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## Three new species of minute heterobranchs (Gastropoda: Heterobranchia: Omalogyridae and Rissoellidae) from Namibia

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**Abstract:** *Retrotortina damara*, *Ammonicera san* and *Rissoella himba* are described as new species from Namibia (SW Atlantic), and compared with their closest relatives.

**Introduction:** Namibia is located between Angola and South Africa. Its molluscan fauna is poorly known, and a recent list compiled by Werner Massier (pers. comm.) only recorded about 140 species of marine molluscs. The molluscan fauna of the southern Namibian coasts is related with that from South Africa (Kilburn & Rippey, 1982), and it may be the same for that from the northern coasts due to the cold Benguela current running northwards along all the Namibian coast (Knudsen, 1973; Rolán & Ryall, 1999).

Heterobranchia are considered a superorder by Ponder (1998), including five superfamilies: **Valvatoidea**, **Architectonicoidea**, **Rissoelloidea**, **Omalogyroidea**

and **Pyramidelloidea**. Both **Rissoelloidea** and **Omalogyroidea** only include the nominotypical families (**Rissoellidae** and **Omalogyridae**, respectively), and comprise minute marine gastropods which are still scarcely known all over the world; their knowledge has been improved in relatively recent times with some taxonomical and anatomical papers (Robertson, 1961a, b; Ponder & Yoo, 1977; Sleurs, 1985a, b, c; Palazzi, 1988, 1992; Rolán, 1991, 1992; Fukuda, 1994; Simone, 1995, 1997; Bieler & Mikkelsen, 1998; Gofas & Warén, 1998; Ponder & de Keyzer, 1998a, b; Wise, 1998; Rolán & Rubio, 2005; Rolán & Hernández, 2004; Ortea & Espinosa, 2001, 2005; Simone & Pimenta, 2003).

About twenty-six species of omalogyrids (15 from the eastern coasts and 11 from the western coasts; Bieler & Mikkelsen, 1998; Simone, 1997) and 19 rissoellids (CLEMAM, MALACOLOG) are currently known from the Atlantic (6 from the eastern side and 12 from the western coast). Only one species of **Omalogyridae** and none of **Rissoellidae** were recorded from South Africa, and two undescribed species of omalogyrids and one rissoellid were recorded from Angola (Rolán & Ryall, 1999). No species of these two families were recorded from Namibia according to Werner Massier (pers. comm.).

During a trip in 2001, the authors collected some samples near Swakopmund (central Namibia) in which some living specimens of two **Omalogyridae** and one **Rissoellidae** species were found. They differ from any other known Atlantic species and are therefore described as new species in this work.

**Material and Methods:** Specimens were collected by washing algal samples in sea water and picking out the living specimens from a Petri dish under a stereomicroscope; then they were preserved in 70% ethanol.

For SEM study specimens and opercula were cleaned with ultrasons, mounted on stubs, sputter-coated with gold, and viewed in a scanning electron microscope.

Radulae were extracted before the shells were dissolved in CLH; later the soft parts in Na(OH), dehydrated in ethanol series, and mounted on SEM stubs.

### Abbreviations

AMNH: American Museum of Natural History, New York

BMNH: The Natural History Museum, London

MHNS: Museo de Historia Natural de la Universidad de Santiago de Compostela.

MNCN: Museo Nacional de Ciencias Naturales, Madrid, Spain

MNHN: Museum National d'Histoire Naturelle, Paris

USNM: United States National Museum, Washington

## Systematic part

SUPERFAMILY **Omalogyroidea** G. O. Sars, 1878

FAMILY **Omalogyridae** G. O. Sars, 1878: 215 (as **Homalogyridae**)

GENUS *Omalogyra* Jeffreys, 1859: 498. Type species by subsequent designation of Bucquoy, Dautzenberg & Dollfus (1884: 78), *Truncatella atomus* Philippi, 1841 (see Bieler & Mikkelsen, 1998).

GENUS *Retrotortina* Chaster, 1896: 2. Type species by monotypy: *Retrotortina fuscata* Chaster, 1896.

### *Retrotortina damara* sp. nov.

Figs 1-9

**Type material:** **Holotype** (Fig. 1), 0.82 mm (MNCN 15.05/53251); Paratypes in the following institutions: MNHN (1), Fig 2; BMNH (1) Fig 3; AMNH (1) Fig 4; USNM (1) Fig 5; MHNS (145) Fig 6.

**Type locality:** 4.5 km S of Swakopmund, Namibia (22° 43' 37" S, 14° 31' 44" E); on algae from intertidal rocky pools, June 8th, 2001.

**Other material studied:** Some specimens were destroyed by radular study.

**Description:** Shell (Figs 1-5) very small (up to 0.9 mm in diameter), hyperstrophic, rounded in profile, fragile, glossy and uniformly brown. Protoconch (Figs 6-7) of  $\frac{3}{4}$  whorl (according to method by Verduin, 1977; equivalent to 1 whorl after Gofas & Warén, 1998) and 180  $\mu$ m in diameter, with a rough surface at high magnification. Teleoconch with 1□ or a little less smooth whorls with numerous and conspicuous growth lines. Aperture oval-rounded, except for a somewhat concave columellar edge.

