctulata*) and *E. emeryi* belong in fact to the genus *Ondina*. As for the other species we do not have at present enough evidence to critically discuss their generic placement.

*Odostomia (Evalea) fernandina* (Dall, 1927: 85) was originally described in *Odostomia* and it has an elongate shell with whorls with an almost rectilinear outline. Although the holotype, USNM 108053, (Figure 4a, b) is eroded and has a partially broken outer lip, it is possible to distinguish from *Evalea* by the absence of spiral sculpture and columellar tooth. However, it does not seem to belong to *Ondina*, because of the different protoconch which is not fully immersed. Thus, until further evidence

is available we suggest this species to be kept in the genus *Odostomia*. The record of *Evalea* sp. A by Odé (1994: 46, fig. 8) is considered doubtful because in the drawing provided by the author, characters that could relate the specimen to *Evalea* such as the spiral sculpture throughout the shell and the presence of a columellar fold, are difficult to interpret.

Therefore, based on previous studies (e.g. Høisæter 2014) and our own results it is here suggested that the genus *Evalea* is absent in the Atlantic Ocean.

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## References

- Abbott RT (1974) American Seashells. The Marine Mollusca of the Atlantic and Pacific coasts of North America. Van Nostrand Reinhold Company, New York.
- Adams A (1860) Mollusca Japonica: New species of *Odostomia*. The Annals and magazine of natural history 4 série 6(31–36): 20–22. <https://biodiversitylibrary.org/page/2267089>
- Albano PG, Sabelli B, Bouchet P (2011) The challenge of small and rare species in marine biodiversity surveys: microgastropod diversity in a complex tropical coastal environment. Biodiversity and Conservation 20: 3223–3237. <https://doi.org/10.1007/s10531-011-0117-x>
- Bartsch P (1909) Pyramidellidae of New England and the adjacent region. Proceedings of the Boston Society of Natural History 34(4): 67–113.
- Bartsch P (1911) New mollusks of the genus *Aclis* from the North Atlantic. Proceedings of the United States National Museum 40(1829): 435–438. [pl. 59]
- Bartsch P (1955) The pyramidellid mollusks of the Pliocene deposits of North St. Petersburg, Florida. Smithsonian miscellaneous collections 125(2): 1–102.
- Bouchet P (2011) Pyramidellidae. MolluscaBase (2018). [accessed through: World Register of Marine Species. <http://www.marinespecies.org/aphia.php?p=taxdetails&id=162> on 2018–01–23]



