First record of the sea anemone *Anthopleura nigrescens* (Cnidaria: Actiniaria: Actiniidae) on the Pacific coast of Central America

F.H. ACUÑA¹, J. ALVARADO², A. GARESE¹ AND J. CORTÉS³,⁴


We report the first record of the sea anemone Anthopleura nigrescens on the Pacific coast of Central America. Five specimens from Mata Limón (Costa Rica) were collected from rocks of a man-made breakwater at sub-tidal level. Images of live specimens are presented. A map with its worldwide distribution is included and we concluded that this actiniarian can be considered widely distributed in the Indo-Pacific.

Keywords: sea anemone, *Anthopleura nigrescens*, Pacific coast, Costa Rica, Central America

Submitted 10 February 2012; accepted 13 February 2012

INTRODUCTION

*Anthopleura* is a common sea anemone genus with 46 widely distributed valid species (Fautin, 2011). Some species are common in the Pacific Ocean, for example *A. artemisia* (Pickering in Dana, 1846), *A. dowi* Verrill, 1869, *A. elegantissima* (Brandt, 1835), *A. kurogane* Uchida and Muramatsu, 1958, *A. mariscali* Daly and Fautin, 2004, *A. sola* Pearse and Francis, 2000, *A. xanthogrammica* (Brandt, 1835) and *A. nigrescens* (Verrill, 1928). This last species was described as *Teliaopsis nigrescens* by Verrill (1928), and then mentioned as *Bunodactis nigrescens* by Carlgren, 1949 and *A. nigrescens* by Mathew (1967) and England (1969). Subsequently, Dunn (1974) redescribed this sea anemone in detail, using specimens from Hawaii. The distribution of *A. nigrescens* was extended to the Galápagos Islands and to Singapore by Fautin et al. (2007, 2009). In this paper we report the presence of *A. nigrescens* in Mata Limón (Costa Rica), extending its distribution to the Pacific coast of Central America.

MATERIALS AND METHODS

Five specimens of *Anthopleura nigrescens* were collected during a low tide at 0.2 m depth by one of us (J.A.) from Mata Limón (9°55′01.99″N–84°42′49.50″W) (Costa Rica) on 8 February 2011. There were more individuals in the field but five specimens were enough to identify the species. All were settled on rocks of a man-made breakwater at a sub-tidal level. The material was fixed in 5% seawater formalin and preserved in 70% ethanol; before preservation some photographs were taken. The five specimens are deposited at the Actiniarian Collection of the Departamento de Ciencias Marinas (Facultad de Ciencias Exactas y Naturales, Universidad Nacional de Mar del Plata) with reference C.A. 28. The general morphology, anatomy and other observations related to the taxonomy of the sea anemones were studied at the Instituto de Investigaciones Marinas y Costeras (IIMyC) (CONICET-UNMdP, Mar del Plata, Argentina) by means of a stereo dissecting microscope. Cnidae were analysed from two individuals using a Zeiss Axiolab microscope with a micrometric eyepiece at a magnification of 1000× (oil immersion). Cnidae nomenclature follows England (1991).

RESULTS

SYSTEMATICS

Order ACTINIARIA Hertwig, 1882
Suborder NYNANTHEAE Carlgren, 1899
Infraorder THENARIA Carlgren, 1899
No rank ENDOMYARIA Stephenson, 1921
Family ACTINIIDAE Rafinesque, 1815
Genus *Anthopleura* Duchassaing de Fombressin and Michelotti, 1860
*Anthopleura nigrescens* (Verrill, 1928)
(Figure 1)

DESCRIPTION

Oral disc diameter in the studied individuals is 12 – 21 mm, approximately equal to that of the basal disc. Height is 9 – 20 mm. Cylindrical column dark. Variable number of rows of adhesive verrucae. Verrucae are about the same size. Attached gravel covering entirely or partly the column.

Corresponding author:
F.H. Acuña
Email: facuna@mdp.edu.ar
Animals in aquarium retain the gravel grains on their verrucae (Figure 1A). 32–80 tentacles arranged in four cycles (Figure 1B), with transverse white-yellow spots on oral surface (Figure 1C). Each tentacle tapers to a point. White acrorhagi form a ring at the top of the parapet (Figure 1A). Oral disc flat, sometimes the anemone extends its oral area into a cone and the mesenterial insertions are marked as dark lines (Figure 1B, D).

**Cnidae**

Spirocysts, basitrichs, microbasic p-mastigophores and holo-trichs. The cnidae agree with previous descriptions of this species (Verrill, 1928; Dunn, 1974). We also found microbasic p-mastigophores (23–32 × 6–8 μm (N = 30)) in the column, not mentioned in previous descriptions. This type of cnidocyst was found in all examined specimens.

**DISTRIBUTION OTHER THAN COSTA RICA (FIGURE 2)**


**DISCUSSION**

The examined specimens agree with those described by Dunn (1974) and Fautin et al. (2007). The colour, although often

---

**Fig. 1.** *Anthopleura nigrescens* (Verrill, 1928): (A) live appearance showing the attached gravel to the column, verrucae and white acrorhagi (arrow); (B) oral disc with the four (I–IV) cycles of tentacles; (C) tentacles with white-yellow spots on their oral face; (D) specimen extending its oral area into a cone. Scale bar: 1 cm.

**Fig. 2.** *Anthopleura nigrescens* (Verrill, 1928): worldwide distribution; previous records (orange circles); the new record for Central America (red star).
unreliable as a systematic character in sea anemones, is very consistent in the examined specimens (Figure 1) perhaps due to asexual reproduction. The variability in colour of this species was reported by Dunn (1974). This is the first record of *A. nigrescens* for the Pacific coast of Central America. In the eastern tropical Pacific, this species has only been found in the Galápagos Islands, where it is common in the intertidal zone (Fautin et al., 2007; Hickman, 2008). In light of the previous records for other regions of the Pacific Ocean and also the Indian Ocean, we can consider this sea anemone as widely distributed in the Indo-Pacific (Figure 2). The lack of previous records of *A. nigrescens*, despite several surveys on the Pacific coast of Costa Rica in the last years support the idea of a recent introduction of this species. Although this new record increases the biodiversity of sea anemones from Costa Rica, more studies are necessary in order to obtain a more complete inventory of these poorly known invertebrates.

**ACKNOWLEDGEMENTS**

We are grateful to Dr Marymegan Daly for her constructive comments and improvement of the English version of this manuscript; and to Oscar Pacheco Prieto for the images of *A. nigrescens* included in this paper.

**REFERENCES**


and


Correspondence should be addressed to:

F.H. Acuña
Instituto de Investigaciones Marinas y Costeras, CONICET
Facultad de Ciencias Exactas y Naturales
Universidad Nacional de Mar del Plata
Funes 3250, 7600 Mar del Plata. Argentina
e-mail: facuna@mdp.edu.ar