

## Two Marine Sponges of the Family Ancorinidae (Demospongiae: Astrophorida) from Korea

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### ABSTRACT

Two sponges, *Stelletta subtilis* (Sollas, 1886) and *Stryphnus sollasi* n. sp., were collected from depth of 24–30 m at Jeju-do Island and Chuja-do Island by SCUBA diving from July 2003 to June 2010. The new species *Stryphnus sollasi* n. sp. is similar with *Stryphnus niger* Sollas, 1886 in the composition of spicules, however they differ in colour and spicule size. This new species has smaller oxeas and larger oxyasters than those of *S. niger*. This new species has two size categories of oxyaster but *S. niger* has one size category of oxyaster. The colour of *S. sollasi* n. sp. is white, but the latter puce black. *Stelletta subtilis* (Sollas, 1886) is first recorded in Korean fauna.

**Keywords:** *Stelletta*, *Stryphnus*, Ancorinidae, new species, Korea

### INTRODUCTION

The genera *Stelletta* Schmidt, 1862 and *Stryphnus* Sollas, 1886 are contained in the family Ancorinidae. This family is characterized by the long-rhabdome triaenes and oxeas as megascleres and euasters, sanidasters or microrhabds as microscleres. The genus *Stelletta* is characterized by presence of long-shafted triaenes as megascleres and euasters without marked centrum as microscleres. Twelve *Stelletta* species have been reported in Korean waters so far (Shim and Sim, 2009). The genus *Stryphnus*, which was first recorded in Korea is characterized by the presence of large oxeas and orthotriaenes, plagiotriaenes or dichotriaenes as megascleres, and euasters and amphiasters or sanidasters as microscleres (Hooper and van Soest, 2002). According to the World Porifera Database (WPD, <http://www.marinespecies.org/porifera/>), fifteen species of the genus *Stryphnus* are reported from the world.

### MATERIALS AND METHODS

Specimens were collected from a depth of 24–30 m at Jeju-

do and Chuja-do by SCUBA diving from July 2003 to June 2010. A holotype has been deposited in the National Institute of Biological Resources (NIBR), Incheon, Korea, and paratypes have been deposited in the Natural History Museum of Hannam University (HUNHN). The colour and texture were described before preservation. Identification was based on the morphological characteristics, skeletal structure, shape and size of spicules. Skeletal structure and spicules were examined by using microscopy and scanning electron microscopy. The length and width of 20 spicules were measured for each spicules type. The procedure of dissociating spicules followed Rützler (1978).

