

The family Triphoridae (Mollusca, Gastropoda Prosobranchia) in Cuba
3. The genus *Isotriphora*, with description of a new species¹

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The Cuban species of *Isotriphora* (Triphoridae) are studied. *Triphora peetersae* Moolenbeek & Faber, 1989, appears to belong to this genus; *I. taenialba* is described as a new species (inclusive of data on operculum and radula).

Key words: Gastropoda, Prosobranchia, Triphoridae, *Isotriphora*, taxonomy, Cuba.

INTRODUCTION

As a continuation of the revision of the Triphoridae species from Cuba (Rolán & Fernández-Garcés, 1993a and 1993b) we treat in the present work the species included in the genus *Isotriphora* Cotton & Godfrey, 1931.

Marshall (1983) made a revision of the family Triphoridae in Southern Australia, showing several genera with species that are characterized conchologically by a short, nodular, and lecithotrophic protoconch. Generally, lecithotrophy is not considered a generic character; species with a paucispiral protoconch sometimes originate from ancestors with planktotrophic development. Frequently they are both considered congeneric (Bouchet, 1987). In *Triphora* Blainville, 1828, for example, the type species (*T. gemmatum* Blainville, 1828) has a planktotrophic protoconch, whereas other species, such as *T. nivea* Verco, 1909, have a lecithotrophic nodular protoconch.

In some cases, however, larval lecithotrophy is a generic character, as in *Eutriphora* Verco, 1909, and *Isotriphora* Cotton & Godfrey, 1931.

Moolenbeek & Faber (1989) described *T. peetersae*, a species with a very typical, white, paucispiral protoconch, the first of this kind known for Caribbean waters. In the material of Triphoridae collected in Cuba we found many specimens with a similar, white, nodular protoconch. It turned out that this represented a species complex. The first problem was its generic assignment; the second, the differentiation and description of the species found in this genus.

The material is in the collections of the authors, except for the types.

SYSTEMATIC PART

Family Triphoridae

Genus *Isotriphora* Cotton & Godfrey, 1931

The comparison of the protoconchs of the species studied in this paper with those of the species in genera containing taxa with similar protoconchs, caused us to include our

¹ For no. 2 in this series see Rolán & Fernandez-Garcés, 1993.

species in *Isotriphora*, because most representatives of this genus look similar. The radulae of several *Isotriphora* species discussed by Marshall (1983), present some mutual differences, but the studied material can be included in these variations.

In *Eutriphora* Cotton & Godfrey, 1931, the protoconch of the type species [*E. cana* (Verco, 1909)], has axial ribs or nodules very similar to those in *Isotriphora*, but there are some conchological differences, and the marginal radular teeth of *Eutriphora* have one elongated cusp, not present in *Isotriphora*.

The genus *Viriola* Jousseaume, 1884, has some species with a similar protoconch, such as *Viriola truncata* Marshall, 1983, but here the characters of the shell are very different.

According to Marshall (1983), the type species of *Triphora* may have a planktotrophic development. Indeed, within the genus *Triphora* Blainville, 1828, there is one species, *Triphora nivea* (Verco, 1909), with a protoconch resembling that of *Isotriphora*, but the characters of the radula and the shell are different.

Therefore we included the species studied in the present work in the genus *Isotriphora* on the basis of the characters of the teleoconch, protoconch, operculum and radula.

Isotriphora peetersae (Moolenbeek & Faber, 1989)

(figs. 1-3)

Material studied. — West Indies, Aruba (ZMA 3.89.016, holotype). Cuba, La Habana, shore of Hotel Comodoro (2); Archipelago of Los Canarreos: Cayo Matías, at 15 m (4); Cayo Diego Perez, at 8 m (2); Cayo Avalos, at 8 m (1 fragment); Isla de la Juventud, Punta Pedernales, at 15 m (4) and at 50 m (1); Cienfuegos, Faro de los Colorados, at 20 m (2) and in the middle of the bay, at 20 m (8 and 6 fragments).

Description. — See Moolenbeek & Faber, 1989. It must be emphasized here that the length referred to as 4.7 mm is that of the largest shell among 45 studied. Also of importance are some characters of the colour pattern (figs. 1-3): white in the $3\frac{1}{2}$ whorls of the protoconch and in the 2 first whorls of the teleoconch. The rest of the teleoconch is dark brown. The third whorl of the teleoconch, where the white pattern ends, has a yellowish colour in the lower part of the whorl.