- Bouchet P (1975) Opisthobranches de profondeur de l'Océan Atlantique: 1. Cephalaspidea = Deep-sea opisthobranches from the Atlantic Ocean: 1. Cephalaspidea. *Cahiers de Biologie Marine* 16(3): 317–365.
- Cunha CM (2011) A new species of *Acteon* (Opisthobranchia: Acteonidae) from Northeast Brazil. *Zoologia* 28: 229–232. <https://doi.org/10.1590/S1984-46702011000200012>
- Cunha CM, Simone LRL (2018) A new species of the genus *Rapturella* (Gastropoda: Acteonidae) from southeast Brazil. *Zootaxa*. [in press]
- Dall WH (1927) Small shells from dredgings off the southeast coast of the United States by the United States Fisheries Steamer 'Albatross' in 1885 and 1886. *Proceedings of the United States National Museum* 70(2667): 1–134. <https://doi.org/10.5479/si.00963801.70-2667.1>
- de Folin L (1870) D'une méthode de classification pour les coquilles de la famille des Chemnitzidae. *Annales de la Société Linneenne de Maine-et-Loire* 12: 191–202. <http://www.biodiversitylibrary.org/page/34137448>
- Dinapoli A, Klussmann-Kolb A (2010) The long way to diversity – phylogeny and evolution of the Heterobranchia (Mollusca: Gastropoda). *Molecular Phylogenetics and Evolution* 55: 60–76. <https://doi.org/10.1016/j.ympev.2009.09.019>
- Fernandes MR, Pimenta AD (2011) Taxonomic review of *Metaxia* (Gastropoda: Triphoridae) from Brazil, with description of a new species. *Zoologia* 28(6): 819–830. <https://doi.org/10.1590/S1984-46702011000600016>
- Geiger DL, Marshall BA, Ponder WF, Sasaki T, Warén A (2007) Techniques for collecting, handling, preparing, storing and examining small molluscan specimens. *Molluscan Research* 27(1): 1–50.
- Gundersen R (1998) The seashells of Sanibel and Captiva Islands. Published privately, Racine, Wisconsin, 1–32.
- Høisæter T (2014) The Pyramidellidae (Gastropoda, Heterobranchia) of Norway and adjacent waters. A taxonomic review. *Fauna Norv* 34: 7–78. <https://doi.org/10.5324/fn.v34i0.1672>
- Hori S, Fukuda H (1999) New species of the Pyramidellidae (Orthogastropoda: Heterobranchia) from the collections of the Yamaguchi Museum and the Hagi City Museum. *Venus* 58(4): 175–190.
- Johnson RI (1989) Molluscan taxa of Addison Emery Verrill and Katharine Jeannette Bush, including those introduced by Sanderson Smith and Alpheus Hyatt Verrill. *Occasional papers on mollusks* 5(67): 1–144.
- Jong KM de, Coomans, HE (1988) Marine Gastropods from Curacao, Aruba and Bonaire. E. J. Brill, Leiden, 261 pp. [47 pls]
- Lee HG (2009) Marine shells of Northeast Florida. Shell Club, Jacksonville, 204 pp. [19 pls]
- Marcus E (1972) On some Acteonidae (Gastropoda, Opisthobranchia). *Papéis Avulsos de Zoologia* 25(19): 167–188.
- Marcus E (1974) On some Cephalaspidea (Gastropoda: Opisthobranchia) from the Western and middle Atlantic warm waters. *Bulletin of Marine Science* 24(2): 300–371.
- MolluscaBase (2018) MolluscaBase. <http://www.molluscabase.org> [2018-09-18]
- Nordsieck F (1972) Die Europäischen Meeresschnecken Opisthobranchia mit Pyramidellidae; Rissoacea. Gustav Fischer, Stuttgart, 327 pp.
- Odé H, Speers AB (1972) Notes concerning Texas beach shells – Superfamily Pyramidellacea, Part II. The odostomiid genera and the genus *Longchaesus*. *Texas conchologist* 9(1): 11–17.
- Odé H (1994) Distribution and records of the marine Mollusca in the Northwest Gulf of Mexico (A continuing monograph: Superfamily Pyramidelloidea, Family Pyramidellidae Part III). *Texas conchologist* 30(2): 38–50.
- Peñas A, Templado J, Martínez JL (1996) Contribución al conocimiento de los Pyramidelloidea (Gastropoda: Heterostropha) del Mediterráneo español. *Iberus* 14: 1–82.
- Peñas A, Rolán E (1999) La familia Pyramidellidae Gray, 1840 (Mollusca, Gastropoda, Heterostropha) en África Occidental. 4. los géneros *Megastomia*, *Odostomia*, *Noemiamea* y *Syrnola*. *Iberus* 5(suppl): 1–150.
- Peñas A, Rolán E (2010) Deep water Pyramidelloidea of the tropical South Pacific: *Turbonilla* and related genera. In: Gofas S (Ed.) *Tropical Deep Sea Benthos* 26. *Mémoires du Muséum National d'Histoire Naturelle* 200: 1–436.
- Pimenta AD (2012) Four new species and two new records of Odostomiinae (Gastropoda: Pyramidellidae) from Brazil. *Zoologia* 29(5): 439–450. <https://doi.org/10.1590/S1984-46702012000500007>
- Pimenta AD, Absalão RS (2001a) Taxonomic revision of the species of *Turbonilla* Risso, 1826 (Gastropoda, Heterobranchia, Pyramidellidae) with type localities in Brazil, and description of a new species. *Basteria* 65(1–3): 69–88.
- Pimenta AD, Absalão RS (2001b) The genera *Bacteridium* Thiele, 1929 and *Careliopsis* Mörch, 1875 (Gastropoda: Pyramidellidae) from the east coast of South America. *Bollettino malacologico* 37(1–4): 41–48.
- Pimenta AD, Absalão RS (2002) On the taxonomy of *Turbonilla puncta* (C. B. Adams, 1850) (Gastropoda, Pyramidellidae), with the description of a new species from Brazil and remarks on other western Atlantic species. *Zootaxa* 78: 1–16. <https://doi.org/10.11646/zootaxa.78.1.1>
- Pimenta AD, Absalão RS (2004a) Fifteen new species and ten new records of *Turbonilla* Risso, 1826 (Gastropoda, Heterobranchia, Pyramidellidae) from Brazil. *Bollettino malacologico* 39(5–8): 113–140.
- Pimenta AD, Absalão RS (2004b) Review of the genera *Eulimastoma* Bartsch, 1916 and *Egila* Dall & Bartsch, 1904 (Mollusca, Gastropoda, Pyramidellidae) from Brazil. *Zoosystema* 26(2): 157–17.
- Pimenta AD, Absalão RS, Alencar AS (2000) *Odostomella carceralis* spec. nov. from Ilha Grande, SE Brazil (Gastropoda: Heterobranchia, Pyramidellidae). *Basteria* 64: 65–70.
- Pimenta AD, Santos FN, Absalão RS (2008) Review of the genera *Ividia*, *Folinella*, *Oscilla*, *Pseudoseilla*, *Tryptichus* and *Peristichia* (Gastropoda, Pyramidellidae) from Brazil, with descriptions of four new species. *Veliger* 50(3): 171–184.
- Pimenta AD, Absalão RS, Miyaji C (2009) A taxonomic review of the genera *Boonea*, *Chrysallida*, *Parthenina*, *Ivara*, *Fargoa*, *Mumiola*, *Odostomella* and *Trabecula* (Gastropoda, Pyramidellidae, Odostomiinae) from Brazil. *Zootaxa* 2049: 39–66.
- Pimenta AD, Geiger DL (2015) Taxonomic revision of the Anatomidae (Mollusca: Gastropoda: Vetigastropoda) from Brazil, with description of four new species. *Malacologia* 59(1): 135–175. <https://doi.org/10.4002/040.059.0109>
- Pimenta AD, Santos FN, Absalão RS (2011) Taxonomic revision of the genus *Eulimella* (Gastropoda, Pyramidellidae) from Brazil, with description of three new species. *Zootaxa* 3063: 22–38.
- Poirier HP (1954) An up-to-date systematic list of 3200 seashells from Greenland to Texas: translation, explanation, and gender of their names. Brooklyn[?], 434 pp.
- Rasband WS (2012) ImageJ. U. S. National Institutes of Health, Bethesda.
- Rehder HA (1939) New marine mollusks from the Western Atlantic. *Nautilus* 53(1): 16–21
- Rios E (1994) *Seashells of Brazil*. Second edition. Editora da Fundação Universidade Rio Grande, Rio Grande, 368 pp.
- Rios E (2009) *Compendium of Brazilian sea shells*. Evangraf, Rio Grande, 668 pp.

