

A Taxonomic Study on Marine Sponges from Chujado Islands, Korea

Chung Ja Sim* and Eun Jeong Shim

Department of Biological Science, College of Life Science and Nano Technology,
Hannam University, Daejeon 306-791, Korea

ABSTRACT

A taxonomic study on the marine sponges was conducted with the materials collected from Chujado Island, Korea during the period June 2001 to May 2005 by SCUBA and hands. They were classified into 63 species, 31 genera, 25 families, seven orders in a class. Among them, *Antho (Arcania) manarensis* Carter, 1880 and *Eurypon lendenfeldi* Hentschel, 1912 were newly added to Korean Fauna. Two species, *Biemna chujaensis* and *B. jeolmyongensis*, were new to science.

Key words: taxonomy, sponge, new species, Chujado Islands, Korea

INTRODUCTION

Chujado Islands (126°30'E, 34°20'N) belong to the administrative district of Bukjeju-gun, Jeju-do, Korea. It is located between Korea mainland and Jeju-do. Chujado Islands contain forty two adjacent Islands which consists of four Islands in Sangchujado Islands and thirty eight Islands in Hachujado Islands.

To date, 12 species, *Phakellia elegans* Thiele, 1898; *Stelletta crassispicula* Sollas, 1886; *Plakortis simplex* Schulze, 1880; *Spongia zimmocca* Schmidt, 1862; *Tetilla ovata* Thiele, 1898; *Stelletta validissima* Thiele, 1898; *Desmacella rasacea* Fristedt, 1887; *Spirastrella insignis* Thiele, 1898; *Halichondria oshoro* Tanita, 1961; *Halichondria panicea* Pallas, 1766; *Hymeniacidon sinapium* De Laudenfels, 1930 and *Haliclona pemollis* Bowerbank, 1866 have been reported from Chujado Islands (Rho and Sim, 1976, 1981; Sim, 1985; Sim and Kim, 1988; Sim and Byeon, 1989, 1991).

The material examined in this study were collected from Chujado Islands by SCUBA diving (5-40 m) deep and hands from June 2001 to May 2005 (Fig. 1). All processes in this study were followed the procedures of Kim and Sim (2005) and Rützler (1978). Type specimens were deposited in the Natural History Museum (NHM), Hannam University, Daejeon, Korea.

As a result, 63 species belonging to 31 genera, 25 families, seven orders, in a class were found from Chujado Islands. Among them, *Antho (Arcania) manarensis* Carter, 1880 and *Eurypon lendenfeldi* Hentschel, 1912 were newly added to Korean Fauna. Two new species, *Biemna chujaensis* and

B. jeolmyongensis were new to science.

SYSTEMATIC ACCOUNTS

⁺added species in the found of Chujado Islands.

^{1*}newly recorded species to Korean fauna.

^{2*}new species to science.

Phylum Porifera Grant, 1836
Class Demospongiae Sollas, 1885
Order Homosclerophorida Dendy, 1905
Family Plakinidae Schluze, 1880
1. *Plakortis simplex* Schulze, 1880

Previous record. Heonggando (Rho and Sim, 1981).

Material examined. Jeolmyoungyeo, 21 Aug. 2002; Jikgodo, 22 Aug. 2002; Cheongdo, 21 Aug. 2002; Chupodo, 22 Aug. 2002; Mokgaekkeut, 23 May 2005; Bangmiyeokseom, 24 May 2005; Sasudo, 24 May 2005.

Distribution. Korea (Geomundo Is., Chujado Is.), Japan (Hiwasa, Dokusima).

Order Astrophorida Sollas, 1888
Family Ancorinidae Schmidt, 1870
+2. *Penares incrustans* Tanita, 1963

Material examined. Chupodo, 22 Aug. 2002; Jikodo, 22 Aug. 2002; Heonggando, 22 Aug. 2002; Jeolmyoungyeo, 21 Aug. 2002; 23 May 2005; Bangmiyeokseom, 21 Aug. 2002; 24 May 2005; Cheongdo, 21 Aug. 2002; 23 May 2005; Sasudo, 24 May 2005.

Distribution. Korea (Namhaedo Is., Geomundo Is.), Japan

*To whom correspondence should be addressed

Tel: 82-42-629-7485, Fax: 82-42-629-7487

E-mail: cjsim@hannam.ac.kr

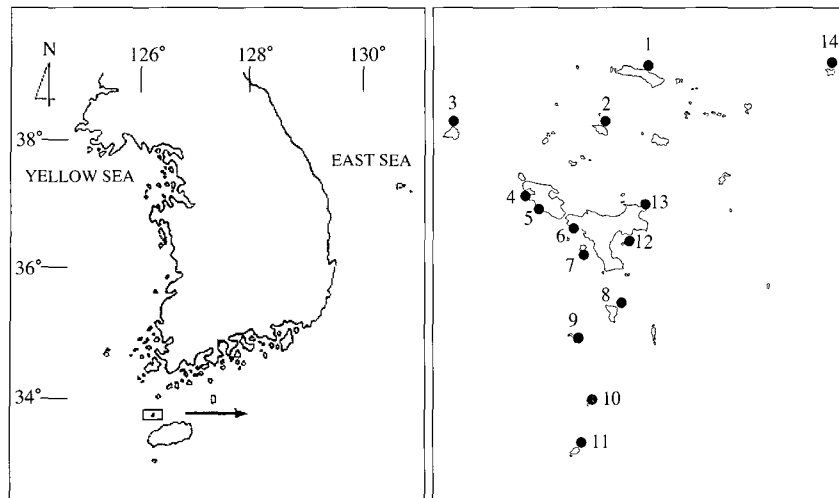


Fig. 1. 14 survey sites on Chujado Islands of Korea from June 2001 to May 2005. 1, Heonggando; 2, Chupodo; 3, Jikgodo; 4, Mokgaekkeut; 5, Hupo-ri; 6, Muk-ri; 7, Seomsaengi; 8, Cheongdo; 9, Bangmiyeokseom; 10, Jeolmyongyeo; 11, Gwantaldo; 12, Sinyang-ri; 13, Yecho-ri; 14, Sasudo.

(Noto Peninsula).

+3. *Stelleta spinulosa* Sim and Kim, 2003

Material examined. Heonggando, 22 Aug. 2002.

Distribution. Korea (Gageodo Is.).

4. *Stelleta crassispicula* Sollas, 1886

Previous record. Heonggando (Rho and Sim, 1981).

Distribution. Korea (Namhaedo Is., Chujado Is.), Brazil.

5. *Stelleta validissima* Thiele, 1898

Previous record. Chujado Is. (Sim and Kim, 1988).

Distribution. Korea (Chujado Is.), Japan.

+6. *Asteropus simplex* Carter, 1879

Material examined. Jeolmyongyeo, 21 Aug. 2002; 30 June 2004; 23 May 2005.

Distribution. Korea (Jejudo Is.), Japan (Sagami Bay), Western Australia, Indian Ocean, Philippines, New Zealand.

+7. *Jaspis wondoensis* Sim and Kim, 1995

Material examined. Sasudo, 24 May 2005.

Distribution. Korea (Geomundo Is.).

+8. *Jaspis coreana* Sim and Lee, 2004

Material examined. Sasudo, 24 May 2005.

Distribution. Korea (Geomundo Is.).

Family Geodiidae Gray, 1867

+9. *Caminus awashimensis* Tanita, 1969

Material examined. Heonggando, 22 Aug. 2002; Chupodo, 22 Aug. 2002; Jikodo, 22 Aug. 2002; Mokgaekkeut, 23 May 2005; Bangmiyeokseom, 24 May 2005.

Distribution. Korea (Geomundo Is.), Japan.

Family Pachastrellidae Carter, 1875

+10. *Poecillastra cribrum* Leibold, 1914

Material examined. Chupodo, 22 Aug. 2002; Jeolmyonfyeo, 21 Aug. 2002; 23 May 2005, Bangmiyeokseom, 24 May 2005, Mokgaekkeut, 23 May 2005.

Distribution. Korea (West Sea, Jejudo Is., Geomundo Is.), Japan.

+11. *Poecillastra doederleim* Thiele, 1898

Material examined. Jeolmyonfyeo, 21 Aug. 2002; Heonggando, 22 Aug. 2002.

Distribution. Korea (Jejudo Is.), Japan.

+12. *Poecillastra tenuilaminaris* Sollas, 1866

Material examined. Gwantaldo, 1 Jul. 2004.

Distribution. Korea (Jejudo Is., Geomundo Is.), Japan (Sado Is., Sagami Bay).

+13. *Poecillostra wondoensis* Sim and Kim, 1995

Material examined. Sasudo, 24 May 2005.

Distribution. Korea (Geomundo Is.).

Order Hadromerida Topsent, 1894

Family Clionaidae D'Orbigny, 1851

+14. *Cliona celata* Grant, 1826

Material examined. Jikodo, 22 Aug. 2002; Cheongdo, 21 Aug. 2002; 23 May 2005; Sasudo, 24 May 2005; Mokgaekkeut, 23 May 2005; Hupo-ri, 22 May 2005.

