

BULLETIN

ZOÖLOGISCH MUSEUM

UNIVERSITEIT VAN AMSTERDAM

Vol. 17 No. 5 1999

HUMMELINCKIELLA BORINQUENSIS, A NEW GENUS AND SPECIES IN THE SUBFAMILY STEPHOPOMINAE (CAENOGASTROPODA: SILIQUARIIDAE) WITH NOTES ON THE GENERA CAPORBIS AND STEPHOPOMA AND THE "BLASIAN SUBREGION"¹

M.J. Faber & R.G. Moolenbeek

Key words: Gastropoda, Siliquariidae, *Hummelinckiella* n.gen., West Indies, taxonomy, zoogeography.

ABSTRACT

A new genus and species, *Hummelinckiella borinquensis* n.gen. & n.sp. has been discovered in sediments from shallow water off Puerto Rico, the Dominican Republic, and Grand Turk (Turks & Caicos Islands). Because of the striking sculpture of its protoconch, it is placed in a new genus of the subfamily Stephopominae.

The only other known western Atlantic member of the Stephopominae is *Stephopoma myrakeenae* Olsson & McGinty, 1958 recorded from the eastern Caribbean (Leeward Islands), herewith invalidating the "paciphile" status of this species and genus, and casting doubts on the value of the "Blasian Subregion", indicated by Petuch (1990) as a biogeographical unit.

INTRODUCTION

Mörch (1860) introduced the "worm-snail" genus *Stephopoma* and included two Recent species, *Vermetus roseus* Quoy & Gaimard, 1834, from New Zealand and *Stephopoma pennatum* Mörch, 1860, from West America.

The genus is characterized by a peculiar, almost planispiral protoconch, ornamented with numerous pustules arranged in prosocline lines. The teleoconch is irregularly coiled, without a slit.

In a revision of *Stephopoma*, Morton & Keen (1960) referred this genus to the Siliquariidae. Recently, Bieler (1997) reviewed this genus and included the

following Recent species:

<i>Stephopoma abrolhosense</i> Bieler, 1997	Western Australia
<i>S. lacunosum</i> (Bernard, 1963)	South Africa
<i>S. levispinosum</i> Bieler, 1997	West America (Panamic)
<i>S. lyngbyanum</i> (Mörch, 1871)	?North Sea
<i>S. mamillatum</i> Morton & Keen, 1960	West Africa
<i>S. myrakeenae</i> Olsson & McGinty, 1958	Panama (Caribbean)
<i>S. nucleogranosum</i> Verco, 1904	South Australia
<i>S. pennatum</i> Mörch, 1860	West America (Panamic)
<i>S. quincunx</i> (Barnard, 1963)	South Africa
<i>S. roseum</i> (Quoy & Gaimard, 1834)	New Zealand (type species)
<i>S. senticosum</i> Mörch, 1861	?Western Pacific
<i>S. tricuspe</i> Mörch, 1861	Australia (New South Wales)

¹ Studies on West Indian marine molluscs 31

S. lyngbyanum (Mörch, 1871) is a nomen dubium, probably with an erroneous type locality (Morton & Keen, 1960; Bieler, 1997). The species from the southern hemisphere form a group with a fine granular texture on the protoconch whereas those from the Atlantic and eastern Pacific all have much coarser granules on the protoconch. Morton & Keen (1960) suggested that within this genus two minor subdivisions seem to be discernible based on these morphological and distributional grounds. However, they refrained from introducing a new (sub-) generic name for the eastern Pacific/Atlantic group, since "On the whole, despite their wide geographic scatter, the seven species of *Stephopoma* form a closely knit natural group" (Morton & Keen, 1960: 35).

In 1982, the second author collected sediment samples in shallow water (6-15 m) off La Parguera, on the southwestern coast of Puerto Rico. In one of these samples, specimens with a peculiar protoconch appeared to be extremely common. It looked like a *Stephopoma* in being paucispiral (with less than two whorls), planorboid, heavily sculptured, and in having a diameter of over 1 mm. However, the sculpture did not consist of pustules but of reflected axial laminae. A few shells showed part of the teleoconch being a rather featureless irregularly coiled hyperstrophic part.

Additional specimens were found in other samples from different depths at the same locality, and from several other Caribbean localities.

The sculpture of the protoconch is so strikingly different that this taxon neither falls within "the closely knit natural group" recognized by Morton & Keen (1960), nor into the South African nominal stephonomid genus *Caporbis* Bartsch, 1915. We attribute this taxon to a new genus and species.

