

## A Systematic Study on the Marine Sponges from the South Sea and the Yellow Sea of Korea

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한국 남해 및 서해 연안 해산 해면류의 계통분류학적 연구

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### 적 요

본인은 1984년 6월부터 1985년 5월까지 서해연안(작약도, 대천, 안면도, 안흥)과 남해연안의 삼천포를 중심으로 한 부근섬(신수도, 늑도, 비진도, 충무) 및 거제도, 제주도 등지에서 채집된 재료 90 여점과 그간 미해결로 보류되어 있던 기존 표본들을 동정분류한 결과 26종의 기록종과 3종의 한국 미기록종(*Spongia officinalis*, *S. zimocca*, *Tedania tublifera*)이 밝혀졌다. 기록종 가운데 *Esperiopsis uncigera*와 *Hymeniacidon sinapium*은 재검토되었다.

Key words: Sponges, South Sea, Yellow Sea.

### INTRODUCTION

This paper deals with Demosponges from the coastal area of the South Sea and the Yellow Sea of Korea during the period from May 1984 to April 1985.

Of the 29 species, 26 have been previously known from Korean waters and three species are newly reported from Korea.

The author has briefly described three unrecorded species in Korea and prepared plates for them. Among the recorded species *Esperiopsis uncigera* and *Hymeniacidon sinapium* were re-examined.

### LIST OF SPECIES

Class Demospongia

Subclass Ceractinomorpha

## Order Keratosa

## Suborder Dendroceratida

## Family Spongiidae

- \*1. *Spongia officinalis* Linne, 1756   간각질해면(신칭)  
 \*2. *Spongia zimocca* Schmidt, 1862   관각질해면(신칭)

## Order Haplosclerida

## Family Halicionidae

3. *Haliclona permollis* (Bowerbank, 1866)   보라해면

## Family Callyspongiidae

4. *Callyspongia elegans* (Thiele, 1899)   예쁜이해면  
 5. *Callyspongia elongata* Ridley & Dendy, 1886   길쭉예쁜이해면  
 6. *Callyspongia confoederata* (Ridley, 1884)   보라예쁜이해면

## Order Poecilosclerida

## Family Adocidae

7. *Strongylophora corticata* Wilson, 1925   불뚱해면

## Family Plocamiidae

8. *Lissoplocamia tokushima* Tanita, 1970   미끈이해면

## Family Myxillidae

9. *Myxilla setoensis* Tanita, 1961   넓적끈적해면

## Family Tedaniidae

10. *Iotrochota baculifera* Ridley, 1884   보라바퀴해면  
 \*11. *Tedania tubulifera* Levi, 1963   관테다니해면(신칭)

12. *Lissodendoryx isodictyalis* (Carter, 1882)   두드럭끈적해면

## Family Ophlitaspongiidae

13. *Esperiopsis uncigera* Topsent, 1928   관발톱해면  
 14. *Ophlitaspongia noto* Tanita, 1963   바늘뼈해면

## Order Halichondrida

## Family Halichondriidae

15. *Halichondria okadai* (Kadota, 1922)   검정해변해면  
 16. *Halichondria panicea* (Pallas, 1776)   회색해변해면

## Family Hymeniacionidae

17. *Hymeniacion sinapium* de Laubenfels, 1930   주황해변해면

## Subclass Tetractinomorpha

## Order Axinellida

## Family Axinellidae

18. *Ceratopsis ramosa* Thiele, 1898   가지뿔해면  
 19. *Phakellia foliacea* Thiele, 1898   잎맵시해면  
 20. *Raspaillia hirsuta* Thiele, 1898   털많은가지해면

## Order Hadromerida

## Family Spirastrellidae

21. *Spirastrella panis* Thiele, 1898   나선별해면

## Family Suberitidae

- 22.
- Suberites excellence*
- (Thiele, 1898) 코르크해면

## Family Chondrosiidae

- 23.
- Chondrilla mixta*
- Schulze, 1877 검정알해면

## Order Epipolasida

## Family Tethyidae

- 24.
- Tethya aurantium*
- (Pallas, 1766) 오렌지둥글해면

## Family Jaspidae

- 25.
- Asteropus simplex*
- (Carter, 1879) 자루벌해면

## Order Choristida

## Family Ancorinidae

## Subfamily Ancorininae

- 26.
- Penares incrustans*
- Tanita, 1963 겁질닷해면

## Family Kaliapsidae

- 27.
- Discodermia calyx*
- Doderlein, 1883 컵가죽해면

- 28.
- Discodermia japonica*
- Doderlein, 1883 판가죽해면

## Order Homosclerophorida

## Family Halinidae

- 29.
- Pachastrella japonica*
- Thiele, 1898 시루해면

## DESCRIPTION OF SPECIES

## Order Keratosa

## Suborder Dendroceratida

## Family Spongiidae

- 1.
- Spongia officinalis*
- Linne, 1759 간각질해면 (pl. 1, figs. 2)

*Spongia officinalis*: Burton, 1934, (p. 575); De Laubenfels, 1948, (p. 4, pl. 1, figs. 1, 2).