Distribution. Korea (Geomundo Is.), Gulf of St. Lawrence to South Carolina, Gulf Coast of Louisiana and Texas, Pacific Coast of North America.

Family Spirastrellidae Ridley and Dendy, 1886

+15. *Spirastrella abata* Tanita, 1961

Material examined. Heonggando, 22 Aug. 2002; Chupodo, 22 Aug. 2002; Jeolmyongyeo, 23 May 2005; Sasudo, 24 May 2005; Cheongdo, 23 May 2005.

Distribution. Korea (South Sea, Jejudo Is.), Japan.

+16. *Spirastrella panis* Thiele, 1898

Material examined. Jeolmyongyeo, 21 Aug. 2002; Bangmiyeokseom, 21 Aug. 2002; Jikodo, 22 Aug. 2002; Chupodo, 22 Aug. 2002; Cheongdo, 23 May 2005.

Distribution. Korea (Jejudo Is., Geomundo Is.), Japan (Sagami Bay, Kiehanel).

17. *Spirastrella insignis* Thiele, 1898

Previous record. Gwantaldo (Sim and Byeon, 1991).

Distribution. Korea (Chujado Is.), Japan.

Family Suberitidae Schmidt, 1870

+18. *Suberites japonicus* Thiele, 1898

Material examined. Jikodo, 22 Aug. 2002; Bangmiyeokseom, 24 May 2005; Jeolmyongyeo, 21 Aug. 2002; Mokgaekkeut, 23 May 2005.

Distribution. Korea (Korea Strait, Geomundo Is.), Japan (Sado Is.).

Family Tethyidae Gray, 1848

19. *Tetilla ovata* Thiele, 1898

Previous record. Chujado Is. (Sim and Kim, 1988).

Distribution. Korea (Chujado Is.), Japan.

Order Poecilosclerida Topsent, 1928

Suborder Microcionina Hadju, Van Soest and Hooper, 1994

Family Microcionidae Carter, 1875

Subfamily Microcioninae Carter, 1875

+20. *Clathria (Clathria) acanthostyli* Hoshino, 1981

Material examined. Cheongdo, 1 Jun. 2004.

Distribution. Korea (Chujado Is.), Japan.

+21. *Clathria (Axociella) simae* Hooper, 1996

Material examined. Jeolmyongyeo, 1 Jul. 2002; 23 May 2005; Sasudo, 24 May 2005; Seomsaengi, 1 Jul. 2004.

Distribution. Korea (Korea Strait, Chujado Is.).

+22. *Clathria (Clathria) gageoensis* Kim and Sim, 2005

Material examined. Bangmiyeokseom, 24 May 2005; Mokgaekkeut, 23 May 2005; Cheongdo, 22 Aug. 2002; 23 May 2005.

Distribution. Korea (Gageodo Is.).

Subfamily Ophlitaspongiinae De Laudenfels, 1936

+23. *Antho (Acarinia) bakusi* Sim and Lee, 1998

Material examined. Jeolmyongyeo, 21 Aug. 2002; Jikodo, 22 Aug. 2002.

Distribution. Korea (Geomundo Is., Ulleungdo Is.).

+24. *Antho (Acarinia) tocushima* Tanita, 1970

Material examined. Jeolmyongyeo, 23 May 2005.

Distribution. Korea (Korea Strait, Chujado Is.), Japan.

¹*25. *Antho (Acarinia) manaarensis* Carter, 1880 (Figs. 2-4)

Dictyocylindrus manaarensis Carter 1880, pp. 37-38, Pl. IV. fig. 1a-g.

Material examined. Sasudo, 24 May 2005.

Description. Specimen, irregular branch form. Size up to 13.2 × 9.8 cm wide and 0.8-1 cm thick. Oscules, invisible. Texture, hard and tough. Color, orange in life, dark beige in alcohol. Endosome and Ectosome not correctly divided.

¹*마나아꽃해면 (신칭)

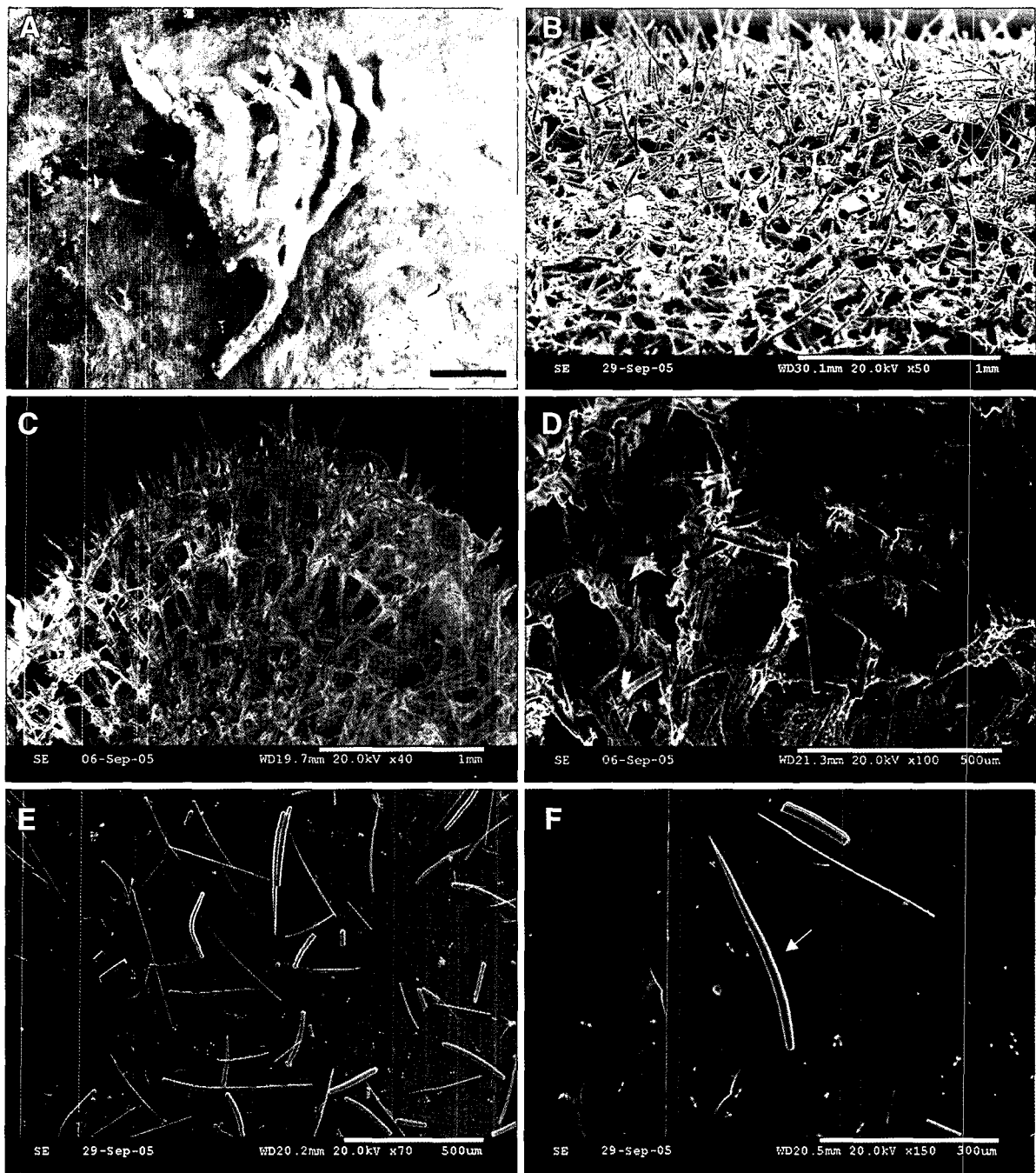


Fig. 2. *Antho (Acarinia) manaarensis*. A, entire specimen; B, surface; C, ectosomal skeleton; D, endosomal skeleton; E, spicules; F, style (arrow). Scale bars=1 cm (A), 500 μ m (B, D, E), 1 mm (C), 300 μ m (F).

Skeletal structure, megascleres compose regular reticulated structure; radial arrangement from endosome to ectosome. Spicules. Style with heavy micro-spines at head; subtylostyle with spines at head; tylote with heavy micro-spines at both ends.

