BASTERIA, 54: 105-113, 1990

Studies on West Indian marine molluscs 18. A review of the genus Pyramidelloides (Gastropoda Prosobranchia: Eulimidae) in the West Indies, with the description of two new species[1]

M.J. FABER

Zoological Museum, University of Amsterdam, P.O. Box 4766, 1009 AT Amsterdam, The Netherlands

The genus *Pyramidelloides* (s.l.) in the West Indies is reviewed. Four species are recognized, of which two are new to science, *P. glaber* and *P. multicostatus*. A syntype of *Aclis trilirata* De Folin, 1873, is figured. Regarding shell-characters only, it is not very clear whether these four taxa belong to only one genus, or even to one family.

Key words: Gastropoda, Prosobranchia, Eulimidae, *Pyramidelloides*, taxonomy, West Indies.

INTRODUCTION

Warén (1984a), in his revision of the genus *Pyramidelloides* Nevill, 1885[2], proved that this taxon (type-species *Rissoa miranda* A. Adams, 1861, by original designation) belongs to the Eulimidae, and not to the Rissoidae, to which it has often been relegated. He mentioned one species from the West Indies, viz. *Aclis trilirata* De Folin, 1872.

From material in the Zoological Museum in Amsterdam it became clear that at least three other species of *Pyramidelloides* (s.l.) occur in the Caribbean.

One, originally described as *Cingulina? carinata* Mörch, 1876, has never been recorded since. The types can be considered lost[3], but from the original description the species is recognizable, and not likely to be confused with any other West Indian mollusc taxon. It is figured here for the first time. The other two taxa are described as new.

Usticke (1971: 28) has listed a "*Pyramidelloides judithae* Usticke, 1959". However, in the original description (Usticke, 1959: 86-87), this taxon was described as a member of the genus *Odostomia*, subgenus *Miralda* (Pyramidellidae). *O. (M.) judithae* is a junior synonym of *Liamorpha babylonia* (C.B. Adams, 1845), a true pyramidellid (Faber, 1988).

At first glance it seems unlikely that all four taxa described in this paper belong to one genus only. Reasons are given why they all are considered members of *Pyramidelloides*.

[1] For no. 17 in this series see this issue of Basteria p. 2.

[2] In Warén (1984a), and many other papers, 1884 is mentioned. This date is shown on the cover and title page. However, the preface is dated "The 25th January 1885".

[3] At least they are not in the Zoological Museum in Copenhagen (Knudsen, in litt.).

ABBREVIATIONS

AMNH = American Museum of Natural History, New York City; MCZ = Museum of Comparative Zoology, Cambridge, Mass.; MNHN = Muséum National d'Histoire Naturelle, Paris; RMNH = Rijksmuseum van Natuurlijke Historie, Leiden; SMNH = Naturhistoriska Riksmuseet (Swedish Museum of Natural History), Stockholm; ZMA = Zoölogisch Museum, Amsterdam; ZMUC = Zoologisk Museum, Copenhagen; o.d. = original designation.

SYSTEMATICS

Pyramidelloides glaber nov. spec. (figs. 1-3)

Material examined. — Holotype (ZMA 389024) length 0.8 mm, width 0.4 mm; 10 paratypes (ZMA 389025, mostly juvenile and/or broken). Paratypes will be donated to AMNH and SMNH.

Type locality. — Martinique, Cap Solomon, -25m, leg. Patrick Bou, 1984.

Description holotype. — Shell small, elongate, with about 1½ nuclear whorls and 3 teleoconch whorls (juvenile). Protoconch with two spiral keels, one on the periphery, one on top, both gradually becoming weaker. In between (on top) are prosocline axial riblets. Teleoconch whorls flat-sided, a little concave, smooth, except for occasional growth scars, and a thin spiral ridge on the periphery, bordering the base, also visible just above the sutures. Base rounded, with a slight depression in the middle. Aperture small, squarish, acute above. Columella straight. No umbilicus.

