

# Octocorals and brittle stars: Recording an unknown relationships in the Colombian Pacific Ocean

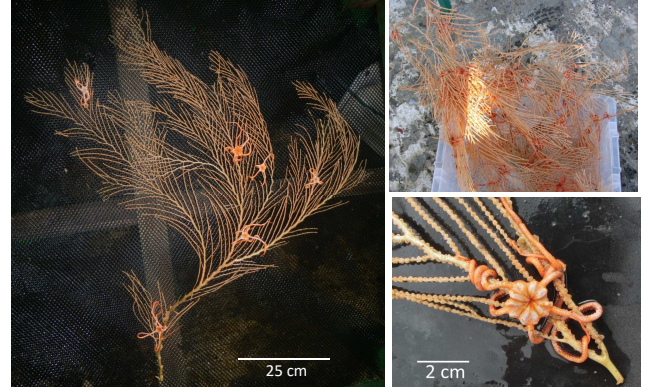
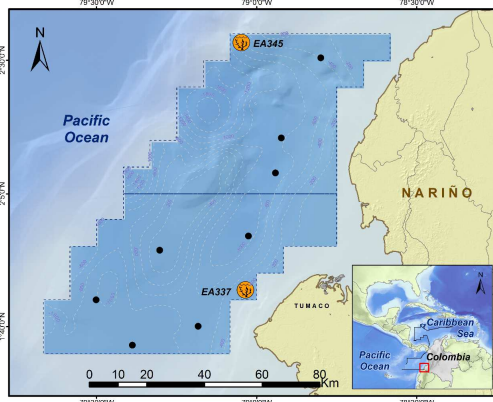


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Brittle stars are recognized as octocoral epizoic organisms, both in shallow and deep environments. In these relationships, ophiurans benefit directly by being elevated, facilitating their feeding by suspension, and passive protection by octocoral. However, the octocorals do not seem to benefit or be harmed by this relationship.

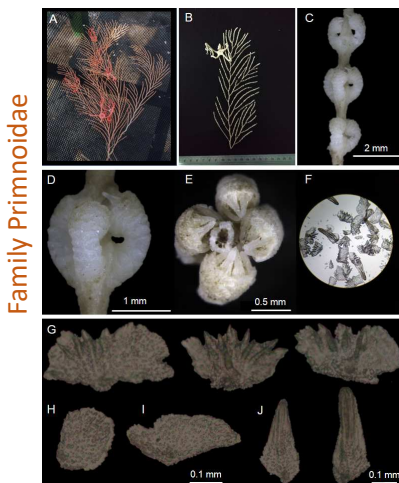


During the Tumaco Offshore project (2012-2013) developed by Inveemar and ANH, samplings were carried out on soft bottoms of 15 localities in an unexplored area offshore of the Colombian Pacific. 218 brittle stars associated with several colonies of octocorals were collected at two stations at 668 (EA345) and 520 (EA337) m depth through trawls using an epibenthic net (9x1 m opening, 2.5 knots for 10 min). Size of the ophiuroids by disk diameter (dd), presence of mature gonads by direct observation, and macroscopic evidence of arm regeneration are reported.

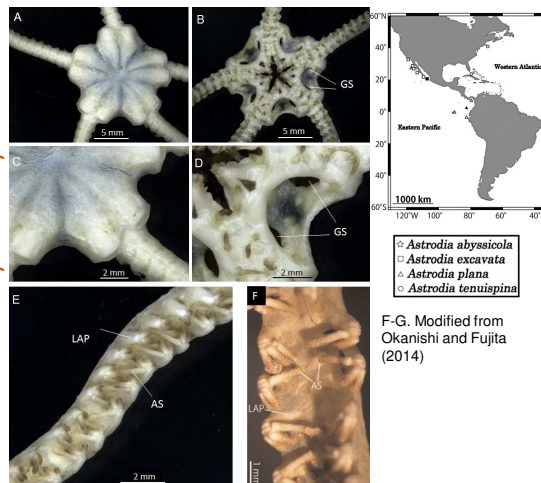
## What are the species?

*Callogorgia cf. galapagensis* Cairns, 2018

*Astrodia cf. excavata* (Lütken & Mortensen, 1899)



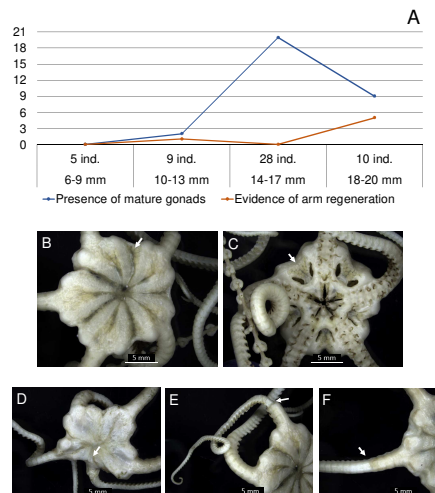
Family Primnoidae



Colony of almost 1 m in height collected in the field (A). All the specimens with alternate and pinnate branching (B). Four to five whorls of polyps occur per cm (C-D), and each whorl with four or five polyps (E), being four the most common in the Colombian specimens. Nevertheless, in the description of the specie (Cairns, 2018) the polyps are arranged in whorls of five or six. Sclerites of the body wall: abaxial (G), adaxial (H), infrabasal scales (I) and the opercular scales (J). The typical highly ridged scales of the abaxial body wall were evident in the specimens (G-J).

*Astrodia* is characterized by maximum of two to four arm spines-AS (E, F), never hooked, cylindrical throughout the arms; and the disc sometimes covered by external ossicles, especially well developed at the margin. *A. excavata* and *A. plana*, two of the four *Astrodia* species, are distributed in the Eastern Pacific Ocean (G). Specimens appear to be *A. excavata* because of their bar-like lateral arm plates-LAP on middle to distal portion of arms (E), and large genital slits-GS (B, D). However, external ossicles on aboral surfaces are absent (A, C), like *A. plana*.

## Ophiuroids morphological characteristics



The disk diameters (dd) of *A. cf. excavata* residing in the octocoral colonies ranged between 6 to 20 mm, mean 14.8 mm (A). Sex of specimens was not determined, however, 60% of the individuals reviewed showed mature gonads mostly between 14-17 mm (B, C), being 13 mm dd the smallest size. Only 11.5% of the specimens had macroscopic signs of regeneration, most of them largest than 18 mm dd. One showed the disc regenerating (D), the rest had only arms, usually from the proximal portions (E, F).

Associations of brittle stars with *Callogorgia* species have been recorded for the Caribbean Sea as commensals (Bayer *et al.*, 2014); however, this finding is relevant because it constitute the first report of this interaction for the Eastern Tropical Pacific. Both species, *Astrodia cf. excavata* and *Callogorgia cf. galapagensis* would represent new records for the Colombian Pacific Ocean contributing to the biodiversity inventories.

## References:

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- Cairns, S. Deep-Water Octocorals (Cnidaria, Anthozoa) from the Galápagos and Cocos Islands. Part I: Suborder Calcarionia. Zookeys 729: 1-46.
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## Acknowledgments:

Our gratitude to Christian Diaz for his help with sorting of specimens. Special thanks to the staff of the Marine Natural History Museum of Colombia MAKURIWA, and David Alonso the Chief of Biodiversity and Marine Ecosystems Program of Inveemar. Samples were collected during the project "Biological and physic baseline of TUM Offshore Blocks 6 and 7 subject to hydrocarbon exploration" sponsored by Inveemar and Hydrocarbon National Agency of Colombia through the Agreement No. 261 of 2012.