

# A new Dendrophylliidae (Anthozoa: Scleractinia) from the Cabo Verde Archipelago.

Oscar Ocaña<sup>1</sup>, Alberto Brito<sup>2</sup> y José Espinosa<sup>3</sup>

1 Fundación Museo del Mar de Ceuta, Muelle Cañonero Dato s.n, 51001, Ceuta, North Africa, Spain (email: lebruni@telefonica.net)

2 Research group BIOECOMAC, Department of Animal Biology, Faculty of Biology, Universidad de La Laguna, C/ Astrofísico Sánchez s.n., 38206 La Laguna, Tenerife, Canary Islands

3 Instituto de Ciencias del Mar, Calle Loma # 14, entre 35 y 37, Plaza de la Revolución, La Habana, Cuba

**RESUMEN:** Un nuevo género y especie de madreporario es descrito para el archipiélago de Cabo Verde. El nuevo hallazgo pertenece a la familia Dendrophylliidae y sus peculiaridades más llamativas son la presencia de engrosamientos en su esqueleto, la expansión de su columela y poseer una fosa poco profunda a diferencia de otras especies. Por el momento, esta especie debe ser considerada endémica de Cabo Verde.

**ABSTRACT:** A new genus and species of Madreporaria is described for the Cabo Verde Archipelago. The discovery belongs to the Dendrophylliidae family and its most striking morphological peculiarities are: thickened areas along the corallum, giving the colony a strange morphology; expanded, spongy columella; and shallow fossa in comparison to other species. At the moment the species seems to be endemic to Cabo Verde.

**KEY WORDS:** Anthozoa, Scleractinia, Dendrophylliidae, new genus, new species, Cabo Verde Islands.

The Cabo Verde Archipelago is a gorgeous hotspot for marine biodiversity, with many Anthozoan species described there. We have already described two new Dendrophylliidae, which we found on several Cape Verdean islands: the new genus and species *Balanopsammia wirtzi* (see Ocaña & Brito, 2013) and also the new species *Tubastrea capverdensis* (Ocaña et al., 2015). Amazingly, this new finding came from a shallow water habitat, and had been established in a cave, although perhaps the species has previously been observed and confused with *Tubastrea caboverdiana*, which usually grows in the surrounding area. Due to the importance of this species being discovered in shallow caves, we only wish to publish the essential information here, as we plan to produce a more detailed article with more information in the near future. Additional material will be sent to several European museums which have important zoological collections.

## MATERIAL AND METHODS

The specimens of the present new genus and species come from two locations within the Cabo Verde Islands. The new taxon was observed in São Vicente (Ponta da Furna da Rosa) and Sal Island (Costa de Palmeira). The samples were collected using scuba diving equipment, fixed with 5-10% formaldehyde and later stored in 70% alcohol in the collections of the Maritime Museum of Ceuta (Museo del Mar de Ceuta, or MMC). Several colonies and polyps were prepared by removing the soft tissue in order to study the general morphology and the anatomical features of the skeleton by means of a stereo dissecting microscope.

## SYSTEMATICS

Order Scleractinia  
Suborder Dendrophylliina  
Family Dendrophylliidae  
Genus *Morabeza* gen. nov.

**Diagnosis:** Small delicate dendroid or bushy colonies formed by intra- and extra-tentacular budding. Extra-calicular budding occurs from the corallum wall and never

from laminar expansion. In the colonies the corallum epitheca are joined and do not overhang from the colony; also the corallum epitheca is slightly costate. Septa are arranged normally and not following Pourtalés Plan; pali is absent while columella is spongy and can be extremely developed, taking up most of the inside of the corallum.

