

A New Record of Sea Star (Asteroidea: Phanerozonia) from Jeju Island, Korea

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ABSTRACT

Some sea stars were collected from the coast of Seogwipo, Jeju Island by using the fishing net at April 2003, and were identified on the basis of their morphological characteristics. Among them, *Paragonaster ctenopes* Sladen, 1889 belonging to family Goniasteridae, order Phanerozonia is newly recorded from Korea. Twenty two species of asteroids are reported to be distributed in the Jeju Island of Korea.

Key words: taxonomy, Phanerozonia, Asteroidea, Jeju Island, Korea

INTRODUCTION

All asteroids are free living marine benthos and vary depending on the sediment. Unlike other classes in Echinodermata, the distribution survey of asteroids indicates that the regions from Alaska as a center to North Pacific Ocean have the most abundant species and population in the world. More than 1,600 species have been reported from the all over the world up to the present time (Brusca and Brusca, 2003).

Since the first report by Sladen (1879) on asteroids, 49 species have so far been reported from South Korea (Rho and Kim, 1966; Rho and Shin, 1980; Shin, 1992, 1995, 2000). Among them, 21 species have been reported in the Jeju Island and eight species of them such as *Luidia maculata*, *Mediaster brachiatus*, *Nympaster symbolicus*, *Ophidiaster cribrarius* and *Linckia laevigata* of order Phanerozonia, *Henricia ohshimai* of Spinulosida, *Coronaster volsellata* and *Sclerasterias satsumana* of Forcipulata were found only in the area of Jeju Island (Shin and Rho, 1996; Shin, 2000).

The asteroid specimens were collected from the coast of Seogwipo, Jeju Island using the fishing net in April 2003. They were preserved in about 70% methyl alcohol, and their morphological characteristics were redescribed and photographed using stereomicroscope. Among them, *Paragonaster ctenopes* Sladen, 1889 belonging to family Goniasteridae, order Phanerozonia which is one of the three major orders composing Asteroidea turned out to be new to the Korean fauna. Therefore, asteroid species including 22 species reported to be distributed in the Jeju Island are

recorded from Korea.

SYSTEMATIC ACCOUNTS

Phylum Echinodermata Klein, 1734
Class Stelleroidea Larmarck, 1816
Subclass Asteroidea De Blainville, 1930
Order Phanerozonia Sladen, 1899
Suborder Valvatida Perrier, 1884
Family Goniasteridae Forbes, 1841
¹*Genus *Paragonaster* Sladen, 1889

Arms very narrow. Superomarginal plates separated by a single series of roundish or quadrate granulated dorsal plates, which have not the shape of paxillae. No pedicellariae.
Type-species: *Paragonaster ctenopes* Sladen, 1889.

²**Paragonaster ctenopes* Sladen, 1889 (Fig. 1A-O)

Paragonaster ctenopes Sladen, 1889, p. 311, pl. 51, figs. 5, 6, pl. 53, figs. 1, 2; Imaoka et al, 1990, p. 47, text-fig. 47.
Paragonaster ctenopes hypacanthus: Fisher, 1919, p. 228, pl. 70, fig. 3, pl. 71, fig. 2, pl. 72, fig. 1, pl. 91, fig. 9, 9a.

Material examined. Seogwipo, 3 April 2003, 1 individual, by fishing net.

Description. R=84 mm, r=24 mm. R=3.5 r. Disk pentagonal and its interbrachial arcs wide and fairly flattened. Arms five in number, elongate, narrow and though tapering, nearly uniform in breadth throughout. Dorsal plates uniform, hexagonal, tabulated, paxillated, bearing granuriform spinelets and more or less inflated in radial regions of disk. Madreporite surrounded by seven dorsal plates, larger than adjacent basal plate, and situated halfway between center of disk and inner edge of superomarginal plates.

