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A new record of sea star genus *Henricia* (Asteroidea: Spinulosida: Echinasteridae) from Jeju Island, Korea

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Some asteroid specimens of genus *Henricia* were collected at a depth of 50-90 m near waters of Moseulpo, Jeju Island, Korea using fishing nets on September 2015. The specimens were identified as *Henricia elachys* Clark and Jewett, 2010 belonging to the family Echinasteridae of order Spinulosida. This small species can be distinguished from other *Henricia* species by short arms, moderately inflated arm base, and slightly broad disk. The morphological characteristics of this species were described with illustrations. Up to date, there are nine species of genus *Henricia* reported in Korean fauna.

Keywords: *Henricia elachys*, Jeju Island, morphological characteristics, Korea, sea star

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Introduction

Identification of the specimens at the species level in genus *Henricia* Gray, 1840 has been reported to be difficult and complex by many authors (i.e. Fisher, 1911; Mortensen, 1927; D'yakonov, 1950; Clark and Downey, 1992), who described the morphology of the species differently. Identification of the related species with similar morphological characteristics is not an easy task for the taxonomist. Long and slender arms as well as short arms occur in the same species (D'yakonov, 1950). Fisher (1911) observed that the species within the *Henricia* probably undergo the hybridization process, and that his work with this genus and species classification had to be considered temporary. Clark (1996) formally designated and made some revisions of Fisher's *Henricia* species in order to differentiate it from another subspecies. In the work of D'yakonov (1950), he observed a great number of deviations and individuals of the intermediate form. It has been suggested that more taxonomic works in these species should be done especially in the North Pacific so that the disagreements of the literature in the past will be resolved (Lambert, 2000). Eernisse *et al*. (2010) observed that an extension of the study of small brooding species of the *Henricia* to the far northern and northwestern Pacific is still needed. *Henricia* complex based mainly on morphological differences in the structure of the dorsal spines was further divided into species by Madsen (1987). He also revived some name of *Henricia* species such as *Henricia spongiosa*. Eight *Henricia* species, *H. leviuscula*, *H. nipponica*, *H. ohshimai*, *H. pachyderma*, *H. pacifica*, *H. regularis*, *H. reniossa*, and *H. reticulata*, were recorded from the Korean fauna (Shin and Rho, 1996; Shin, 2010; Shin and Ubagan, 2015a; 2015b).

Materials and Methods

Some asteroid specimens were collected at a depth of 50-90 m near sea waters of Moseulpo, Jeju Island, Korea by fishing nets on 8 September 2015. The collected specimens were preserved in 95% ethanol and their morphological characteristics such as size of disk, upper and proximal portion of arms, dorsal skeleton and ventral skeleton, and adambulacral spines were determined. Morphological features of the specimen were photographed using a digital camera (Nikon D7000; Nikon Co., Tokyo, Japan), stereomicroscope (Nikon SMZ1000), and a scanning electron microscope (JSM-6510; JEOL Ltd., Tokyo Japan). Abbreviations for measurements are: R, major radius from disk center to arm tip; r, minor radius from disk center to edge of the disk. The specimens were deposited in the Marine Echinoderm Resource Bank of Korea (MERBK), Sahmyook University, Seoul, Korea.

