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The classification of *Columbella dormitor* with description of a new genus *Minipyrene* (Mollusca, Gastropoda)

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ABSTRACT

Columbella dormitor Sowerby, 1844, was placed by the malacologists in the genera *Columbella*, *Pyrene*, *Parametaria* (all Columbelloidea), and in *Mitromorpha* (Turridae). It is a rare species, living in deeper water in the southern Caribbean. The species belongs to the Columbelloidea; however, it is different from all existing genera. A new taxon is erected for the species, *Minipyrene*.

INTRODUCTION

Columbella dormitor Sowerby is a small and rare species with a restricted geographical distribution in the West Indies. Since its discovery the species was moved from one genus to another by several authors, and its definite systematical place has not been settled yet. In addition some authors confused it with another species, *Conorbis dormitor* (Swainson). We collected a number of specimens of *Columbella dormitor* in the Netherlands Antilles, therefore we are able to give more attention to this species.

COLUMBELLA DORMITOR IN THE LITERATURE

Columbella dormitor was described by G. B. Sowerby II in the "Thesaurus Conchyliorum", 1 (1844a: 143, pl. 40 fig. 173). The type locality was St. Vincent, Lesser Antilles. The species was redescribed by the same author in the "Proceedings of the Zoological Society of London", 12 (1844b: 52—53). The latter publication referred to the Thesaurus. The type specimen is in the British Museum (Natural History) in London.

A few months later C. B. Adams (1845: 2) described this species as *Columbella purpurascens*, type locality was Jamaica, no figure was given. The type specimen is lost (Clench & Turner, 1950: 334). The name "*purpurascens*" is well chosen, since the shell is all purple, except for the white apex. It is not known why Sowerby named it the "sleeper" *Columbella*. The synonymy

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[71]

of *Columbella dormitor* and *C. purpurascens* was already mentioned by Jay (1850: 348) and accepted by all later authors.

The species had been placed in several genera by the malacologists, and also in different families, as will be shown in the following synonymy.

Pyrene (Conella) dormitor, Adams & Adams, 1858 [1853]: 185.

This is *Conella* H. & A. Adams = *Parametaria*.

Columbella dormitor, Reeve, 1859a, species 236.

Reeve remarked that this species "may be regarded as a characteristic example of Mr. Swainson's genus *Conella*" (= *Pyrene*).

Columbella dormitor, Krebs, 1864: 28.

Mitromorpha dormitor, Carpenter, 1865: 182.

Carpenter informed "M. Crosse suggests that *Columbella dormitor* Sby. may be congeneric" with *Mitromorpha filosa*.

Columbella (Conidea) dormitor, Tryon, 1883: 181.

Conidea is a synonym of *Pyrene*.

Columbella (Conella) dormitor, Paetel, 1883: 33.

This is *Conella* H. & A. Adams = *Parametaria*. Later Paetel (1888) changed his opinion.

Daphnella dormitor, Tryon, 1884: 318.

This is in the family Pleurotomidae (= Turridae), however Tryon stated "I think it is a true *Columbella*".

Mitra (Mitromorpha) dormitor, Paetel, 1888: 177, 206.

In this publication the author had placed the species in the Mitridae.

Mitromorpha dormitor, Dall, 1889: 164.

"These shells are related to *Mitra* rather than *Daphnella*", according to Dall. Later Dall (1927: 50) placed *Mitromorpha* definitely in the Mitridae.

Columbella (Conidea) dormitor, Kobelt, 1897: 113.

Columbella (Seminella) dormitor, Hervier, 1899: 389.

Seminella is now considered a subgenus of *Anachis*, a genus in the Columbellidae.

Columbella dormitor, Pace, 1902: 56, 77.

In his species list of the Columbellidae, Pace did not assign the species to any particular genus, however he remarked that *dormitor* belongs in the same group as "*Conus*" *atramentosus* Reeve, which species is placed in *Mitromorpha*.

Lovellona dormitor, Iredale, 1917: 329.

The taxon *Lovellona* Iredale is closely related to *Mitromorpha*.

Columbella dormitor, van Benthem Jutting, 1927: 7.

This is the first paper in which Curaçao is mentioned as locality for this species.

Columbella dormitor, Coomans, 1958: 88.

Pyrene dormitor, Abbott, 1958: 72.

Columbella dormitor, de Jong & Kristensen, 1965: 36.

Columbella dormitor is not mentioned by the following authors who studied the Columbellidae: Moersch, 1858; Thiele, 1924; Risbec, 1954; Marcus & Marcus, 1962.