Megascleres	
styles	340-665 \times 10-20 μ m
subtylostyles	300-470 \times 3-5 μ m
tylotes	190-230 \times 8-22 μ m
Microscleres	
toxas	25-100 μ m

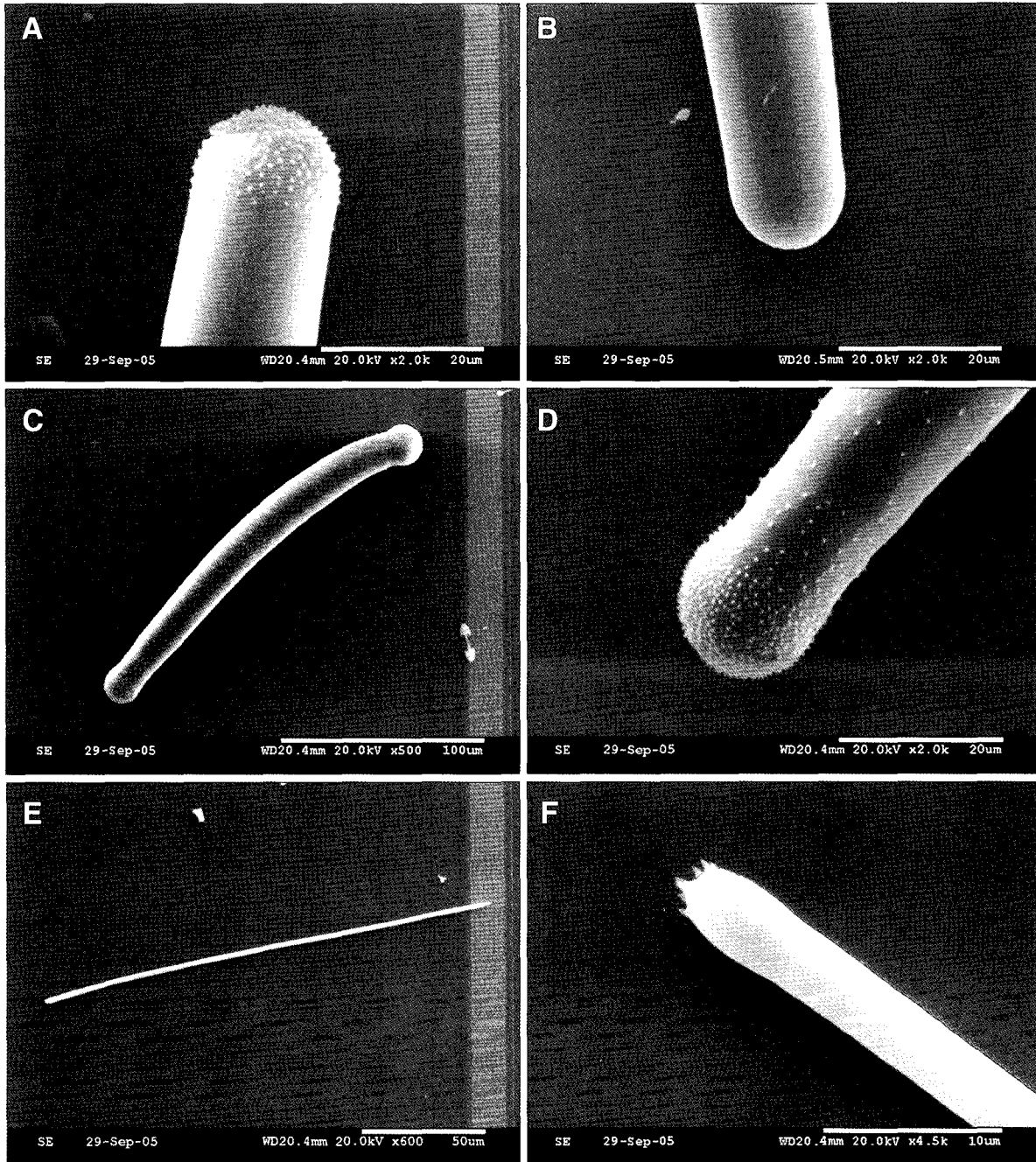


Fig. 3. *Antho (Acarnia) manaarensis*. A, style with heavy micro-spines at head; B, head part of style; C, tylole; D, tylole with heavy micro-spines at head; E, subtylostyle; F, subtylostyle with spines. Scale bars=20 μ m (A, B, D), 100 μ m (C), 50 μ m (E), 10 μ m (F).

isochelae 16-20 μ m

Laccadives, California.

Remarks. This species is slightly different from the specimen of Carter (1880) and Lambe (1895) in color, but other characters are similar to Carter and Lambe's ones.

Family Raspilidae Henschel, 1923
 +26. *Raspailia koreana* Rho and Sim, 1979

Distribution. Gulf of Manaar, West coast of India, Ceylon,

Material examined. Jeolmyongyeo, 1 Jul. 2004.

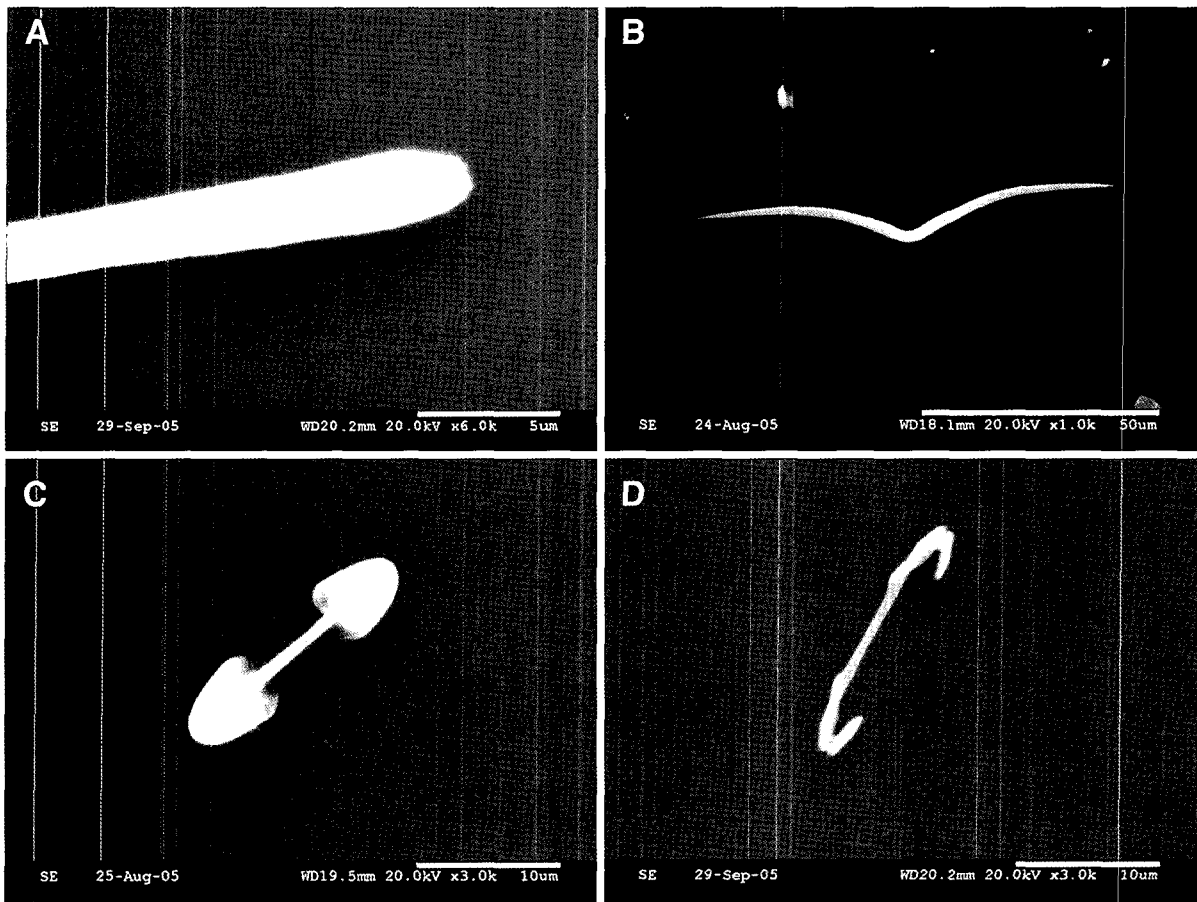


Fig. 4. *Antho (Acarinia) manaarensis*. A, head part of subtylostyle; B, toxa; C, front view of isochela; D, side view of isochela. Scale bars=5 μm (A), 50 μm (B), 10 μm (C, D).

Distribution. Korea (Jeju Is.).

+27. *Raspailia hirusta* Thiele, 1898

Material examined. Cheongdo, 1 Jul. 2004; Jeolmyongyeo, 21 Aug. 2002; 23 May 2005; Heonggando, 22 Aug. 2002; Mokgaekkeut, 23 May 2005.

Distribution. Korea (Korea Strait, Geomundo Is.), Japan (Aikawa, Sato Is., Noto Peninsula).

+28. *Raspailia folium* Thiele, 1898

Material examined. Jeolmyongyeo, 21 Aug. 2002.

Distribution. Korea (Jeju Is.), Japan.

¹*29. *Eurypon lendenfeldi* Henchel 1912 (Figs. 5, 6)

Material examined. Chungdo, 21 Aug. 2002.

