



## A new species of *Leptogorgia* (Cnidaria: Anthozoa: Octocorallia) from Golfo Dulce, Pacific, Costa Rica

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The description of this single species is necessary to facilitate the publication of ongoing research conducted by Rita Vargas at the Museum of Zoology, University of Costa Rica, dealing with the associated microfauna. Presently 24 species of *Leptogorgia* have been reported for the eastern Pacific, 13 of which have been found in Costa Rica (Breedy & Cortés 2011). Although octocoral surveys have been conducted as part of biodiversity studies, there is no published information regarding the occurrence of this taxon in Golfo Dulce. Here we describe a new species of *Leptogorgia* and compare it with other *Leptogorgia* species with similar characteristics. Golfo Dulce is a bay located on the southern Pacific coast of Costa Rica. It is about 50 km long, 10–15 km wide, and covers an area of approximately 680 km<sup>2</sup>. The inner part of Golfo Dulce has a maximum depth of slightly over 200 m with a 60 m deep sill at the opening to the Pacific Ocean (Cortés 1999). It has been considered a tropical fjord because of the bathymetry and the presence of anoxic deep waters (Cortés 1999, Svendsen *et al.* 2006). Specimens were collected by Scuba diving, preserved in 70% ethanol or air dried, and treated and identified following the current methodology (Breedy & Guzman 2002). The holotype and paratypes are deposited in the Museo de Zoología, Universidad de Costa Rica (MZUCR, formerly UCR), San José, P.O. Box 11501-2060, Costa Rica.

**Order Alcyonacea Lamouroux, 1812**

**Family Gorgoniidae Lamouroux, 1812**

**Genus *Leptogorgia* Milne Edwards & Haime, 1857**

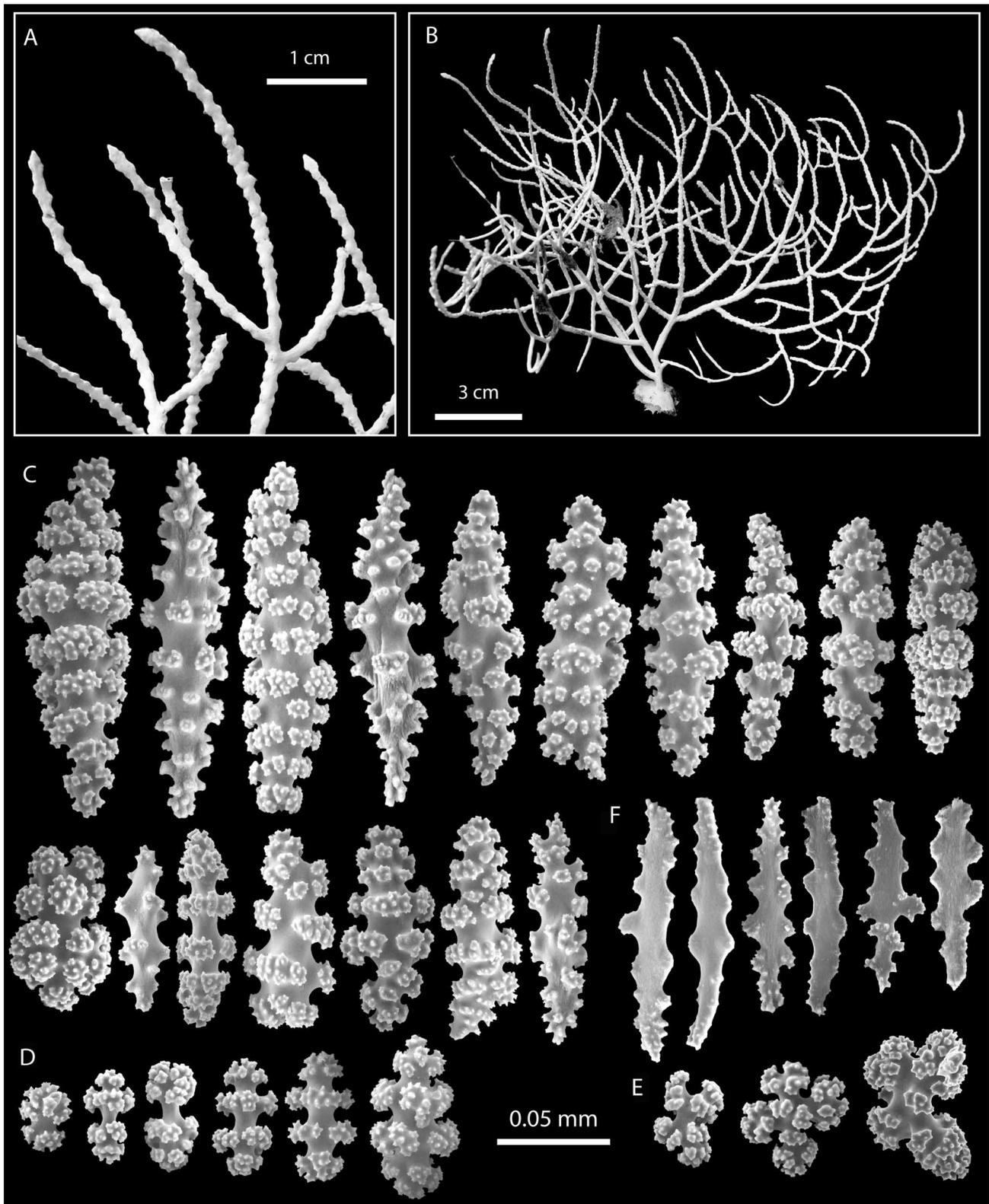
*Leptogorgia cortesi* sp. nov.