Head-foot white with two flat, wide and short cephalic tentacles.

Operculum paucispiral, oval and transparent, coiling counterclockwise as seen from its outer surface (Fig 8).

Radular ribbon very short, with a single row of a few solid triangular teeth (Fig. 9); we did not find any lateral plate.

**Distribution:** Only known from the type locality.

**Remarks:** *Retrotortina damara* is here considered as the second known Atlantic species in the genus *Retrotortina* Chaster, 1896, since it has a hyperstrophic, non planispiral shell flatted adapically and umbilicate abapically and lack radular lateral plates, according to the characteristics of the type species (*Retrotortina fuscata* Chaster, 1896) given by Gofas & Warén (1998).

*Retrotortina cuniculus* Barnard, 1969 has a shell with a slight but distinct keel and varicoid growth-lines, the periphery in dorsal view showing beyond the keel, and a diameter of 1.5 mm (Barnard, 1969).

*Retrotortina fuscata* from the Mediterranean and NE Atlantic is smaller (up to 0.75 mm, according to Gofas & Warén, 1998) than *Retrotortina damara*, has a straight columella and proportionally smaller aperture, less prominent in its abapical part.

*Omalogyra atomus* (Philippi, 1841), the type species of *Omalogyra* (see Bieler & Mikkelsen, 1998) has a planispiral or slightly hyperstrophic shell, like that of all other known Atlantic species of *Omalogyra* (Aartsen, Menkhorst & Gittenberger, 1984; Palazzi, 1988; Castellanos, 1989; Rolán, 1991, 1992; Gofas & Warén, 1998). According to Gofas & Warén (1998) the radula of *O. atomus* has a central tooth very similar to that of *Retrotortina*, and a lateral plate (probably a reduced lateral tooth) on each side.

The only *Omalogyra* species recorded from South Africa is *O. gemmulata* Turton, 1932 (Barnard, 1963, 1974); this species is figured by Kensley (1973) and has evident prominences on both sides, abapical and adapical, and it seems to be a species of *Orbitestella* Iredale, 1917.

**Etymology:** The specific name is after the Damara people inhabiting central and southern Namibia.

GENUS *Ammonicera* Vayssière, 1893: 15. Type species by monotypy: *Homalogyra fischeriana* Monterosato, 1869.

*Ammonicera san* sp. nov.

Figs 10-14

**Type material:** **Holotype** (Fig. 10), 0.63 mm (MNCN 15.05/53253); paratypes in MNHN (1, Fig. 11); BMNH (1, Fig. 12); AMNH (1).

**Type locality:** 4.5 km S of Swakopmund, Namibia (22° 43' 37" S, 14° 31' 44" E); on algae from intertidal rocky pools, June 8th, 2001.

**Description:** Shell (Figs 10-12) very small, reaching 0.67 mm in diameter, planispiral, biconcave, fragile and uniformly brownish in colour. Protoconch (Figs 13-14) of about  $\frac{3}{4}$  whorl (according to Verduin method) and 135  $\mu$ m in diameter, with 6-8 nodulous spiral cords. Teleoconch of about 1□ whorls, smooth but with evident growth lines, with a faint spiral elevation cord at both sides of the shell. Aperture rounded.

Head-foot, operculum and radula unknown.

**Distribution:** Only known from the type locality.

**Remarks:** Most of the 17 known Atlantic species of *Ammonicera* have strong or evident spiral and axial sculpture on the teleoconch (Palazzi, 1988; Rolán, 1991, 1992; Simone, 1997; Bieler & Mikkelsen, 1998). *Ammonicera verdensis* Rolán, 1991 from the Cape Verde Islands lacks spiral sculpture, but it has some faint axial ribs near the suture at the beginning of the teleoconch and only one spiral cord on the protoconch. *A. rotundata* Palazzi, 1988 lacks spiral sculpture but has conspicuous axial wrinkles and few and very strong spiral cords in the protoconch.

**Etymology:** The specific name is after the San people (bushmen) inhabiting southern Africa (mainly in Namibia and Botswana, but also in Angola, South Africa, Zambia and Zimbabwe).

SUPERFAMILY Rissoelloidea Gray, 1850

FAMILY Rissoellidae Gray, 1850

GENUS *Rissoella* Gray, 1847: 159. Type species: *Rissoella diaphana* Alder, 1848 (= *Rissoa?* *glaber* sensu Alder, 1844 not Brown, 1844).

*Rissoella himba* sp. nov.

Figs 15-23

**Type material:** **Holotype** (Fig. 15), 1.42 mm (MNCN 15.05/53254); paratypes in MNHN (1, Fig. 16); BMNH (1); AMNH (1); USNM (1); MHNS (65, Figs. 17, 18);

**Type locality:** 4,5 km S of Swakopmund, Namibia (22° 43' 37" S, 14° 31' 44" E); on algae from intertidal rocky pools, June 8th, 2001.