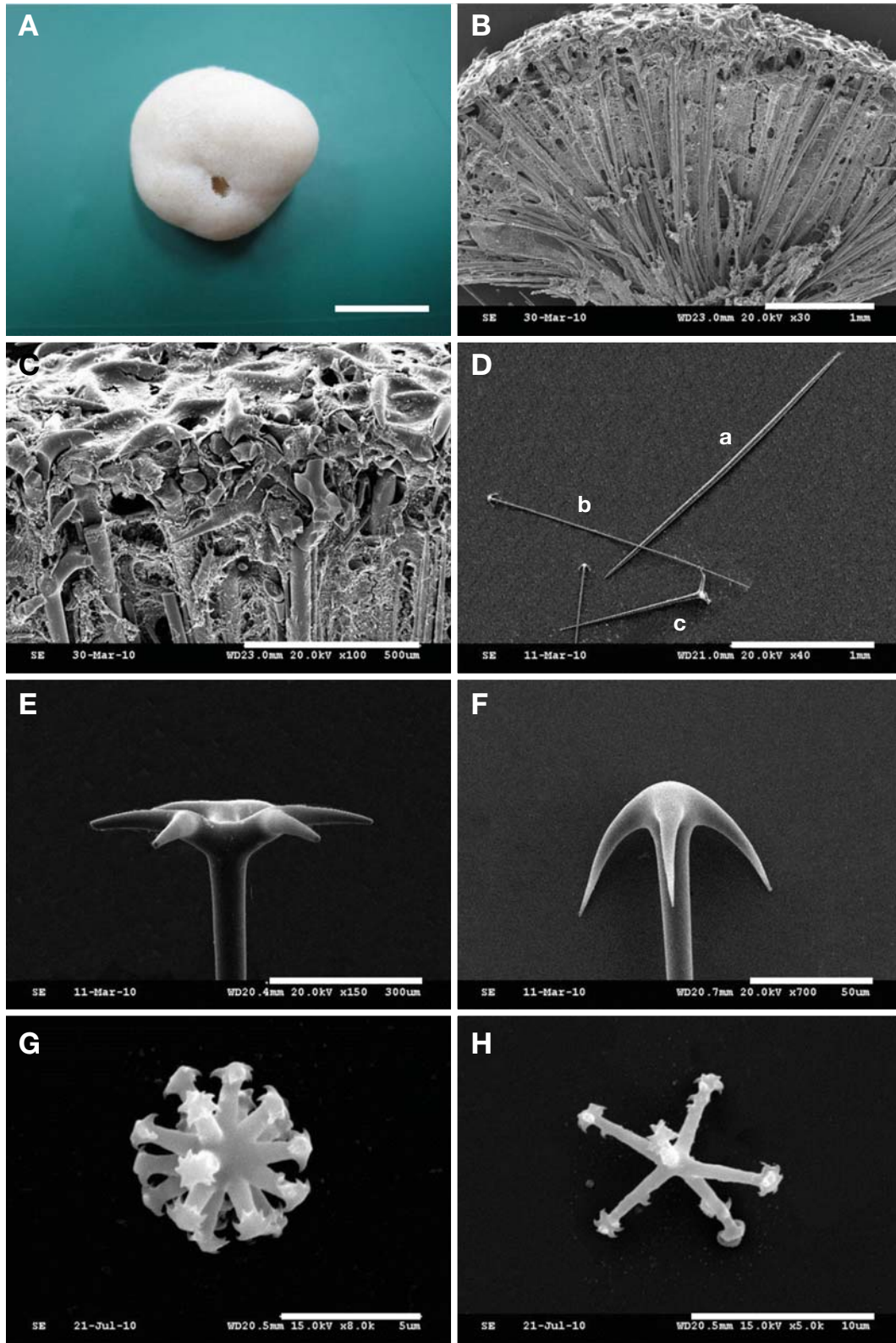
### SYSTEMATIC ACCOUNTS

Phylum Porifera Grant, 1836  
Class Demospongiae Sollas, 1885  
Subclass Tetractinomorpha Levi, 1953  
Order Astrophorida Sollas, 1888  
Family Ancorinidae Schmidt, 1870  
Genus *Stelletta* Schmidt, 1862