Description. Irregular massive form. Size up to 4.1 × 2.5 cm wide and 1 cm thick. Surface, covered with thin layer and lines, rough. Oscule and pore, invisible. Texture, hard. Color red in life, ivory in alcohol. Endosome and Ectosome not correctly divided.

Structure skeleton, bundle with megascleres form plumose to surface.

Spicules. Megascleres: Large acanthostyle with spines at lower part, small acanthostyle with spines through whole body equally.

Megascleres

- large acanthostyles 310-670 × 18-20 μm
- small acanthostyles 145-220 × 8-10 μm
- styles 500-600 × 3-6 μm
- large tylostyles 1100-2025 × 8-20 μm
- small tylostyles 400-630 × 8-10 μm

Remarks. This species has three types of acanthostyle

¹*렌네펠드넓은해면(신칭)

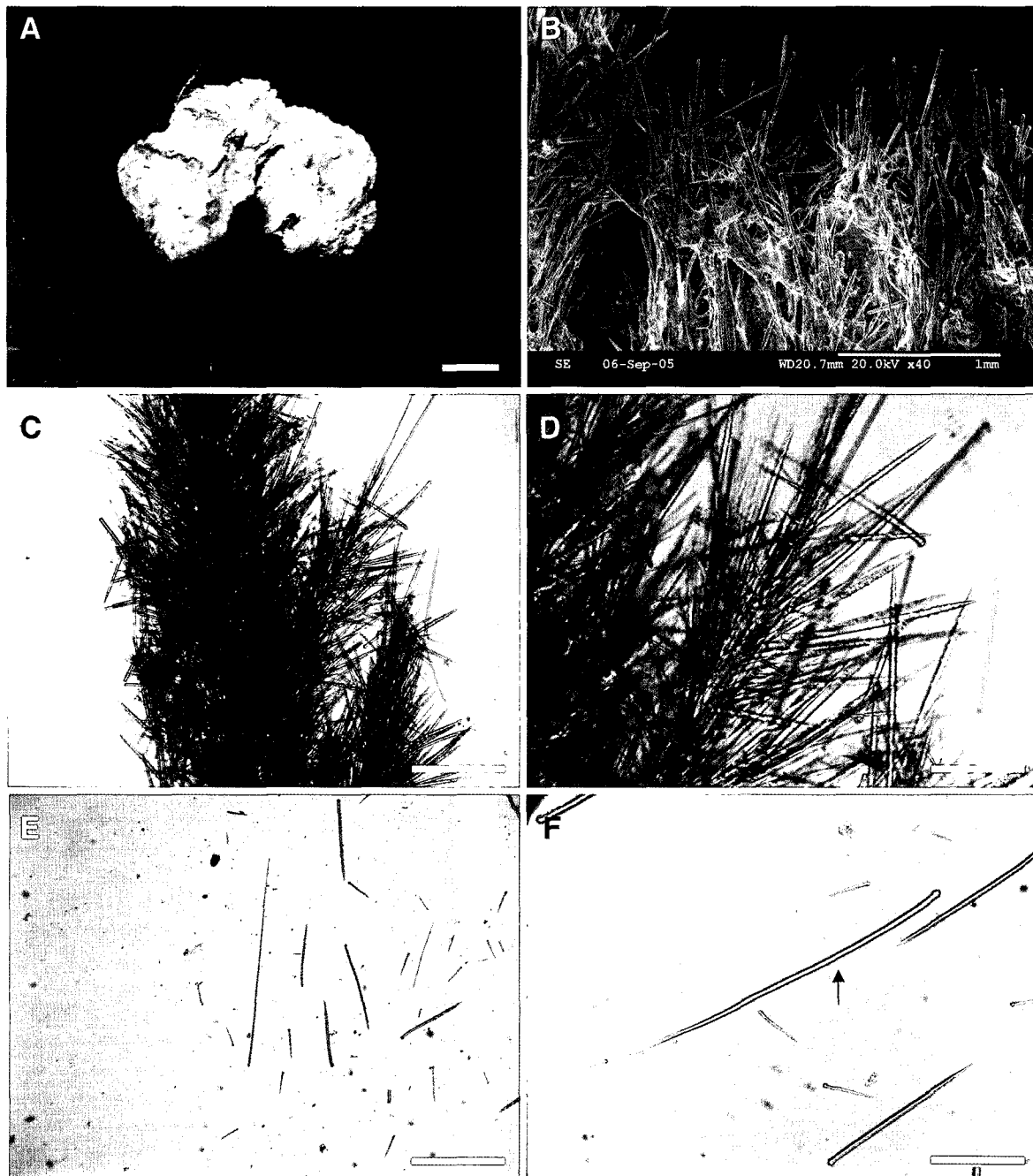


Fig. 5. *Eurypon lendelfeldi*. A, entire specimen; B, surface; C-D, skeletal structure; E, spicules; F, large tylostyle (arrow). Scale bars=1 cm (A), 1 mm (B), 50 μ m (C, D, F), 500 μ m (E).

according to position of spine but Hentschel's (1912) specimen has two type of acanthostyle. Hentschel's specimen has only large acanthostyles but this species has large acanthostyle and small acanthostyle rarely.

Suborder Myxillina Hadju Van Soest and Hooper, 1994

Family Coelosphaeridae Dendy, 1923

+30. *Lissodendoryx firma* Lambe, 1895

Material examined. Cheongdo, 21 Aug. 2002; Muk-ri, 21 Aug. 2005; Yecho-ri, 24 May, 2005; Sasudo, 24 May 2005.

Distribution. Korea (Jejudo Is.), California, Washington,

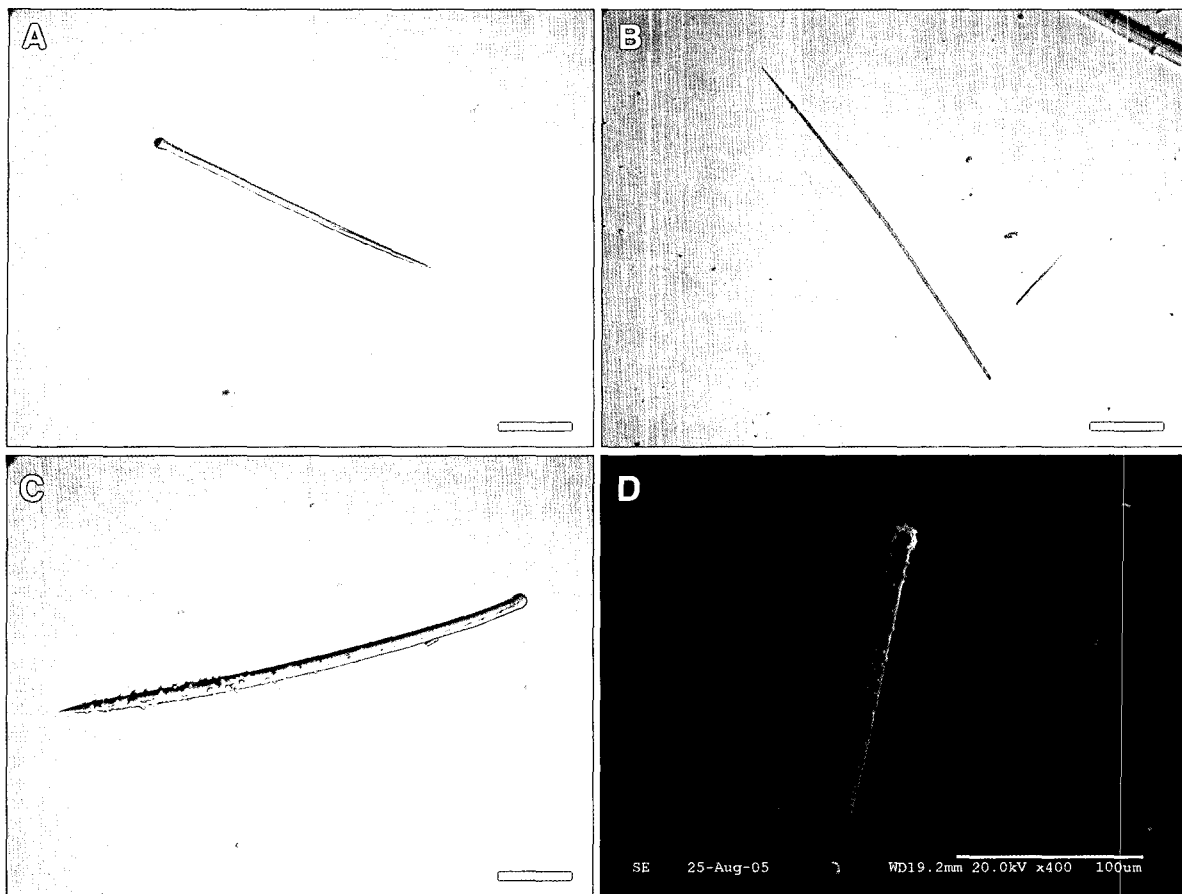


Fig. 6. *Eurypon lendelfeldi*. A, small tylostyle; B, style; C, large acanthostyle; D, small acanthostyle. Scale bars=100 μ m (A-D).

