

The shouldered species of the Rissoininae (Mollusca: Rissooidea) in the Caribbean with the description of three new species

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PALABRAS CLAVE. Rissooidea, Rissoininae, *Rissoina*, *Schwartziella*, especies nuevas, Cuba, Yucatán, Nicaragua.

ABSTRACT. The Caribbean species of Rissoininae which have a shoulder on the subsutural part of the whorls are studied. New information on some already known species is reported, and three new species are described as new and compared with the ones that are morphologically close.

RESUMEN. Se estudian las especies de Rissoininae del Caribe que tienen un hombro en la porción subsutural de las vueltas. Se aporta información sobre algunas especies ya conocidas y se describen tres nuevas especies, que se comparan con las morfológicamente más próximas.

INTRODUCTION

The species of the superfamily Rissooidea Gray, 1847 occur in radiations in several biogeographical provinces. Likewise the subfamily Rissoininae Stimpson, 1865 exhibits diversification in many geographical areas. In the eastern Atlantic the group is very important as exemplified in the Cape Verde Archipelago with 29 species (Rolán & Luque, 2000).

In the Caribbean, the species of the subfamily are comparably numerous with 23 species recorded from Cuba in Espinosa et al. (1995). In recent years new species have been named: two in De Jong & Coomans (1988), one in Rolán (1998), four in Espinosa & Ortea (2002), one in Rolán & Fernandez-Garcés (2009a), one in Rolán, Fernandez-Garcés & Lee (2009), and taxonomic reviews have been published such as Rolán & Fernandez-Garcés (2009b).

In the present work, we study those species of the subfamily which have shouldered whorls, an easily distinguished salient quite possibly without phylogenetic significance.

The material examined was collected by the junior author (RFG) diving and dredging in Cuba during many collecting trips spanning a long period of time, and also by the first author (ER) in some trips to Cuba (in 1978, 1984, 1990, 2008). Other samples were obtained by the first author during a trip to Yucatan (Mexico) in 1994 and January 1997 on a research expedition to study the marine biodiversity of the

Miskitos Archipelago (Nicaragua) organized by the Universidad Autónoma de Madrid.

The material from these collections along with museum material, principally from Cuba, possessing a subsutural shoulder are studied and described in detail. Some species new to science are named in the present work.