CONFUSION WITH *CONUS DORMITOR*

Conus dormitor Solander in Brander was described by D. Solander in G. Brander's "Fossilia Hantoniensia" (1766: 16, pl. 1 fig. 24), it is a fossil from the Eocene of Barton, England. G. B. Sowerby I (1823, in 1820-1834, pl. 267 fig. 8) figured *Conus dormitor* and remarked that it approached very nearly to a *Pleurotoma*, see fig. 9.

The species was chosen as genotype for *Conorbis* by Swainson (1840: 312) as "C. Dormitor" [sic] and he referred to the figure in Sowerby. Later authors (Thiele, 1929-1931: 372, fig. 459-460; Wenz, 1943, in 1938-1944: 1464-1465, fig. 4144; Powell, 1966: 95. textfig. A3 nr. 29, pl. 15 figs. 1-2) had placed *Conorbis* in the Turridae, which is correct. However they accepted G. B. Sowerby I as the author of *Conus dormitor*, this is wrong and also confusing, since G. B. Sowerby II described *Columbella dormitor*. In addition the two species have several characters in common, cf. figs. 5 and 9.

Kohn (1964: 151-152) considered *Conus dormitor* to belong to the genus *Conus*, and he did not mention *Conorbis* at all.

V. Orr (1959: 76) was not aware that *Conus dormitor* "Sowerby" and *Columbella dormitor* Sowerby are two different species. The confusion was temporarily enlarged by Pilsbry who described another species as *Conus dormitor* in 1904, however in the same year he changed this homonym into *Conus comatosa*.

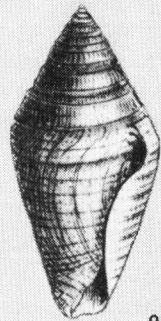
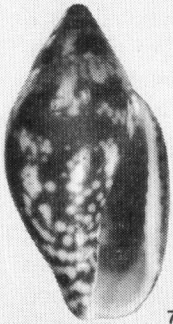
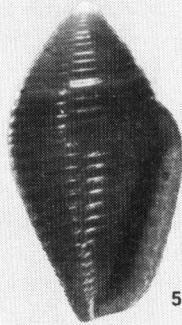
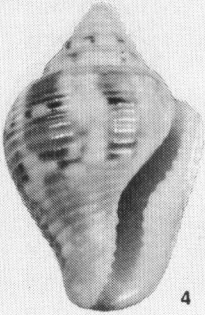
ICONOGRAPHY OF *COLUMBELLA DORMITOR*

All known figures of *Columbella dormitor* date from the 19th century and were given in color. The type specimen was figured by Sowerby (1844a, pl. 40 fig. 173). The figure in Chenu (1848, in 1842-1853, pl. 23 no. 5-6) is not accurate. Probably the artist had no specimen at hand. The size is too large (10½ mm) and in general the specimen of the drawing is too columbelloid in appearance, with a curved columella, S-shaped outer lip and aperture, the last whorl has a concave base, the columella has callus, the siphonal canal is too wide, while the apex has the same color (pink) as the rest of the shell. In the specimens that we have studied the outer lip, columella and aperture are almost straight, the last whorl is not concave at the base, the columella bears no callus, the siphonal canal is narrow, and the shell is purple with a white apex.

In Reeve's figure (1859a, pl. 37 fig. 236 a, b) the columella is curved too much, and the apex is not white. The figure in Tryon (1883, pl. 59 fig. 63; 1884, pl. 27 fig. 23) is correct, however in the last edition the color is brown instead of purple. In Kobelt (1897, pl. 17 fig. 1, 2) the figure is not too good either and the color of the shell is bluish grey. In this study the species is illustrated in figure 5.

DISTRIBUTION OF *COLUMBELLA DORMITOR*

The type locality of *C. dormitor* is St. Vincent, Lesser Antilles, it was collected by the Reverend L. Guilding. Type locality of its synonym *C. purpurascens* is Jamaica, where it was found by C. B. Adams in 1844. These



localities were copied by later authors. Kobelt (1897: 114) mentioned the West Indies as locality, however he also stated "Meine von Sowerby erhaltenen Exemplare waren mit Californien bezeichnet". Hervier (1899: 389) also listed this species from California, which is not correct. *Columbella dormitor* is reported from Curaçao, Netherlands Antilles, by van Benthem Jutting (1927: 7, one specimen), and by de Jong & Kristensen (1965: 36, two dead specimens in 30 meter). We collected a small number of specimens at the beaches on the southern and western coasts of Aruba and Curaçao in the period 1957-1960. Since no live specimens were collected we suppose that the species is living in deeper water, as was already suggested before (Coomans, 1958: 88).