Western Canada, San Juan Archipelago.

Family Hymedesmidae Topsent, 1928

+31. *Phobas gukhulensis* Sim and Kim, 2004

Material examined. Bangmiyeokseom, 24 May 2005; Sasudo, 24 May 2005.

Distribution. Korea (Gageodo Is.).

Family Myxillidae Dendy, 1922

+32. *Myxilla setoensis* Tanita, 1961

Material examined. Jeolmyongyeo, 30 Jun. 2004; 1 Jun. 2004; 23 May 2005; Jikodo, 22 Aug. 2002; Bangmiyeokseom, 24 May 2005.

Distribution. Korea (Geomundo Is.), Indian Ocean, Japan, North America.

+33. *Myxilla incrustans* Johnston, 1842

Material examined. Jeolmyongyeo, 23 May 2005; Cheongdo,

21 Aug. 2002; Jikodo, 21 Aug. 2002; Bangmiyeokseom, 21 Aug. 2002.

Distribution. Korea (Jejudo Is., Geojedo Is.), Japan, Canada.

+34. *Myxilla productus* Hoshino, 1981

Material examined. Gwantaldo, 30 Jun. 2004; Jeolmyongyeo, 21 Aug. 2002.

Distribution. Korea (Geomundo Is.), Japan.

+35. *Myxilla rosacea* Lieberkuhn, 1859

Material examined. Cheongdo, 21 Aug. 2002; Chupodo, 22 Aug. 2002; Jeolmyongyeo, 23 May 2005.

Distribution. Korea (Geomundo Is., South Sea), Japan (Kobe).

Family Tedaniidae Ridely and Dendy, 1886

+36. *Tedania tubulifera* Levi, 1963

Material examined. Cheongdo, 21 Aug. 2002.

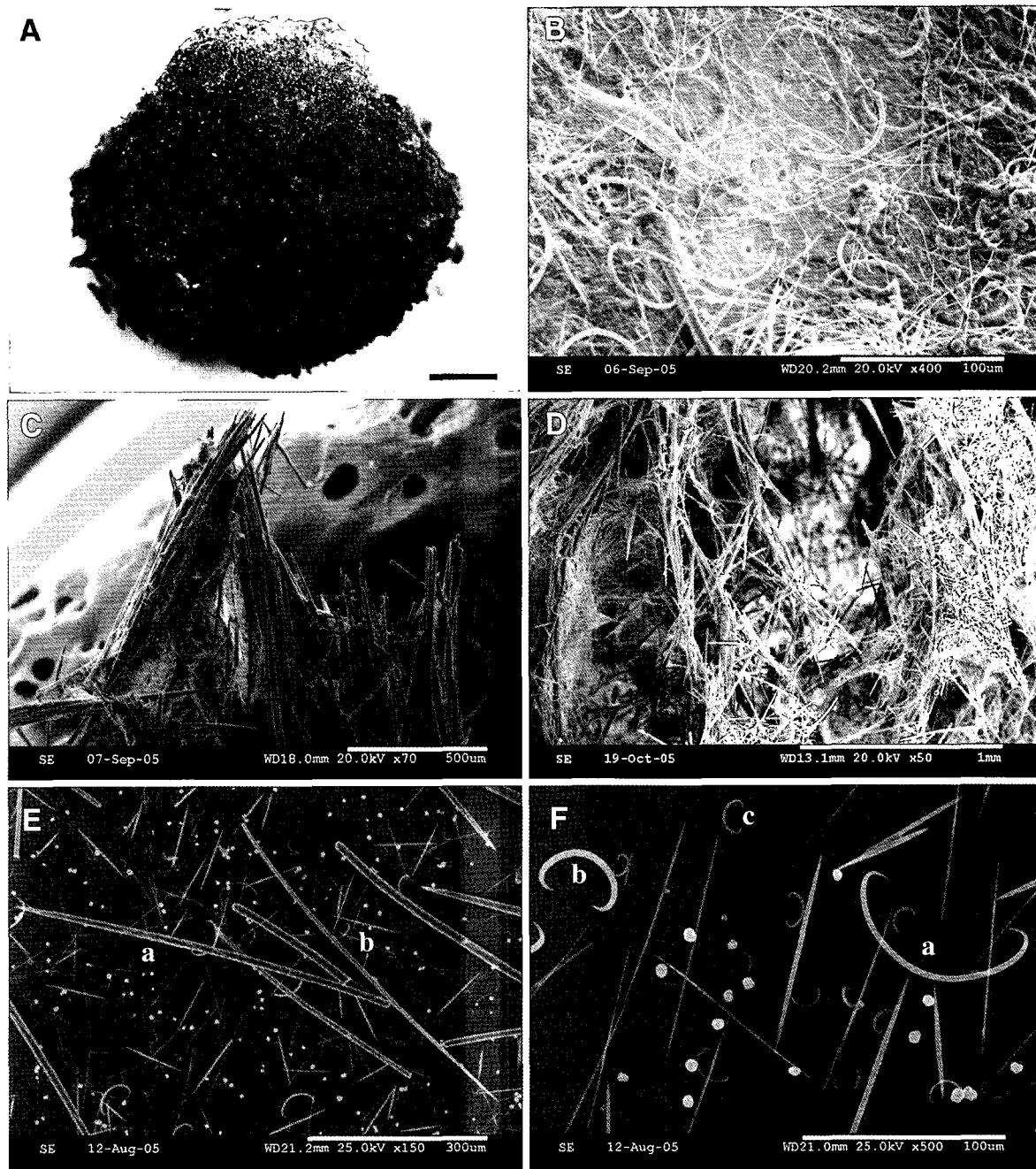


Fig. 7. *Biemna chujaenesis*. A, entire specimen; B, surface; C, ectosomal skeleton; D, endosomal skeleton; E, spicules (a, thick style; b, slender style); F, sigmas (a, sigma I; b, sigmas II; c, sigmas III). Scale bars=1 cm (A), 100 μ m (B, F), 500 μ m(C), 1 mm (D), 300 μ m (E).

Distribution. Korea (Jejudo Is.), South Africa.

+37. *Tedania brevispiculata* Thiele, 1903

Material examined. Sasudo, 24 May 2005.

Distribution. Korea (Korea Strait, Jejudo Is.), Japan, South

China Viet Nam (Nha Trang).

+38. *Tedania ignis* Duchassing and Michelotti, 1864

Material examined. Hupo-ri, 22 May 2005.