Abbreviations

MNCN: Museo Nacional de Ciencias Naturales, Madrid

MNHN: Museum national d'Histoire naturelle, Paris

MHNS: Museo de Historia Natural, Santiago de Compostela

BMNH: Natural History Museum, London

IES: Instituto de Ecología y Sistemática, La Habana

IdO: Instituto de Oceanología, La Habana

CFG: Collection Fernández-Garcés, Cienfuegos

CHL: Collection Harry G. Lee, Florida

SEM: Scanning Electron Micrograph

SYSTEMATICS

Superfamily **RISSEOIDEA** Gray, 1847

Family **RISSOIDAE** Gray, 1847

Subfamily **RISSOININAE** Stimpson, 1865

Genus *Schwartziella* Nevill, 1884

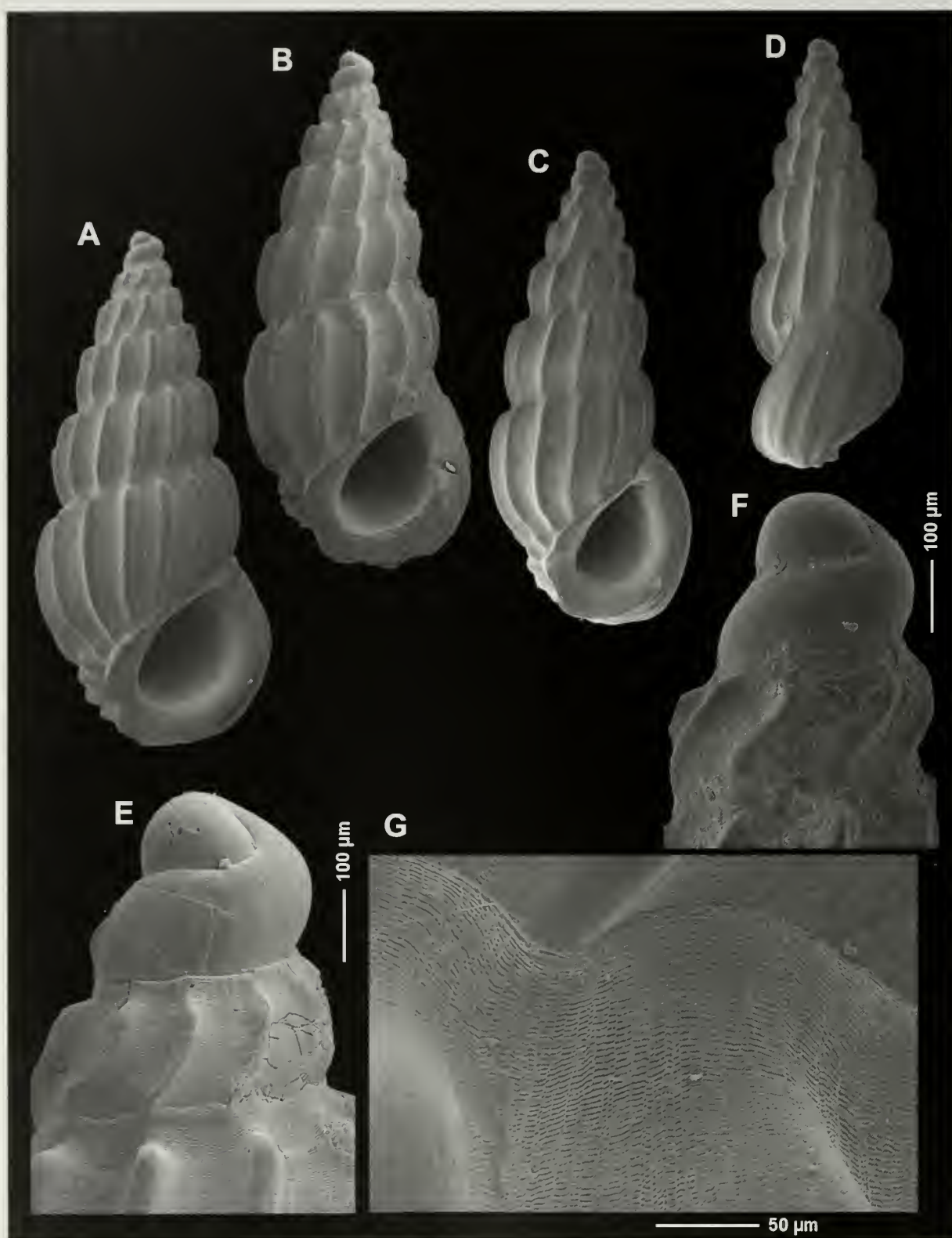


Figure 1

A-D. *Schwartziella fischeri* (Desjardin, 1949); **A.** Neotype, 3.5 mm, Cuba (MNH); **B.** Shell, 3.5 mm, María la Gorda, Cuba (MHNS); **C-D.** Shells, 3.3, 3.1 mm, Tobago (CHL); **E-F.** Protoconchs; **G.** Microsculpture.

Schwartziella fischeri (Desjardin, 1949)

Figs 1A-G

Type material. The type material, supposedly in the MNHN was not found (Virginie Héros, pers. comm.). As the separation of these species is based in minor details we have designated a neotype (Fig. 1A) which is deposited in MNHN (catalogue number MNHN 23016).

Other material examined. Several hundred shells from Cuba: Canarreos, María la Gorda, Cienfuegos Bay, etc.

Description. Shell (Figs 1A-D), see Desjardin (1949). The mention of 8 whorls in the original description is based in counting from the beginning of the protoconch, not in the Verduin (1977: 92) method. It is important to point out the mention of a funicle near the base derived from an inflexion of the axial ribs. The protoconch (Figs 1E-F) has about 1.2 whorls and a diameter between 240-280 µm. The microsculpture (Fig. 1G) is minute and covers all the entire shell.

Distribution. Desjardin (1949) described this species from Cuba, Vokes & Vokes (1983) from Mexico, and Redfern (2001) from Bahamas and in the CHL there are shells from Tobago. The records of De Jong & Coomans (1988) from ABC Islands, Leal (1991) from Trindade, and Rios (1994) from Brazil, are dubious since the shells shown do not conform to that of the original description.

Schwartziella vanpeli De Jong & Coomans, 1988

Figs 2A-B

Rissoina vanpeli De Jong & Coomans, 1988: 25, pl. 1, fig. 108.

Type material. Holotype in ZMA (3.87.0.56) 3.8 mm.

Other material examined. About 60 shells from Cienfuegos, Cuba (MHNS, CFG).

