



New bathyal *Anachis* (Neogastropoda: Buccinoidea: Columbellidae) from the Southwestern Atlantic, and the designation of a lectotype for *A. stricta* (Watson, 1882)

SILVIO FELIPE BARBOSA LIMA & CARMEN REGINA PARISOTTO GUIMARÃES

Laboratório de Bentos Costeiro, Departamento de Biologia, Centro de Ciências Biológicas e da Saúde, Universidade Federal de Sergipe, São Cristóvão 49100-000, Sergipe, Brasil. E-mail: sfblima@gmail.com

Mollusks are the marine invertebrates with the greatest diversity (Bouchet *et al.* 2002), and account for one of the highest number of descriptions of new species (Bouchet 1997, 2006). A total of 1776 species of marine mollusks have been cataloged for Brazil (Rios 2009). Knowledge of species richness in the country has increased mainly due to the discovery of new deep sea mollusks (see Lima & Christoffersen 2013, 2014; Lima *et al.* 2013, 2014; Corrêa *et al.* 2014; Lima 2014; Simone & Cunha 2012, 2014).

Columbellids are among the gastropods most frequently described in recent taxonomic studies conducted along the Brazilian coast (Costa & Absalão 1998; Costa & Souza 2001; Costa 2005; Rios 2009). *Anachis* H. & A. Adams, 1853 is a group of carnivorous columbellids (Wilson 1998; deMaintenon 1999) and one of the most speciose genera of the Gastropoda with about 84 Holocene species described (Bouchet & Gofas 2014). However, deep sea species of *Anachis* remain little known throughout the world. *Anachis stricta* (Watson, 1882), *A. strix* (Watson, 1882), *A. roberti* K. Monsecour & D. Monsecour, 2006 and *A. martinicensis* Pelorce, 2013 are the only taxa described for deep waters of the Western Atlantic. Prior to the present study, only *Anachis strix* has been reported in deep waters off northeastern Brazil (Costa 2005; Rios 2009).

Specimens of a micro-columbellid with a stout, biconic, axially sculptured shell belonging to the genus *Anachis* were identified during the study of deep sea mollusks off northeastern Brazil. These specimens were compared to photographs of the type material of deep sea Atlantic congeners, which allowed the recognition of a new species.

Institutional abbreviations. ANSP—Academy of Natural Sciences of Philadelphia of Drexel University, Philadelphia, USA; BMSM—The Bailey-Matthews Shell Museum, Sanibel, FL, USA; CMPHRM-A—Coleção Malacológica Prof. Henry Ramos Matthews – série A, Fortaleza, Ceará, Brazil; IBUFRJ—Departamento de Zoologia, Instituto de Biologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil; MNHN—Muséum national d’Histoire naturelle, Paris, France; MNRJ—Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil; MORG—Museu Oceanográfico “Prof. Eliézer de Carvalho Rios”, Universidade Federal do Rio Grande, Rio Grande, Rio Grande do Sul, Brazil; MZSP—Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil; NHMUK—The Natural History Museum, London, Great Britain; UFPB MOLL—Coleção de Invertebrados Paulo Young, Departamento de Sistemática e Ecologia, Universidade Federal da Paraíba, João Pessoa, Paraíba, Brazil; UF—Florida Museum of Natural History (FLMNH), University of Florida, Gainesville, Florida, USA; UFS MOL—Coleção Zoológica de Invertebrados do Departamento de Biologia da Universidade Federal de Sergipe, Aracajú, Sergipe, Brazil; ZMB—Zoological Museum Berlin, Berlin, Germany; ZUEC GAS—Universidade Estadual de Campinas, Campinas, São Paulo, Brazil.

Other abbreviations. AL—Aperture length; LW—Last whorl length; PD—Protoconch diameter; PH—Protoconch height; SL—Spire length; SW—Shell width; TL—Total length.

Systematics

Columbellidae Swainson, 1840

Anachis H. & A. Adams, 1853

continental slope off the state of Pernambuco during the REVIZEE/Score-Northeast Program (2000), thereby improving our knowledge of its conchology (Costa 2005; Rios 2009).