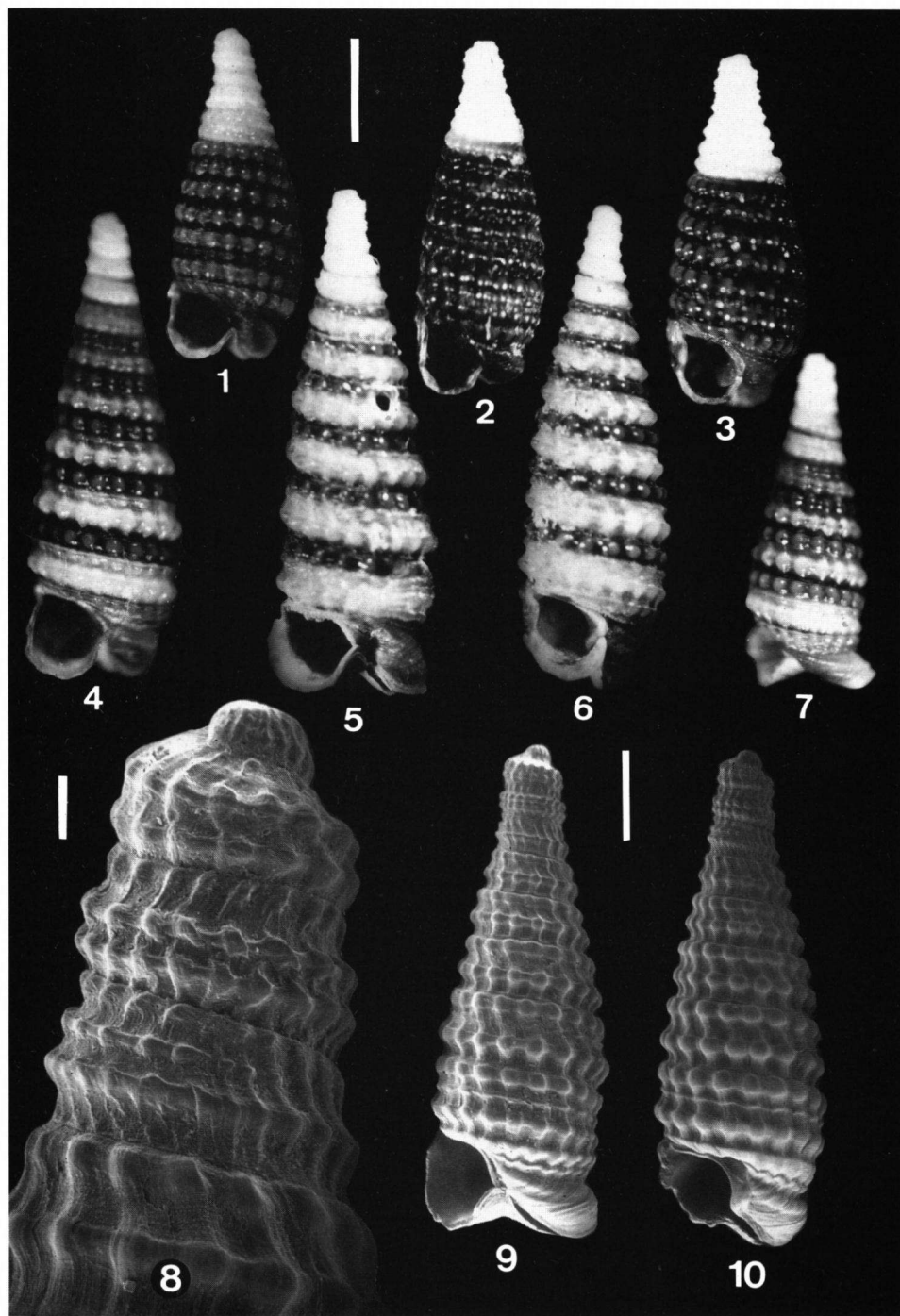
Comments. — Our shells have the dimensions and colour pattern mentioned in the original description. The holotype (fig. 1) is very similar to shells from the north coast of Cuba (fig. 2) as well as from the south (fig. 3). Our largest specimen is 4.4 mm long.

