



Research note

New record of the starfish *Narcissia ahearnae* (Echinodermata: Asteroidea) in the Mexican Caribbean

Nuevo registro de la estrella de mar Narcissia ahearnae (Echinodermata: Asteroidea) en el Caribe mexicano

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Abstract

Narcissia ahearnae is a starfish found on hard substrates with a thin surface of fine sediment. This species has been collected in Florida and The Bahamas at depths of 53–135 m. This paper presents a new record of this species for the Mexican Caribbean (23° 17' 04" N, 87° 57' 04" W), on the northern coast of Quintana Roo, which extends its distribution range to its southernmost limit. A bathymetric range extension is also presented. © 2017 Universidad Nacional Autónoma de México, Instituto de Biología. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Keywords: First record; Asteroidea; Yucatán; Quintana Roo

Resumen

Narcissia ahearnae es una estrella de mar que habita sobre sustratos duros que presentan una capa fina de sedimento en su superficie. Esta especie ha sido recolectada en las Bahamas y Florida a profundidades de 53–135 m. Se presenta un nuevo registro de la especie para el Caribe mexicano (23° 17' 04" N, 87° 57' 04" O), costa norte del estado de Quintana Roo, la cual extiende su área de distribución al límite meridional. También se presenta una extensión del rango batimétrico. © 2017 Universidad Nacional Autónoma de México, Instituto de Biología. Este es un artículo Open Access bajo la licencia CC BY-NC-ND (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Palabras clave: Primer registro; Asteroidea; Yucatán; Quintana Roo

The family Ophidiasteridae Verrill, 1870, with 28 valid genera, is mainly a shallow-water, tropical and subtropical family. The species of that family are a conspicuous feature of the coral reef fauna. Asexual reproduction by fission occurs in a few species, but sexual reproduction, planktotrophic or

lecithotrophic larvae, and bipinnaria and/or brachiolaria stages are more common (Mortensen, 1921).

The species of the genus *Narcissia* Gray, 1840 can be distinguished by a high, more or less pyramidal disk; 5 long, tapering arms that are trigonal in cross-section; 7–13 irregular series of abactinal plates; papulae that are isolated, single or in pairs; mouth plates with large, blunt, compressed spines and abundant, small alveolar pedicellariae with elongate, spoon-shaped valves (Clark & Downey, 1992). There are 4 valid species in the genus. The species *N. gracilis* A. H. Clark, 1916 is found

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Table 1

Material examined of *Narcissia ahearnae*.

Catalog number	Latitude N	Longitude W	Date	Depth	Number of specimens
ICML-UNAM 2.70.0	22° 74'	86° 55'	1985	43.6 m	3
ICML-UNAM 2.70.5	22° 09.0'	87° 00.0'	Oct-85	–	1
ICML-UNAM 2.70.6	23° 04.5'	88° 34.0'	Feb-86	–	2
ICML-UNAM 2.70.7	23° 17.4'	87° 57.1'	Feb-86	86.5 m	1

in the Pacific Ocean; whereas *N. canariensis* d'Orbigny, 1839; *N. trigonaria* Sladen, 1889; and *N. ahearnae* Pawson, 2007 are distributed in the Atlantic Ocean.

Narcissia ahearnae has been reported from Cape Canaveral in Florida, The Bahamas, Grand Cayman, and the British Virgin Islands, at depths ranging from 53 to 135 m. It has conspicuous undulating carinal ridges extending from the center of the disk along the upper surfaces of the arms (Pawson, 2007).

Seven specimens were collected in the Mexican Caribbean (Table 1) during 3 oceanographic cruises (PROIBE III, IV and V) in 1985 and 1986, on board of the Research Vessel “Justo Sierra”, UNAM. The identity of the specimens of *N. ahearnae* was determined on the basis of the diagnostic characters described in Pawson (2007). In addition, in order to confirm the geographical range of the species, we consulted specialized literature (Alvarado & Solís-Marín, 2013; Pawson, 2007) and checked the information about voucher specimens deposited at the National Museum of Natural History, Smithsonian Institution, Washington, DC (USNM, 2016).

Narcissia ahearnae Pawson, 2007 (Fig. 1).

Specimens are deposited in the Colección Nacional de Equinodermos “Dra. María Elena Caso Muñoz”, Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México (ICML-UNAM), since 1985. They were previously misidentified as *N. trigonaria*.