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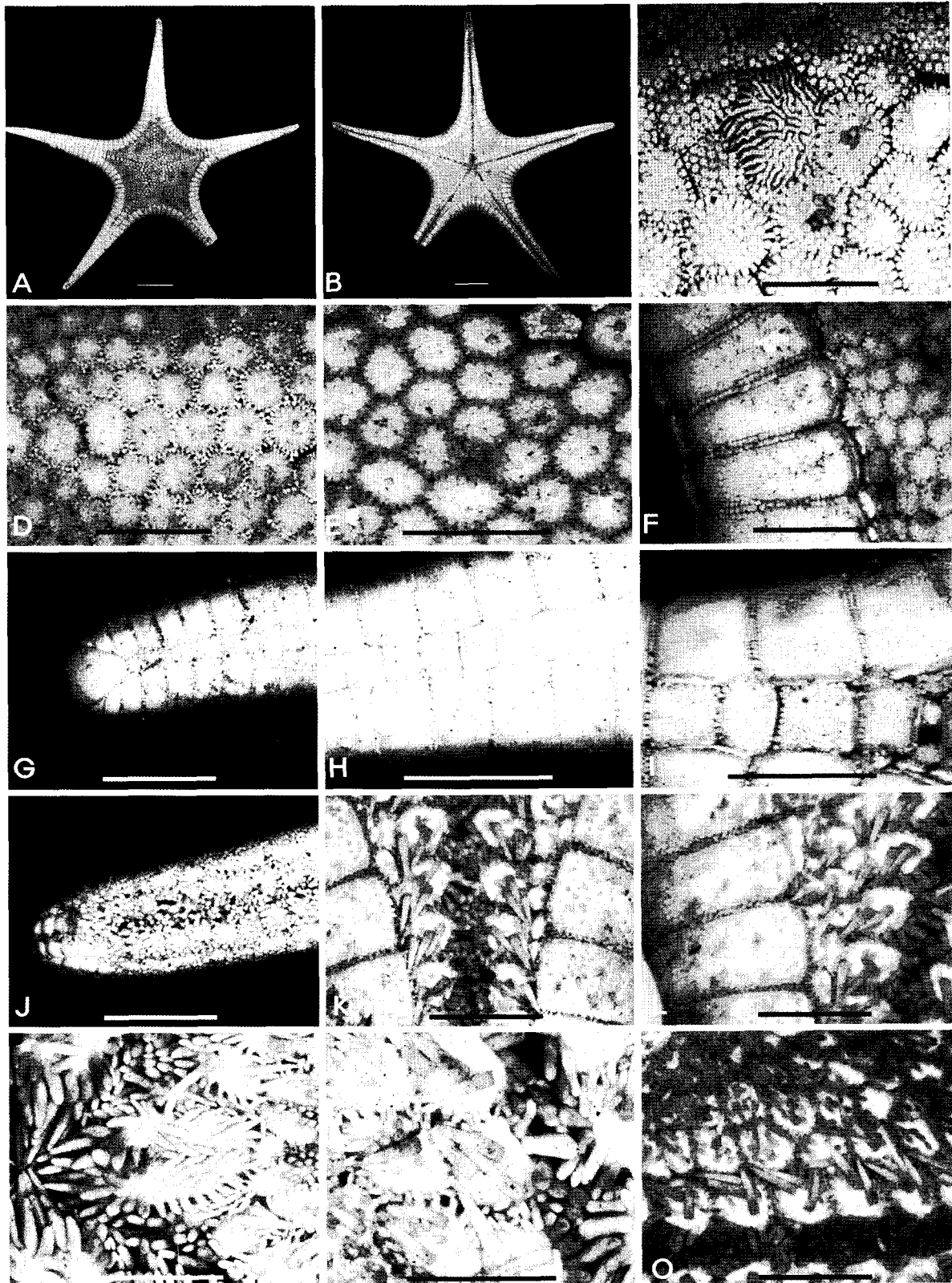


Fig. 1. *Paragonaster ctenopus*. A, dorsal side; B, ventral side; C, madreporite surrounded by paxillae; D, E, paxillae on dorsal side; F, superomarginal plates; G, H, I, dorsal side of arm; J, K, L, ventral side of arm; M, mouth plate; N, O, adambulacral plates and ventrolateral plates. Scale bars=2 cm (A, B), 4 mm (C, N), 5 mm (D-M, O).

Marginal plates large, distinct, broader than long, and separated by a very narrow furrow. Along margin of plate a regular lineal series of uniform granules which rather larger than rest. Supermarginal plates well developed, marked and covered with fine granules. In innermost plates breadth greater than twice length but fourth plate widest, beyond which plates very gradually decrease in breadth and then slightly longer than wide on outer half. They 35 in number from median interbrachial region to tip of arm, and separated from those of opposite side of arm by a single lineal series of 40 to 41 quadrate plates which reach terminal plate. Terminal plate round cone-like shape and also granulated.

Inferomarginal plates correspond exactly to superomarginal plates, but their breadth much less than those of superomarginals, and covered with fine granules. Those on ventral side also seen towards outer side of superomarginal plates on dorsal side. Beyond fourth plates they in contact with adambulacral plates. On plates of basal part of arm a series of nine to eleven small, compressed and sharply pointed spinelets arranged in almost two irregular series somewhat in parallel to lateral border of inferomarginal plates. But beyond middle part of arm one or rarely two spinelets presented. Ventrolateral plates bear one or two acute spines at center.

Adambulacral plates broad, furnished with usually seven compressed and roundly truncate furrow spines of which three on each side and one large at center. Their transverse parts armed with two or usually three tapering, sharp spines which about same or a little longer than length of a plate, but reduced to one or two on middle to distal portion of arms.

Mouth plates narrow and elongated, with nine or ten spines of which innermost one longest, outermost three compressed and truncated, and rest tapering and cylindrical. On their median suture eleven to thirteen large spines forming a somewhat irregular series and on their margin a series of six or seven spines exist.

Distribution. Korea (Jejudo Island), Japan (Tosa Bay), Philippine waters, Banda Sea.

Remarks. Only one specimen was collected from several specimens of *Mediaster brachiatus* Goto, 1914 but was identified due to its very peculiar morphological characteristics. This species is characterized by having superomarginal plates separated by a single lineal series of rectangular plates which reach the terminal plate and are wider than

long. The low arm ratio of this Korean specimen ($R=3.5$ r) is similar to Japanese specimen of Imaoka et al. (1919, $R=3.7$ r) when compared with Indo-Pacific specimens of Sladen (1889, $R=4$ r) and Fisher (1919, $R=4.6$ r).

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