Columbella dormitor was not recorded in recent fauna lists and monographs dealing with special areas of the Caribbean:

Greater Antillean area:

- Cuba (Aguayo & Jaume, 1947-1952);
- Puerto Rico (Warmke & Abbott, 1961);
- Grand Cayman (Abbott, 1958);

Virgin Islands and Lesser Antilles:

- St. Croix (Usticke, 1959);
- Water Island (Weber, 1961);
- St. Martin (Coomans, 1963b);

Mainland of Middle and South America:

- Bocas Island, Panama (Olsson & McGinty, 1958);
- Venezuela (Weisbord, 1962).

We therefore may conclude that *Columbella dormitor* has a restricted range within the southern Caribbean.

The Panamic zoogeographical province on the Pacific side of Middle America is very rich in Columbellidae. Keen (1958: 378-396) mentioned 111 species from that area. Since a number of Caribbean marine mollusks have analogous species (twin species) in the Panamic province, it could be possible

- FIG. 1. *Pyrene ovulata* (Lamarck), St. Thomas, length 14 mm (coll. Amer. Mus. Nat. Hist., New York, no. 10160).
- FIG. 2. *Pyrene punctata* (Bruguière), Moluccas, length 21 mm (coll. Zool. Mus. Amsterdam).
- FIG. 3. *Pyrene ovuloides* (C. B. Adams), West Indies, length 15 mm (coll. Zool. Mus. Amsterdam).
- FIG. 4. *Columbella mercatoria* (Linné), Barbados, length 18 mm (coll. Amer. Mus. Nat. Hist., New York, no. 49445).
- FIG. 5. *Minipyrene dormitor* (G. B. Sowerby II), Curaçao, length 8 mm (coll. Zool. Mus. Amsterdam).
- FIG. 6. *Mitromorpha filosa* (Carpenter), San Diego, length 8 mm (coll. Amer. Mus. Nat. Hist., New York, no. 8602).
- FIG. 7. *Nitidella nitida* (Lamarck), Antilles, length 15 mm (coll. Zool. Mus. Amsterdam).
- FIG. 8. *Parametaria dupontii* (Kiener), Guaymas, Mexico, length 24 mm (coll. Zool. Mus. Amsterdam).
- FIG. 9. *Conorbis dormitor* (Solander), after a drawing in G. B. Sowerby I, 1820—1834, pl. 267 fig. 8, length 25 mm.

that *C. dormitor* has a Pacific analogue. However, no closely related species is known from the Eastern Pacific.

DISCUSSION ON THE SYSTEMATIC PLACE OF *COLUMBELLA DORMITOR*

In the synonymy it was demonstrated that *C. dormitor* had been assigned to several genera: *Columbella*, *Pyrene*, *Parametaria*, and *Mitromorpha* (including *Lovellona*). We will discuss whether *C. dormitor* can be placed in any of these genera.

Mitromorpha Carpenter, 1865, type species *Daphnella filosa* Carpenter, fig. 6, distribution California. It has long been a question if this genus should be placed in the Mitridae, the Columbelloidae, or in the Turridae. Some species of *Mitromorpha* have small wrinkles or pustulations on the columella, a mitroid character, which explains their name. However, study of the radula of *M. filosa* by Thiele (1924: 209) has shown that it is toxoglossate, and therefore the genus *Mitromorpha* belongs into the Turridae. The Columbelloidae and Mitridae have a rachiglossate radula. Unfortunately the radula of *Columbella dormitor* could not be studied, since never a live specimen was collected.

The opinion of Hervier (1899: 389) that *Columbella dormitor* belongs with *C. fischeri* into *Seminella*, can be withdrawn. It has been shown that *C. fischeri* Hervier and its synonym *C. perplexa* Schepman belong into *Lovellona* Iredale (Schepman, 1911: 337-338; van Benthem Jutting, 1940: 191). *Lovellona* can be considered a subgenus of *Mitromorpha*, the type species is *Conus atramentosus* Reeve, this species has a toxoglossate radula (Orr, 1959).