Description. See De Jong & Coomans (1988). We can now add information on the protoconch (Fig. 2B): 310 µm in diameter, one whorl and 4 spiral cords.

Distribution. Curaçao and Aruba in the original description. Leal (1991) from Vitória Seamount and Abrolhos Reef Complex. We have material from Cuba.

Remarks. The species was figured only by drawings in the original description (De Jong & Coomans, 1988), and later, Leal (1991) showed SEMs of the shell and protoconch. We agree with this information and we also present photographs of the shell (Fig. 2A) and protoconch (Fig. 2B), showing that the presence of spiral threads. The only "Caribbean" species with a

stepped profile previously reported was *Schwartziella turricula* Pease, 1861, but this is a Pacific species (represented in Leal, 1991), and its occurrence in the Caribbean is probably erroneous based on misidentification.

Schwartziella abacocubensis

Espinosa & Ortea, 2002

Figs 2C-E

Schwartziella abacocubensis Espinosa & Ortea, 2002. *Avicennia*, 15: 143, Figs 1D.

Type material. Holotype in IdO (represented in Espinosa & Ortea (2002). Paratype in CFG (Fig. 2C).

Other material examined. About 15 shells from Guanahacabibes (MHNS).

Description. Shell (Fig. 2C): see Espinosa & Ortea (2002). In the original description this species is shown only by two poor quality photographs, and it is mentioned that the protoconch has 1¼-1½ whorls. We have examined material from Cuba. The protoconch (Fig. 2D) is smooth, with a diameter of about 350 µm. The microsculpture of the teleoconch (Fig. 2E) is similar what is found in other species. The holotype measures 4.0 mm. Our material is comprised of slightly smaller shells (3.6-3.9 mm).

Distribution. Only known from Cuba and Bahamas (Redfern, 2001).

Remarks. This species is very similar to *S. vanpeli*, but the latter has obvious spiral cords on the protoconch. It is somewhat similar to *S. fischeri*, but the latter has a nodulous spiral cord near the base.

Schwartziella luisalvarezii spec. nov.

Figs 3A-F

Type material. Holotype (Fig. 3A) in the MNCN (15.05/53580). Paratypes in the following collections: MNHN (1, Fig. 3B), MHNS (5), CFG (1).

Other material studied. 2 s, 5 juveniles, Cayo Witties, Nicaragua (MHNS).

Type locality. Puerto Morelos, Yucatán, Mexico, 20 m.

Etymology. The species is named for Luis Álvarez Estévez, nephew of the first author.

Description. Shell (Figs 3A-C) small, oval-conic, solid, whitish. Protoconch (Fig. 3D) with ¾ of whorl beginning with a broad nucleus (150 µm) with a total diameter of about 270 µm. Under high magnification a coarse microsculpture of numerous micro depressions can be seen (Fig. 3E). Teleoconch between 4 and 4 ½