**Remarks:** *Cladopsammia* and *Morabeza* may develop well-separated, enlarged calyces, although the septa of *Morabeza* do not present Pourtalés Plan. *Rhizopsammia* is quite different from *Morabeza* because its septa follow the Pourtalés Plan and do not form dendroid colonies. The new genus *Morabeza* retains some resemblance to *Tubastrea* but differs from the former in that it does not form massive colonies as *Tubastrea* normally does, and it also forms delicate colonies with highly elongated polyps; additional ongoing analysis focusing on cnidom (see Ocaña & Brito, 2013; Mariani et al., 2018), ecological distribution and other anatomical characteristics will support these differences in future articles.

**Type species:** *Morabeza benitoi*, described below.

**Etymology:** The term *Morabeza* is dedicated to the inspirational Cape Verdean singer Cesarea Evora.

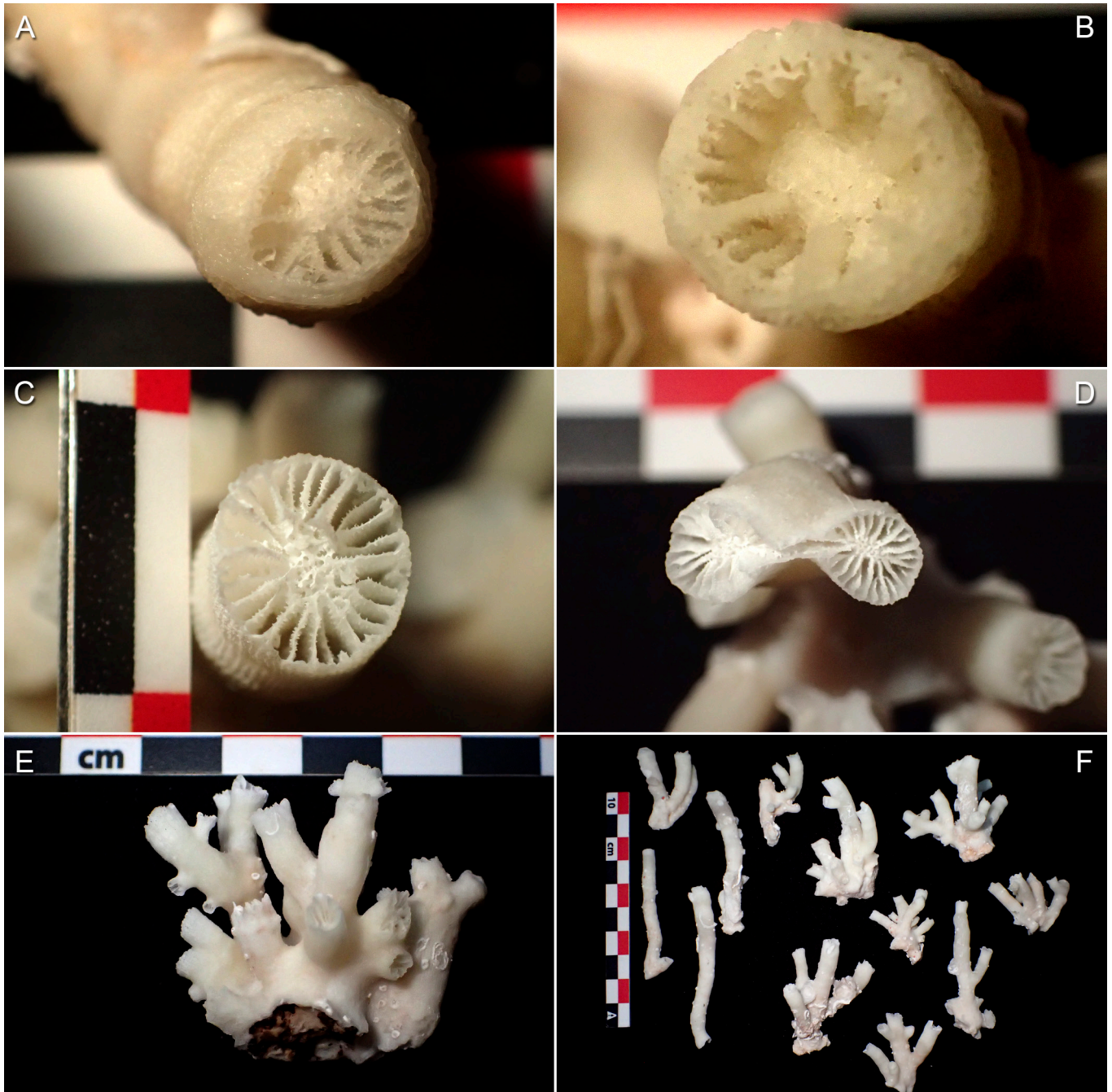
## *Morabeza benitoi* Ocaña & Brito new species