Although the shell of *Columbella dormitor* resembles *Mitromorpha filosa* in size, shape, and striation, *C. dormitor* does not belong into the genus *Mitromorpha* for the following reasons: there are no plications, pustulations or wrinkles on the columella — the outer lip is thickened (a columbelloid character) — the aperture is very narrow (like in *Columbella* and *Pyrene*) — the grooves on the last whorl do not run into the aperture — there is no turrid slit and no columellar callus. As for the distribution, the littoral and sublittoral species of *Mitromorpha* in the Western Atlantic and in the Eastern Pacific have a subtropical distribution (Florida and California), *Columbella dormitor* is a pure tropical species.

Parametaria Dall, 1916 (= *Conella* H. & A. Adams = *Meta* Reeve), type species *Conus dupontii* Kiener, from the Gulf of California, fig. 8. This genus is characterized by a biconical smooth shell, with a nice color, a medium size, the outer lip is not thickened and has weak dentations on the inside. Since the shell of *Columbella dormitor* is small and unicolored, heavily ribbed, with a thick outer lip and strong teeth within, this species does not belong to *Parametaria*. This genus has no living representatives in the West Indies.

Some authors do not accept any difference between *Pyrene* and *Columbella*, in that case they give preference to the name *Pyrene*, being the oldest. This explains why the family is known as Pyrenidae and as Columbelloidae.

Most authors consider *Pyrene* and *Columbella* as two separate taxa, especially since it is known that the radulae in these two genera are distinct (Moersch, 1858; Thiele, 1924). *Columbella* is placed on the official list of genera by the International Commission on Zoological Nomenclature, opinion 94.

Pyrene Röding, 1798 (= *Conidea* Swainson = *Conella* Swainson), type species *Pyrene rhombiferum* Röding (= *Buccinum punctatum* Bruguière, 1789 = *Voluta discors* Gmelin, 1791), fig. 2, distribution Indopacific. The genus *Pyrene* is characterized by rather small but strong shells, oval to elongate eggshaped, the spire is not too high, the last whorl is large with weak spiral grooves on the base, otherwise smooth, the aperture is long and narrow, about $\frac{1}{2}$ to $\frac{3}{4}$ of the length of the shell, the outer lip is thickened and bears denticles on the inside, the shell is dark colored with lighter markings. Two Caribbean species belong to this genus, *Pyrene ovulata* (Lamarck) fig. 1, and *P. ovuloides* (C. B. Adams) fig. 3. Some authors consider these to be only one species, however it was shown (Coomans, 1963a: 73-74) that they are distinct. Reeve (1859a, b) went much further and placed them into different genera: *Columbella picata* Swainson (= *ovulata*) and *Meta ovuloides*, although Reeve stated that *ovuloides* can be regarded as the intermediate link between *Meta* (= *Parametaria*) and *Conella* (= *Pyrene*).

Columbella dormitor had been assigned by some authors to the genus *Pyrene*, however the species is distinct in a number of characters: it is much smaller, heavily ribbed, unicolored, and it has a biconical shape, also the outer lip is not ascending towards the penultimate whorl.

Columbella Lamarck, 1799, type species *Voluta mercatoria* Linné, fig. 4, distribution West Indies. In this genus the last whorl is pearshaped, the sculpture consists of many spiral cords, the aperture is S-shaped, the columella is twisted and bears denticles, the outer lip is thickened and on the inside with teeth, the outer lip is ascending towards the penultimate whorl, the shell is multicolored, its length is more than 10 mm. "*Columbella*" *dormitor* in different in many of these characters, and therefore it cannot be placed into the genus *Columbella*.

No author ever placed *C. dormitor* into *Nitidella* Swainson, 1840, type species *Columbella nitida* Lamarck, from the West Indies, fig. 7, *Nitidella* also has a biconical shell like *C. dormitor*, however many other features are distinct.

The fact that *Columbella dormitor* was placed in several genera proves that for some reason this species does not fit into any of the existing taxa. Our opinion is that *C. dormitor* is related to *Columbella* and even more to *Pyrene*, without belonging to these genera as has been discussed before. We therefore propose a new taxon for it, the name of which shows its relation to *Pyrene* and indicates its small size:

Minipyrene nov. gen.

Type species: *Columbella dormitor* Sowerby, 1844, fig. 5.

Description: shell small, less than 10 mm in length, biconical; spire short, about 6 whorls; the surface is spirally grooved throughout and unicolored;

aperture long, narrow and straight; outer lip thickened and denticulate within, the outer lip is not ascending towards the penultimate whorl (in this character *Minipyrene* differs from many other Columbellidae); the grooves of the last whorl do not run into the aperture; apex white and smooth. Radula unknown. Fossil records none. Recent distribution: southern Caribbean.

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