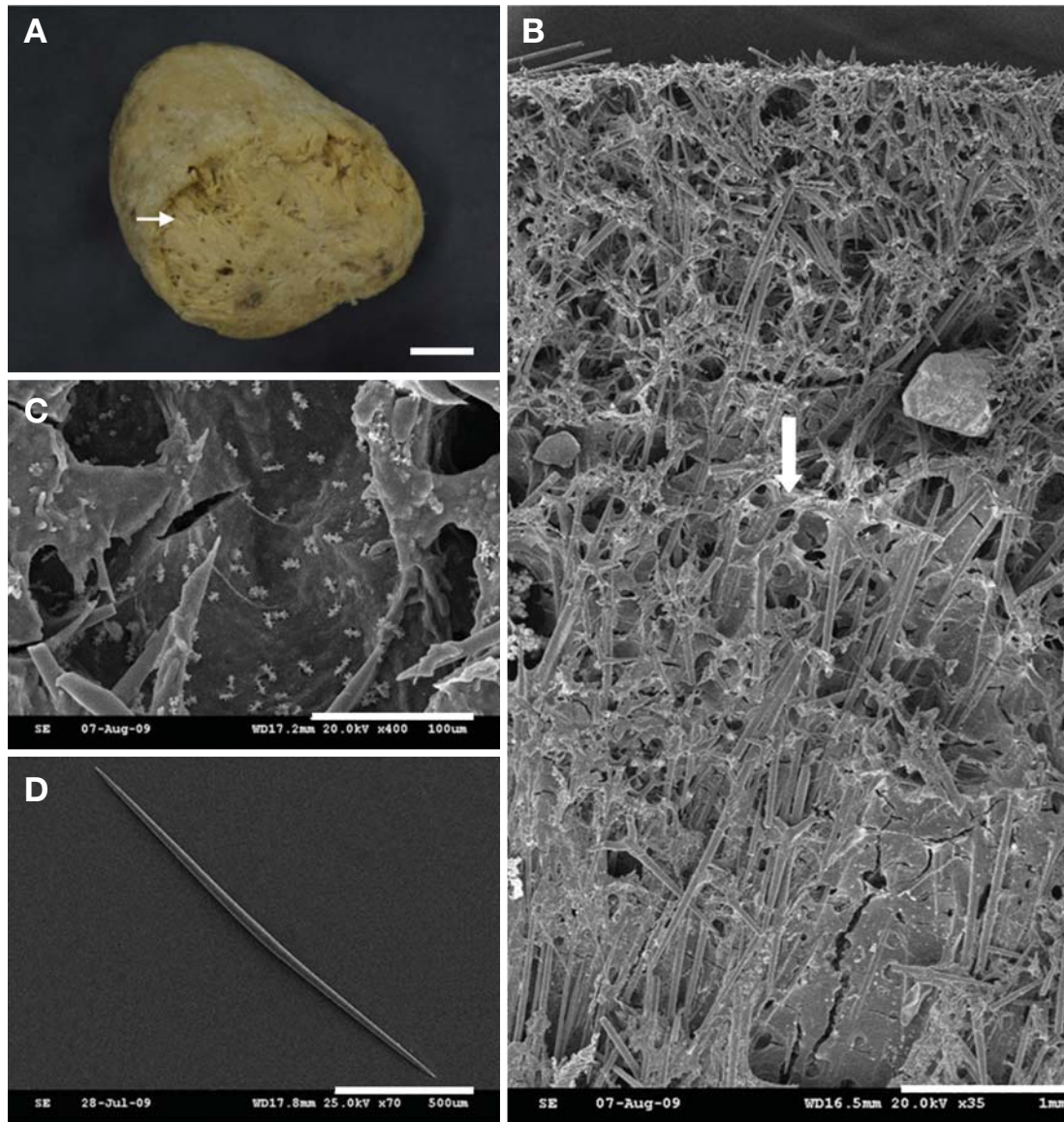
Korean name: <sup>1\*</sup>작은별해면 (신칭)

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**Fig. 1.** *Stelletta subtilis*. A, Entire animal; B, Skeleton; C, Cortex; D, Megasclere (a, oxea; b, anatriaene; c, dichotriaene); E, Head of dichotriaene; F, Head of anatriaene; G, H, Tylasters. Scale bars: A=5 mm, B, D=1 mm, C=500  $\mu$ m, E=300  $\mu$ m, F=50  $\mu$ m, G=5  $\mu$ m, H=10  $\mu$ m.



**Fig. 2.** *Stryphnus sollasi* n. sp. A, Entire animals (arrow); B, Skeleton (*S. chujaensis* n. sp. is showing under arrow) C, Magnification showing the amphirasters; D, Oxea. Scale bars: A=2 cm, B=1 mm, C=100  $\mu$ m, D=500  $\mu$ m.

<sup>1</sup>\**Stelletta subtilis* (Sollas, 1886) (Fig. 1)

*Myriaster subtilis* Sollas, 1886: 188; 1888: 133, Pl. 14, figs. 23–28; Hoshino, 1971: 22.