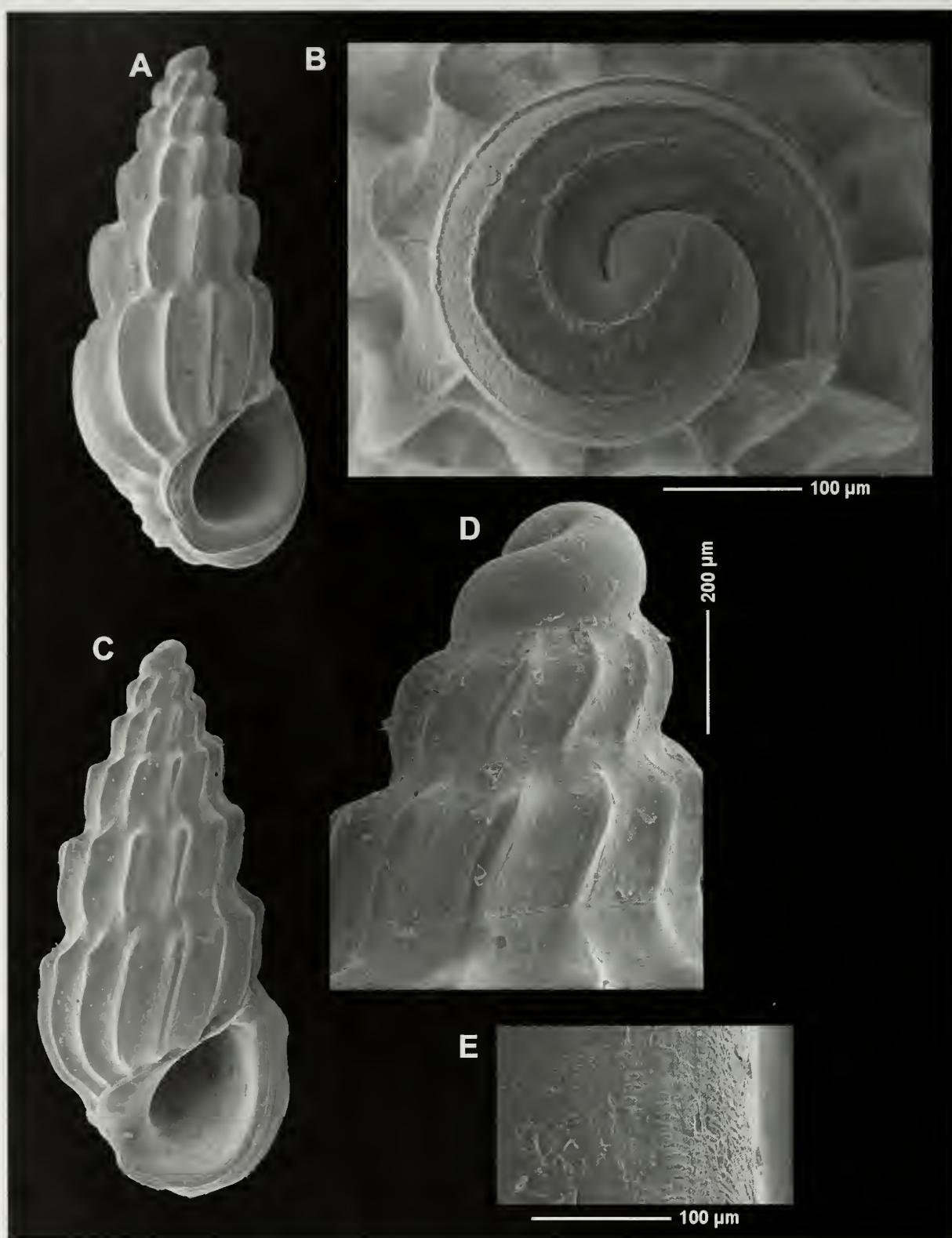


Figure 2

A-B. *Schwartziella vanpeli* De Jong & Coomans, 1988. **A.** Shell, 3.3 mm, Cienfuegos, Cuba (MHNS). **B.** Protoconch; **C-E.** *Schwartziella abacocubensis* Espinosa & Ortea, 2002; **C.** Paratype, 3.6 mm, Maria la Gorda (CFG); **D.** Protoconch; **E.** Microsculpture.

whorls, with prominent and undulating sharp axial ribs which form a subsutural shoulder. They number 9 on the first whorl, 12 on the two subsequent and 12-13 on the last whorl. Near the base there is a little thickening of the ribs. The suture is slightly undulating as it passes over the ribs of the previous whorl. Aperture slightly ovoid, the labrum with numerous parallel lines and reinforced border. Dimensions: the holotype is 2.5 mm long; other shells can be slightly larger but never reaching 3 mm.

Distribution. Only known from Yucatán, Mexico and Nicaragua.

Remarks. The new species must be distinguished from those morphologically most similar:

Schwartziella abacocubensis Espinosa & Ortea, 2002, is slightly larger (usually 3.3-4.2 mm), the axial ribs are lightly thickened on their upper aspects, the shoulder being angulous and not rounded. Furthermore, the spiral striae on the last whorl in *S. abacocubensis* number about 14 per 100 microns, while in the new species there may be up to 50 striae in the same space.

S. fischeri and *S. vanpeli* are larger, their protoconchs have one whorl or more, and the latter species has spiral cords.

Schwartziella bryerea (Montagu, 1803)

Figs 4A-F

Turbo bryereus Montagu, 1803: 313-314, pl. 15, fig. 8as.

Rissoa subangulata C. B. Adams, 1850.

Rissoina decipiens E. A. Smith, 1890.

Rissoina bermudensis Peile, 1926.

Rissoina michaudi Desjardin, 1949.

Type material. The lectotype is in the Exeter Museum (63/1976/4223) (Fig. 4C). It is the type of *Schwartziella* Nevill, 1884 (monotypy).

Type locality. Weymouth [In error]. It is a species of the Caribbean Province.