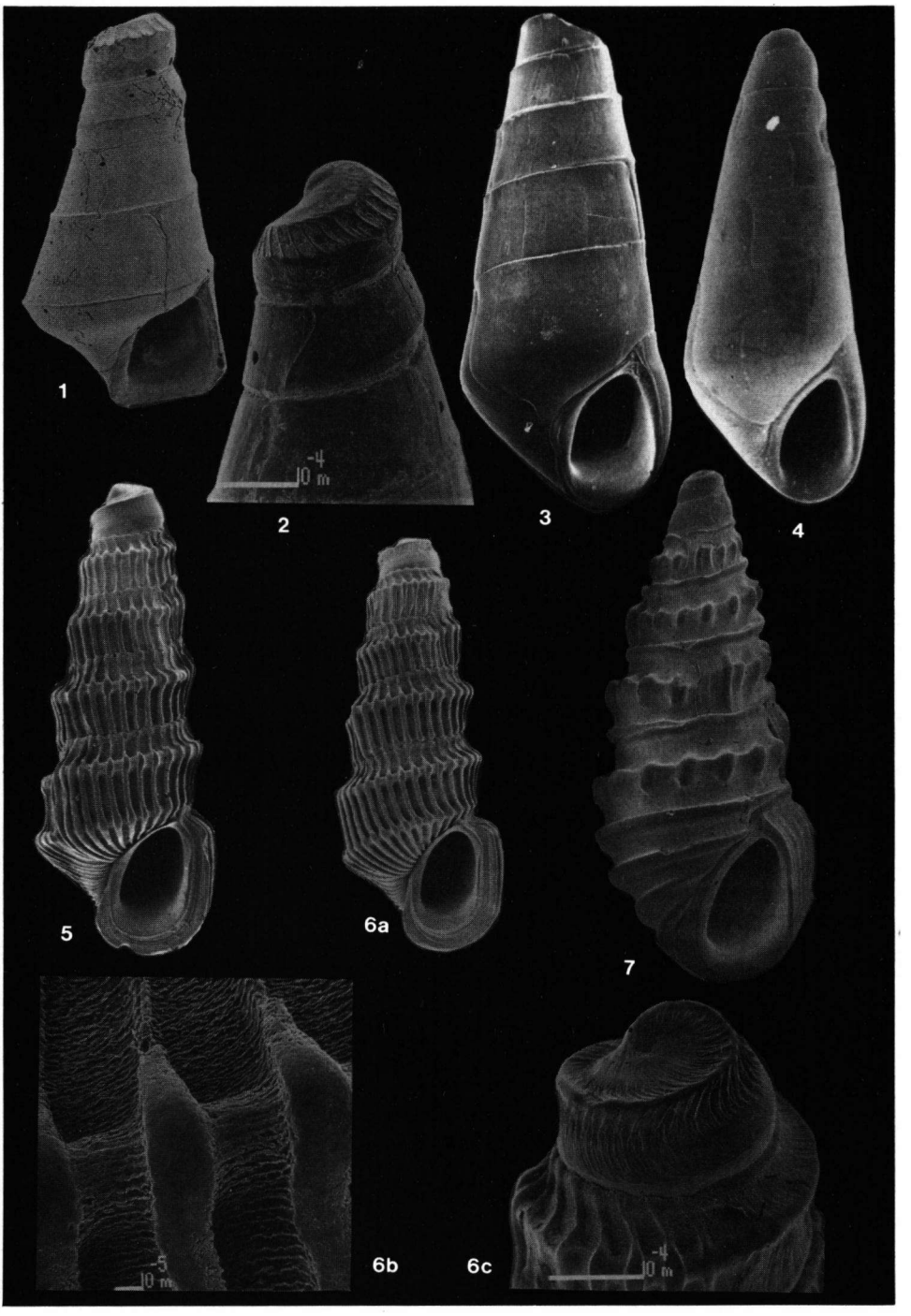
Variability. — Juvenile and subadult specimens have their protoconch still in place. Their outer lips are thin. The base shows a distinct keel. Adult specimens have a more rounded base, without a distinct keel. The outer lip is thickened and expanded below. The top is always decollated and replaced by a plug. An adult specimen with 5 whorls measured 1.5 × 0.7 mm (top whorls missing). A complete specimen would have about 8 whorls.

Distribution. — *P. glaber* is only known from the type locality.

Remarks. — This species can easily be separated from the other species of the genus by the smooth appearance of the teleoconch shell. It differs from all other smooth Eulimidae in possessing a highly sculptured protoconch (compare the undescribed species of "*Eulima*" (*?Hebeulima*) from Curaçao in fig. 4), which is lost and replaced by a plug in adult shells.

As I consider the protoconch features most distinctive in this new taxon, I have selected an immature specimen as holotype.