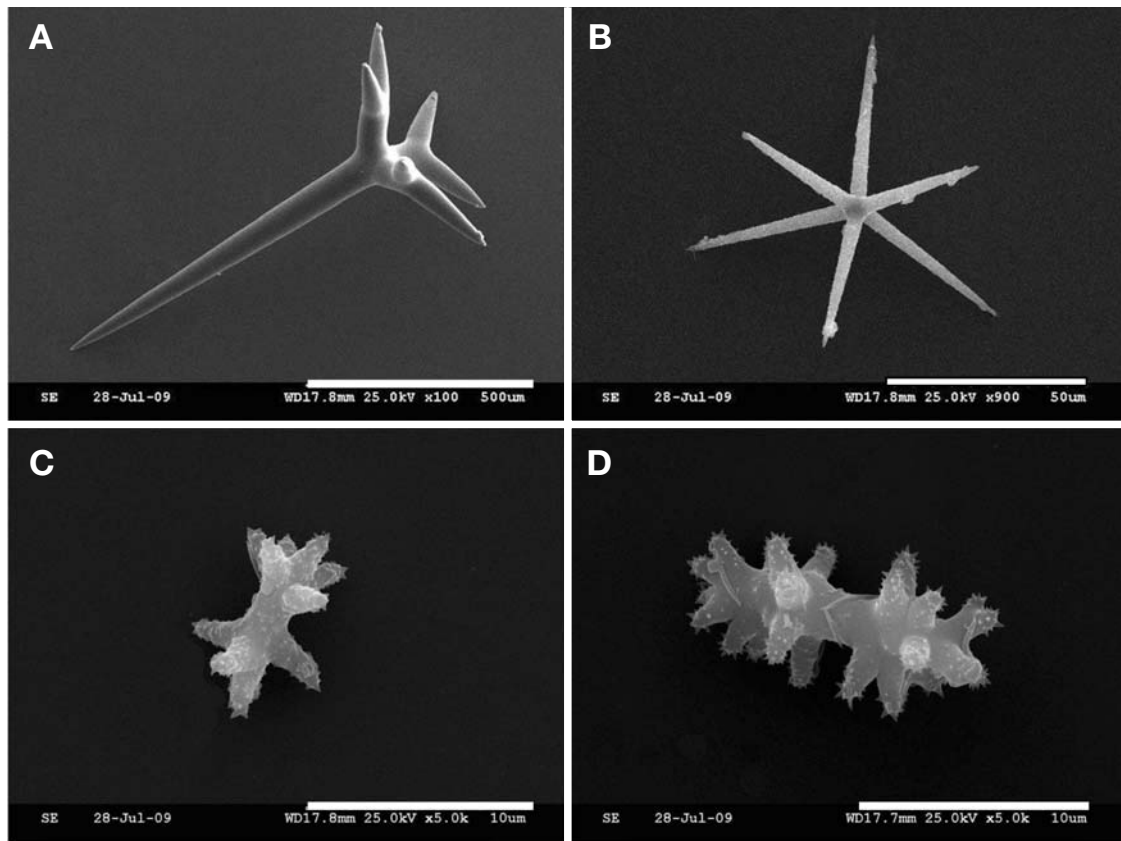
*Stelletta subtilis*: Lendenfeld, 1903: 48; Hoshino, 1981: 247, fig. 32.

**Material examined.** Korea: Jeju-do, Beom-seom, 28 Jul 2003, Lee KJ, by SCUBA diving 24 m depth; Jeju-do Island, Hang-won, 5 Jun 2010, Kim BI, by SCUBA diving 20 m depth, deposited in the HUNHN.

**Description.** Small round shape, 1.5 cm in diameters. Oscule only one, 1 mm in diameter, opened at center of sponge.

Surface covered with pores like sieves. Texture hard and incompressible. Colour pale pink in life, beige in alcohol. Skeleton hard to distinguish between cortex and choanosome. Radially arranged with bundles of oxeas, dichotriaenes and anatriaenes. Clads of dichotriaenes and anatriaenes run toward surface. Tylasters scattered in sponge.

Spicules. Megasclere oxeas sharply pointed ends, 1,490–2,360 by 12–40  $\mu$ m. Anatriaenes rhabds sharply pointed clads, rhabds 1,580–2,260 by 10–14  $\mu$ m, clads 50–80 by 8–12  $\mu$ m. Dichotriaenes sharply pointed clads, rhabds 960–2,100 by 28–60  $\mu$ m, clads 140–340  $\mu$ m. Microscleres tylasters, 12–24 spined rays, spines at the ends, 7–10  $\mu$ m dia-



**Fig. 3.** *Stryphnus sollasi* n. sp. A, Dichotriaene, B, Oxyaster; C, D, Amphirasters. Scale bars: A=500  $\mu$ m, B=50  $\mu$ m, C, D=10  $\mu$ m.

meter.