Anachis rechonchuda n. sp. most closely resembles *A. stricta* from the West Indies. Both species have a stout shell with a similar outline and rounded, smooth protoconch (dome-shaped with 1.5 whorls). *Anachis rechonchuda* n. sp. and *A. stricta* also share a blunt spire with slightly convex whorls and a broad, tumid last whorl with a very contracted base. Furthermore, these species exhibit a slight subsutural cord, the intersection of which with the ribs projects little tubercles and a minute shoulder. The new species differs in having up to about 4.25 teleoconch whorls, while the teleoconch of *A. stricta* (Fig. 2B) develops up to six whorls. The inner lip is slightly concave, and the outer lip is smooth in *A. rechonchuda* n. sp. However, *A. stricta* has a straight inner lip and about 10 small denticles on the outer lip (Fig. 2B). The spiral sculpture on the new species consists of a weak subsutural cord and spiral threads on the siphonal canal. *Anachis stricta* (Fig. 2B) is spirally sculptured by two well-marked subsutural furrows interrupted by ribs, broad, flat but obsolete threads on the spire, and very distinct threads on the base (Watson 1886: 238; pl. 13, fig. 3). Finally, *A. rechonchuda* n. sp. differs from *A. stricta* by the presence of a more pronounced projection of the small tubercles in the subsutural region.

Anachis stricta was described on the basis of two adult specimens dredged from deep waters off the West Indies (North of Culebra Island, St. Thomas, 18°38'30"N, 65°05'30"W, at a depth of 713 m) (Watson 1886: 238). The syntype of *A. stricta* figured herein (Fig. 2B) is in good condition and was chosen as the lectotype (NHMUK 1887.2.9.82H-5) under the provisions of Article 74.1 (ICZN 1999). The paralectotype has a worn surface, broken protoconch and outer lip as well as two holes in the ventral region.

Acknowledgments

To Dr. José C. N. Barros (Departamento de Pesca e Aquicultura, Universidade Federal Rural de Pernambuco, Brazil) for the donating the specimens of *Anachis* for study; Mrs. Andreia Salvador (Curator of Marine Mollusca, NHMUK) for providing information on the type material deposited in your institution; Mr. Phil Crabb (NHMUK) for taking photos of the syntypes figured herein; Dr. Paulo M. S. Costa (associate research, MNRJ) for taking photos of the syntypes figured herein and sending literature; we are very grateful to Mr. Marien Faber (The Netherlands), Dr. Marta J. deMaintenon (Marine Science, University of Hawaii at Hilo, Hawaii, USA), Dr. Harry G. Lee (Florida, USA) and Dr. Luiz R.L. Simone (MZSP) for critically reviewing the manuscript.

References

- Bouchet, P. (1997) Inventorying the molluscan diversity of the world: what is our rate of progress? *The Veliger*, 40, 1–11.
- Bouchet, P. (2006) The magnitude of marine biodiversity. In: Duarte, C.M. (Ed.), *The exploration of marine biodiversity: scientific and technological challenges*. Fundación BBVA, Bilbao and Madrid, pp. 33–64.
- Bouchet, P. & Gofas, S. (2014) *Anachis* H. Adams & A. Adams, 1853. World Register of Marine Species. Available from: <http://www.marinespecies.org/aphia.php?p=taxdetails&id=137802> (accessed 11 December 2014)
- Bouchet, P., Lozouet, P., Maestrati, P. & Héros, V. (2002) Assessing the magnitude of species richness in tropical marine environments: exceptionally high numbers of molluscs at a New Caledonia site. *Biological Journal of the Linnean Society*, 75, 421–436.
<http://dx.doi.org/10.1046/j.1095-8312.2002.00052.x>
- Corrêa, V.F., Fassina, P.V. & Passos, F.D. (2014) *Falcidens targatus* and *F. acutargatus*: two species of Caudofoveata (Mollusca, Aplacophora) new for Brazil. *Journal of Natural History*, 48(45–48), 2947–2963.
<http://dx.doi.org/10.1080/00222933.2014.959575>
- Costa, P.M.S. (2005) *Estudo Taxonômico dos Representantes da Família Columbelloidea Swainson, 1840 (Mollusca, Caenogastropoda) da Costa Brasileira*. Ph.D. Thesis, Universidade Federal do Rio de Janeiro/Museu Nacional, Rio de Janeiro, 290 pp.
- Costa, P.M.S. & Absalão, R.S. (1998) *Nassarina thetys* sp. nov. (Neogastropoda: Columbelloidea), a new species from the Brazilian coast. *Basteria*, 62, 277–285.
- Costa, P.M.S. & Souza, P.J. (2001) Two new species of *Mitrella* Risso, 1826 (Gastropoda: Columbelloidea) from west Atlantic. *Iberus*, 19, 15–21.
- deMaintenon, M.J. (1999) Phylogenetic analysis of the Columbelloidea (Mollusca: Neogastropoda) and the evolution of herbivory from carnivory. *Invertebrate Biology*, 118, 258–288.
<http://dx.doi.org/10.2307/3226997>
- International Commission on Zoological Nomenclature (ICZN) (1999) *International Code of Zoological Nomenclature*.

