

# Two New Euryspongian Sponges (Dictyoceratida: Dysideidae) from Korea

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## ABSTRACT

Two new sponges, *Euryspongia coreana* n. sp. and *E. regularis* n. sp., collected from Hataedo, Ulleungdo and Chujado, Korea by SCUBA diving during the period from 2001 to 2005. *Euryspongia coreana* n. sp. is very close to *E. lactea* Row, 1911 and *E. arenaria* Bergquist, 1961 in skeletal structure, but primary and secondary fibres of the new species are thicker than those of *E. lactea*. *E. arenaria* is cored with mostly spicule fragments but *E. coreana* n. sp. is cored with mainly sand. *E. regularis* n. sp. is readily distinguished from other euryspongian sponges. by its thickly encrusting growth form, yellowish ivory colour, and thickness of fibres. The bright yellow color and regular ladder-like skeletal structure are major features distinguishing this *E. regularis* n. sp. from other euryspongian sponges. Most species are brown, violet, red or orange in color except for *E. lactea* (milky white), *E. arenaria* (biscuit) and *E. coreana* n. sp. (yellowish ivory). Other euryspongian sponges have regularly or irregularly well developed secondary fibres, but *E. regularis* n. sp. has simple and regular secondary fibres.

**Key words:** new species, *Euryspongia*, Dysideidae, Dictyoceratida, Korea

## INTRODUCTION

Dictyoceratid sponges constitute four families, Irciniidae Gray, 1867, Spongiidae Gray, 1867, Thorectidae Bergquist, 1978 and Dysideidae Gray, 1867 (Cook and Bergquist, 2002; Lee and Sim, 2005). The family Dysideidae is characterized by laminated skeletal fibres and eurypylous choanocyte chambers. Dysideidae has five valid genera, *Dysidea*, *Pleraplysilla*, *Euryspongia*, *Lamellodysidea*, and *Citronia*, with about 120 species described worldwide (van Soest, 2005).

The genus *Euryspongia* is characterized by cored primary fibres, uncored secondary fibres, and well developed and reticulated secondary fibres (Cook and Bergquist, 2002). The genus *Euryspongia* Row, 1911 is a small group in the family Dysideidae. Ten species have been described (van Soest, 2005). In Korea, the family Dysideidae and the genus *Euryspongia* are reported for the first time in the present study.

## MATERIALS AND METHODS

Sponge specimens were collected from Hataedo Is. (Heuk-

san-myeon, Sinan-gun, Jeollanam-do) locating at the southwestern end of the Yellow Sea, Ulleungdo Is. (Ulleung-gun, Kyungsangbuk-do) in the East Sea and Chujado Is. (Bukjeju-gun, Jeju-do) in the South Sea, Korea. They were obtained in shallow water (20-40 m deep) by SCUBA diving during 2001-2005. Their fixation was followed the procedures of Sim and Lee (2002). Sponges were examined under the stereo-microscope (Carl Zeiss, Stemi SV 6 and Leica, MZ75) and light-microscope (Carl Zeiss, Axiocop II and Leica DMLS), following the procedures described by Hooper (1996). The type specimens are deposited in the Natural History Museum, Hannam University (HUNHM), and Department of Biological Science, Hannam University, Daejeon, Korea.

## SYSTEMATIC ACCOUNTS

Phylum Porifera Grant, 1836  
Class Demospongiae Sollas, 1885  
Order Dictyoceratida Minchin, 1900  
Family Dysideidae Gray, 1867