Distribution. Korea (Jejudo Is.), Jamaica, Bahamas, Re-

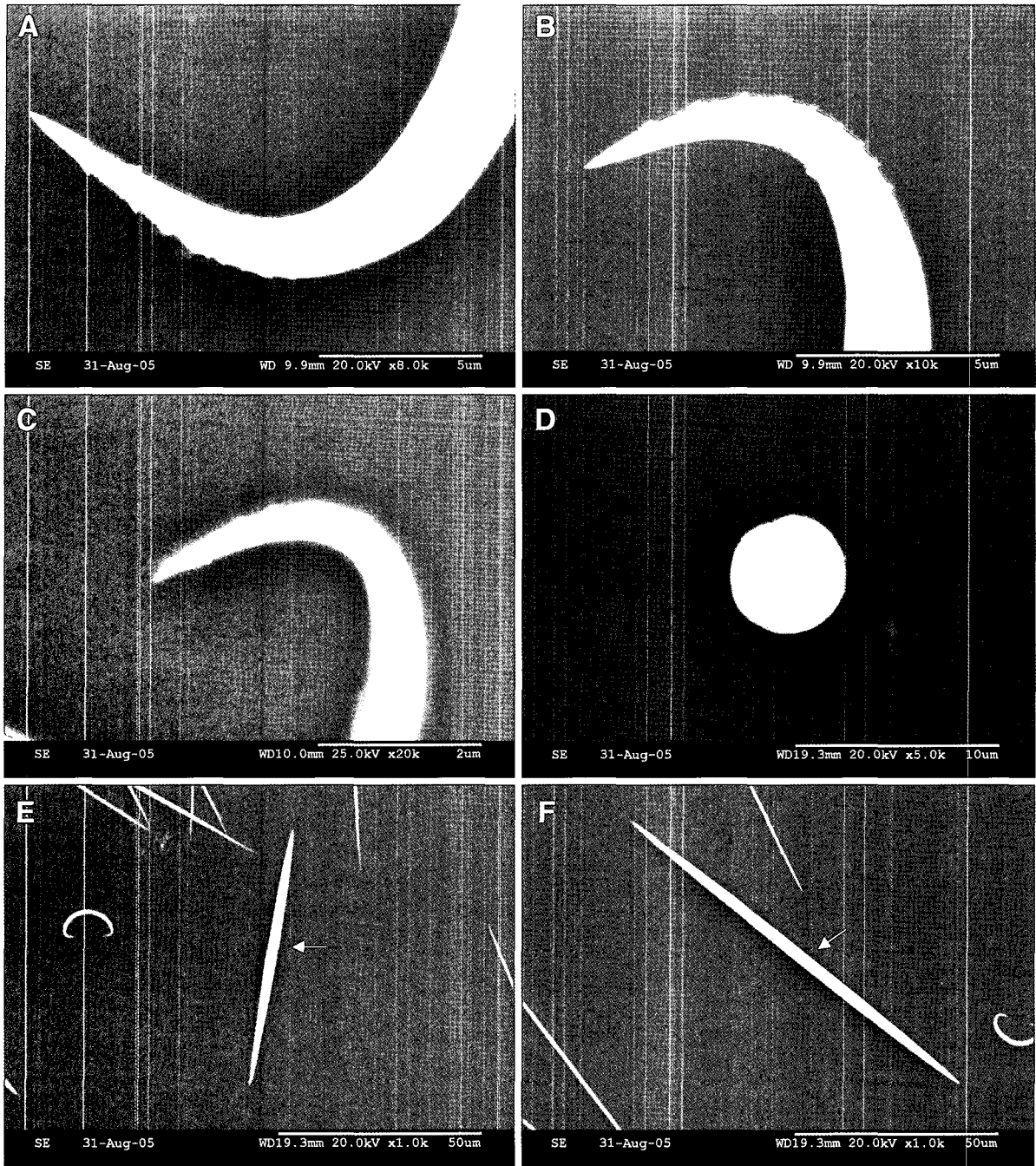


Fig. 8. *Biemna chujaensis*. A, sigma I with spines; B, sigma II with spines; C, sigma III with spines; D, sphere; E, small microxea (arrow); F, large microxea (arrow). Scale bars=5 μm (A, B), 2 μm (C), 10 μm (D), 50 μm (E, F).

publica Dominicana, Puerto Rico.

Suborder Mycalina Hadju Van Soest and Hooper, 1994
 Family Desmacellidae

¹*39. *Biemna chujaensis* (Figs. 7-9; Table 1)

Type specimens. Holotype (Por. 63), Paratype (Por. 63-1, 63-2), Jeolmyongyeo, 21 Aug. 2002, SCUBA diving, 25 m deep by K.J. Lee. Deposited in Department of Biology, Hannam University, Daejeon, Korea.

Description. Specimen, massive form, size up to 7 × 5 cm

¹*추자미해면 (신칭)

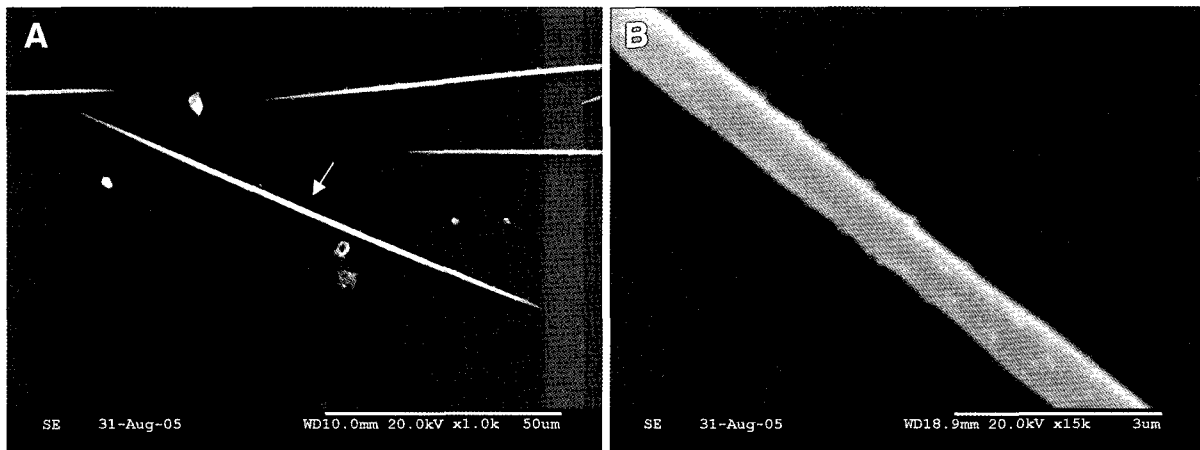


Fig. 9. *Biemna chujaensis*. A, raphide (arrow). B, spine part of raphide. Scale bars=50 μm (A), 3 μm (B).

Table 1. Comparison of spicules between *Biemna chujaensis* and *B. megalosigma* (unit : μm)

	Style	Sigmas			Microxea	Raphide	Sphere
		Sigma I	Sigma II	Sigma III			
<i>B. chujaensis</i>	530-790 × 10-14 420-690 × 2-7	52-80	30-45	12-22	50-60 90-105	80-100	5-10
<i>B. megalosigma</i>	546-704 × 15-29	72-216	27-32	15-18	40-112	136-208	9

wide and 4 cm thick. Coror in life, purple in ectosome, yellow in endosome, pale beige in alcohol. Surface, covered with thin membrane. Texture, compressible and easily fragile. Oscules, 1-3 μm diameter, scattered on surface and located between shaggy appearances. Ectosomal skeleton, irregular bundles of styles. Choanosomal skeleton, regular reticulated structure of style bundles and microscleres dispersed between bundles.

Spicules. Megascleres, thick and slender styles. Microscleres, three size of sigmas with micro spines at both ends, two categories of microxeas, hair like raphides with micro spines whole body and spheres.

- Megascleres
 - thick styles 530-790 × 10-14 μm
 - slender styles 420-690 × 2-7 μm
- Microscleres
 - sigmas I 52-80 μm
 - sigmas II 30-45 μm
 - sigmas III 12-22 μm
 - large microxeas 50-60 μm
 - small microxeas 90-105 μm
 - raphides 80-100 μm
 - spheres 5-10 μm

Etymology. This species is named after its type locality, Chujado Islands, Korea.

Remarks. This new species is similar to *B. megalosigma* Hentschel (1912), based on the type of spicules, but new species has two categories of styles and microxeas, smaller sigmas and raphides than Hentschel's specimen in size (Table 1).

¹*40. *Biemna jeolmyongensis* (Figs. 10, 11; Table 2)

Type specimens. Holotype (Por. 64), Jeolmyongyeo, 23 May 2005, SCUBA diving, 25 m deep by H.J. Kim. Deposited in Department of Biology, Hannam University, Daejeon, Korea.

Description. Holotype, massive form, size up to 14 × 10 cm in wide 4.5 cm in thick. Coror in life, black in ectosome and beige in endosome, dark beige in alcohol. Surface, covered with thin layer. Texture, compressibel and easily fragile. Oscules, 1-3 diameter, scattered on surface and located between shaggy appearances. Ectosomal skeleton, irregular bundles of styles. Choanosomal skeleton, regular reticulated structure of style bundles and microscleres dispersed between bundles.

Spicules. Megascleres, thick and slender styles. Microsc-

¹*절명띠해면 (신칭)

