

## A Systematic Study on the Asteroidea in Korea I. Species from the South Sea

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### 한국산 해성류의 계통분류학적 연구 I. 남해 연안에 사는 종

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#### 적 요

1980년 4월 부터 1992년 4월까지 우리나라의 남해 연안과 여러 도서 지방의 총 69개 지역에서 채집된 해성류를 동정하였다. 그 결과 5목 8과 23종이 밝혀졌고, 이들 중 *Mediaster brachiatus*와 *Stellaster equestris* 2종은 한국 미기록종이었으며 *Asterina pectinifera*는 43개 지역에서 채집되어 가장 흔한 종이였다. 대한해협과 제주도 해역에는 각각 15종의 해성류가 있으며 온대종 15종, 열대종 7종, 한대종 3종이 분포하고 있었다. 현재까지 밝혀진 해성류는 43종이 된다.

Key words: systematics, Asteroidea, South Sea, Korea.

#### INTRODUCTION

Asteroidea is one of the five major taxa belonging to Echinodermata. Asteroids are benthos which is

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mainly distributed in the neritic ocean and in particular are abundantly found in North Pacific Ocean. Although more than 1,600 species have been known from all over the world up to the present time, only forty one species have so far been reported from South Korea (Sladen, 1879; Sato, 1936; Kamita, 1938; Hayashi, 1939; Rho and Kim, 1966; Rho, 1971; Rho and Shin, 1980).

In part of series of the Korean asteroid fauna, thus the author performed the systematic and distributional studies of Asteroidea which have not been studied extensively.

## MATERIALS AND METHODS

In the current investigation the asteroid specimens were collected from 69 localities in Korea Strait (50 localities) and Cheju Island area (19 localities) during the period from April, 1980 to April, 1992.

The materials were collected by the author in the intertidal zone and by SCUBA diving and using fishing nets in the subtidal zone. All samples were preserved in 75% methyl alcohol and were identified on the basis of their morphological characteristics. The important parts of specimen were photographed using stereomicroscope and the systematic scheme on the identified asteroids was adopted from that of Fell (1962, 1984) and Tommasi (1970). The notable features on the known species were described while for Korean unreported species the plates on the characteristics of species were prepared along with the description.

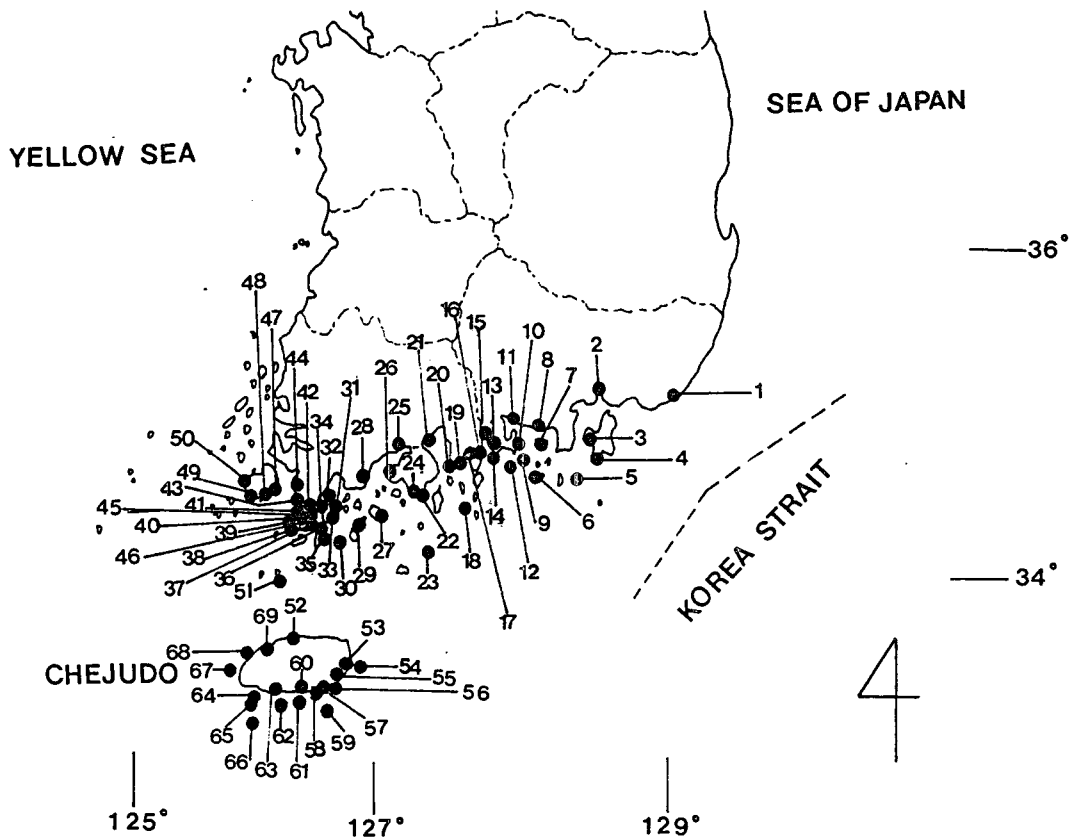


Fig. 1. For legend see next page.

