A new subgenus and three new species of Brazilian deep water *Olivella* Swainson, 1831 (Mollusca, Gastropoda, Olivellidae) collected by the RV *Marion Dufresne* in 1987

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ABSTRACT

Anasser n. subgen., a new subgenus of *Olivella* Swainson, 1831, is proposed based on the absence of any kind of pillar structure and the presence of a parietal callus reaching the apertural end but not above it. Three new species are described from Brazilian deep waters: *Olivella* (*Anasser*) *careorugula* n. sp. is medium sized, oblong outline, whorls strongly convex and with a large subsutural white band; *Olivella* (*Olivina*) *hyphala* n. sp. is large, relatively big-belled and presents a milk-white subsutural belt; and *Olivella* (*Olivina*) *klappenbachi* n. sp. is medium sized, roughly obconic, resembling a whirligig with protoconch large and rounded.

KEY WORDS
Mollusca,
Gastropoda,
Olivellidae,
Olivella,
Olivina,
Anasser n. subgen.,
deep water,
Brazil,
new subgenus,
new species.

INTRODUCTION

The family Olividae Latreille, 1825 sensu Vaught (1989) is traditionally considered to include five subfamilies: Olivinae Latreille, 1825; Ancillinae Swainson, 1853; Olivellinae Troschel, 1869; Agaroninae Olsson, 1956; and Pseudolivinae Cossmann, 1901 (Ponder & Warén 1988). Kantor (1991), after an anatomically based phylogenetic study, raised the Olivellinae taxon to the family level, sharing with Olividae the presence of mantle appendages, formation of parapodia of the foot, crescent shaped propodium, ramified tubular salivary glands and a channeled suture. According to Kantor (1991), the Olivellidae is defined by the loss of the spiral morphology of visceral mass, the head and the accessory glands (Leiblein included), and includes the single genus Olivella Swainson, 1831, a large and important group for understanding the muricoidean phylogeny. Family assignment notwithstanding, the group still lacks an actual taxonomic revision under genus and subgenus level.

Olivella subgeneric taxonomy was established by Olsson (1956), based on the presence of pillar structure over the parietal wall, degree of excavation above the basal fold of the columella and the presence of columellar plaits. Olsson (1956) pointed out that there are more species of Olivella in the American tropics than in any other part of the world. In fact, the olivellids are mainly tropical and subtropical, with about 17 species assigned to Brazilian waters. These are assigned to six subgenera (Rios 1994; Absalão 2000). On the other hand, Abbott (1974) recognized 25 species of Olivella from the eastern coast of North America, while Diaz & Puyana (1994) reported only nine species from the Atlantic coast of Colombia. Such numbers suggest that the apparent lower species diversity of Olivella in the more southerly areas probably reflects the low number of researchers (Bouchet 1997). Indications that we are not leveling off in the inventory of Olivella diversity can be found in the reports of Klappenbach (1962, 1964, 1986, 1991), Diaz & Götting (1990) and Absalão (2000). Deep water operations carried on by the research ship Marion Dufresne in May 1987, off the southeastern coast of Brazil (MD-55 cruise), yielded new taxa of other marine gastropod families, such as Volutidae (Leal & Bouchet 1989) and Muricidae (Houart 1991). This work deals with the Olivellidae species collected by the MD-55 cruise.

ABBREVIATIONS

<table>
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<tr>
<th>Institutions</th>
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<tr>
<td>ANSP</td>
<td>Academy of Natural Sciences, Philadelphia;</td>
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<td>Aust. Mus.</td>
<td>The Australian Museum, Sydney;</td>
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<td>BMNH</td>
<td>The Natural History Museum, London;</td>
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<tr>
<td>IBUFRJ</td>
<td>Instituto de Biologia, Universidade Federal do Rio de Janeiro;</td>
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<tr>
<td>MNHN</td>
<td>Muséum national d’Histoire naturelle, Paris;</td>
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RÉSUMÉ

Un nouveau sous-genre et trois nouvelles espèces d’Olivella Swainson, 1831 (Mollusca, Gastropoda, Olivellidae) des eaux profondes du Brésil, récoltés par le NO Marion Dufresne en 1987.