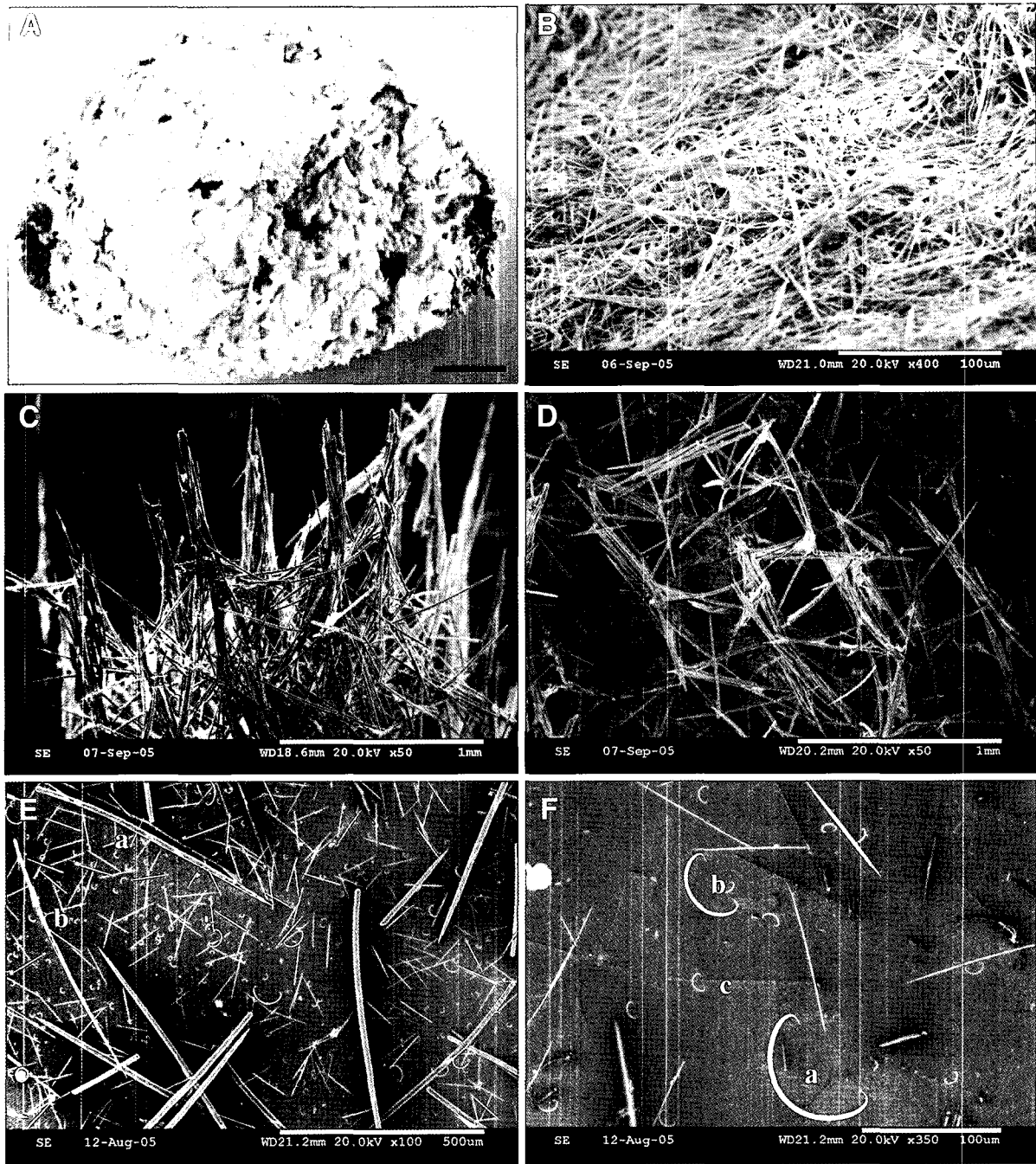


Fig. 10. *Biemna jeolmyongensis*. A, entire specimen; B, surface; C, ectosomal skeleton; D, endosomal skeleton; E, spicules (a, thick style; b, slender style); F, sigmas (a, sigma I; b, sigma II; c, sigma III). Scale bars=1 cm (A), 100 μm (B, F), 1 mm (C, D), 500 μm (E).

leres, three size of sigmas with micro spines both ends, two categories of microxeas, hair like raphides with micro spines whole body and spheres.

Megascleres
 thick style 475-700 × 8-14 μm

slender style 460-520 × 2-3 μm
 Microscleres
 sigma I 65-80 μm
 sigma II 30-45 μm
 sigma III 12-22 μm

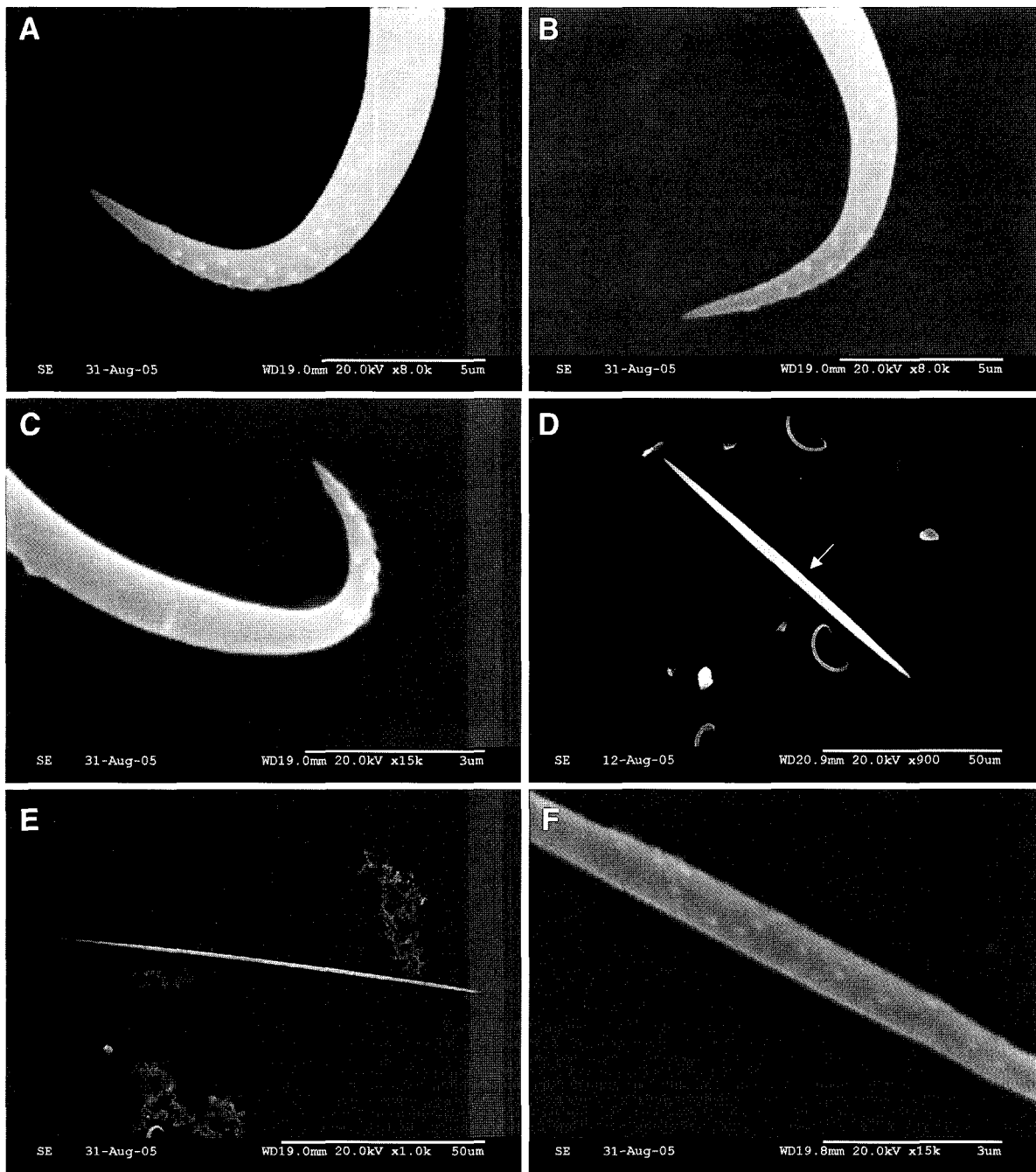


Fig. 11. *Biemna jeolmyongensis*. A, sigma I with spines; B, sigma II with spines; C, sigma III with spines; D, microxea (arrow); E, raphide; F, raphide with spines. Scale bars=5 μ m (A, B), 3 μ m (C, F), 50 μ m (D, E).

microxea 90-100 μ m
 raphides 90-105 μ m

Etymology. This species is named after its type locality, Jeolmyongyeo, Korea.

Remarks. This new species is similar to *B. saucia* Hooper et

al. (1991) based on the type of spicules, but new species has slender style and smaller sigmas and raphides than Hooper et al.'s specimen in size. When this new species compare with *B. sp 1*, similar to growth form and skeletal structure. But, this species has not small microxeas and spheres (Table 2).

Table 2. Comparison of spicules between *Biemna jeolmyongensis* and *B. saucia* Hooper, 1991 (unit : μm)

	Style	Sigmas			Microxea	Raphide
		Sigma I	Sigma II	Sigma III		
<i>B. jeolmyongensis</i>	475-700 × 8-14 460-520 × 2-3	65-80	30-45	12-22	90-100	90-105
<i>B. saucia</i>	532-676 × 8-14 490-592 × 7-12	83-175	24-36	12-21	63-118 36-58	175-244

41. *Desmacella rosacea* Fristedt, 1887

Previous record. Chujado Is. (Sim and Byeon, 1989)
Distribution. Korea (Korea Strait, Chujado Is.), Atlantic Ocean, Arctic Ocean.

Family Esperioptidea Hentschel, 1923
+42. *Esperopsis uncigera* Topsent, 1928

Material examined. Jeolmyongyeo, 30 Jun. 2004.
Distribution. Korea (East Sea, Korea Strait), Japan (Sagami Bay).

+43. *Esperopsis rugasa* Thiele, 1905

Material examined. Bangmiyeokseom, 24 May 2005; Sasudo, 24 May 2005.
Distribution. Korea (Geomundo Is.), Calbuco.

Suborder Latrunculina
Family Latrunculidae Topsent, 1922
+44. *Latrunculia ikematsui* Tanita, 1968

Material examined. Sasudo, 24 May 2005; Mokgaekkeut, 23 May 2005.
Distribution. Korea (Korea Strait, Gageodo Is., Ulleungdo Is.), Japan (Sagami Bay).