**Holotype:** MZUCR 2118, ethanol preserved, Punta Islotes, Golfo Dulce, 9 m, O. Breedy and J. Cortés, 11 April 1997.

**Paratypes:** MZUCR 2119–2127, 2130–2135, same data as the holotype; MZUCR 2128–2129, ethanol preserved, Punta Estrella, Golfo Dulce, 25–30 m, O. Breedy and H.M. Guzman, 5 February 2009; MZUCR 2147, dry, Punta Islotes, Golfo Dulce, 14 m, J. Cortés, 20 January 1994.

**Description.** The holotype is a bushy, irregular looking colony 11.2 cm long and 15.5 cm wide (Fig. 1A–B), arising from a conical holdfast, 15 mm in diameter, spreading over solid substrate. The colony is laterally branched; three primary branches arise from a very short basal stem, 3 mm in length and 2.5 mm in diameter. The branches, 2–2.5 mm in diameter, produce secondary branchlets, 1–1.5 mm in diameter, irregularly subdividing up to seven times. Some branchlets form pseudo-anastomoses (anastomosis of the coenenchyme, not of the axes). The unbranched final twigs are long, slender, and sprout at a wide angle; they shortly curve upward roughly parallel with the larger branches or extend perpendicularly. The twigs reach up to 6 cm in length, 0.5–1 mm in diameter, and have pointed tips. A narrow, marked, sinuous groove extends along the main stem and the branches and branchlets, but it may be indistinct or absent on the distal portions of the latter. The axis is horny, with a chambered central core filled with organic filaments mineralized with microspheres of carbonate hydroxylapatite. The polyps are retracted into surface mounds that are closely distributed, prominent, and about 0.3–0.5 mm tall; they are mostly arranged in two alternating rows on each side of the

thicker branches, and in a single row on each side of the branchlets. The edge of the distal part of the branches shows an undulating, delicate contour, which is very distinctive for the species (Fig. 1A).



**FIGURE 1.** Holotype of *Leptogorgia cortesi*: A, close up view of branches; B, entire colony; C–E, coenenchymal sclerites; F, anthocodial rods.

Sclerites of the coenenchyme are colourless; the longer ones are spindles (Fig. 1C), some slightly curved, with up to 12–14 whorls of tubercles, and up to 0.16 mm long and 0.048 mm wide. They have acute tips, one of which can be

slightly bent or bifurcated. There are also transitional forms between a capstan and a spindle, with various arrangements of tubercles and warts (Fig. 1C). The shorter sclerites are tuberculate capstans, with two whorls of warty tubercles and complex terminal clusters, ranging from 0.029–0.075 mm long and 0.019–0.04 mm wide (Fig. 1D). A small number of crosses are present, up to 0.06 x 0.06 mm long, with tuberculate arms (Fig. 1E). The polyps are colourless. The anthocodiae have a weak, point-like arrangement of long and narrow, somewhat flattened rods with lobed or indented margins that are sparsely covered with low warts, more concentrated at the ends of the longer rods. The anthocodial rods are up to 0.12 mm long and 0.03 mm wide (Fig. 1F), and are colourless.

Colour of the colony is white.

**Distribution.** Presently, the species has been found only at the inner rocky coralline reefs of Golfo Dulce.

**Etymology.** The species is named after a long time friend and colleague Jorge Cortés, who first suggested to us to adopt octocorals as a topic of study, and we hereby acknowledge him as a pioneer of marine biodiversity research in Costa Rica.

**Discussion.** The new species belongs to the *Leptogorgia alba*-group which unites the species that have white colonies, variable branching pattern, mostly lateral, and polyp-mounds varying from flat to slightly prominent (Guzman & Breedy 2008). There are six valid species in the *Leptogorgia alba*-group, the new species differing from the others by having the following unique combination of characters. Firstly; ramifications can be up to seven times; and a few pseudo-anastomoses occur in some parts. Secondly, the polyps retract in prominent mounds that are closely arranged, giving an undulating appearance to the edges of the branches. Finally, the maximum length of spindles is 0.16 mm, having 12–14 whorls of tubercles and frequently a bent end. See Table 1 for details.

**TABLE 1.** Comparative characteristics of the *Leptogorgia alba*-group.

Species	Polyps		Growth form					Sclerites			
	Polyp mounds	Colony form	Type of branching	Branch form	Maximum # of bifurcations	Pseudo-anastomosis	Most abundant sclerite type	Spindles >0.1mm	Max. spindle length in mm	Bent spindles	Anth. rods max length in mm
<i>L. alba</i> Duchassaing & Michelotti	sr	fla	lat	st	4	X	spindle	√	0.18	√	0.15
<i>L. cofrini</i> Breedy & Guzman	sr	bu	d-lat	st	4	X	spindle	√	0.12	X	0.14
<i>L. peruviana</i> (Verrill)	f	bu	d-lat	st	4	X	capstan	X	0.10	X	X
<i>L. laxa</i> Hickson	sr	asc	s-lat	sl	2	X	spindle	√	0.18		0.10
* <i>L. ramulus</i> (Milne Edwards & Haime)	p	bu	pi-lat	st	5	X	capstan	√	0.13	X	0.09
<i>L. styx</i> Bayer	f	fla	lat	st	4	X	spindle	√	0.15	√	X
<i>L. cortesi</i> <b>sp. nov.</b>	p	bu	lat	sl	7	√	spindle	√	0.16		0.12

(\*) white variety

polyp mounds: p, prominent; sr, slightly raised; f, flat

branching tendency: fla, flabellate/; bu, bushy; asc, ascending and whip-like

type of branching: lat, lateral; s-lat, sparsely lateral; d-lat, densely lateral; pi-lat, lateral with irregular pinnate branches

branch form: st, stout; sl, slim

present: √; absent: X

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