Anasser n. subgen., nouveau sous-genre d’Olivella Swainson, 1831, est proposé. Il est basé sur l’absence de toute structure en pilier et sur la présence d’un callus pariétal atteignant mais ne recouvrant pas l’extrémité aperturale. Trois nouvelles espèces sont décrites des eaux profondes du Brésil: Olivella (Anasser) careorugula n. sp. est de taille moyenne, de silhouette allongée, les tours sont fortement convexes et possèdent une large bande subsuturale blanche; Olivella (Olivina) hyphala n. sp. est grande, avec un cône relativement grand, elle présente une ceinture subsuturale blanc laiteux; et Olivella (Olivina) klappenbachi n. sp. est de taille moyenne, grossièrement obconque et ressemble à un tournoquet avec une grande protoconque arrondie.

MOTS CLÉS

Mollusca, Gastropoda, Olivellidae, Olivella, Olivina, Anasser n. subgen., eaux profondes, Brésil, nouveau sous-genre, nouvelles espèces.
MNRJ  Museu Nacional, Universidade Federal do Rio de Janeiro;
MORG  Museu Oceanográfico “Eliezer de Carvalho Rios” da Fundação Universidade do Rio Grande;
MZSP  Museu de Zoologia, Universidade de São Paulo;
ZMA  Zoologisch Museum, Amsterdam.

Oceanographic vessels
AG  Astro Garoupa;
NOAC  Almirante Câmara;
NOAS  Almirante Saldanha;
NOWB  Professor Wagner Besnard.

Expeditions
CF VII  Comissão Oceanográfica Cabo Frio VII, NOAS, 1983;
CGR II  Comissão Oceanográfica Geocosta Rio II, NOAC, 1979;
Conversut I  Convergência subtropical, NOAS, 1977;
GEOMAR XII  Geologia Marinha, NOAC, 1979;

Prefixes for station data of the MD-55 denote collecting equipment
CB  lake trawl;
DC  dredge.

MATERIAL EXAMINED

Besides the material of the species here described, we have examined several lots of other species for comparison purposes.

SYSTEMATICS

Subclass ORTHOGASTROPODA
Ponder & Lindberg, 1995

Order SORBEOCONCHA
Ponder & Lindberg, 1997

Infraorder NEOGASTROPODA Thiele, 1929

Family OLIVELLIDAE Troschel, 1869

Genus Olivella Swainson, 1831

TYPE SPECIES.— *Oliva dama* Mawe, 1828 by subsequent designation (Dall 1909).

DIAGNOSIS.—Shell small or medium sized, oliviform, elevated spire, polished and smooth surface; suture grooved or channeled; parietal region with a callus which may extend along the spire whorls that usually bears an accessory growth (pillar structure) upon it developing folds or lirations. Operculum when present is chitinous and thin.

Subgenus Anasser n. subgen.

TYPE SPECIES.— *Olivella amblia* Watson, 1882. Recent, off Brazil, southern Atlantic.

ETYMOLOGY. — This taxon is named after its characteristic absence of pillar structure: *an* (Latin), without; and *asser* (Latin), pillar.

DESCRIPTION

Small and large *Olivella*, whitish or very light colors. Parietal callus light to moderately developed, reaching the apertural end but not above it. No pillar structure. Lirae on the inner side of the outer lip absent. Suture channeled. Operculum chitinous, usually present. Internal resorption of shell.

*Olivella (Anasser) amblia* Watson, 1882

(Fig. 1A-C)

TYPE MATERIAL. — Three syntypes (BMNH 1887.2.9.771-3).

TYPE LOCALITY. — Off Pernambuco, Brazil, Challenger Expedition, stn 122.