ABBREVIATIONS

ANSP = Academy of Natural Sciences, Philadelphia
 ZMA = Zoologisch Museum Amsterdam
 BMSM = Bailey-Matthews Shell Museum, Sanibel, Florida
 NNM = Nationaal Natuurhistorisch Museum, Leiden
 NMSA = Natal Museum, Pietermaritzburg

SYSTEMATICS

Siliquariidae Anton, 1838

Stephopominae Bandel & Kowalke, 1997

Hummelinckiella n.gen.

Type species: *Hummelinckiella borinquensis* n.sp.

Description.- Hyperstrophic *Stephopoma*-like teleoconch, its protoconch small, planorboid, and with a lamellar rib structure.

Etymology.- This genus is named after Dr Pieter Wagenaar Hummelinck, who contributed much to our knowledge of the Caribbean region and donated extensive natural history collections (including the malacological samples) to the Zoologisch Museum Amsterdam.

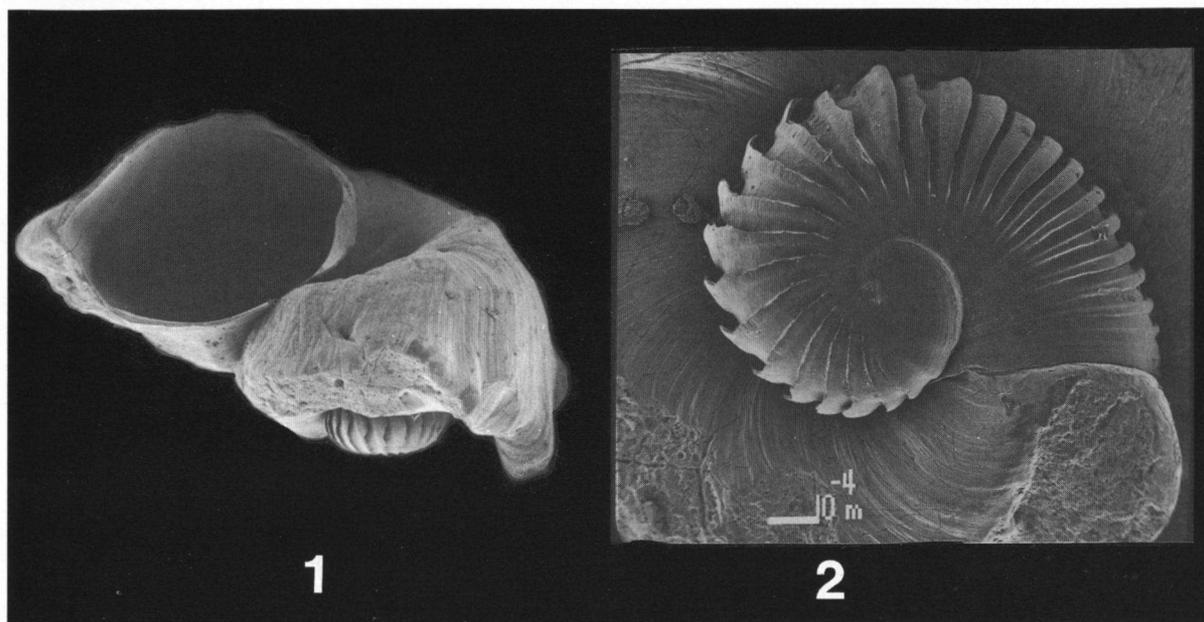
Remarks.- This genus strongly recalls the South African genus *Caporbis* Bartsch, 1915, with *Caporbis africana* Bartsch, 1915, as the type species by original designation.

Caporbis is also based on a protoconch with lamellar ribs which are decidedly sinuous and have a retractive slant. Bandel & Kowalke (1997: 262) recognized this genus as stephonomid, and included it in a new subfamily, the *Stephopominae*, a "subfamily of siliquariid gastropods without slit with ornament of a tuberculate sculpture or ribs on a planispiral protoconch". According to them the protoconch of *Caporbis* "... is terminated by a thickened rim. It closely resembles that of *Stephopoma*, but differs not only in regard to the ornament...". Moreover, in *Caporbis* the lamellar ribs are more sinuous, having fine spirals in between, and point away from the aperture, whereas in *Hummelinckiella* n.gen. they are orthocone devoid of spiral (micro)sculpture, and point towards the aperture. Also the protoconch of *Caporbis* is less planorboid than in *Hummelinckiella* n.gen. Its operculum is on the outside smooth, strongly concave, with concentric rings, that of *Hummelinckiella* n.gen. is still unknown. Pustulose members of the genus *Stephopoma* sensu stricto are known from the Miocene (Gibson-Smith & Gibson-Smith, 1982) and Oligocene (Bandel & Kowalke, 1997), whereas lamellated stephonomids are only known from the Recent.