Specimens examined: Sögwip'o, (C.J. Sim), 840701 (Han Nam Univ. Biol.).

## Description:

Dimensions—7.5×4.5cm

Habitat—Low tide mark, under the rock.

Shape—More or less spherical, 3.6cm thickness.

Color—Black, the interior is brown.

Consistency—Very spongy and elastic.

Surface—Finely conulose, oscules are about 0.5 to 1.5mm in diameter on top of the subspherical body.

Ectosome—Contains small quantities of foreign material such as spicules.

Endosome—Primary fibers are cored with some foreign material, 40~100 $\mu$  in diameter. Secondary fibers are much smaller, 20~50 $\mu$  in diameter.

Remark: This species is characterized by having a finely conulose surface and a skeletal reticulation more uniform than others. In this specimen, secondary fibers are much thicker than in De Laubenfels' (1948) paper.

**Distribution** : Common species throughout the warmer water of the ocean. Mediterranean, West Indian and Australian regions, Asia, Indian Ocean and South America.

2. *Spongia zimmocca*, Schmidt, 1862 관각질해면 (pl. 1, figs. 3-4)

*Spongia zimmocca* Schmidt, 1862, (p. 23) ; De Laubenfels, 1948, (p. 13, text-fig. 3) ; Hoshino, 1981, (p. 60, pl. 1, fig. 2, text-fig. 2).

**Specimens examined** : Hoenggando, (B.J. Rho), 690902 (Han Nam Univ. Biol.).

**Description**:

Dimension— $11 \times 8 \times 5$ cm

Habitat—On the rock.

Shape—Irregular massive sponge.

Color—Violet.

Consistency—Very elastic.

Surface—They have several upright hollow tubes 1~4cm height, 2cm in width.

Oscules open at the tips of tube, 5mm in diameter.

Ectosome—Fleshy dermis containing a foreign material.

Endosome—Primary fibers are cored with sand grain and measure 10~50 $\mu$  in diameters. Secondary fibers are uncorred, measure 30 $\mu$  in diameter.

**Remark** : This species is characterized by having numerous upright hollow branches and a variety of this oscular tube seems to be especially common in many areas. The specimens examined in this study have round tubes.

**Distribution** : Mediterranean; West Indian Region; Australia; Chili; Japan.

Order Poecilosclerida

Family Tedaniidae

3. *Tedania tubulifera* Levi, 1963 관테다니해면 (pl. 2, figs. 3-4)

*Tedania tubulifera* Levi, 1963, (p. 34, fig. 36)

**Specimens examined** : Söngsanp'o, (C.J. Sim), 840603 (Han Nam Univ. Biol.).

**Description**:

Dimensions— $7 \times 4$ cm

Habitat—Intertidal zone, on rocky substrate.

Shape—Encrusting sponge of 1.5-2.0cm thick.

Color—Orange.

Consistency—Slightly compressible.

Surface—Uneven, tube like oscules 1mm in diameter, 1.5mm height.

Spicules( $\mu$ )—

Style.....200-270 $\times$ 10

Tylote .....200-220 $\times$ 6

Raphide .....40-50 $\times$ 2(small)

156 $\times$ 2.4(large)

**Remark** : This species resembles *Tedania brevispiculata* Thiele, 1903 but differs in the two sizes of raphides.

**Distribution** : South Africa.

4. *Esperiopsis uncigera* Topsent, 1928 관밭톱해면 (pl. 2, figs. 5-6)

*Esperiopsis uncigera* Topsent, 1928, (p. 307, pl. 3, figs. 4, 5) ; Tanita 1978, (p. 231, text-fig. 1) ; Rho & Sim, 1979, (p. 61, pl. 3, figs. 1-3).

Specimens examined : Chöngsando, (M.K. Huh), 810705 (Han Nam Univ. Biol.).

Remark : The surface of this sponge is not smooth and wide in diameter than Yongil specimen.

Distribution : Japan.

5. *Hymeniacidon sinapium* De Laubenfels, 1930 주황해변해면 (pl. 1, figs. 5-6)

*Hymeniacidon sinapium* De Laubenfels, 1930, (p. 26) ; 1932, (p. 57, text-fig. 29).