Isotriphora taenialba n. sp.

(figs. 4-10)

Material studied. — Cuba: Cienfuegos Bay (type locality), at 10-30 m (155 shells and 35 fragments) [Museo Nacional de Ciencias Naturales (Madrid) (MNCN), 15.05/11140 holotype (fig. 4), 4.7 mm long and 1.5 mm wide; 2 paratypes each in Instituto de Ecología y Sistemática (La Habana) (IES), American Museum of Natural History (New York) (AMNH), Natural History Museum (London) (BMNH), Muséum National d'Histoire Naturelle (Paris) (MNHN), Nationaal Natuurhistorisch Museum (Leiden) (RMNH), and Zoologisch Museum (Amsterdam) (ZMA); 10 paratypes in the collections of the authors]; Playa Rancho Luna, at 20 m (8 paratypes); Faro de los Colorados, at 50 m (28 paratypes).

Description. — Shell (figs. 4-10) sinistral, oval-elongated, narrowly cyrtocoid. Protoconch (fig. 8) wide (diameter between 0.39-0.43 mm), with little more than 3



Figs. 1-10. *Isotriphora* species from Cuba. 1-3, *I. peetersae*. 1, holotype (ZMA). 2, La Habana (N. Cuba). 3, Cienfuegos (S. Cuba). 4-10, *I. taenialba*. 4, holotype (MNCN). 5-10, paratypes. 5, type locality (AMNH). 6-7, type locality (colln. E. Rolán). 8, protoconch. 9-10, La Habana (IES). Scale bars 1 mm (top), 0.5 mm (bottom right), 0.1 mm (bottom left).

whorls, sculptured with axial riblets and two similar spiral threads, which merge into one near the beginning of the third whorl. The end of the teleoconch is not well defined. Colour milky-white.

Teleoconch with 5-7 spiral whorls, the first ones with two spiral nodular cords with a space between them. In the third whorl, below the upper cord, a very fine spiral thread begins and continues very close to it. One or two whorls lower down, this cord is nodulous but always smaller than the two previous ones. It continues nearer the upper cord. In the last whorl, there are four nodulous cords, one more undulating, and at the base, one more without nodules near the siphonal canal. The aperture is almost circular with the outer lip projecting, and with two folds, one for the anal sinus and another closing the siphonal canal. This is curved and little prominent in front view of the shell (fig. 7). The colour is cream or light brown with the upper cord and suture dark brown. The first whorl is whitish but the suture is already present with a dark brown colour. The last whorl is brown, but cream in the external part of the outer lip and at the end of the siphonal canal.

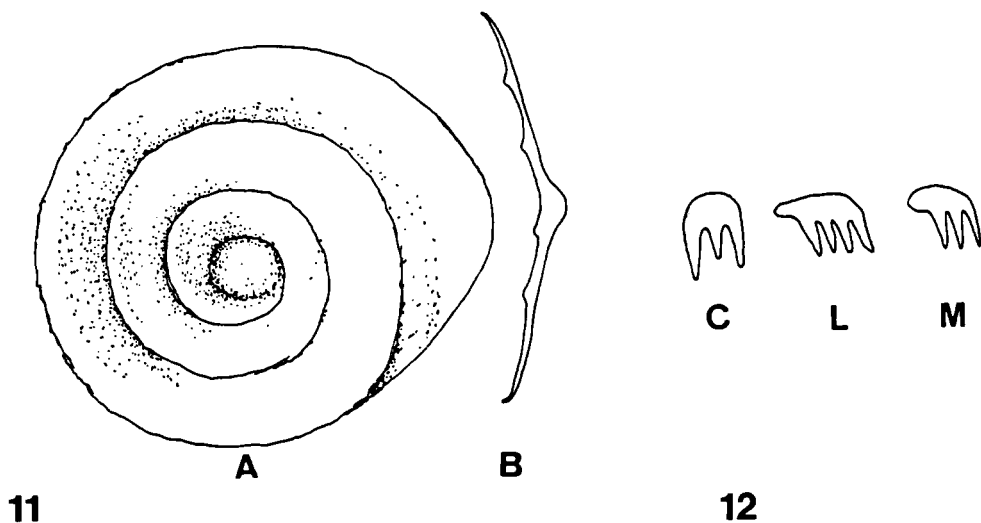
Dimensions: the smallest specimen measures 3.0 mm in length and the largest 5.5 mm.