Hummelinckiella borinquensis n.sp. (Figs. 1-2)

Description holotype.- Protoconch thin-shelled, translucent, whitish with irregular brown spots, glossy, consisting of about 1.25 smooth initial (embryonic?) whorls, with hardly one larval whorl with 26 smooth, reflected axial ribs, the earliest and last ones weak.

Teleoconch of about one hyperstrophic whorl, thick-shelled, irregularly coiled, wider than the protoconch and gradually expanding, weakly triangular, with a few irregular tube-like projections on and



Figs 1-2. *Hummelinckiella borinquensis* n.sp., holotype ZMA Moll. 3.99.007, 1. height 1.7 mm, width 2.9 mm, 2. protoconch, apical view, width 0.8 mm.

below the periphery, irregular growth-lines and no other apparent sculpture. Aperture weakly angulated. Colour: light greyish white with some light brown spots.

Height 1.7 mm, width 2.9 mm.

Type locality.- Puerto Rico, south coast, La Parguera, Cayo Media Luna, 12 m, leg. R.G. Moolenbeek, VII.1982.

Type material.- Holotype (ZMA Moll. 3.99.007) and 230 paratypes (mostly juveniles, in ZMA Moll. 3.99.008; 2 in ANSP; 2 in BMSM; 2 in NNM; 2 in NMSA; all from the type locality, 12-14 m, leg. R.G. Moolenbeek, VII.1982.

Other material studied.- Puerto Rico, south coast, La Parguera, Cayo Enrique, various depths, leg. R.G. Moolenbeek, VII.1982: >10 specimens.

Turks & Caicos Islands: Grand Turk, west coast, "Cesals" Reef, 41 m, leg. Sherry Dawson, X.1990, sta. Fab/GT-D2: 2 specimens.

Dominican Republic, north coast, Las Terrenas, shallow water, leg. L. Duiveman, VII.1992: 5 specimens; south coast, off Juan Dolio, leg. M.J. Faber, VII.1997, sta. Fab/DR-15 & DR-08: 10 specimens.

Etymology.- After the old native Indian name "borinquén" for Puerto Rico.

Distribution.- From Turks & Caicos Islands (Grand Turk) to the Dominican Republic and Puerto Rico.

Remarks.- The holotype is probably a young shell; more fullgrown shells are very irregularly coiled (hypostrophic), and may reach a size of over 5 mm. In most paratypes, the larval shell is rather glossy, greyish-white, vaguely stained with brown. Paratypes beyond the larval phase all show the same type of weak and irregularly sculptured, loosely coiled teleoconchs, that are rapidly increasing in size. Often, the apical side is flattened, probably because the shell is usually attached to a surface on this side.

Hummelinckiella borinquensis n.sp. is easily recognised by its lamellated protoconch. *Stephopoma* (sensu stricto) *myrakeenae* Olsson & McGinty, the other Caribbean stephopomid, has a pustulated protoconch. The teleoconch of *Hummelinckiella borinquensis* n.sp. shows much resemblance to that of *Stephopoma myrakeenae*.

We have seen a vermetid with strong smooth axial riblets on the protoconch (Honduras, Utila, MF). However, the shells of this unidentified species are much smaller and more irregular in shape, with the initial whorl protruding above the aperture.

TABLE 1

Distribution of micro-gastropods described in Olsson & McGinty (1958) (genera modified in accordance with modern systematics).