MATERIAL EXAMINED. — The type material photographs and: MD-55, stn DC70, 18°59’1”S, 37°47’8”W, 1540-1550 m, 12 spec.; MD-55, stn CB97, 21°33’9”S, 40°08’4”W, 600 m, 5 spec.; MD-55, stn CB76, 18°58’9”S, 37°49’6”W, 637 m, 7 spec.; MD-55, stn SY74, 18°58’S, 37°49’W, 682 m, 2 spec.; MD-55, stn CB79, 19°01’8”S, 37°47’8”W, 1500-1575 m, 3 spec.; MD-55, stn CB105, 23°46’7”S, 42°10’1”W, 610 m, 8 spec.

REMARKS

See under *O. (A.) ephamilla* Watson, 1882.

*Olivella (Anasser) ephamilla* Watson, 1882

(Fig. 1D-F)

TYPE MATERIAL. — Three syntypes (BMNH 1887.2.9.774).

TYPE LOCALITY. — Off Pernambuco, Brazil, Challenger Expedition, stn 122.

MATERIAL EXAMINED. — The type material photographs and: MD-55, stn DC73, 18°59’5”S, 37°48’2”W, 607-620 m, 106 spec. (MNHN).

REMARKS

*Olivella amblia* Watson, 1882 (Fig. 1A-C) and *O. ephamilla* Watson, 1882 (Fig. 1D-F) were described based on three shells each and were known, up to now, by their original descriptions and illustrations only. Examination of the photographs of these syntypes (Fig. 1A, B, D, E), several additional specimens of *O. amblia* (Fig. 1C), *O. ephamilla* (Fig. 1F), and of an undescribed species (Fig. 1G-I) (see description below) has led us to confirm the absence of pillar structure in all these taxa, which seem to form a natural group (*Anasser n. subgen.*) unlike any other subgenus of *Olivella*, already described.

While the definition of a generic-level taxon based solely on conchological characters is a suboptimal situation, we feel the uniqueness of this group warrants such a measure.

The simplest kind of pillar structure among the *Olivella* is found in the subgenera *Minioliva* Olsson, 1956, *Callianax* H. & A. Adams, 1853 and *Cupidoliva* Iredale, 1924 (Table 1). Besides that character, these subgenera share with *Anasser n. subgen.* a callus that does not extend beyond the upper end of the aperture.
FIG. 1. — Subgenus Anasser n. subgen.; **A-C**, Olivella ambila Watson, 1882; **A**, syntype, 5.9 mm length (BMNH 1887.2.9.771-3); **B**, syntype, 5.2 mm length (BMNH 1887.2.9.771-3); **C**, specimen from MD-55, stn 95, 8.2 mm length (MNHN); **D-F**, Olivella ephamilia Watson, 1882; **D**, syntype, 3.6 mm length (BMNH 1887.2.9.774); **E**, syntype, 4.2 mm length (BMNH 1887.2.9.771-3); **F**, specimen from MD-55, stn DC73, 4.7 mm length (MNHN); **G-I**, Olivella careorugula n. sp., holotype (MNHN); **G**, optical photography, 4.5 mm length; **H**, SEM photography, 4.5 mm length; **I**, apex detail. Scale bar: I, 500 µm.
Olivella (Anasser) careorugula n. sp.  
(Fig. 1G-I)

**Type material.** — Holotype: MNHN; paratypes (two shells in each lot): MNRJ 8913, 8915; IBUFJR 11074; MORG 41036; MZSP 35529; ANSP 410280. All type material from the type locality.

**Type locality.** — South of Cabo Frio, Rio de Janeiro State, Brazil, MD-55, stn CB105, 23°47’S, 042°10’W, 610 m.

**Other material examined.** — MD-55, stn CB105, 23°47’S, 042°10’W, 610 m, V.1987, 41 spec. (MNHN); MD-55, stn CB105, 23°47’S, 42°10’W, 610 m, V.1987, 2 shells (MNHN); MD-55, stn CB97, 21°34’S, 40°08’W, 600 m, V.1987, 1 spec.