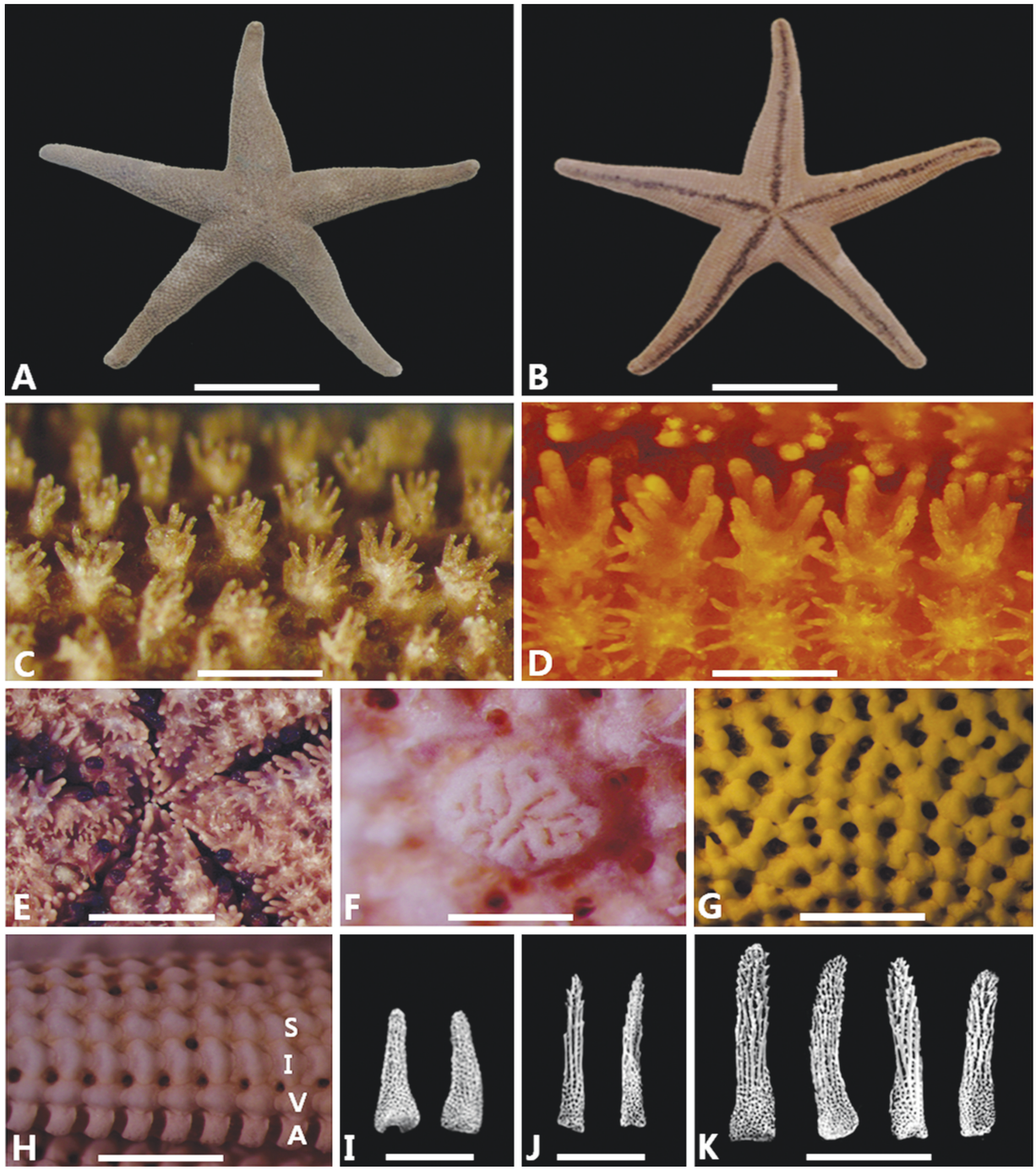


Fig. 1. *Henricia elachys*. A. dorsal view; B. ventral view; C, J. dorsal spines; D, K. adambulacral spines; E. oral part; F. madreporite; G. dorsal skeleton; H. ventral skeleton: adambulacral plate (A), ventrolateral plate (V), inferomarginal plate (I), supermarginal plate (S); I. furrow spines. Scale bars: A, B = 2 cm; C, D, G, H = 2 mm; E, F = 1 mm; I, J = 100 μm, K = 200 μm.

Systematic Accounts

Class Asteroidea de Blainville, 1830

Order Spinulosida Perrier, 1884
Family Echinasteridae Verrill, 1870
Genus *Henricia* Gray, 1840

***Henricia elachys* Clark and Jewett, 2010**
작은애기불가사리 (신칭) (Fig. 1A-K)
Henricia elachys Clark and Jewett, 2010: pp. 22, figs. 59-62, 64; Mah, 2015: 509327.

Material examined. Three specimens were collected on 8 September 2015, near waters of Moseulpo, Jeju Island, Korea, at 50-90 m depth by fishing net, Shin, S. and D. Kim.
Description. Slightly broad disc. Arms five in number, short, moderately inflated arm base. Dorsal skeleton imbricated forming irregular size. Dorsal paxillae forming in groups, slender, pointed tips bearing three to fourteen spinelets. Papular area small, containing two to five papulae, not in regular form. Madreporite circular in form, slightly inflated. Ventrolateral plates slightly convex, reaching up to three-fourths length of arm. Inferomarginal plates larger than ventrolateral plates, reaching tip of arm. Supermarginal plates almost the same size of inferomarginal plates, reaching near tip of arm. Marginal plates relatively distinct. Adambulacral armature with ten to fourteen slender and stout spinelets. Furrow spine single.
Size. R = 27-32 mm, r = 7-10 mm, R/r = 3.2-3.9.
Habitat. Coral reefs and under rocky places.
Distribution. Korea (Jeju Island), Alaska (Rat Island of Aleutian Islands).
Remarks. This species as first recorded by Clark and Jewett, 2010 from Rat Island of Aleutian Islands in southwest Alaska. Our *H. elachys* specimen was collected from temperate area of Jeju Island in Korea, This species can tolerate cold region to temperate zone. In terms of body forms, both possessed slender dorsal spinules but *H. elachys* of Clark and Jewett (2010) has sixteen to twenty-seven spines in a group. Other body parts such as ambulacral spines and oral part agree with the description of *H. elachys* by Clark and Jewett (2010). The examination showed that our specimens differ from *Henricia tumida*. Our specimen has numerous (ten to fourteen) adambulacral spines which occur in two or three rows in *H. elachys*, while in *H. tumida* a single often irregular or staggered row of four or five adambulacral spines; smaller, more numerous papulae two to five per area while *H. tumida* usually one, rarely two, large papulae.

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