Description. Shell (Figs 4A-F): see Montagu (1803), Schwartz (1870) and Desjardin (1949). We would only like to point out that the whorls are slightly convex, the suture not very evident; axial ribs are numerous, slightly opisthocline, and approximately as wide as their interspaces.

Distribution. Most of the literature on the Caribbean malacofauna indicates a wide distribution in that Province and a little to the north.

Remarks. The original figure from Montagu (1803) (Fig. 4A) shows a shell minimally convex whorls,

shallow sutures, and with an inconspicuous protoconch (which might be broken). The lectotype (Fig. 4C) shows a similar shell. Also, in Desjardin (1949: pl. 1, fig. 2) (Fig. 4B) the shell shown presents this morphology, as well as *Rissoina chesneli* var. *Michaudi* (Fig. 4D), considered a synonym. Desjardin cites the figure of Schwartz (1870: 72) as representative. Also the figure of Perry & Schwengel (1955: fig. 177) has this morphology (protoconch may be lost, slight convexity), but the number of the axial ribs is slightly smaller than in the previously figured shells. Similar are the shell shown in Warmke & Abbott (1961: pl. 10, fig. M) and that figured by Morris (1973: pl. 39, fig. 1). All these figures depict a shell like the original figure without any shoulder, very different from some of modern representations (see under the following taxon).

The present species does not have shouldered whorls, and is mentioned here simply because of its similarity with the following species.

Schwartziella yoguii spec. nov.

Figs 4G-K

Schwartziella bryerea (Montagu, 1803) in De Jong & Coomans, 1988: 100.

Schwartziella bryerea (Montagu, 1803) in Redfern (2001).

Type material. Holotype (Fig. 4G) in MNCN (15.05/53581); paratypes in the following collections: MNHN (1, Fig. 4J), CFG (3, Fig. 4H), MHNS (1); IES (1).

Type locality. Cienfuegos, Cuba.

Etymology. After Israel González Durán (El Yogui), diving instructor from the Hotel Rancho Luna, for his many contributions supplying specimens and sediments.

Description. Shell (Figs 4G-H) ovoid elongate, solid, with stepped whorls. Protoconch (Figs 4I-J) very characteristic, almost cylindrical with 2¼ smooth whorls, a small nucleus measuring 50 µm, and a maximum diameter of about 300 µm. Teleoconch of about six whorls which increase rapidly, each with a marked subsutural convexity below which the shell is nearly straight. The axial sculpture is formed by opisthocline ribs which are narrow, the interspaces 4-5 times the width of the ribs. Aperture slightly ovoid, with a thickening labrum and columella. Dimensions: the holotype is 4.3 mm long, but some paratypes are larger (up to 5.8 mm).

Distribution. The species is known from ABC Islands (De Jong & Coomans, 1988, as *S. bryerea*), Bahamas (Redfern, 2001, as *S. bryerea*), and Cuba.