**Distribution.** Korea (Jeju-do), Japan (Kobe).

**Remarks.** The shape, colour, skeleton and composition of spicules of our specimen are almost identical to those of Sollas (1886) and Hoshino (1981).

<sup>1</sup>\*Genus *Stryphnus* Sollas, 1886

<sup>2</sup>\**Stryphnus sollasi* n. sp. (Figs. 2, 3)

**Type specimen.** Holotype (NIBRIV0000260248), Jeolmyeongyeo, Chuja-do, 23 May 2005, Lee KJ, by SCUBA 30 m depth, deposited in the NIBR. Paratype (NIBRIV0000260248-1, NIBRIV0000260248-2), collected with holotype, deposited in the HUNHN.

**Description.** Massive shape, size up to 8  $\times$  6.5  $\times$  4.5 cm. Surface completely covered with *Pocillastra* sp. Oscule not apparent due to other sponge, *Pocillastra* sp. Texture compressible. Colour externally unknown due to *Pocillastra* sp. at surface, internally white. Cortex 2 mm in thick, clads of

dichotriaenes and amphirasters arranged. Choanosome oxeas, rhabds of dichotriaenes and oxyasters scattered. Several cavities, 1–3 mm in diameters scattered in sponge.

**Spicules.** Megascleres oxeas sharply pointed ends, 880–1,640 by 10–70  $\mu$ m. Dichotriaenes sharply pointed clads, rhabds 220–730 by 18–55  $\mu$ m, clads 105–300  $\mu$ m. Microscleres oxyasters with 8 thin rays, spines at the ray, two size categories, large oxyasters 75–130  $\mu$ m diameter and small oxyasters 30–55  $\mu$ m diameter. Amphirasters 8–28 rays, spines at the surface, 10–15  $\mu$ m diameter.

**Etymology.** This species is named after Professor W. J. Sollas who erected the genus *stryphnus*.

**Remarks.** This new species is similar to *Stryphnus niger* Sollas, 1886 in the composition of spicules, however they differ in colour and spicule size. This new species has smaller oxeas and larger oxyasters than those of *S. niger*. This new species has two size categories of oxyasters but *S. niger* has one size category of oxyasters. The colour of *S. sollasi* n. sp. is white, but the latter puce black.

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## REFERENCES

- Hooper JNA, van Soest RWM, 2002. *Systema porifera: a guide to the classification of sponges*. Kluwer Academic/Pleum Publisher Press, New York, pp. 1-1101.
- Hoshino T, 1971. Sponge fauna of Seto Inland Sea (Demospongiae, Calcarea) in Japan. *Bulletin of the Biological Society of Hiroshima University*, 38:21-30.
- Hoshino T, 1981. Shallow-water Demosponges of Western Japan 2. *Journal of Science of the Hiroshima University, Series B, Division 1 (Zoology)*, 29:207-289.
- Lendenfeld RV, 1903. Porifera. Tetraxonia. In: *Das Tierreich* 19 (Ed., Schulze FE). Friedländer, Berlin, pp. 1-168.
- Rützler K, 1978. Sponges in coral reef. In: *Coral reef: research method. Monographs on oceanographic methodology* (Eds., Stoddart DR, Johannes RE). United Nations Educational, Scientific and Cultural Organism, Paris, pp. 299-313.
- Shim EJ, Sim CJ, 2009. Two species of genus *Stelletta* (Astrophorida: Ancorinidae) from Korea. *Animal Cells and Systems*, 13:147-152.
- Sollas WJ, 1886. Preliminary account of the tetractinellid sponges dredged by H.M.S. Challenger 1872-76. Part I. The Chorstida. *Scientific Proceedings of the Royal Dublin Society (New Series)*, 5:177-199.
- Sollas WJ, 1888. Report on the Tetractinellida collected by H.M.S. Challenger, during the years 1873-1876. *Report on the Scientific Results of the Voyage of the H.M.S. Challenger during the Year, 1873-1876, Zoology*, 25:1-458.

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