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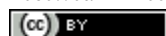
## First record of Yellow Mesh sea star *Nardoa novaecaledoniae* (Perrier, 1875) (Echinodermata: Asteroidea: Ophidiasteridae) from Andaman and Nicobar Islands

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### Abstract

*Nardoa novaecaledoniae* (Perrier, 1875) was reported herein from coral reefs of Andaman and Nicobar Islands for the first time. This paper presents the detailed taxonomic account along with its distribution.

**Key words** Andaman and Nicobar Islands; Echinoderm; *Nardoa*; new record; sea star.

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### 1 Introduction

Sea stars belong to the class Asteroidea (Phylum Echinodermata). They are exclusively marine organisms, found in the intertidal zone to the subtidal zone and widely distributed throughout the world oceans. The genus *Nardoa* Gray, 1840 is abundant on the coral reefs throughout the world tropical oceans and distributed in the Pacific. Among 9 accepted extant species worldwide in the genus *Nardoa* viz., *N. frianti*, *N. galathea*, *N. gomophia*, *N. mamillifera*, *N. rosea*, *N. tuberculata*, *N. tumulosa*, *N. variolata* and *N. novaecaledoniae* (Mah, 2015), four are known from India namely, *N. frianti*, *N. galathea*, *N. tuberculata* and *N. novaecaledoniae* (Sastry, 2007; Sadhukhan and Raghunathan, 2012) of which species are known from Andaman and Nicobar Islands region namely, *N. frianti*, *N. galathea* and *N. tuberculata* (Sastry, 2005; Sadhukhan and Raghunathan, 2012).

In India very few authors contributed in studies regarding asteroids (Bell, 1902; James, 1969; Sastry, 2007; Sadhukhan and Raghunathan, 2012) Andaman and Nicobar Islands (Sastry, 2005; Sadhukhan and Raghunathan, 2012). Presently 182 species (Gravely, 1927; James, 1969; Clark & Rowe, 1971; Sastry, 2007; Karuppaiyan & Raja, 2007; Sadhukhan and Raghunathan, 2012; Raghunathan et al., 2013) are reported from India, of which 109 species (Sastry, 2005; Sadhukhan and Raghunathan, 2012; Raghunathan et al., 2013) reported from Andaman and Nicobar Islands. The present paper reports the first record of *N. novaecaledoniae* from the coral reefs of Andaman & Nicobar Islands.

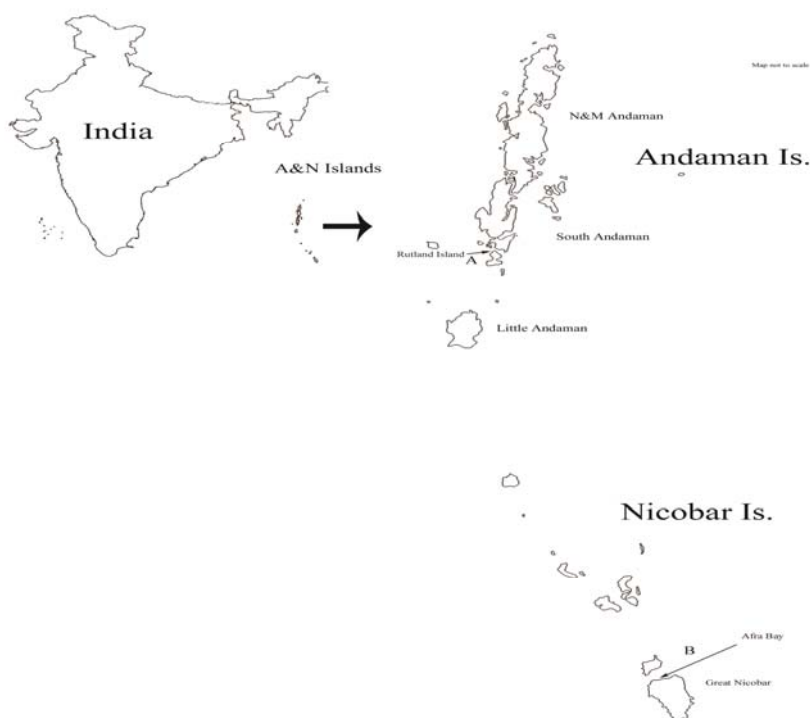
## 2 Study Area and Methodology

### 2.1 Study site

Exploratory survey was carried out during February and September 2016 at Rutland Island & Afra Bay, in region of Andaman and Nicobar Islands (Fig. 1).

### 2.2 Data collection

In this study, specimens were collected by employing SCUBA to assess the species diversity of reef associated faunal communities up to the depth of 30m. The collected specimens were preserved in 70% ethanol, examined under stereo zoom microscope (Leica M 205 A) and measurements were taken using Vernier caliper. The identification was based on morphological characters given in literature (Clark, 1967; Clark and Rowe, 1971). All the identified specimens are deposited in the National Zoological Collection at the Zoological Survey of India, Andaman and Nicobar Islands.



**Fig. 1** Map showing localities of *Nardoia novaecaledoniae* (Perrier, 1875) in Andaman and Nicobar Islands (A. Rutland Island, South Andaman; B. Afra Bay, Great Nicobar).

## 3 Results and Discussion

Class ASTEROIDEA de Blainville, 1830

Order VALVATIDA Perrier, 1884

Family OPHIDIASTERIDAE Verrill, 1870

Genus *Nardoia* Gray, 1840

*Nardoia novaecaledoniae* (Fig. 2)

### Taxonomic References

*Scytaster novaecaledoniae* Perrier, 1875.