*Halichondria japonica* : Kim *et al.*, 1968, (p. 39, pl. 1, fig. 5, text-fig. 6) ; Rho *et al.*, 1969, (p. 155) ; Hoshino, 1970, (p. 20) ; Rho & Sim, 1972, (p. 183) ; 1972b, (p. 126) ; 1976, (p. 97) ; Sim, 1982, (p. 192).

Specimens examined : Shinsudo, (C.J. Sim), 840704 (Han Nam Univ. Biol.).

Remark : This species is very abundant in intertidal zones off of two coastal seas. They have differences in spicule size, form and color according to the environments.

Distribution : Cosmopolitan.

Table 1. Distribution of Demospongia in Korean coastal seas

Species	Yellow Sea	South Sea	Chejudo
Subclass Ceractinomorpha			
Order Keratosa			
<i>Spongia officinalis</i>			Sögwip'o
<i>Spongia zimocca</i>			Hoenggando
Order Haplosclerida			
<i>Haliclona permollis</i>	Anhüng	Samchönp'o	Sögwip'o
<i>Callyspongia elegans</i>		Haegümgang Chüngmu	Sögwip'o
<i>Callyspongia elongata</i>			Sögwip'o
<i>Callyspongia confoederata</i>		Chüngmu	Sögwip'o
Order Poecilosclerida			
<i>Strongylophora corticata</i>			Sögwip'o
<i>Lissoplocamia tokushima</i>			Sögwip'o
<i>Myxilla setoensis</i>		Samchönp'o	
<i>Iotrochota baculifera</i>			Söngsanp'o
<i>Tedania tubulifera</i>			Söngsanp'o
<i>Lissodendoryx isodictyalis</i>			Söngsanp'o
<i>Esperiopsis uncigera</i>		Chöngsando	
<i>Ophlitaspongia noto</i>	Anhüng Chakyakto		
Order Halichondrida			
<i>Halichondria okadai</i>		Pijindo	Sögwip'o
<i>Halichondria panicea</i>	Chakyakto Anmyöndo	Haegümgang Pijindo	Söngsanp'o
<i>Hymeniacidon sinapium</i>	Taechön Anhüng	Haegümgang Pijindo	Söngsanp'o

	Amyöndo	Shinsudo, Nükto Samchönp'o
Subclass Tetractinomorpha		
Order Axinellida		
<i>Ceratopsis ramosa</i>		Sögwip'o
<i>Phakellia foliacea</i>		Sögwip'o
<i>Raspailia hirsuta</i>		Sögwip'o
Order Hadromerida		
<i>Spirastrella panis</i>		Sögwip'o
<i>Suberites excellence</i>	Anhüng	Samchönp'o
<i>Chondrilla mixta</i>		Söngsanp'o
Order Epipolasida		
<i>Tethya aurantium</i>		Söngsanp'o
<i>Asteropus simplex</i>		Sögwip'o
Order Choristida		
<i>Penares incrustans</i>		Namhaedo
<i>Discodermia calyx</i>		Sögwip'o
<i>Discodermia japonica</i>		Sögwip'o
Order Homosclerophorida		
<i>Pachastrella japonica</i>		Sögwip'o

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## CONCLUSION

According to table 1, among the 29 species only 5 species of sponges were collected from the Yellow Sea and they are common species in three coastal area. It appears that the coasts of the Yellow Sea are not suitable for Tetractinomorpha due to its oceanographic conditions, but Tetractinomorpha are abundant in Cheju Island.

Commonly distributed through two coastal seas are *Halichondria panica* and *Hymeniacidon sinapium*.

## ABSTRACT

Demospongia of coastal area of the South Sea and the Yellow Sea were classified into 29 species, 24 genera, 20 families and 9 orders. Of which 3 species are hitherto unreported species in Korea: *Spongia officinalis*, *Spongia zimocca* and *Tedania tubulifera*. The coasts of the Yellow Sea are not suitable for Tetractinomorpha.

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RECEIVED: 10 MAY, 1985.

ACCEPTED: 14 SEPTEMBER, 1985.