* <i>Arene bittleri</i>	no new records (but possibly conspecific with the Caribbean <i>A. riisei</i> Rehder, 1943)
<i>Diodora fargoii</i>	no new records
<i>Lirobarleeia chiriquiensis</i>	West Indies (Faber, in prep.)
<i>Pelycidion megalomastoma</i>	West Indies (Faber, in prep.)
<i>Solariorbis corylus</i>	no new records
<i>Solariorbis decipiens</i>	Dominica (Faber, in prep.)
<i>Pleuromalaxis pauli</i>	Tobago (Faber, in prep.)
<i>Vitrinella semisculpta</i>	Aruba (De Jong & Coomans, 1988)
<i>Vitrinella elegans</i>	no new records
<i>Vitrinorbis elegans</i>	no new records
<i>Lodderena pulchella</i>	ABC Islands (De Jong & Coomans, 1988)
<i>Lodderena ornata</i>	Florida to Brazil (Leal, 1991); Indian Ocean (Moolenbeek, 1996)
* <i>Stephopoma myrakeenae</i>	Dominica, Santa Lucia (this paper)
<i>Macromphalina pilsbryi</i>	West Indies (Faber, in prep.)
<i>Caecum clenchi</i>	West Indies (Abbott, 1974)
<i>Rosenia minibulla</i>	Martinique (Faber, in prep.)
* <i>Nassarina dubia</i>	ABC Islands (De Jong & Coomans, 1988)
<i>Decipifus sixaolus</i>	Bahamas to lower Caribbean (Abbott, 1974)
* <i>Olivella minuta marmorata</i>	no new records
* <i>Persicula adamsiana weberi</i>	Lower Caribbean (Abbott, 1974)
* <i>Gibberula bocasensis</i>	ABC Islands (De Jong & Coomans, 1988; as <i>Volvarina abbotti</i> De Jong & Coomans, 1988)
<i>Acteocina inconspicua</i>	Aruba (De Jong & Coomans, 1988)
<i>Odostomia gemmulosa</i>	ABC Islands (De Jong & Coomans, 1988)
<i>Chrysalida jadesi</i>	Suriname (Van Regteren Altena, 1975)
<i>Miralda terryi</i>	Aruba (De Jong & Coomans, 1988)
<i>Miralda abbotti</i>	ABC Islands (De Jong & Coomans, 1988)
<i>Mumiola toroensis</i>	West Indies (Faber, in prep.)

A NOTE ON THE "BLASIAN SUBREGION"

Petuch (1990) introduced the "Blasian Subregion" as a separate zoogeographical unit within the tropical western Atlantic fauna, situated along the Caribbean coast of Panama and Costa Rica. He considered it distinct because it "... contains numerous Panamic-Caribbean cognate species pairs" (Petuch, 1990: 58). The genus *Stephopoma*, and *S. myrakeenae* in particular, played an important role in the recognition of this "Subregion", since it was marked as a "paciphile" element in the West Indian fauna, probably as a relict species from before the closure of the Panamic isthmus: "Of particular interest in the Blasian area is the presence of the bizarre vermetid genus *Stephopoma* Mörch, 1860 this characteristic Panamic gastropod is found in the Caribbean only within the Blasian Subregion This area, which was the last to be exposed to the Pacific molluscan fauna, would be expected to have the most Panamic-appearing molluscan assemblages in the Caribbean" (Petuch, 1990: 58).

Earlier, Gibson-Smith & Gibson-Smith (1982) had already suggested that *Stephopoma* might be a

"paciphile" genus, because they believed that *S. myrakeenae* was identical to the eastern Pacific *S. pennatum*, and could have reached the Caribbean side of Panama in Recent times through the Panama canal.

However, we have several specimens of *S. myrakeenae* from the Lesser Antilles (eastern Caribbean): Santa Lucia, Anse Chastanet, 7 m, leg. A.A. Bos, VII.1991: 2 specimens; Grenadines, Mustique, 2-6 m, leg. R.G. Moolenbeek, III.1987: 10 specimens; Grenadines, Carriacou, Sandy Island, 2-5 m, leg. R.G. Moolenbeek, III.1987; 1 specimen.

Morton & Keen (1960: figs 3-4) clearly showed that *S. myrakeenae* and *S. pennatum* are different, with *S. myrakeenae* having more and smaller mammillae, that are more clearly lined up axially. The shells from the Lesser Antilles completely confirm their observation.

Together with this new record of *S. myrakeenae*, the presence of a second stephopomid, restricted to the Greater Antilles and adjacent islands weakens the concept of *Stephopoma* as a "paciphile" genus. The occurrence of a *Stephopoma* in Senegal, West

Africa (*S. mamillatum* Morton & Keen, 1960) does contradict the "paciophilia" of this genus even more. Instead, a Tethyan origin seems likely, especially because the genus has also been recorded as a Paleogene fossil from southern Europe (fide Bandel & Kowalke, 1997).

The "Blasian Subregion" of Petuch was further based on the supposed endemism of several species described by Olsson & McGinty (1958). Six out of 27 described as new by Olsson & McGinty (1958), were mentioned by Petuch (1990) in particular. All are listed in table 1, with their distribution, as presently known. Taxa mentioned by Petuch (1990) are marked with an asterisk (*).