<sup>1</sup>\*Genus *Euryspongia* Row, 1911

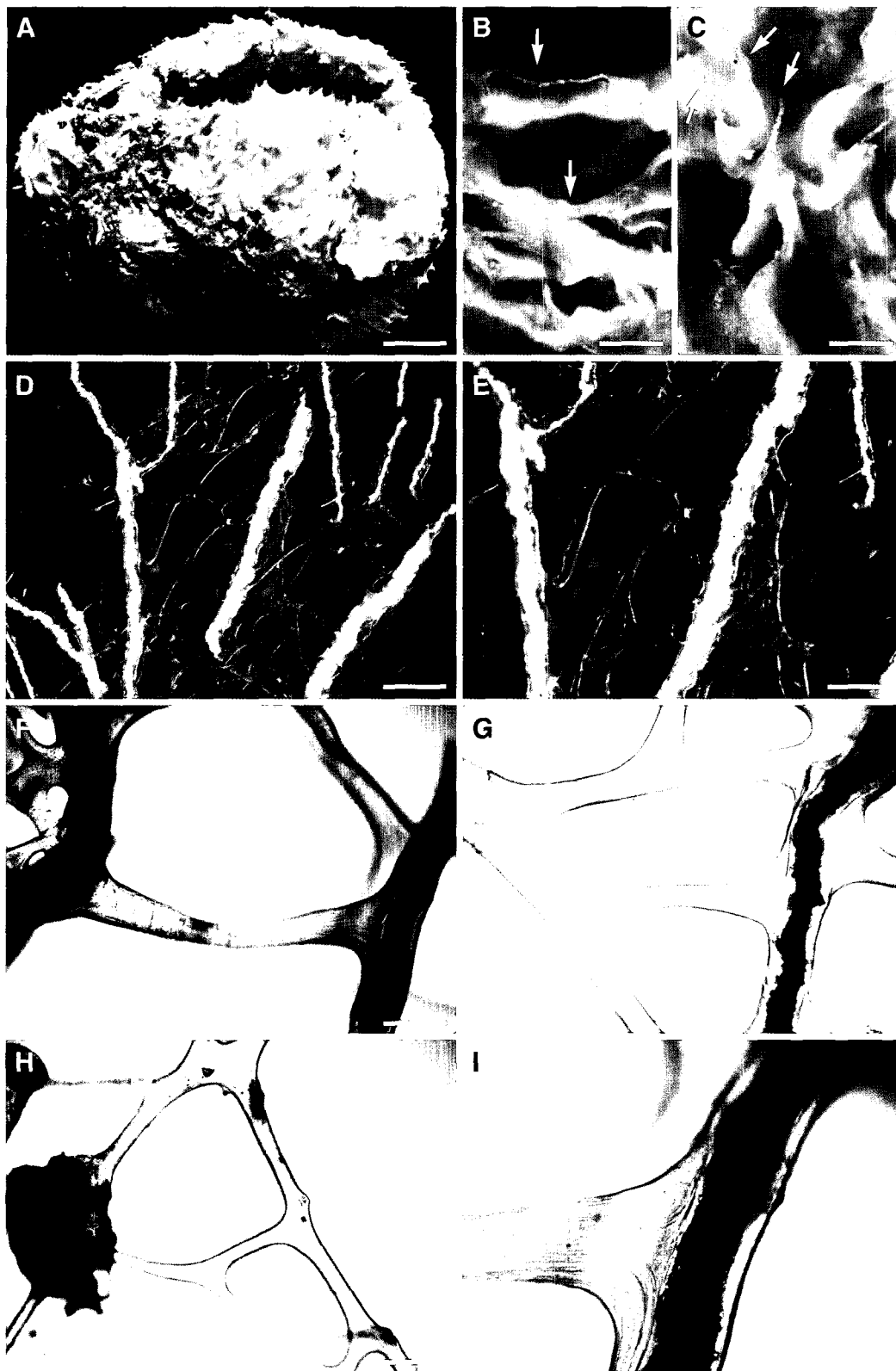
<sup>2</sup>\**Euryspongia coreana* n. sp. (Fig. 1A-I)

*Material examined.* Holotype (Por. 67), Ganseo (Hataedo Is., Heuksan-myeon, Sinan-gun), 25 June 2005, SCUBA

