Ocurrence of the sea anemone *Telmatactis panamensis* (Verrill, 1869) (Cnidaria: Anthozoa: Actiniaria) at Isla del Coco National Park, Costa Rica

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Abstract: The sea anemone fauna of Isla del Coco National Park (also known as Cocos Island Nacional Park), Pacific Costa Rica is poorly known. In the present work we report the first occurrence of the species *Telmatactis panamensis*. Individuals of this sea anemone (n=24) were collected at Chatham Bay intertidal and at 15m depth in Punta Ulloa, in both cases attached to rocks; during the expedition UCR-UNA-COCO-I in April 2010. We provide photographs of live individuals, external anatomy and an inventory of cnidae of the studied specimens. Possibly this species is extended to greater depth as observed by other authors in the Galápagos Islands.
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Key words: *Telmatactis panamensis,* sea anemone, Actiniaria, Cocos Islands, Tropical Eastern Pacific, Isla del Coco, Costa Rica.

Cocos Island (Isla del Coco, Costa Rica) is one of the oceanic islands in the Eastern Tropical Pacific. The marine fauna of this island have been the subject of scientific interest especially for the biogeographic relevance and biodiversity (Breedy & Cortés 2008). This island has been the target of numerous expeditions to explore the island's species richness (Cortés 2008); notwithstanding some groups like the sea anemone fauna are practically unknown. The only record of a sea anemone is the species *Telmatactis cricoides* (cited as *T. americana*) (Cortés 1996/1997), based on a photographic record (Bradley & Ireland 1993), but its identification is doubtful. During the expedition UCR-UNA-COCO-I to Isla del Coco National Park in April 2010 we sampled many sites and collected many individuals of sea anemones, both from the intertidal and deeper zones. This sampling allowed us to identify the species *T. Panamensis*, this being the first record of a sea anemone based on collected individuals from this island.

MATERIAL AND METHODS

The individuals were collected by hand from the intertidal zone at Bahía Chatham (5º32'52"N 87º02'32"W) and by SCUBA dives at Punta Ulloa (5º33'05"N 87º02'06"W), Isla del Coco National Park, Costa Rica; during the expedition UCR-UNA-COCO-I in April 2010. Individuals were anesthetized by the addition of crystals of magnesium chloride, and preserved in 5% formalin and later in

ethanol 70%. The external characters of live specimens were observed in the field and also in preserved material in the lab. The internal anatomy was studied by dissections under the stereoscopic microscope. The cnidae was analyzed using a Zeiss Axiolab Microscope with micrometric eyepiece at a magnification of 1000X (oil immersion). Terminology of cnidae follows England (1991). The current classification of sea anemones, synonymy and the taxonomic status were cross-checked with the electronic database "Hexacorallians of the World" (Fautin 2011).

RESULTS

Classification

Order Actiniaria
Suborder Nynantheae
Infraorder Thenaria
No Rank Acontiaria
Family Isophellidae
Genus *Telmatactis*
Telmatactis panamensis (Verrill, 1869)

Synonymy

Phellia Panmensis Verrill, 1869, p. 490 (original description).
Phellia panamensis Hertwig, 1882, p. 81.
Phelliopsis Panamensis Verrill, 1899, p. 214-216.
Phellia rapanuiensis Carlgren, 1922 (1920), p. 153-156.
Telmatactis panamensis Carlgren, 1949, P. 91.
Telmatactis rapanuiensis Carlgren, 1949, p. 91.