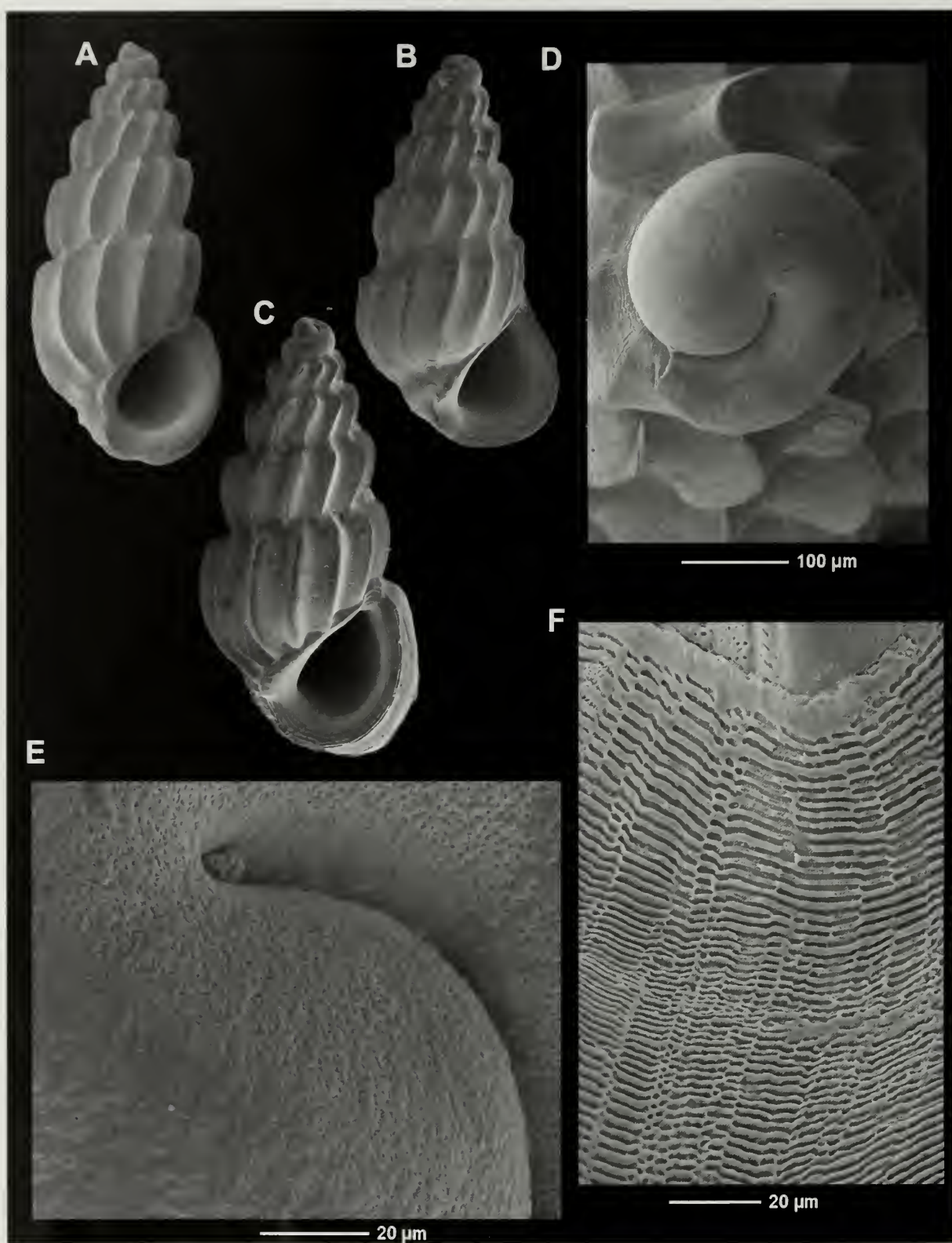


Figure 3

A-F. *Schwartziella luisalvarezi* spec. nov. **A.** Holotype, 2.5 mm, Puerto Morelos, Yucatán (MNCN); **B.** Paratype, 2.4 mm (MNHN); **C.** Paratype, 2.9 mm (MHNS); **D.** Protoconch; **E.** Microsculpture of the protoconch; **F.** Microsculpture of the teleoconch.