**Type material:** Coll. MMC-50: cave roof, 20 m, colony with 25 polyps; all of them presented yellow colour; Ponta da Forna da Rosa, São Vicente Island, Cabo Verde, O. Ocaña leg., 05/05/2017, preserved in alcohol; holotype. Coll. MMC-51: same data, six small colonies with few polyps; paratype. Coll. MMC-52: same data, nine small colonies with few polyps; paratype. Coll. MMC-55: same data, 16 small colonies; paratype. Coll. MMC-53: cave roof, 20 m, four small colonies; yellow colour; Ponta da Forna de Rosa, São Vicente Island, Cabo Verde, O. Ocaña leg., 22/11/2017, preserved in alcohol; paratype. MMC-54: same data, nine small colonies; paratype. MMC-56: cave roof, 22 m, 12 colonies, yellow colour; Palmeira coast, Sal Island, Cabo Verde, O. Ocaña leg., 14/11/18, preserved in alcohol; paratype. Coll. MMC-57: same data, six small colonies; paratype.

**Description:** Mainly yellow, but also some orange polyps have been observed in the specimens of this new species. In live conditions the polyps can be widely extended from their skeletons and attain a gorgeous yellow colour (see plate 2). The species forms small, delicate branched colonies with a solid basal attachment and no more than 25 polyps per colony (see plate 1 E-F), although usually there are much fewer (5-10). Corallum is cylindrical and presents thickened areas along its length. Branching occurs both intra- (see plate 1D) and extratentacularly and bud usually curves inward towards the colony as it grows (Fig.1 lower right). Colonies generally have short to medium sized polyps (1-3 cm), although very fine and elongated ones are not rare (up to 8-9 cm) (see plate 1F); calyces are round with a diameter of 3 to 8 mm. Between 25-40 septa were observed in our analysis on

the material. Septa arrangement shows 3 cycles in small corallites and 4 in more developed ones, but the last cycle was always observed incomplete. S3 can be joined to S2 and S4 always have low development (see plate 1 C-D). The fossa is narrow, there is no pali and most of the septa are joined to the columella which is always spongy, showing a variable development occupying just part of the calyce centre, or it can be very spread out inside (see plate 1 A-B). Costae are fine and granulate and the pores are concentrated in the upper part of the calyces. Corallum are commonly covered by encrusting organisms (see plate 1F).

**Etymology:** The name chosen for this new species is in memory of the first author's nephew Benito, who passed away due to a cruel illness; his was a soul captivated by poetry and the natural world.



**Plate 1.-** Skeletal features of *Morabeza benitoi*: septa and very spread out columella in top images; septa and asexual reproduction in central images; colonies morphology in the holotype (MMC-50) bottom left and MMC-56 paratype bottom right.



**Distribution and Ecology:** The species has been exclusively recorded in two locations of the São Vicente and Sal islands (Cabo Verde Archipelago); its presence on the other islands is expected but not confirmed. The species inhabits certain caves at moderate depths of 10 to 25 metres and grows in low-lit areas or even complete darkness, on the roofs of the caves. *M. benitoi* occurs together with other encrusting species such as sponges, bryozoa and other cnidarians and can form important populations where they become established (see plate 2).