Characteristics of studied specimens

In the intertidal zone of Bahía Chatham 24 small specimens were collected under rocks during low tides, while at Punta Ulloa six individuals under rocks were sampled at 15 m depth (Fig. 1) during two dives. After preservation most of them retracted their tentacles but remained the column extended. The column diameter varies between 0.3cm and 2cm, and height from 0.4cm to 2.3cm in preserved state. Scapus wrinkled brown/orange, thick-walled

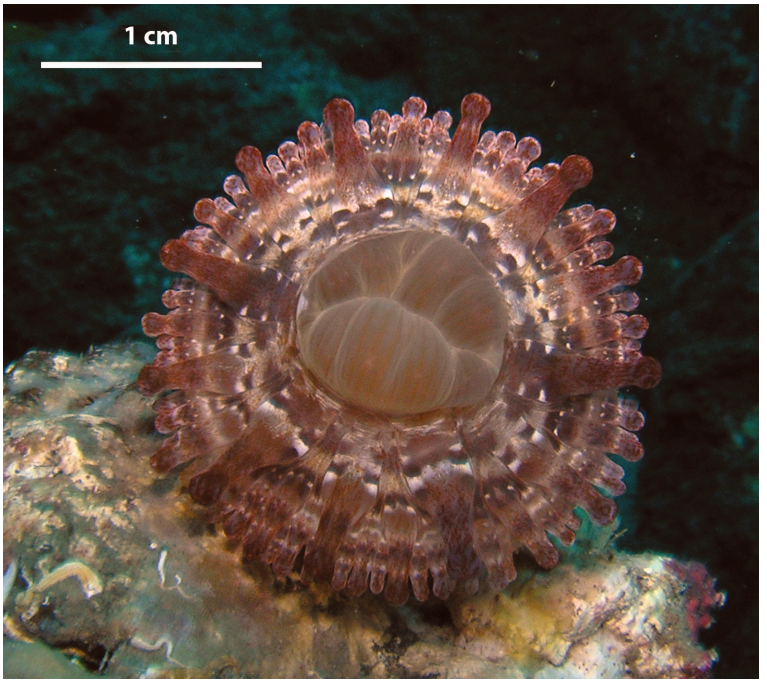

Fig. 1. Individual of *Telmatactis panamensis* from Punta Ulloa showing the oral disc and tentacles. Photograph by Jaime Nivia.

scapulus (Fig. 2). Acontia may be emitted through scapus and was observed in some of the collected individuals (both live and preserved). Actinopharynx paler orange than column; two symmetrical siphonoglyphes, each have white marking at its intersection with oral disk. Oral disk tentacle-free in central zone. Digitiform tentacles reddish brown with a proximal white crossband and swollen at their end, internal longer than external. Tentacles from 44 to 79. Those of the primary and secondary cycles much better developed than the others. In Table 1 the size and distribution of cnidae is detailed. The cnidom is composed by spirocysts, basitrichs, microbasic p-mastigophores and microbasic amastigophores.

Distribution other than Isla del Coco National Park

Galápagos Islands (Fautin *et al.* 2007), Chile: Easter Island (Rapanui) (Carlgren 1922), Mexico: Baja California (Carlgren 1951) and Panama (Verrill 1869).

DISCUSSION

The sea anemone *T. panamensis* is a new record for Isla del Coco National Park (Costa Rica). It is a common sea anemone in the intertidal of Bahía Chatham and Punta Ulloa at 15m depth, usually attached under rocks, but can also be found attached to large cobbles or shells as was observed by Fautin *et al.* (2007) in specimens from the Galápagos Islands. Bradley & Ireland (1993) in their photo guide illustrate an specimen of *T. cricoides* from Isla del Coco National Park (Cortés 1996/1997), but this record is based on a photo and no data are provided on its location, depth or anatomical characteristics, being therefore uncertain.