## EXPLANATION OF PLATES

## Plate 1

Figs. 1 & 2. *Spongia officinalis* Linné, 1759

1. Entire animal    2. Portion of skeleton in endosome x 40

Figs. 3 & 4. *Spongia zimmocca* Schmidt, 1862

3. Entire animal    4. Portion of skeleton in endosome x 40

Figs. 5 & 6. *Hymeniacidon sinapium* De Laubenfels, 1930

5. Entire animal    6. Spicules, Styles

## Plate 2

Figs. 1-4. *Tedania tubulifera* Levi, 1963

1. Entire animal    2. Spinules on tip of tylote    3-4. Surface of raphide

Figs. 5 & 6. *Esperiopsis uncigera* Topsent, 1928

5. Entire animal    6. Isochela

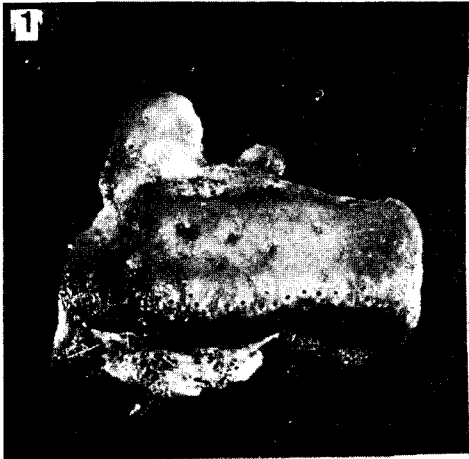
Fig. 7. *Iotrochota baculifera* Ridley

    Biotulate

Scale bar : 1 $\mu$ m



PLATE 1



3 4 5 6 7 8 9 10 11 12

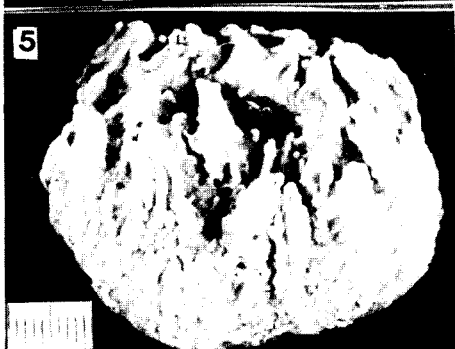
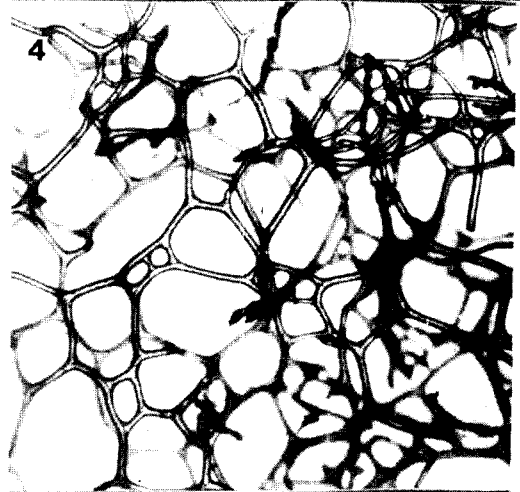
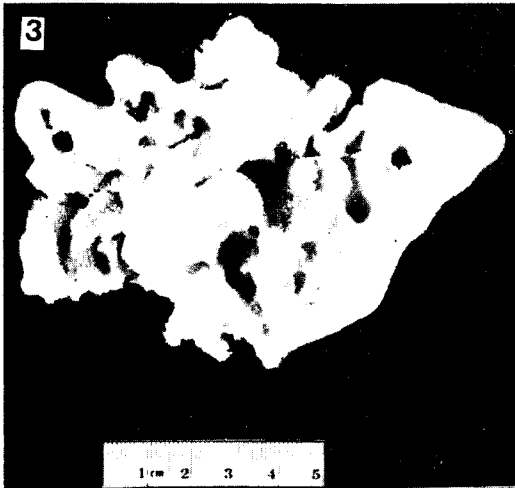
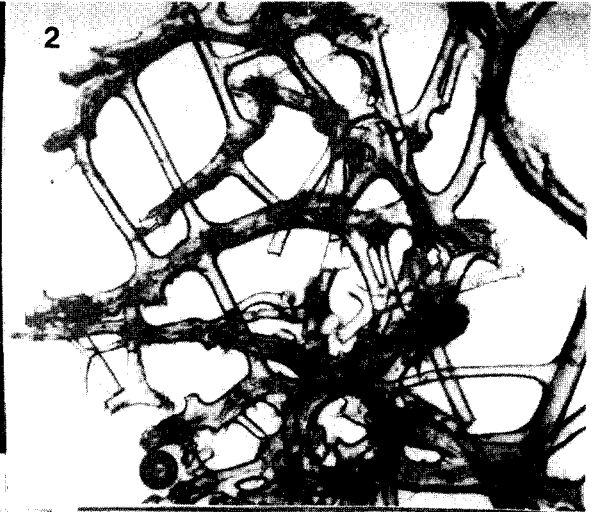


PLATE 2