- Rosenberg G, Moretzsohn F, García EF (2009) Gastropoda (Mollusca) of the Gulf of Mexico. In: Felder DL, Camp DK (Eds) Gulf of Mexico—Origins, Waters, and Biota. Biodiversity. Texas A&M University Press, College Station, 579–699.
- Salvador R, Cunha CM (2016) Taxonomic revision of the fossil genera *Bulimactaeon*, *Hemiauricula* (= *Liocarenus*) and *Nucleopsis*, with description of a new Recent genus and species (Gastropoda: Heterobranchia: Acteonidae). *Journal of Molluscan Studies* 82(3): 472–483. <https://doi.org/10.1093/mollus/eyw010>
- Smriglio C, Mariottini P (1996) Central Tyrrhenian Sea Mollusca: XI. Description of *Callostracon tyrrhenicum* sp. nov. (Gastropoda, Acteonidae) and remarks on other Mediterranean species of the family. *Basteria* 60: 183–193.
- Tunnell Jr JW, Andrews J, Barrera NC, Moretzsohn F (2010) Encyclopedia of Texas seashells. Identification, ecology, distribution & history. Texas A&M University Press, College Station, 512 pp.
- Valdés Á (2008) Deep-sea “cephalaspidean” heterobranchs (Gastropoda) from the tropical southwest Pacific. In: Héros V, Cowie RH, Bouchet P (Eds) Tropical Deep-Sea Benthos, Volume 25. *Annales du Muséum d’histoire naturelle* 196, 587–792.
- van Aartsen JJ (1984) The Pyramidellid genera described by the Marquis L. de Folin. *Bollettino malacologico* 20: 5–8.
- van Aartsen JJ (1987) European Pyramidellidae: III. *Odostomia* and *Ondina*. *Bollettino malacologico* 23(1–4): 1–34.
- Van Aartsen JJ, Menkhorst HPMG (1996) Nordsieck’s Pyramidellidae (Gastropoda Prosobranchia): a revision of his types. Part 1: The genera *Chrysallida*, *Ondina* (s.n. *Evalea*) and *Menestho*. *Basteria* 60: 45–56.
- Van Aartsen JJ, Gittenberger E, Goud J (1998) Pyramidellidae (Mollusca, Gastropoda, Heterobranchia) collected during the Dutch CANCAP and MAURITANIA expeditions in the south-eastern part of the North Atlantic Ocean (part 1). *Zoologische Verhandelingen* 321: 1–57.
- Verrill AE (1880–1881) Notice of recent addition to the marine Invertebrata of the northeastern coast of America, with descriptions of new genera and species and critical remarks on others. Part II - Mollusca, with notes on Annelida, Echinodermata, etc, collected by the United States Fish Commission. *Proceedings of the United States National Museum* 3: 356–409. [pp. 356–400 issued December 1880, 401–409 January 1881]
- Verrill AE (1882) Catalogue of marine Mollusca added to the fauna of the New England region, during the past ten years. *Transactions Connecticut Academy of Arts and Sciences* 5(2): 447–587. [pl. 57–58]
- Zelaya DG, Schejter L, Ituarte C (2011) *Neactaeonina argentina*, new species, and family placement of the genus *Neactaeonina* Thiele, 1912 (Mollusca: Gastropoda). *Malacologia* 53(2): 251–263. <https://doi.org/10.4002/040.053.0204>
- Warén A (1991) New and little known Mollusca from Iceland and Scandinavia. *Sarsia* 76(1–2): 53–124. <https://doi.org/10.1080/00364827.1991.10413466>

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