Figs. 1-7. Various Eulimidae, including two new species of *Pyramidelloides*. 1-3, *Pyramidelloides glaber* n. sp., Martinique, Cap Solomon, -25 m (leg. P. Bou). 1, holotype, x 68. 2, juvenile paratype showing protoconch, x 135. 3, adult paratype, x 43. 4, "*Eulima*" (*?Hebeulima*) n. sp., Curaçao (leg. R.G. Moolenbeek), x 50. 5-6, *Pyramidelloides multicostatus* n. sp., Little Cayman, Owen Island, beach (leg. Dr. P. Wagenaar Hummelinck). 5, paratype, x 47. 6, holotype; 6a, ventral side, x 47; 6b, do., sculpture detail, x 400; 6c, do. protoconch, x 140. 7, *P. miranda* (A. Adams). Arabian Gulf, Kuwait, Messilah beach (leg. R. & J. Nolen), x 37.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6a
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6c

Pyramidelloides multicostatus nov. spec. (figs. 5-6)

Material examined. — Holotype, length 1.5 mm, width 0.6 mm (ZMA 389026); 14 paratypes (ZMA 389027). Paratypes will be donated to AMNH, MCZ, MNHN, RMNH, SMNH and ZMUC.

Type locality. — Little Cayman, Owen Island, beach, leg. Dr. P. Wagenaar Hummelinck, 7.VI.1973.

Description holotype. — Shell small, elongate, with about 1½ nuclear whorls, the lower half convex, smooth except for growth lines; the upper half concave, with curved axial grooves, ending in a sharp keel on top, flattened above, with curved growth lines, becoming more prominent towards the spiral keel. Postnuclear (teleoconch) whorls 5, with a strong spiral cord, giving the whorls a shouldered appearance. A second spiral cord, just below the suture becomes visible on the last whorl above the base. Near the aperture these two cords deviate a bit from each other. All postnuclear whorls are covered by sharp, pronounced axial riblets, about 35 on the last whorl. These riblets are knobby where they cross the spiral cord(s). The microsculpture consists of exceedingly fine, frilled spiral striae, that do not cross the axial riblets. Aperture ovate, a little acute above. Peristome complete; formed by the ultimate axial riblet. Outer lip thick, broadened and expanded below, near the spire. Umbilicus closed.

Variability. — All paratypes are very similar to the holotype in outline and sculpture, and are only slightly variable in size and slenderness.

Distribution. — *P. multicostatus* is only known from the type-locality.