Description. High, pyramidal disk, 5 long, slender arms more or less triangular in cross-section. At the base, height of arm sometimes equal to breadth of arm, but more commonly up to 1.5× arm breadth. Carinal ridge (Fig. 1) elevated, conspicuously undulating in horizontal and vertical planes from center of disk along arms, approximately to mid-point of each arm. Ridge is 3–4 mm wide, composed of carinal plates along with several series of abactinal plates. Marginal plates conspicuous when a specimen is viewed from above, forming and defining ambitus; marginals covered with granules. Anus slightly off-center, protected by several spatulate spines. Madreporite typical of genus, placed approximately at one-third from apex to inter-radial margin. Abactinal plates vary greatly in size, typically not in regular series; at about mid-point of arm, about 17 abactinal plates traverse abactinal arm surface. Granules on abactinal plates are evenly but closely spaced, discrete, and not forming a

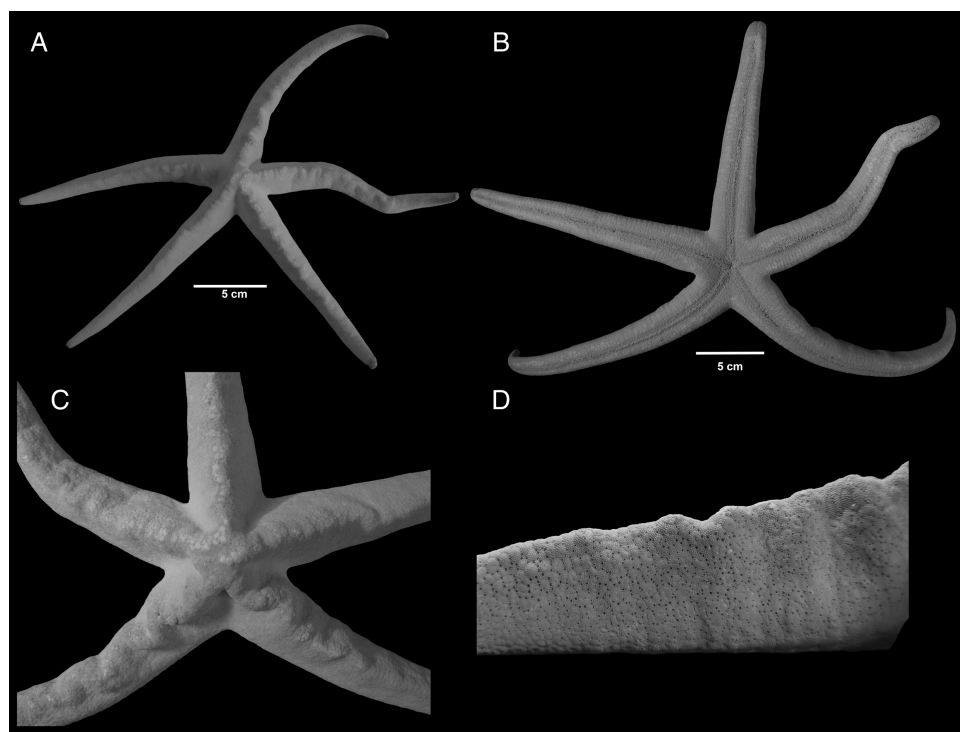


Figure 1. *Narcissia ahearnae* (ICML-UNAM 2.70.6); (A), abactinal view; (B), ambulacral furrow; (C), papular areas; (D), carinal ridges.