The anatomical characteristics of studied specimens from Isla del Coco National Park agree very well with the description of *T. panamensis* by Carlgren (1951) and Fautin *et al.* (2007), therefore we assigned the analyzed individuals to this species. Doumenc *et al.* (1989) in his work on variability of *Telmatactis*

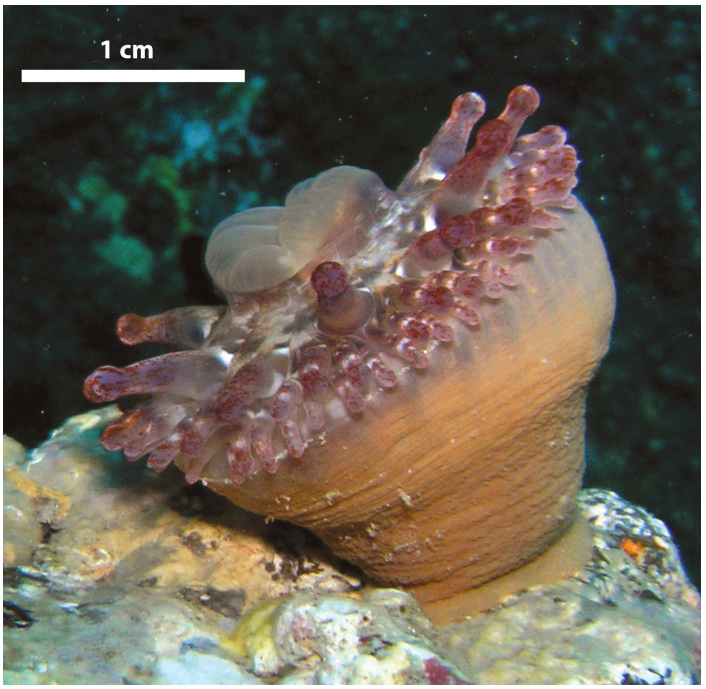

Fig. 2. Individual of *Telmatactis panamensis* from Punta Ulloa showing the wrinkled column. Photograph by Jaime Nivia.

TABLE 1
Distribution and size of cnidae of *Telmatactis panamensis*

Cnidae	Range in µm Length (mean±sd) x width (mean)	n	N	Abundance
Tentacles				
Spirocysts	17-37 (25.45 ± 4.70) x 2-6 (3.42)	73	4/4	++++
Basitrichs	33-57 (45.09 ± 6.82) x 2-5 (3.28)	71	4/4	++++
Microbasic p-mastigophores	26-41 (33.29 ± 3.58) x 4-6 (4.96)	27	4/4	+
Actinopharynx				
Basitrichs I	21-35 (26.46 ± 3.20) x 2-4 (3.10)	86	4/4	++++
Basitrichs II	12-19 (15.03 ± 2.19) x 2-4 (2.14)	76	4/4	+++
Microbasic p-mastigophores	37-60 (49.11 ± 4.58) x 7-14 (8.90)	87	4/4	++++
Microbasic p-mastigophores	25-33 (28.27 ± 2.32) x 4-7 (5.50)	11	3/4	+
Mesenterial filaments				
Basitrichs I	35-56 (48.03 ± 5.55) x 2-4 (3.03)	29	3/4	+
Basitrichs II	12-25 (18.43 ± 3.24) x 2-5 (2.26)	83	4/4	++++
Microbasic p-mastigophores	41-66 (53.58 ± 6.98) x 7-13 (9.60)	48	4/4	+++
Microbasic p-mastigophores	12-20 (15.49 ± 1.52) x 4-6 (4.49)	89	4/4	++++
Acontia				
Basitrichs II	17-29 (22.20 ± 1.84) x 2-3 (2.42)	89	4/4	++++
Microbasic p-mastigophores	46-63 (55.57 ± 3.85) x 9-17 (11.55)	89	4/4	++++
Column				
Microbasic amastigophore	13-17 (15.12 ± 0.92) x 3-5 (3.77)	102	4/4	++++
Basitrichs I	40-56 (45.2 ± 7.42) x 3-4 (3.6)	5	3/4	+
Basitrichs II	18-26 (22.06 ± 2.21) x 2-3 (2.24)	47	4/4	++

n: total number of capsules measured.
N: proportion of animals studied that contained the cnida.
+rare, ++++ abundant.

provide a worldwide inventory of this species-rich genus and conclude that most of species of *Telmatactis* are entirely littoral. However, Fautin *et al.* (2007) found that *T. panamensis* extends much deeper, while Wirtz (1996) mentioned a range of 0-62m for *T. cricoides;* in this way it is probable that population of *T. panamensis* at Isla del Coco National Park may also extend deeper and also to other sites around the island, which may be verified in future expeditions.