**Other material studied:** Some specimens were destroyed for radular studies.

**Description:** Shell (Figs 15-16) small (reaching 1.7 mm), elongated, with a blunt apex, transparent and whitish, very fragile. Protoconch (Figs 17-18) of about  $\square$  whorl after the nucleus, and about 370  $\mu$ m in diameter, smooth. Teleoconch of 1½ or a little more smooth convex whorls, with slightly prosocline growth lines; suture deep. Aperture (Fig. 20) oval, inner lip slightly thickened and concave, outer lip simple and thin.

Operculum (Figs 19-20) oval, colour yellowish translucent, with the nucleus near the mid-inner edge and external concentric lines. The columellar edge is bordered in its inner side by a ridge and forms a short peg at the middle, and a short fold arises from the base of the peg towards the centre of the operculum; outer edge simple.

First whorls of the body visible by transparent dark brown body on the last whorl, brown at the beginning, white below, with a small black ovoid spot (Fig. 20). Head white, with only a grey rhomboid spot behind the eyes, and mantle border light brown. Eyes black. The head ( Fig.21) has four prominences: the external ones (the tentacles) are narrow and shorter than the internal ones, which are wider and more elongate. The propodium has the extremes prominent.

Radula ( Fig.22-23) with a central tooth wider basally, with cut border with four prominent cusps and several other, smaller, between them and externally. The lateral teeth are elongate with a wide cut border and several cusps, some very sharply pointed and others smaller.

**Distribution:** Only known from the type locality.

**Remarks:** The colour of the soft parts is an important characteristic to identify species of *Rissoella* (Robertson, 1961; Wise, 1998; Rolán & Rubio, 2001; Rolán & Hernández, 2004; Ortea & Espinosa, 2001, 2005). There is not any reference of this genus from South Africa or Angola, except for the undescribed *Rissoella* sp. mentioned in Rolán

& Ryal (1999).

The species here described is very different not only by the colour of the soft parts but by the difference between the internal and external anterior prolongations.

**Etymology:** The specific name is after the Himba people inhabiting northern Namibia.

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## LIST OF ATLANTIC SPECIES

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*Ammonicera burnayi* Rolán, 1991. Cape Verde Archipelago.

*Ammonicera circumcirra* Rolán, 1992. Cuba.

*Ammonicera familiaris* Rolán, 1992. Cuba.

*Ammonicera fischeriana* (Monterosato, 1869). Mediterranean, Atlantic.

*Ammonicera lignea* (Palazzi, 1988). Madeira.

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*Ammonicera minortalis* Rolán, 1992. Cuba.

*Ammonicera multistriata* Rolán, 1991. Cape Verde Archipelago.

*Ammonicera nolai* Rolán, 1991. Cape Verde Archipelago.

*Ammonicera oteroi* Rolán, 1991. Cape Verde Archipelago.

*Ammonicera plana* Simone, 1997. Brazil.

*Ammonicera robusta* Rolán, 1991. Cape Verde Archipelago.

*Ammonicera rota* (Forbes & Hanley, 1850). Ireland, Atlantic.

*Ammonicera rotundata* (Palazzi, 1988). Madeira.

*Ammonicera sculpturata* Rolán, 1992. Cuba.

*Ammonicera verdensis* Rolán, 1991. Cape Verde Archipelago.

## RISSOELLIDAE

*Rissoella ameliae* Ortea & Espinosa, 2005. Cuba.

*Rissoella belkisiae* Ortea & Espinosa, 2005. Cuba.

*Rissoella caribaea* Rehder, 1943. Florida, Mexico, Puerto Rico and Brazil.

*Rissoella contrerasi* Rolán & Hernández, 2004. Canary Islands.

*Rissoella diana* Ortea & Espinosa, 2005. Cuba.

*Rissoella diaphana* (Alder, 1848). NE Atlantic.

*Rissoella elsae* Ortea & Espinosa, 2005. Cuba.

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*Rissoella trigoi* Rolán & Hernández, 2004. Senegal.  
*Rissoella zaidae* Ortea & Espinosa, 2005. Cuba.

**Plate 1****1-9. *Retrotortina damara* sp. Nov**

- 1: holotype, 0.82 mm (MNCN)
- 2: paratype, 0.85 mm (MNHN)
- 3: paratype, 0.77 (BMNH)
- 4: paratype, 0.84 (AMNH)
- 5: paratype, 0.83 mm (USNM)
- 6: protoconch, paratype (MHNS)
- 7: microsculpture of the protoconch
- 8: operculum
- 9: radular tooth

**Plate 2****10-14. *Ammonicera san* sp. nov.**

- 10: holotype, 0.62 mm (MNCN)
- 11: paratype, 0.63 mm (MNHN)
- 12: paratype, 0.63 mm (BMNH)
- 13: protoconch
- 14: microsculpture of the protoconch

**Plate 3****15-23. *Rissoella himba* sp. nov.**

- 15: holotype, 1.42 mm (MNCN)
- 16: paratype, 1.53 mm (MNHN)
- 17, 18: protoconch of paratypes (MHNS)
- 19: operculum
- 20: detail of the operculum in the aperture
- 21: drawing showing the colour distribution of the soft parts
- 22-23: radula