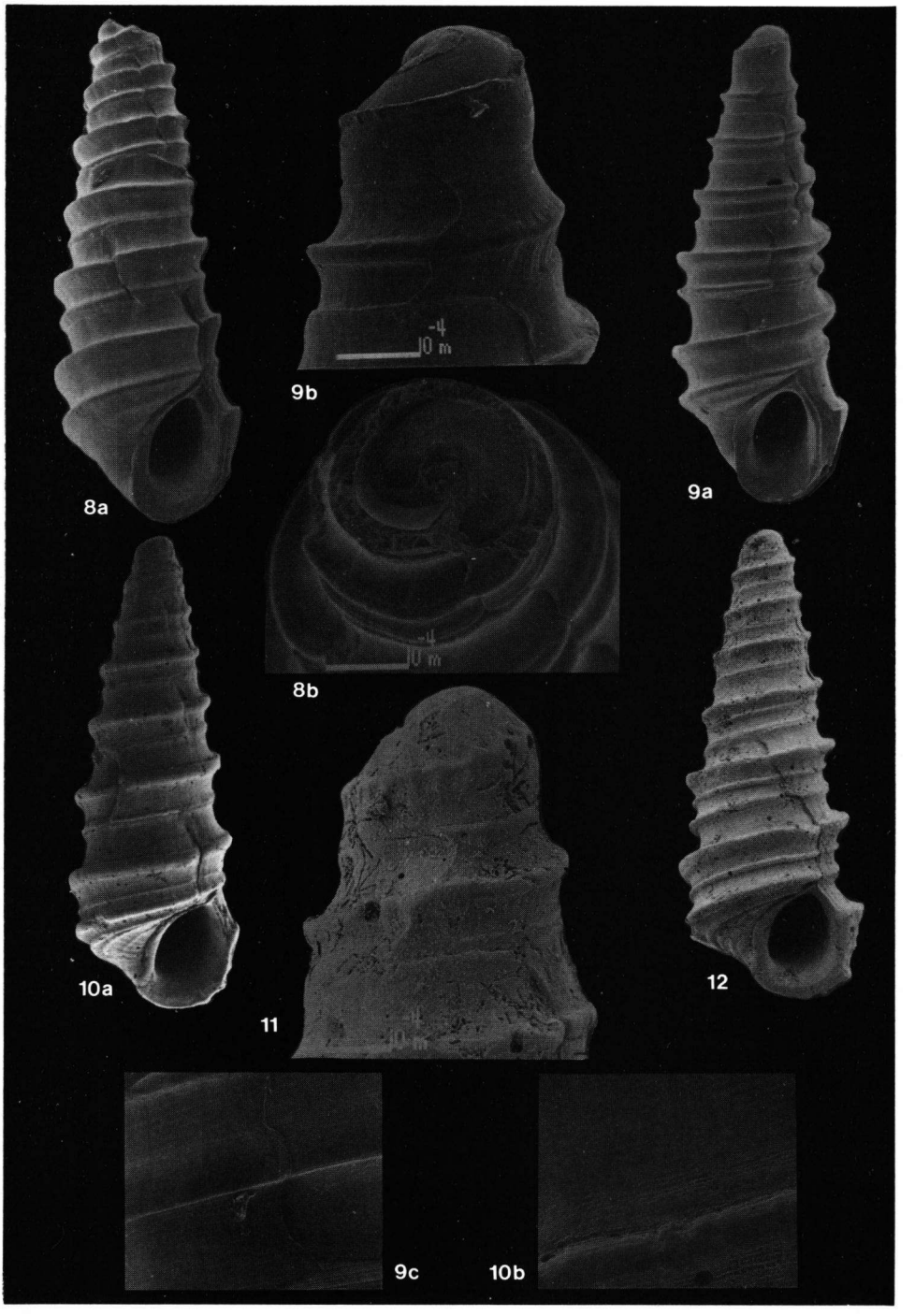
Remarks. — This species is the only West Indian member of the genus with elaborate axial sculpture. In this, it resembles "*P.* spec. A" in Warén (1984a: fig. 90). But in the latter, from the Arafura Sea, the axial ribs are much broader, less in number, and undulating. It also resembles *Coenaculum minutulum* (Tate & May, 1900) and *Awanuia dilatata* Powell, 1927, from New South Wales and New Zealand respectively. Both have, among other differences, also fewer axial ribs. See also sub Discussion.

Pyramidelloides carinatus (Mörch, 1876) (figs. 8-9)

Original description. — "T. minuta, candidissima, subulato-cylindrica; anfr. 8-9 angustis planis, carinis spiralibus duabus validis acutis, posteriore validissima; apex decollatus; apertura parva irregulariter pentagona, extus obsolete marginata. Long. 1¾, lat. ½ mm. Hab. St. Thomas (Riise). Rissoina insolita Desh[4]. Moll. Reunion pl. 40. f. 15-17 affinis sed different anfr. ult. quadricarinato."

[4] Footnote by M.J.F. According to Warén (1984a: 289) *Rissoina insolita* Deshayes, 1863, is a junior synonym of *Pyramidelloides miranda* (A. Adams, 1861).

Figs. 8-12. Species of *Pyramidelloides*. 8-9, *P. carinatus* (Mörch), Puerto Rico, La Parguera, Reef Media Luna (leg. R.G. Moolenbeek & W. v.d. Hijden). 8, adult; 8a, ventral side, x 37; 8b, do., showing decollated top with plug, x 110. 9, subadult; 9a, ventral side, x 37; 9b, do. protoconch, x 120; 9c, do., sculpture details, x 185. 10-12, *P. triliratus* (De Folin). 10, Marie-Galante (leg. Dr. P. Wagenaar Hummelinck, WH sta. 744); 10a, adult, x 24, 10b, detail of sculpture of do., x 185. 11-12, Guadeloupe, Pointe à Pitre (MNHN). 11, paralectotype, protoconch, x 120. 12, lectotype, ventral side, x 21.


8a
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9a
8b
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11
12
9c
10b

Material examined. — Puerto Rico, 4 km off Punta Cadena near Mayaguez, -90 m, 1 specimen (ZMA, leg. Dr. P. Wagenaar Hummelinck, 14.IX.1963, Wagenaar Hummelinck, 1977: sta. 1415); Puerto Rico, off La Parguera, reef Media Luna, -14 m, 118 specimens; same locality, -12 m, 120 specimens; Puerto Rico, off La Parguera, reef Enrique, -15 m, 34 specimens; same locality, -2 m, 32 specimens (ZMA, all specimens collected by R.G. Moolenbeek & W. van der Hijden, VI. 1982). St. Maarten, Great Bay, beach, 1 specimen (worn) (ZMA, leg. R.G. Moolenbeek & W. van der Hijden, VIII.1982); St. Thomas, 1 specimen (AMNH, leg. G.W. Nowell Usticke).