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RESUMEN

La fauna de anémonas de mar es prácticamente desconocida para el Parque Nacional Isla del Coco (Costa Rica). En el presente trabajo se reporta por primera vez la presencia de la especie *Telmatactis panamensis*. Individuos de esta anémona de mar fueron colectados en el intermareal de Bahía Chatham y a 15m de profundidad en Punta Ulloa, en ambos casos adheridas a rocas; durante la expedición UCR-UNA-COCO-I en Abril de 2010. Se proveen fotografías de ejemplares vivos, datos de su anatomía externa y un inventario del cnidae de los especímenes

estudiados. Posiblemente esta especie se extienda a mayor profundidad, tal como fue observado por otros autores para ejemplares de las Islas Galápagos.

Palabras clave: *Telmatactis panamensis*, anémona de mar, Actiniaria, Isla del Coco, Pacífico Tropical Este, Costa Rica.

REFERENCES

Bradley, G.E. & J. Ireland. 1993. Such is Life in Costa Rica Underwater. Printex Int., San José, Costa Rica. 95 p.

Breedy, O. & J. Cortés. 2008. Octocorals (Coelenterata: Anthozoa: Octocorallia). Rev. Biol. Trop. 56 (Suppl. 2): 71-77.

Carlgren, O. 1922. Actiniaria jund Zoantharia von Juan Fernandez und der Osterinsel: Pp. 145-160 (Chapter 20). *In* C. Skottsberg (Ed.). The Natural History of Juan Fernandez and Easter Island. Vol. 3. Almquist und Wiksells Boktryckeri, Uppsala.

Carlgren, O. 1951. The actiniarian fauna of the Gulf of California. Proc. U.S. Natl. Mus. 101: 415-449.

Cortés, J. 1996/1997. Biodiversidad marina de Costa Rica: Filo Cnidaria. Rev. Biol. Trop 44(3)/45(1): 323-334.

Cortés, J. 2008. Historia de la investigación marina de la Isla del Coco, Costa Rica. Rev. Biol. Trop. 56 (Supl.2): 1-18.

Doumenc, D., C. Chintiroglou & A. Foubert. 1989. Variabilité du genre *Telmatactis* Gravier, 1918 (Actiniaria, Acontiaria, Isophellidae). Bull. Mus. Natl. Hist. Nat. ser. 4, 11(A): 5-45.

England, K.W. 1991. Nematocysts of sea anemones (Actiniaria, Ceriantharia and Corallimorpharia: Cnidaria): nomenclature, Pp. 691-697. *In*: R.B. Williams, P.F.S. Cornelius, R.G. Hughes & E.A. Robson (Eds.). Coelenterate Biology: Recent Research on Cnidaria and Ctenophora. Kluewer, Dordrecht, The Netherlands.

Fautin, D.G. 2011. Hexacorallians of the World. http://geoportal.kgs.ku.edu/hexacoral/anemone2/index.cfm. Accessed in April 2012.

Fautin D.G, C.P. Hickman Jr., M. Daly & T. Molodtsova. 2007. Shallow-water sea anemones (Cnidaria: Anthozoa: Actiniaria) and tube anemones (Cnidaria: Anthozoa: Ceriantharia) of the Galápagos Islands. Pac. Sci. 61: 549-573.

Verrill, A.E. 1869. Review of the polyp's of the west coast of America. Trans. Conn. Acad. Arts Sci. 1: 377-558.

Wirtz, P. 1996. The sea anemone *Telmatactis cricoides* from Madeira and the Canary Islands: Size, frequency, depth distribution and colour polymorphism. Arquipélago 14A: 1-5.