Order Halichondrida Gray, 1867
Family Axinellidae Carter, 1875
45. *Phakellia elegans* Thiele, 1898

Previous record. Sasudo (Rho and Sim, 1976).
Material examined. Sasudo, 24 May 2005; Bangmiyeokseom, 24 May 2005; Jeolmyongyeo, 24 May 2005; Jikodo, 21 Aug. 2002.
Distribution. Korea (Korea Strait, Hongdo Is., Geomundo Is.), Japan (Sagami Bay).

+46. *Phakellia folicea* Thiele, 1898

Material examined. Sasudo, 24 May 2005.

Distribution. Korea (Jejudo Is.), Japan (Sagami Bay).

Family Dictyonellidae Van Soest, Diaz and Pomponi, 1990
+47. *Acanthella vulgata* Thiele, 1899

Material examined. Heonggando, 22 Aug. 2002.
Distribution. Korea (Korea Strait, Ulleungdo Is.), Japan (Sagami Bay).

Family Halichondriidae Gray, 1867
48. *Halichondria panicea* Pallas, 1766

Previous record. Chujado Is. (Ministry of Environment, 2001).
Material examined. Sinyang-ri, 8 Jun. 2001; Yecho-ri, 24 Feb. 2005; Hupo-ri, 22 May 2005.
Distribution. Korea (Korea Strait, Jejudo Is.), Japan (Tsushima Bay).

49. *Halichondria oshoro* Tanita, 1961

Previous record. Chujado Is. (Ministry of Environment, 2001).
Distribution. Korea (Korea Strait, Jejudo Is.), Bristol Bay.

50. *Halichondria okadai* Kadota, 1922

Material examined. Yecho-ri, 24 Feb. 2005; Muk-ri, 24 Feb. 2005; Sinyang-ri, 9 Jun. 2001; Hupo-ri, 22 May 2005.
Distribution. Korea (Korea Strait, Jejudo Is.), Japan.

51. *Hymeniacidon sinapium* De Laudenfels, 1930

Previous record. Chujado Is. (Ministry of Environment, 2001).
Material examined. Cheongdo, 21 Aug. 2002; Sinyang-ri, 8 Jun. 2001; Muk-ri, 8 Jun. 2001; 21 Feb. 2005; Yecho-ri, 8 Jun. 2001; 23 Jul. 2002; 24 Feb. 2005; Sindangi, 25 May 2005; Hupo-ri, 22 May 2005.
Distribution. Korea (East Sea, Yellow Sea, Korea Strait, Jejudo Is.), Japan (Honshu).

+52. *Hymeniacidon flavia* Sim and Lee, 2003

Material examined. Yecho-ri, 24 Feb. 2005.

Distribution. Korea (Jejudo Is., Geojedo).

Order Haplosclerida Topsent, 1928

Suborder Haplosclerina Topsent, 1928

Family Callyspongiidae de Laudenfels, 1936

+53. *Callyspongia elongata* Ridley and Dendy, 1884

Material examined. Bangmiyeokseom, 22 Aug. 2002; Jeolmyongyeo, 30 Jun. 2004; Jikodo, 22 Aug. 2002; Chupodo, 22 Aug. 2002; Cheongdo, 1 Jul. 2004.

Distribution. Korea (Jejudo Is.), Japan.

+54. *Callyspongia confoederata* Ridley, 1884

Material examined. Jeolmyongyeo, 30 Jun. 2004; Cheongdo, 1 Jul. 2004.

Distribution. Korea (Geomundo Is.), Cosmopolitan.

+55. *Callyspongia ramosa* Gray, 1843

Material examined. Chupodo, 22 Aug. 2002.

Distribution. Korea (Korea Strait), Japan, New Zealand, Victoria Land, Falkland Islands.

Family Chalinidae Gray, 1867

+56. *Haliclona (Adocia) cinera* Grant, 1827

Material examined. Chupodo, 22 Aug. 2002; Bangmiyeokseom, 21 Aug. 2002; Heonggando, 22 Aug. 2002.

Distribution. Korea (South Sea), Cosmopolitan.

+57. *Haliclona ulrengia* Sim and Byeon, 1989

Material examined. Jeolmyongyeo, 22 Aug. 2002.

Distribution. Korea (Ulleungdo Is.).

+58. *Haliclona pemollis* Bowerbank, 1866

Previous record. Chujado Is. (Ministry of Environment, 2001).

Material examined. Sinyang-ri, 24 Feb. 2005; Muk-ri, 24 Feb. 2005; Hupo-ri, 22 May 2005; Sasudo, 24 May 2005.

Distribution. Korea (Korea Strait, Jejudo Is.), Japan (Tsushima Bay, Krushima Strait), Friday Harbor.

+59. *Haliclona tenuispiculata* Burton, 1934

Material examined. Jeolmyongyeo, 21 Aug. 2002.

Distribution. Korea (South Sea), Coast of Malay Peninsula, Indian Ocean.

+60. *Haliclona (Reniclona) densaspicula* Hoshino, 1981

Material examined. Bangmiyeokseom, 24 May 2005; Sasudo, 24 May 2005.

Distribution. Korea (South Sea, Ulleungdo Is.), Japan (Sizsima, Michucue).

+61. *Haliclona (Gellius) angulatus* Bowerbank, 1866

Material examined. Bangmiyeokseom, 21 Aug. 2002; Sasudo, 24 May 2005; Chupodo, 22 Aug. 2002.

Distribution. Korea (South Sea).

Suborder Petrosina Boury-Esnault and Van Beveren, 1982

Family Petrosiidae Van Soest, 1980

+62. *Petrosia corticata* Wilson, 1925

Material examined. Bangmiyeokseom, 24 May 2005; Jeolmyongyeo, 21 Aug. 2002; 23 May 2005; Jikodo, 22 Aug. 2002; Chupodo, 22 Aug. 2002; Cheongdo, 23 May 2005; Gwantaldo, 30 Jun. 2004; Heonggando, 22 Aug. 2002; Sasudo, 24 May 2005.

Distribution. Korea (Korea Strait, Jejudo Is., Geomundo Is.), Japan (Sagami Bay, Hiwasa, Kii Peninsula).

Order Dictyoceratida Minchini, 1900

Family Spongiidae Gray, 1867

+63. *Spongia zimocca* Schmidt, 1862

Previous record. Heonggando (Sim, 1985).

Distribution. Korea (Chujado Is.), Japan, West Indian Ocean, Australia, Chile.

ACKNOWLEDGEMENTS

This study was supported by grant from Hannam University, 2005-2006.

REFERENCES

- Carter, H.J., 1880. Report on specimens dredged up from the Gulf of Mannaar and presented to the Liverpool Free Museum by Capt. Ann. Mag. Nat. Hist., 5(5): 37-38.
- Hentschel, E., 1912. Kiesel- und Hornschwamme der Aru- und Kei-Inseln. Abh. Senckenb. Ges., 34(3): 351-352
- Hooper, J.N.A., R.J. Capon and R.A. Hodder, 1991. A new

- species of toxic marine sponges (Porifera: Demospongiae: Poecilosclerida) from northwest Australia. *Beagle, Rec. North. Terr. Mus. Arts Sci.*, 8(1): 27-36.
- Kim, H.J. and C.J. Sim, 2005. Two new marine sponges of genus *Clathria* (*Clathria*) (Poecilosclerida: Microcionidae) from Korea. *Korean J. Syst. Zool.*, 21: 111-122.
- Lambe, L.M., 1895. Sponges from the western coast North America (1894). *Proc. Trans. R. Soc. Can.*, 12(4): 138-713.
- Rho, B.J. and C.J. Sim, 1976. On the classification and the distribution of the marine benetic animals in Korea. 4. Sponges. *J. Korean. Res. Inst. Better Living, Ewha Womans Univ.*, 16: 67-87.
- Rho, B.J. and C.J. Sim, 1981. A taxonomic study on the marine sponges in Korea 3. Choristida., *Ewha Womans Univ.*, 28: 55-65.
- Rützler, K., 1978. Sponges in coral reefs. *In*: Stoddart, D.R. and R.E. Johannes eds., *Coral reefs: research methods.* Monogr. Oceanogr. Neth. Unesco, 5: 299-313.
- Sim, C.J., 1985. A systematic study on the marine sponges from the South Sea and the Yellow Sea of Korea. *Korean J. Syst. Zool.*, 1(1-2): 1-11.
- Sim, C.J. and M.H. Kim, 1988. A systematic study on the marine sponges in Korea. 7. Demospongiae and Hexaactinellida. *Korean J. Syst. Zool.*, 4(1): 21-42.
- Sim, C.J. and H.S. Byeon, 1989. A systematic study on the marine sponges in Korea 9. Ceractinomorpha. *Korean J. Syst. Zool.*, 5(1): 33-57.
- Sim, C.J. and H.S. Byeon, 1991. A systematic study on the marine sponges from the South Sea of Korea. *Korean J. Syst. Zool.*, 7(1): 111-116.

Received September 6, 2006
Accepted November 3, 2006