Description. — Shell small, slender, translucent white, with about 1½ nuclear whorls and about 5 postnuclear whorls. Transition indefinite. Nuclear whorls nearly straight-sided, with a prominent spiral keel and flattened above. Subsequent whorls with two spiral cords; the strongest about halfway each whorl, the other a little above the suture, which is indistinct. Between these cords the whorls look somewhat concave. Microsculpture consists of exceedingly fine spiral grooves, about 10 µm apart, which also overrun the spiral cords. Base convex, with a slight depression in the middle. Aperture simple, ovate, a little pointed above. Outer lip thickened, inner lip bordered by a thin callus. Umbilicus closed. In subadult specimens, the outer lip is thin. Adult specimens, especially the largest ones, are often decollated, the top sealed with a plug. This might indicate protrandrous hermaphroditism, with smaller "intact" males and larger, decollated females.

Remarks. — *P. carinatus* is by far the most common eulimid in the dredge samples from off La Parguera, Puerto Rico (in 6 to 20 m of water). Actually it is one of the most abundant mollusc-species in some of these samples. Although many fresh looking specimens were found, no living specimens and opercula were collected. Also, the host of *P. carinatus* is unknown.

For differences with the next species, *P. triliratus*, see below sub Remarks.

The name *P. carinatus* should not be confused with *Scalenostoma carinata* Deshayes, 1863, a vaguely similar eulimid from the Pacific Ocean (see Warén, 1984b).

Pyramidelloides triliratus (De Folin, 1872) (figs. 10-12)

Original description. — "Testa minuta, elongata-conica, apice paulo obtusa, albida seu subchrystallina; anfractus embryonales I½ vix perspicui; normales VIII, lente crescentes, primi ad suturam lira valida spirale, subacuta, extus expansaq ornati, dein liram minorem paulo prominentem monstranti, ultimi liris tribussculpti (prima maxima, secunda minima, ultima major): super basin lirae minisculae II-III; apertura paulo obliqua, ovalis, peristoma inferne et super columellam reflexum.

Long.: 3 mm.; Lat.: 9 d. mm.

Jolie espèce assez conique et légèrement obtuse au sommet, blanchâtre ou semi-vitreuse. Nucléus difficile à distinguer. Tours de spire normaux (huit) ornés, les premiers, de deux cordons spiraux dont le supérieur est de beaucoup le plus fort et fait une saillie considérable en dehors de la spire, et les derniers, de trois cordons, l'un très saillant, le second fort petit et à peine visible, et le troisième de grosseur intermédiaire. Deux ou trois cordons très fins se montrent sur la base.

Ouverture légèrement oblique, ovale, quelque peu acuminée vers le haut; péristome évasé vers le bas et réfléchi sur la columelle."

Material examined. — Guadeloupe & Pointe à Pitre, Guadeloupe, several specimens (MNHN; syntypes); Marie Galante, Capesterre, les Galeries (beach debris), 12 specimens (ZMA, leg. Dr. P. Wagenaar Hummelinck, 2.II.1964, Wagenaar Hummelinck, 1977: sta. 744).

Description. — Shell small, elongate, slender, white, with about 1½ nuclear whorls with a spiral keel, and flattened above. Subsequent whorls with occasional growth-scars and two raised spiral cords, the strongest about halfway each whorl, the other just above the suture, which is indistinct. On the last whorls a third spiral cord appears between the other two. On the base three more cords of various strength are present. The microsculpture consists of exceedingly fine striae, about 3 µm wide; the strongest near the spiral cords, but not on these cords. Aperture ovate, a little acute above. Outer lip thickened, inner lip covered by a thin callus. Umbilicus closed.

Remarks. — *P. triliratus* differs from *P. carinatus* in possessing additional spiral ribs on the last whorls and the base. It also seems to have a different microsculpture. Moreover, the largest specimens of *P. triliratus* are never decollated, as in *P. carinatus*. The distribution seems to be disjunct, but it cannot be ruled out completely that they actually represent two clinal morphs of one species only.

DISCUSSION

One may wonder why these four taxa are classified in one and the same genus. Reasons for doing so, are:

(1) Several important shell-characters, especially size and general outline, and the shape of the aperture and outer lip, are much the same. These West Indian species also share very similar nuclear whorls. They all seem to be of basically the same design, only (prominently) differing in teleoconch shell-sculpture.