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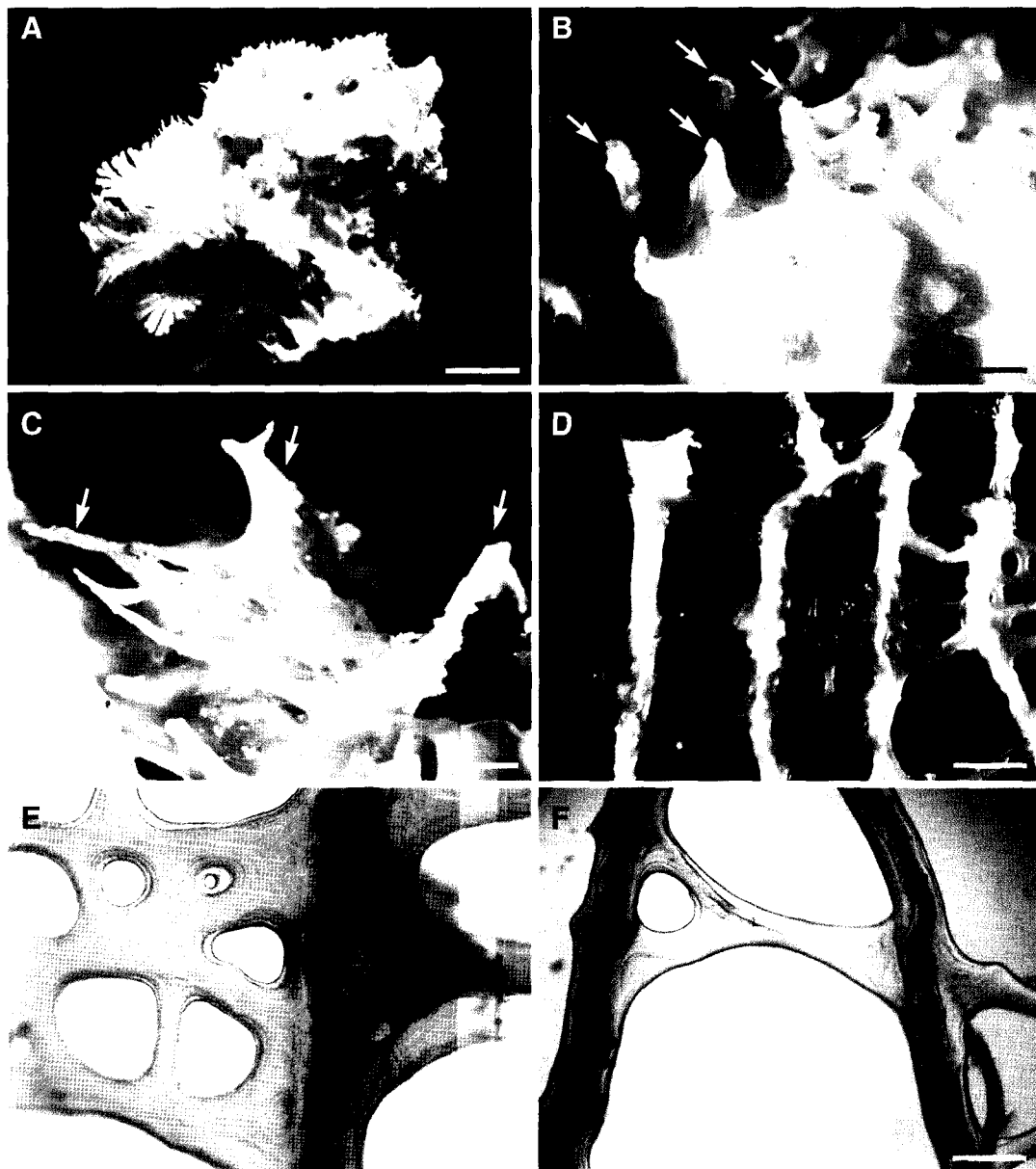
**Fig. 1.** *Euryspongia coreana* n. sp. A, preserved specimen in spirit; B, connected adjacent conules like a folding screen (arrows); C, primary fibres protruding out of conules (arrows); D-I, fibre skeletal structure (photographs D-E in stereo microscope, photographs F-I in light microscope). Scale bars=1 cm (A), 5 mm (B, C), 1 mm (D), 500  $\mu$ m (E), 200  $\mu$ m (F-H), 60  $\mu$ m (I).

diving, 20 m deep, K.J. Lee and H.J. Kim, deposited in HUNHM, Korea.