**Remarks:** Our first impression was that the new species was *R. manuelensis*, described by Chevalier in 1966 and widely recorded on Western and Eastern Atlantic coasts including Cabo Verde (see Zibrowius, 1980); as the species can only be found in circalittoral environments, cave populations are plausible. After a brief analysis, it was quickly concluded that this was indeed a new genus. Furthermore, the presence of *Tubastrea caboverdiana* nearby emphasises the differences between both taxa. *Cladopsammia rolandi* can be found on the roofs of the



**Plate 2.-** Different colonies presenting yellow and orange colours.

caves and presents a striking yellow colour, and it can also sometimes grow bushy (see Ocaña & Brito, 2013), but it differs from *Morabeza benitoi* in having septa that follow the Pourtalés Plan, deep fossa and a tiny columella, as well as common extra-calicular budding from laminar expansion. *Rhizopsammia manuelensis* is exclusively found in deep waters from 55 to 366 meters (see Cairns, 1979) and branching colonies have never been observed. These characteristics, together with the massive columella and the presence of a noteworthy pali, make *R. manuelensis* very different to *Morabeza benitoi*. *Tubastrea caboverdiana* (see Ocaña & Brito, 2015) does not present a narrow fossa and its septa does not follow the Pourtalés Plan but form dendroid colonies that distantly resemble the new genus and species; however they also grow in massive colonies, very unlike *M. benitoi*. Moreover the ways in which they branch are quite different from one species to the other (see plates 1-2). Nevertheless, the skeletal characteristics that most differentiate *M. benitoi* from any other Dendrophylliidae are thickened areas along the corallum, giving the colony a strange morphology, narrow fossa, and a spongy columella that is very spread out inside.

### ACKNOWLEDGEMENTS

We are grateful to Professor Rui Freitas from Cabo Verde University for his help and enthusiastic support of the marine biodiversity of Cabo Verde. Medina Withman reviewed the English language.

This study has benefited from the development of the MIMAR MAC/4.6.d/066 project (INTERREG MAC 2014-2020).

### BIBLIOGRAPHY

- Cairns, S. D., 1979. The deep-water Scleractinia of the Caribbean Sea and adjacent waters. *Studies on the Fauna of Curacao and other Caribbean Islands*, 57 (180):341.
- Chevalier, J.P. 1966. Contribution à l'étude des Madreporaires des côtes occidentales de l'Afrique tropicale (2. partie), Bulletin de l'Institut Fondamental d'Afrique Noire, Ser A, Tome XXVIII, n° 4: 1356-1405.
- Zibrowius, H., 1980, Les Scleractiniaires de la Méditerranée et de l'Atlantique nordoriental, Mém. Inst. Océanogr., Monaco, 11 (three volumes): 1-284.
- Ocaña, O. & Brito, A. 2013. *Balanopsammia wirtzi*, a new genus and species of coral (Anthozoa:Scleractinia:Dendrophylliidae) from the Cape Verde Islands: a comparative study with the Mediterranean *Cladopsammia rolandi*. *Revista de la Academia Canaria de Ciencias*, Vol. XXV: 87-104.
- Ocaña, O., Hartog, J.C. den, Brito, A., Moro, L., Herrera, R., Martín, J., Ramos, A., Ballesteros, E. & Bacallado, J.J., 2015. A survey on Anthozoa and its habitats along the Northwest African coast and some islands: new records, descriptions of new taxa and biogeographical, ecological and taxonomical comments, Part I. *Revista de la Academia Canaria de Ciencias*, Vol. XXVII: 9-66.
- Mariani, S., Ocaña, O., López-Sendino, P., García, M., Ricart, A. M., Garrabou J. & Ballesteros, E. 2018. The zooxanthellate scleractinian coral *Oulastrea crispata* (Lamarck, 1816), an overlooked newcomer in the Mediterranean Sea?. *Mediterranean Marine Science*, 0, 589-597.