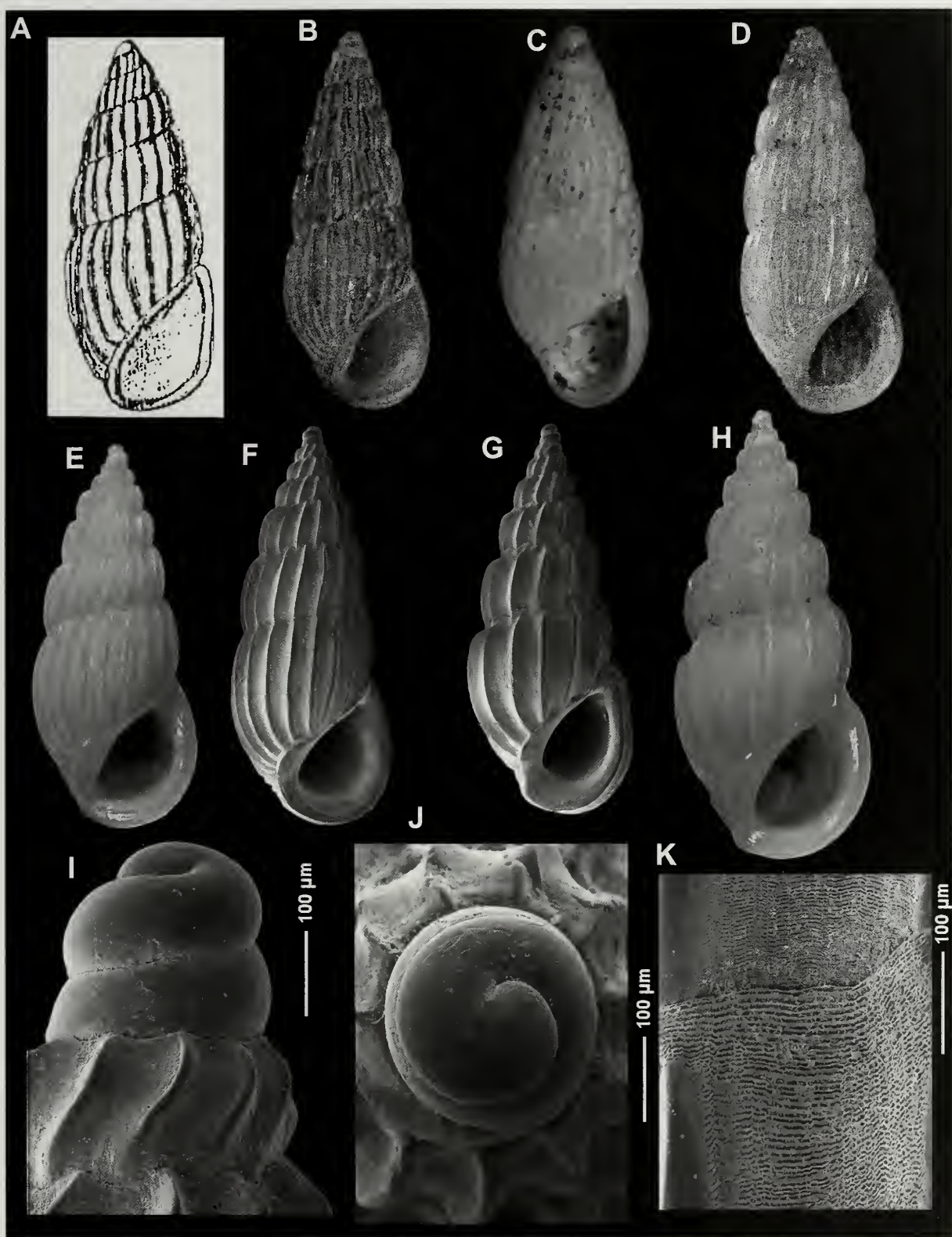


Figure 4

A-F. *Schwartziella bryerea* (Montagu, 1803); **A.** Original figure; **B.** in Desjardin (1949), approx. 2.8 mm; **C.** Lectotype, 4.7 mm, Exeter Museum (EXEMS:63/1976/4223) (photographed by Dave Bolton); **D.** *Rissoina chesneli* var. *Michaudi* in Desjardin (1949), considered a synonym of *S. bryerea*, 4.9 mm; **E-F.** shells, *S.* cf. *bryerea*, 4.6 mm, Cienfuegos (CFG) (MHNS); **G-K.** *Schwartziella yoguii* spec. nov. **G.** Holotype, 4.3 mm, Cienfuegos, Cuba (MNCN); **H.** Paratype, 5.7 mm (CFG); **I-J.** Protoconch; **K.** Microsculpture.

Remarks. This species has been considered by some authors to be *S. bryerea* (De Jong & Coomans, 1988, pl. 11, Figs 100) and Redfern (2001, Figs 147A-D). However, it may be distinguished by having fewer, narrower axial ribs and a distinct subsutural step.

Genus *Rissoina* d'Orbigny, 1840

Rissoina nicaobesa spec. nov.
Figs 5A-F

Type material. Holotype (Fig. 5A) in the MNCN (15.05/53579).

Other material examined. 3 immature shells and 5 juveniles, all from the type locality.

Type locality. Cayo Los Muertos, Miskitos Archipelago, Nicaragua, 30 m.

Etymology. The specific name is a combination of two words "nica", diminutive of Nicaragua, and "obesa", referring to the width of the shell.

Description. Shell (Fig. 5A) small, oval-conic, wide, solid, whitish. Protoconch (Figs 5B-D) with a diameter of about 330 µm and a little more than one whorl after the nucleus (which is about 130 µm in diameter). In juvenile shells (Figs 5C-E), a rough irregular nodulous surface can be observed. Teleoconch with about 6 whorls, the first few not stepped but in the later ones a subsutural step is quite evident. In the early whorls axial ribs are a little opisthoeline, narrow, and about 10-12 per whorl. On the later ones, the axial ribs are orthoeline, narrower than interspaces, and number about 21-22. The suture is slightly undulating as they pass over the ribs of the previous whorl. Aperture ovoid, with a strongly thickened lip, increased on the columella and parietal wall. A depression of the apertural border near the base confirms that this species is in the genus *Rissoina*.