*Description.* Encrusting, up to 0.5 cm thick, with small mounds or small erected branches. Size up to 7.5 × 4.5 cm wide. Sponges attached to rocky substrate, easily taken from substrate by hand. Texture very soft. Oscules very rare; a large oscule, 4 mm in diameter, locally opened on top of specimen. Colour yellowish ivory throughout whole body in life and gradually changing to grayish ivory. Surface, smooth and covered with low conules, under 0.5

mm high, 1-5 mm apart. Conules connected with adjacent conules continuously like folding screen. Some primary fibres protruded out of conules. Thin membrane uncored with any detritus.

*Skeleton:* Primary fibres, 90-150 µm in diameter, heavily cored with small sand and reduced in number in endosome. Primary fibres irregularly divided into two or three primary fibres near surface. Some primary fibres start from branched secondary fibre and create conule. Primary and secondary fibres of endosome, thicker, more compact and than in



**Fig. 2.** *Euryspongia regularis* n. sp. A, preserved specimen in spirit; B, firm and short conules (arrows); C, long and thin conules (arrows); D-F, fibre skeletal structure (photograph D in stereo microscope, photographs E-F in light microscope). Scale bars=1 cm (A), 5 mm (B, C), 1 mm (D), 50 µm (E, F).

ectosome. Secondary fibres, 65-100  $\mu\text{m}$  in diameter, clean, well developed and irregularly branched. Mesh of skeleton diverse in form and size. All fibres laminated.

*Etymology.* This species name, *coreana*, is named after its nationality, Korea.

*Remarks.* Ten species were known in the genus *Euryspongia* so far. Among them, this new species is very close to *E. lactea* (see Cook and Bergquist, 2002) and *E. arenaria* (see Bergquist, 1961) in skeletal structure, but primary and secondary fibres of the new species are thicker than those of *E. lactea*. *E. arenaria* is cored with mostly spicule fragments but the new species is cored with mainly sand. *E. arenaria* is biscuit color in life and dull yellow gray in spirit. This new species is readily distinguished from other species of *Euryspongia* by its thickly encrusting in growth form, yellowish ivory colour, and thickness of fibres.

<sup>1</sup>*Euryspongia regularis* n. sp. (Fig. 2A-F)

*Material examined.* Holotype (Por. 68), Neunggul (Ulleung-do Is., Ulleung-gun, Kyungsangbuk-do), 2 Oct. 2001, SCUBA diving, 40 m deep, K.J. Lee and H.J. Kim, deposited in HUNHM, Korea. Paratype (Por. 68-1), Sasudo (Chujado Is., Bukjeju-gun, Jeju-do), 24 April. 2004, SCUBA diving, 39 m deep, K.J. Lee and H.J. Kim, deposited in Department of Biological Science, Hannam University, Korea.

*Description.* Massive, size up to 5  $\times$  2 cm wide and 3.5 cm high, with short and thick stalk. Sponges attached to rocky substrate. Specimen easily taken from substrate by hand. Texture hard, but slightly compressible. Large oscules, 2-3 mm in diameter, irregularly scattered on surface. Color light yellowish through whole body in life, gradually changing to ivory in alcohol. Surface covered with firm and short conules, 1-3 mm high and 1-4 mm apart, but many long and thin conules, 4-7 mm high, and project out of surface like harsh brush. Some bryozoan and barnacles lived on or within sponge bodies.

*Skeleton:* Ectosomal skeleton more developed than endosomal. A primary fibre extending from base to surface divided into two or three primary fibres near surface and make conules. Ectosomal skeleton has regular ladder form. Sometimes, secondary fibres create web structure with large mesh. Endosomal skeleton more simple, thick, loose and regular in form than ectosome. Primary fibre, 200-280  $\mu\text{m}$  in diameter, cored with sand and some broken spicules. Secondary fibre, 40-120  $\mu\text{m}$  in diameter, clean. All fibres heavily laminated.

*Etymology.* The species name, *regularis*, reflects the regular ladder-like skeletal structure.

*Remarks.* The bright yellow color and regular skeletal structure are major features distinguishing new species from other species of *Euryspongia*. Most species are brown, violet, red or orange in color except for *E. lactea* (milky white), *E. arenaria* (biscuit) and *E. coreana* (yellowish ivory, in this paper). Other species of *Euryspongia* have regularly or irregularly well developed secondary fibres, or strongly fasciculated primary fibres (*E. delicatula* Bergquist, 1995), but this new species has simple secondary fibres.

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