(2) Although there are many (sub)generic names available in this group of rissoid-like Heterogastropoda, the systematics above the species-level are as yet not well understood. Some very similar genera are classified with the Aclididae, others in the Eulimidae. The borderline between these families seems to be vague, regarding shell characters only. Ponder (1985) suggests *Teretianax* Iredale, 1919 (type species *Scalenostoma suteri* Oliver, 1915) and *Chrystella* Laseron, 1956 (type species *C. islandica* Laseron, 1956, o.d.) as possible subgenera of *Pyramidelloides*. Other taxa that might be closely related or synonymous are *Awanuia* Powell, 1927 [type species *Merelina (Awanuia) dilatata* Powell, 1927, o.d.], *Coenaculum* Iredale, 1924 (type species *Scalaria minutula* Tate & May, 1900) and possibly *Palisadia* Laseron, 1956 (type species *Palisadia subulata* Laseron, 1956, o.d.). *Awanuia* and *Coenaculum* were classified with the Aclididae by Ponder (1985), and *Palasidia* together with *Pyramidelloides* (and *Chrystella* and *Teretianax*) with the Eulimidae.

Based on shell-characters *P. multicostatus* is more close to *Awanuia* and *Coenaculum*, *P. triliratus* and *P. carinatus* more close to *Teretianax* and *Chrystella*, than to *Pyramidelloides* s.s., i.e. to *P. miranda* (A. Adams, 1861) (see fig. 7).

(3) Warén (1984a) considered two species that differ entirely in shell-sculpture both to belong to *Pyramidelloides* on account of their similarity in soft parts. Of most of the taxa mentioned above, the soft parts are unknown.

(4) *Pyramidelloides* is the oldest name available in this group.

Another point of interest is, that the largest specimens in *P. carinatus* and *P. glaber* lack protoconchs and first teleoconch whorls. Little can be said about why this

phenomenon occurs. Perhaps it is somehow linked to protandrous hermaphroditism, with small, intact males, and larger, decollated females, but actually no solid data are available to support this suggestion [i.e., although protandrous hermaphroditism is known to occur in Eulimidae, no other eulimids are known to lose protoconch and early teleoconch whorls "on purpose" in the adult stages, although Warén & Moolenbeek (1989) apparently observed this phenomenon in the eulimids *Sabinella troglodytus* (Thiele, 1925) and *Trochostilifer eucidaricola* Warén & Moolenbeek, 1989]. Neither is it known if loss of the uppermost whorls really coincides with change of sex.

However, it is interesting to note that Warén (1984b: 24) proclaimed the opinion that in the parasitic Eulimidae "the body size represents a compromise between survival (which I [= Warén] suppose to be smaller at larger size) and reproductive capacity (greater at a larger size)".

Losing top-whorls in the largest (presumably female) specimens of *Pyramidelloides carinatus* and *P. glaber*, as well as in the two West Indian eulimids discussed by Warén & Moolenbeek (1989), then might be a likely method to combine the advantages of both small(er) body size *and* larger reproductive capacity. However, it remains a mystery why *P. multicostatus* and especially *P. triliratus*, which is very similar to *P. carinatus*, have intact protoconchs, when — presumably — adult. A difference in size of the host-species (I suppose this to be larger in the case of *P. triliratus*) may be one possibility.

ACKNOWLEDGEMENTS

I thank Robert Moolenbeek (ZMA) for critically reading the manuscript, and adding several improvements. Dr. A. Warén (Stockholm) kindly provided me with important data and discussed with me some of the taxa mentioned in this paper. Dr. Ph. Bouchet (MNHN) allowed me to study and photograph type material of *Aclis trilirata*. Dr. J. Knudsen (ZMUC) kindly informed me about Mörch's taxon. Thanks are also due to Dr. W.K. Emerson and Mr. W.E. Sage (AMNH) who made the Gordon W. Nowell-Usticke collection available to me. Dr. P. Wagenaar Hummelinck (Utrecht), Mr. P. Bou (Martinique), Mr. R.G. Moolenbeek and Mrs. W. v.d. Hijden (Ankeveen), and Mr. and Mrs. R. Nolen (Amsterdam) collected and donated material. Photographs were taken with a Cambridge Scanning Electron Microscope at the Laboratorium voor Elektronenmikroskopie (University of Amsterdam).

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