*Nardoia gomophia*: Fisher, 1919.

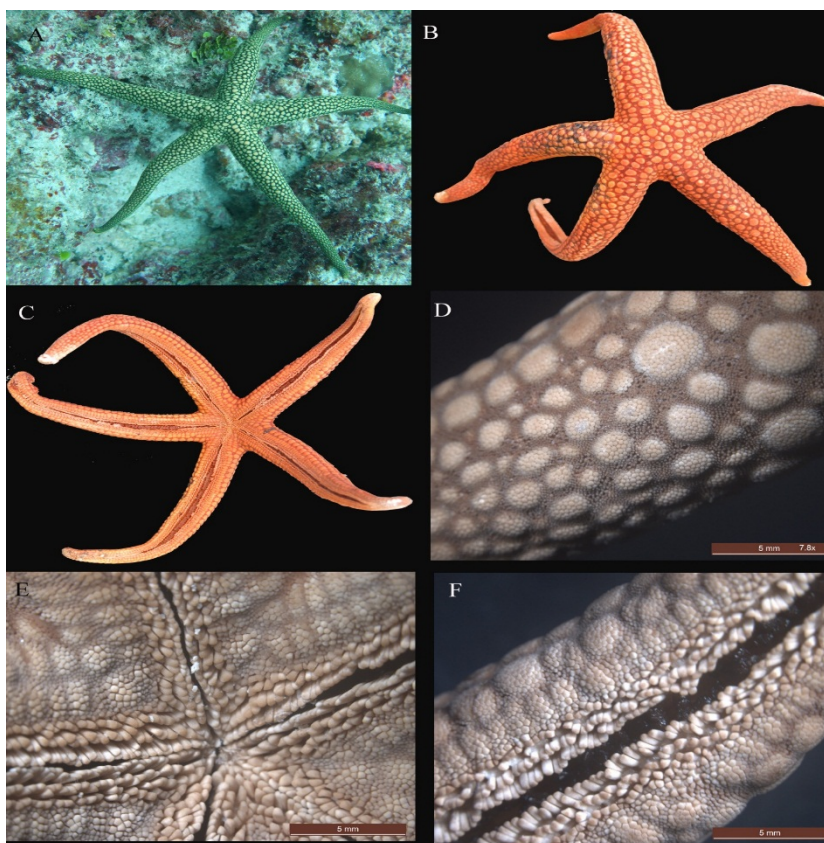
*Nardoia novaecaledoniae*: Clark, 1967; Clark and Rowe 1971; Lane et al., 2001; Ameziane, 2007; Pearse, 2009; Antokhina and Britayav, 2012; Gaffar et al., 2014; Supono et al., 2014, Gaffar, 2015.

### Material Examined

Two individuals- Rutland Island, South Andaman - 6m (Lat. 11°25.577'N, Long. 92°40.812'E), Reg. ZSI/ANRC- 16851, R/r=98-125/14 mm, Afra Bay, Great Nicobar- 5m (Lat. 07°12.442'N, Long. 93°46.324'E), Reg. ZSI/ ANRC- 16852, R/r=95 -110/12 mm.

### Description

Five arms present, arms longer than the disc body. Abactinal plate discs polygonal and rounded. Abactinal plate distal in lower arm, irregular. Papule abactinal circle forming groups, Plates look convex, irregular. Tubercles small rounded, spread all over the arms. Madreporite single present on area of the base of the arms. Plate abactinal proximal and superomarginal especially in the midradial greater than in the distal portion. Superomarginal and interomarginal plate present, rounded on the corners. The pores in groups between the plates actinal and inferomarginal. Pores present in between the plates actinal and inferomarginal. Granule are hexagonal to polygonal in section abactinal, regular arranged above and between the plates, the same relative size. Granules are spread evenly top, between the plates and greater than the other parts. Granules shapes Polygonal, regularly arranged on top between the plates. Actinal plate narrow in one series. Ambulacral rectangular slit, adambulacral present, blunt tip and smooth.



**Fig. 2** *Nardoa novaecaledoniae* (Perrier, 1875) A, in-situ; B- Dorsal side view C- Ventral side view; D- Proximal arm, distal plates, E- Mouth; Dense granules actinal slabs, F- Subambulacral spines elongated bar-shaped and short; irregular blunt tip.

### Colour and Habitat

Yellowish green in live condition and the colour changes to light orange after preservation. This species is exclusively available in the corals reefs areas.

### Distribution Range

India: Andaman and Nicobar Islands (present report), Lakshadweep (Bell, 1902), Gulf of Mannar (James, 1969). *Elsewhere*: Philippines, New Caledonia, North Australia, South Pacific Islands (Clark and Rowe, 1971), Malaysia (George and George, 1987), Australia (Endean, 1957; Williams, 2000; Byrne et al., 2004), East Indian area, West Pacific area (Endean, 1957), Indonesia (Jangoux et al., 1989; Gaffar et al., 2014; Supono et al., 2014; Gaffar, 2015), Maldives (Bell, 1902; Clark and Davies, 1965), Vietnam (Antokhina and Britayav, 2012).

*Nardoa novaecaledoniae* is previously reported from India (Lakshadweep and Gulf of Mannar) and hitherto not known from these Islands so far. Bell (1902) reported this species as *Scytaster novaecaledoniae* from Minicoy Island, Lakshadweep while James (1969) reported this species from Gulf of Mannar.

#### 4 Conclusion

The present report of *Nardoa novaecaledoniae* from the Andaman and Nicobar Islands stresses the significance of intensive studies for precise documentation of the asteroid diversity and distribution in the Islands.

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