**Etymology.** — From *careo* (Latin): not; and *rugula* (Latin): fold, referring to the absence of folds or pillar structure.

**Description**

Shell medium sized (maximum length about 6.0 mm), white, semi-translucent, glossy of about 3.5 whorls. Spire of 2.5 whorls moderately tapering, comprising about 16-19% the total length. Protoconch small, rounded, not projecting above the outline of shell. The sutures are narrow and channeled visible as a spiral line due to shell translucence. In fresh specimens, there is usually an opaque white subsutural belt. Body whorl sub-cylindrical; spire whorls quite convex and very slightly stepped. Apex blunt and convex. Fasciole simple and sometimes hardly discernible. Low, light parietal callus, a bit more opaque than the shell and extending only to the end of the aperture. Pillar structure absent. Columella strongly concave at anterior end, the remainder almost straight. Yellowish chitinous operculum present.

**Remarks**

*Olivella careorugula* n. sp. (Fig. 1G-I) is less inflated and much smaller than *O. ambyla* (Fig. 1A-C). *Olivella ephamilla* (Fig. 1D-F) shares with *O. careorugula* n. sp. the oblong outline but the spire profile of *O. ephamilla* is almost straight, giving a stepping tapering appearance, while in *O. careorugula* n. sp. it is strongly convex. Besides that, *O. careorugula* n. sp. bears a large subsutural white band, which is not present in the types of *O. ephamilla*.

The only species from western Atlantic with shells similar to *O. careorugula* n. sp. are *O. (Minioliva) acteocina* Olsson, 1956 and *O. (Minioliva) perplexa* Olsson, 1956 (Olsson 1956: pl. 12, fig. 6 and pl. 16, fig. 7 respectively) from Florida and Bahamas-Panamá respectively. Both these *Minioliva* have higher spires and less convex whorls than *O. (Anasser) careorugula* n. sp. Furthermore, they have a typical *Minioliva* pillar structure (*sensu* Olsson 1956), absent in all *Anasser* n. subgen. species.

Additionally, *Anasser* n. subgen. seems to be a deep water southern Atlantic group while *O. acteocina* and *O. perplexa* inhabit shallow, more northernly coastal waters.
We failed to find radulae in dried specimens. Despite rehydration, careful dissection and, ultimately, KOH digestion. *Olivella careorugula* n. sp. may lack this structure.

Subgenus *Olivina* d’Orbigny, 1841

*Type species.* — *Olivella tehuelchana* d’Orbigny, 1841, by subsequent designation by Olsson (1956): Recent, southern Atlantic.

**Olivella (Olivina) hyphala** n. sp.  
(Fig. 2A-C)

*Type material.* — Holotype: MNHN; paratypes (two shells in each lot): MNRJ 8914, 8917;
IBUFRJ 11914; MORQ 41051; MZSP 35534; ZMA 402931; ANSP 410279. All from the type locality.

**TYPE LOCALITY.** — Abrolhos continental slope, Brazil; MD-55, stn DC75, 18°59’S, 37°50’W, 295 m.

**OTHER MATERIAL EXAMINED.** — MD-55, stn DC75, 18°59’S, 37°50’W, 295 m, 27.V.1987, +150 spec. (MNHN); MD-55, stn DC63, 29°00’S, 37°48’W, 607-620 m, 27.V.1987, 32 spec. (MNHN); MD-55, stn DC65, 18°59’S, 37°50’W, V.1987, 6 spec. (MNHN); MD-55, stn DC73, 19°00’S, 37°48’W, 607-620 m, V.1987, 17 spec. (MNHN).

**ETYMOLOGY.** — From *hyphalos* (Greek): under the sea, in the deep, concerning the relatively deep waters where this species inhabits.