Dimensions: the holotype is 4.0 mm.

Distribution. Only known from Nicaragua.

Remarks. No other Caribbean species may be confused with this species due to its broad profile, large last whorl, rough protoconch and stepped profile.

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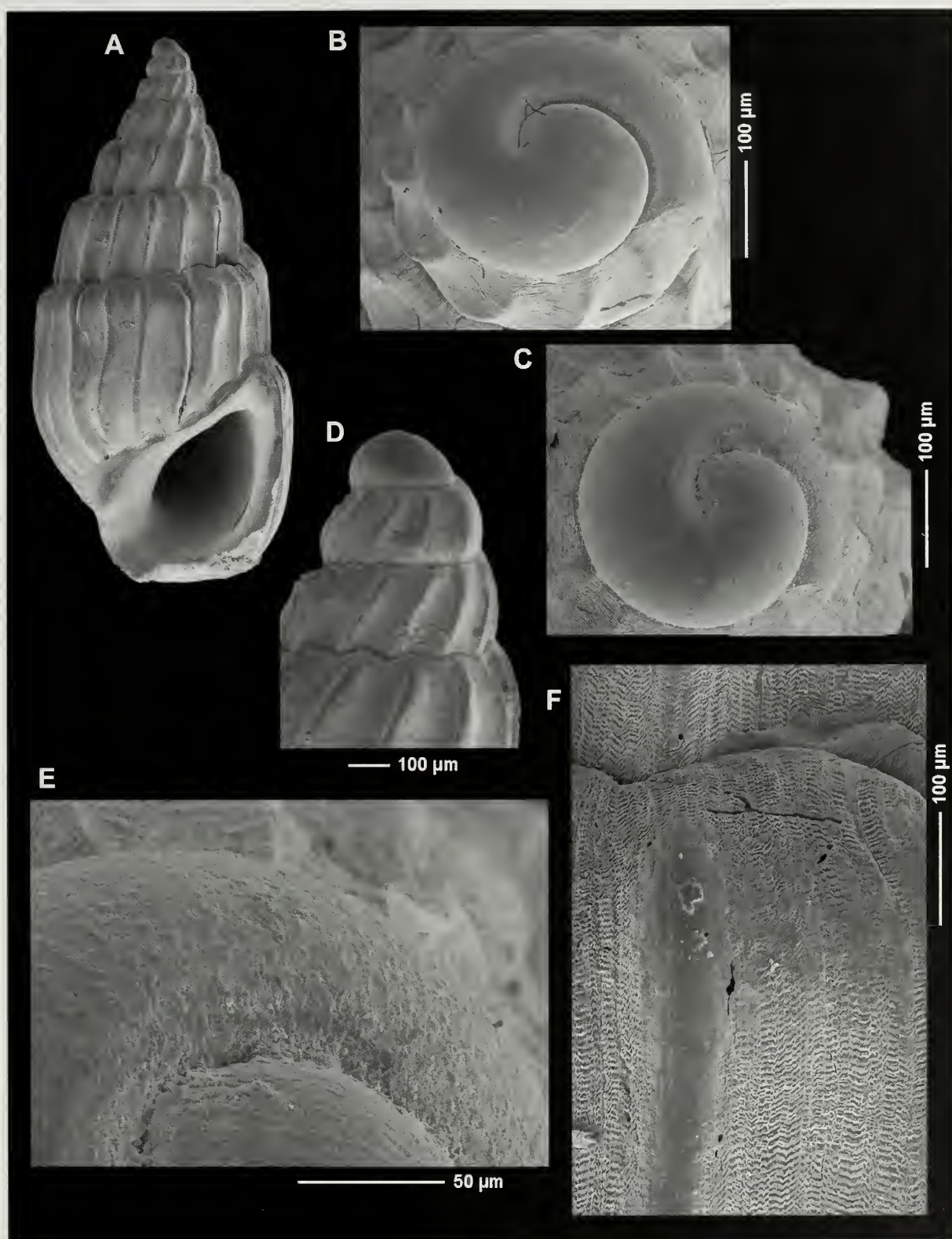


Figure 5

A-F. *Rissoina nicaobesa* spec. nov. **A.** Holotype, 4.0 mm, Los Muertos, Nicaragua (MNCN); **B-D.** Protoconch; **B.** From the holotype; **C.** From a juvenile; **D.** Apex of the holotype; **E.** Microsculpture of the protoconch of fig. C; **F.** Microsculpture of the teleoconch.