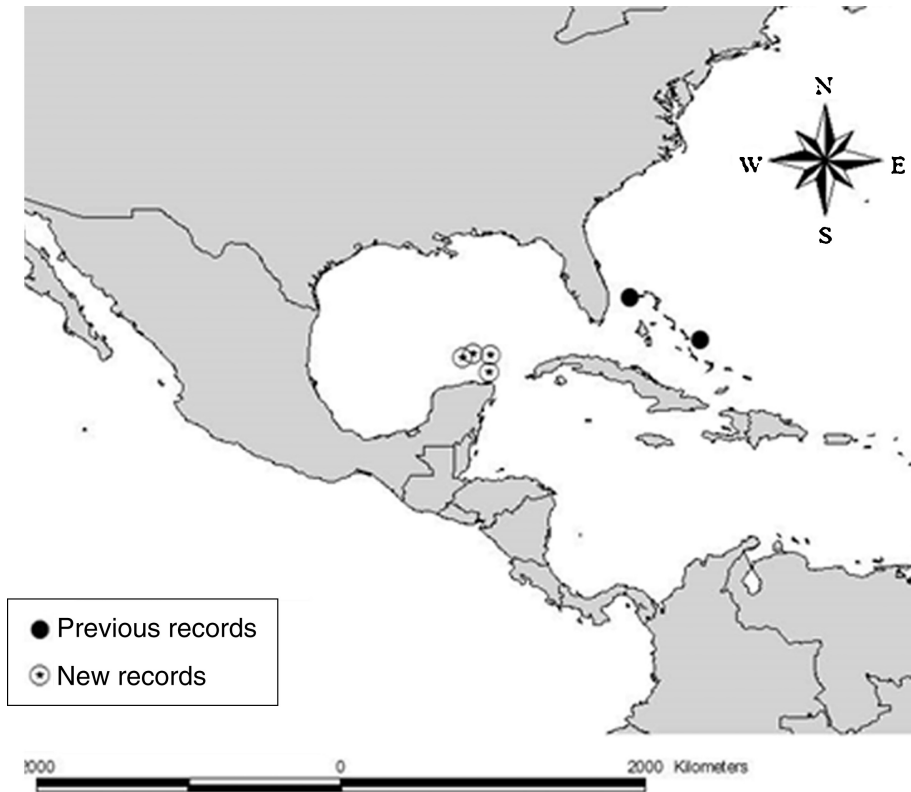


Figure 2. Map showing the known records of *N. ahearnae*, ● previous records (Pawson, 2007) and ⊙ new records in the Mexican Caribbean.

mosaic; granules usually short, peg-shaped, about 330 μm high and 200 μm in diameter, tapering distally to blunt to sharp point. Some granules rounded distally, but most are pointed. Papulae single or paired and extremely numerous abactinally in radii and interradii, about 7 papulae per mm^2 . Papulae also present in small numbers among the actinolateral plates. No pedicellariae were found.

The survey of literature and museum records (Pawson, 2007) indicated that the northernmost record is at Cape Canaveral, Florida (27°26' N, 78°57' W), based on a specimen present in the Harbor Branch Oceanographic Museum (HBOM 073:00531). The other record is from The Bahamas (26°32.89' N, 78°45.29' W). Figure 2 shows the known records, previous and new, of *N. ahearnae*.

This report of *N. ahearnae* in the Mexican Caribbean located 1000 km west of the previously recognized western limit is important as it increases the number of known starfish species present in the Mexican Caribbean to 52 (Alvarado & Solís-Marín, 2013). *N. ahearnae* differs markedly from its 3 congeners in possessing a prominent, elevated, undulating carinal ridge. The other species distributed in the western Atlantic, *N. trigonaria*, has a perfectly straight carinal ridge and in life is cream-colored blotched with rust red (Clark & Downey, 1992). In addition, in *N. trigonaria* the marginal plates are inconspicuous, pedicellariae are very common, the abactinal granules are flattened and angular, forming a mosaic pattern, and there

are about 3 papular pores per mm^2 , while in *N. ahearnae* the marginal plates are conspicuous and pedicellariae are absent or rare.

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References

- Alvarado, J. J., & Solís-Marín, F. A. (2013). *Echinoderm research and diversity in Latin America*. The Netherlands: Springer.
- Clark, A. M., & Downey, M. E. (1992). *Starfishes of the Atlantic. Natural History Museum Publications. Identification Guide 3* London: Chapman and Hall.
- Mortensen, T. (1921). *Studies on the development and larval forms of echinoderms*. Copenhagen: G. E. C. Gad.
- Pawson, D. (2007). *Narcissia ahearnae*, a new species of sea star from the Western Atlantic (Echinodermata: Asteroidea: Valvatida). *Zootaxa*, 1386, 53–58.
- USNM (National Museum of Natural History). (2016). Department of Invertebrate Zoology Collections. Smithsonian National Museum of Natural History. Retrieved on October 23, 2015 from: <http://collections.nmnh.si.edu/search/iz/>