As can be concluded from this table, there is no support for the recognition of a zoogeographical subunit.

Indeed, Olsson & McGinty (1958) reported the grand total of 383 species (all others, with only a few exceptions described and/or known from outside the area studied by these authors), the maximum percentage of possible endemic species then is a mere 2%. A maximum of 4.2% endemism for this region was recently reported by Rosenberg (1994), who also expressed doubt about the usefulness of recognizing separate biogeographical units within the West Indies.

ACKNOWLEDGEMENTS

We thank Mike Filmer (Chobham, U.K.), Han Nijssen and Bram van der Bijl for critically reading the manuscript. Dr. R. Kilburn (Natal Museum, S.A.) kindly send in loan shells of *Caporbis africana* for comparison. SEM photographs were made by the authors. Specimens of *Stephopoma*, not collected by the authors, were discovered in sediment samples collected by the following persons: Drs L. Duiveman, Mrs Sherry Dawson and Mr A.A. Bos.

REFERENCES

Abbott, R.T., 1974. American Seashells, 2nd ed. : 1-663 (Van Nostrand, New York NY).

- Bandel, K. & T. Kowalke, 1997. Cretaceous *Laxispira* and a discussion on the monophyly of vermetids and turritellids (Caenogastropoda, Mollusca). *Geol. Paleont.* 31: 257-274.
- Bartsch, P., 1915. Report on the Turton collection of South African marine mollusks, with additional notes on other South African shells contained in the United States National Museum. *Bull. U.S. nat. Mus.* 91: 1-267.
- Bieler, R., 1997a. Mörch's worm-snail taxa (Caenogastropoda: Vermetidae, Siliquariidae, Turritellidae). *American Malac. Bull.* 13: 23-35.
- Bieler, R., 1997b. *Stephopoma* (Caenogastropoda: Siliquariidae) from the Houtman Abrolhos Islands, Western Australia; with a review of the genus: 255-280. In: Wells, F.E. (ed.). *Proc. Seventh Internat. Mar. Biol. Workshop, Perth.*
- De Jong, K.M. & H.E. Coomans, 1988. Marine gastropods from Curaçao, Aruba and Bonaire. *Stud. fauna Cur.* 69: 1-261 [Published separately in hard cover by E. J. Brill. Leiden, etc.].
- Gibson-Smith, J. & W. Gibson-Smith, 1982. An ancestral *Stephopoma* (Mollusca: Gastropoda) from the Tertiary of Venezuela. *Nautilus* 96: 120-121.
- Leal, J.H., 1991. Marine prosobranch gastropods from oceanic islands off Brazil: 1-419. *Universal Book Services/Dr. W. Backhuys, Oegstgeest.*
- Moolenbeek, R.G., 1996. New skeneiform species of the genus *Lodderena* Iredale, 1924 from the Sultanate of Oman (Gastropoda: Skeneidae). *Vita Marina* 44: 21-28.
- Mörch, O.A.L., 1860. Etudes sur la famille des Vermets (suite). *J. Conchyl.* 8: 27-48.
- Morton, J.E. & A.M. Keen, 1960. A new species of *Stephopoma* (Siliquariidae: Mesogastropoda) from the eastern Atlantic Ocean. *Proc. malac. Soc. London* 34: 27-35.
- Olsson, A.A. & T.L. McGinty, 1958. Recent marine mollusks from the Caribbean coast of Panama with the description of some new genera and species. *Bull. American Paleont.* 39: 1-58.
- Petuch, E.J., 1990. A new molluscan faunule from the Caribbean coast of Panama. *Nautilus* 104: 57-71.
- Rosenberg, G., 1994. A database approach to studies of molluscan taxonomy, biogeography and diversity, with examples from western Atlantic marine gastropods. *Amer. Malac. Bull.* 10: 257-266.
- Van Regteren Altena, C.O., 1975. The marine Mollusca of Suriname (Dutch Guiana) Holocene and Recent. Part III. Gastropoda and Cephalopoda. *Zool. Verh.* 139: 1-104.

M.J. Faber & R.G. Moolenbeek,
Zoölogisch Museum Amsterdam,
University of Amsterdam
P.O. Box 94766,
1090 GT Amsterdam,
The Netherlands
(moolenbeek@bio.uva.nl)

Received: 3 September 1999.
Distributed: 31 December 1999.