**DESCRIPTION**

Shell large (reaching 12.0 mm length), subovate, homogeneously light cream in color, glossy, with a white subsutural belt. Spire moderately elevated, of three whorls, and about 48% the total length. Protoconch relatively low and large, forming a blunt apex. Sutures anterior to a wide channel. Fasciole line double. Parietal callus light, semi-translucent and relatively narrow, reaching the end of the aperture or a little above it, but never above the middle of the last whorl. Pillar structure smooth or with one or two folds in an inflexion of parietal wall, remainder smooth and almost straight. Younger forms are, usually, more inflated than adults. Deep water species (300-600 m depth). Known only from empty shells.

**REMARKS**

The form of shell of *O. hyphala* n. sp. (Fig. 2A) is relatively big-belled and distinguishes it from more slender taxa as *O. (Olivina) plata* (Ihering, 1909), *O. (Olivina) orejasmirandai* Klappenbach, 1964 and *O. (Olivina) tehuelcha*. It is close to *O. (Olivina) riosi* Klappenbach, 1991 and *O. (Olivina) puelcha* (Duclos, 1840). While *O. puelcha* is colored by tones of yellowish-brown or orange, *O. hyphala* n. sp. is devoid of colors except the milk-white subsutural belt. Additionally, *O. hyphala* n. sp. shows a double fascioilar line, while it is simple in *O. puelcha*.

*Olivella riosi* is very variable in the shell form but is always less inflated than *O. hyphala* n. sp., both species share a double fascioilar line but the parietal calus in *O. hyphala* n. sp. is more lighty than in *O. riosi*.

*Olivella hyphala* n. sp. can be distinguished from *O. klappenbachi* n. sp. by its high spire. It may be distinguished from all other *Olivina* species by its subsutural band. Finally, the two new *Olivina* species differ conspicuously in bathymetric range from all previously recorded members of the subgenus — the next deepest record being 87 m (Rios 1994), for *Olivella (Olivina) riosi*.

**Olivella (Olivina) klappenbachi** n. sp.  
(Fig. 2D, E)

**TYPE MATERIAL.** — Holotype: MNHN; paratypes: MNRJ 8916; IBUFRJ 11913; MORQ 41050; ANSP 410281. All from the type locality.

**TYPE LOCALITY.** — South of Cabo Frio, Rio de Janeiro State, Brazil, MD-55, stn CB105, 23°47’S, 042°10’W, 610 m.

**ETYMOLOGY.** — *Olivella klappenbachi* n. sp. is named after Dr Miguel Klappenbach from Montevideo Museum, Uruguay, who has studied the South American *Olivella*.

**DESCRIPTION**

Shell medium sized (about 6.0 mm length), roughly obconic, resembling a whirligig; color dirty cream. Parietal calus and aperture white. Callus broad, strong, sometimes forming like a rounded projection near the end of aperture. Parietal wall almost straight except the most anterior end where it is concave. Pillar structure does not extend into the aperture. Spire low to very low, suture broad and channeled, protoconch large and rounded, apex blunt. Fasciole simple. Operculum and radulae unknown, only empty shell collected. Deep sea species (610 m depth).

**REMARKS**

The whirligig-shaped, stout profile (Fig. 2D) is the main distinctive character of *O. klappenbachi* n. sp. This species and the variable *O. (Olivina) riosi*...
share the double fasciolar line, but it is clearly deeper in *O. klappenbachi* n. sp. The parietal callus of *O. klappenbachi* n. sp. is also somewhat thicker than in *O. riosi*. The protoconch width in *O. klappenbachi* n. sp. is approximately twice that of *O. riosi*. Despite the shell form variability showed by *O. riosi* which, sometimes, superficially looks like a teetotum, it is mainly more oblong than *O. klappenbachi* n. sp. and due to its shell form the spire in the former species is lower than in *O. riosi*. *Olivella riosi* usually has yellowish lines or flames on the shell, but the pattern, if any, of *O. klappenbachi* n. sp. remains unknown because all specimens were dead-collected and devoid of color.

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