4th Edition. International Trust for Zoological Nomenclature, London, 306 pp.

- Lima, S.F.B. (2014) *Notocrater christofferseni* n. sp. (Vetigastropoda: Pseudococculinidae): first record of the genus in the South Atlantic Ocean. *Zootaxa*, 3873 (2), 178–186.
<http://dx.doi.org/10.11646/zootaxa.3873.2.5>.
- Lima, S.F.B. & Christoffersen, M.L. (2013) Nystiellidae (Gastropoda: Epitonioidae) Collected During the REVIZEE Program/Northeast Brazil with Descriptions of New Species and a Checklist of the Family from the Atlantic Coast of South America. *American Malacological Bulletin*, 31, 289–296.
<http://dx.doi.org/10.4003/006.031.0208>
- Lima, S.F.B. & Christoffersen, M.L. (2014) New species of *Gregorioiscula* and *Opalia* (Caenogastropoda: Epitoniidae) in the Western Atlantic: a case of republication. *Zootaxa*, 3835 (3), 392–396.
<http://dx.doi.org/10.11646/zootaxa.3835.3.9>
- Lima, S.F.B., Christoffersen, M.L. & Barros J.C.N. (2013) New Seguenziidae of the genus *Ancistrobasis* (Vetigastropoda: Seguenzioidea) from deep waters in the South Atlantic Ocean (Brazil). *Cahiers de Biologie Marine*, 54, 103–108.
- Lima, S.F.B., Christoffersen, M.L. & Villacampa, Y. (2014) Record of *Basilissopsis* for the bathyal region of the South Atlantic (Brazil) based on the description of a new species and the designation of a lectotype for *B. rhyssa* (Vetigastropoda, Trochidae). *Spixiana*, 37, 27–34.
- Monsecour, D. & Monsecour, K. (2006) Two new deep water species of Columbelloidea (Gastropoda: Neogastropoda) from the Caribbean. *Gloria Maris*, 45, 1–6.
- Pelorce, J. (2013) Deux nouvelles espèces de Columbelloidea (Gastropoda: Neogastropoda) de l'île de Martinique, Antilles françaises. *Novapex*, 14 (1), 21–24.
- Rios, E.C. (2009) *Compendium of Brazilian Sea Shells*. Evangraf, Rio Grande, Rio Grande do Sul, 668 pp.
- Rolán, E. & Boyer, F. (2006) A new *Anachis* (Gastropoda: Columbelloidea) from Gabon. *Novapex*, 7 (1), 25–27.
- Simone, L.R.L. & Cunha, C.M. (2012) Taxonomic study on the molluscs collected in *Marion-Dufresne* expedition (MD55) to SE Brazil: Xenophoridae, Cypraeoidea, mitriforms and Terebridae (Caenogastropoda). *Zoosystema* 34 (4), 745–781.
<http://dx.doi.org/10.5252/z2012n4a6>
- Simone, L.R.L. & Cunha, C.M. (2014) Taxonomical study on the mollusks collected in *Marion-Dufresne* (MD55) and other expeditions to SE Brazil: the Fissurellidae (Mollusca, Vetigastropoda). *Zootaxa*, 3835 (4), 437–468.
<http://dx.doi.org/10.11646/zootaxa.3835.4.2>
- Tate, R. (1868) *Appendix to the Manual of Mollusca of S.P. Woodward, A.L.S., containing such recent and fossil shells as are not mentioned in the second edition of that work*. Virtue & Yorston, London, 86 pp.
- Thorsson, W.M. & Monsecour, K. (2008) Living Columbelloidea – Part 78. *Internet Hawaiian Shell News*, 2008, 1–17. [Hawaii]
- Watson, R.B. (1886) Report on the Scaphopoda and Gasteropoda collected by H.M.S. 'Challenger' during the years 1873–1876. *Report on the Scientific Results of the Voyage of H.M.S. Challenger*, *Zoology*, 15, 1–756.
- Wilson, B. (1998) Part B. Family Columbelloidea. In: Beesley, P.L., Ross, G.J.B. & Wells, A. (Eds.), *Mollusca: The Southern Synthesis. Fauna of Australia. Vol. 5*. CSIRO Publishing, Melbourne, pp. viii + 827–829.