The soft parts are white. The operculum (fig. 11) is almost circular, translucent, with a central nucleus and with few whorls. The border line is curved outside and the suture is elevated. The centre in the insertion side is a little elevated.

Radula (fig. 12) with formula 8-1-1-1-8. Central tooth with 3 cusps, lateral teeth each with 4 cusps, marginal teeth each with 3.

Etymology. — From the Latin words *taenia*, band, and *alba*, white.

Discussion. — *Isotriphora taenialba* n. sp. must be compared with *I. peetersae*. Some characters are consistently different in both species. In *I. peetersae* the two first whorls of



Figs. 11-12. Details of *Isotriphora taenialba*. 11, operculum (A, front view; B, cross-section). 12, radular teeth (C, central tooth; L, lateral tooth; M, marginal tooth).

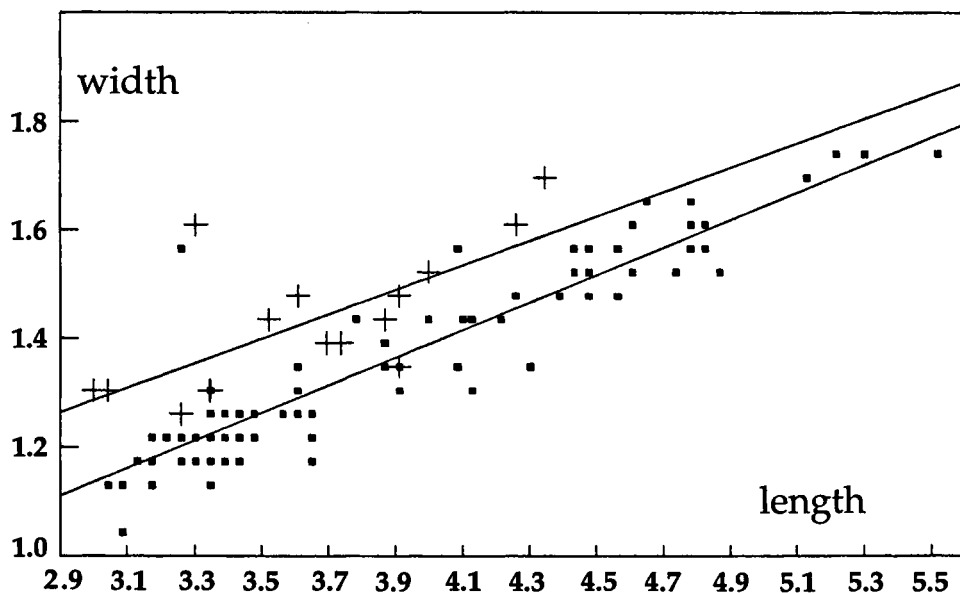


Fig. 13. Regression lines of ratio width/length of shells of *Isotriphora peetersae* (+) and *I. taenialba* (■) from Cuba.

the teleoconch are milky-white, the rest being dark brown, whereas in *I. taenialba* the first whorl has a brown suture, the upper cord is white and the lower cream; both change in the second whorl, the upper cord then being dark brown, and the lower cream, while the suture is dark brown. *I. peetersae* also has a shorter siphonal canal, which does not protrude beyond the dorsal profile of the shell. In *I. peetersae* the nodules are bigger while, on the other hand, *I. taenialba* has smaller nodules and bigger spaces between the spiral cords. The shells of *I. peetersae* are usually smaller and the width/length ratio is different from that in *I. taenialba*, especially in the smaller-sized specimens of the latter species, as is shown by the regression lines in fig. 13.

It was also observed that the distribution of the size of the shells is not representative of a normal or bell-shaped curve, because it shows two peaks with a depression in the middle. We thought that this could have been caused by sexually different shells (i.e., that the shells of males and females have different sizes) or by the presence of more than one generation (cohort) (i.e. smaller specimens may represent more recent generations than larger ones).

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