## RESULTS AND DISCUSSION

The identification of total 690 individuals of asteroids collected from 69 localities demonstrated that Asteroidea distributed in the coastal area of Korea Strait and Cheju Island area consisted of 23 species, 18 genera, 8 families and 5 orders, of which two species *Mediaster brachiatus* and *Stellaster equestris* (asterisk\*) belonging to Goniasteridae, Valvatida are unreported in Korea yet. The asteroids found so far in Korea turned out to be 43 species.

## SYSTEMATIC ACCOUNT

Phylum Echinodermata Klein, 1734	극피동물 문
Class Stelleroidea Lamarck, 1816	성형 강
Subclass Asteroidea de Blainville, 1830	불가사리 아강
Order Platyasterida Spencer, 1951	편평불가사리 목
Family Luidiidae Verrill, 1839	검은머불가사리 과



Fig. 1. A map showing the localities where the materials were collected.

## I. Kyongsangnam-do(경상남도)

1, Mip'o(미포) ; 2, Chinhae(진해) ; 3, Ch'ungmu(충무) ; 4, Pijindo(비진도) ; 5, Chõngsa(청사) ; 6, Yokjido(육지도) ; 7, Sinsudo(신수도) ; 8, Samchũnp'o(삼천포) ; 9, Mijo(미조) ; 10, Mulkõn(물진) ; 11, Nũkdo(늑도) ; ; 12, Sangju(상주) ; 13, Dangjõ(당저) ; 14, Nodo(노도) ; 15, Younghae(영해).

## II. Chollanam-do(전라남도)

16, Wonp'o(원포) ; 17, Kunnae(군래) ; 18, Yundo(연도) ; 19, Oa. jdo(오동도) ; 20, Yochõn(여천) ; 21, Ganolim Bay(가노림만) ; 22, Sinkũm(신금) ; 23, Kõmundo(거문도) ; 24, Naebal(내발) ; 25, Pibong(비봉) ; 26, Nokdong(녹동) ; 27, P'yõngildo(평일도) ; 28, Maryang(마량) ; 29, Sinhũng(신흥) ; 30, Do'chõng(도청) ; 31, Wando(완도) ; 32, Kunnae(군내) ; 33, Mangnam(망남) ; 34, Wondong(원동) ; 35, Chukdo(죽도) ; 36, Ch'ungdo(충도) ; 37, Pokildo(보길도) ; 38, Pija(비자) ; 39, Ayesong(예송) ; 40, Baekdo(백도) ; 41, Imok(이목) ; 42, Sõnchang(선창) ; 43, Dangsan(당산) ; 44, Kusõng(구성) ; 45, Mokdo(목도) ; 46, Põljõng(별정) ; 47, Chukrim(죽림) ; 48, Hõnbokdong(현북동) ; 49, Gulp'o(굴포) ; 50, Kahag(가학).

## III. Cheju-do(제주도)

51, Chujado(추자도) ; 52, Cheju-hang(제주항) ; 53, Sõngsanp'o(성산포) ; 54, Udo(우도) ; 55, Pyosõn(표선) ; 56, Namwon(남원) ; 57, Daehũng(대홍) ; 58, Wimi(위미) ; 59, Jigwido(지귀도) ; 60, Sõgwip'o(서귀포) ; 61, Mundo(문도) ; 62, Põmdo(법도) ; 63, Hwasun(화순) ; 64, Kap'ado(가파도) ; 65, Kwabutan(과부탄) ; 66, Marado(마라도) ; 67, Chagwido(차귀도) ; 68, Hanrim(한림) ; 69, Piyangdo(비양도).

Genus *Luidia* Forbes, 1839 검은띠불가사리 속

1. *Luidia quinaria* von Martens, 1865 검은띠불가사리

**Material examined:** Pibong, Oct. 15, 1980, 1 specimen; Chinhae, Nov. 18, 1980, 20 specimens; Sangju 7m, Nov. 27, 1980, 2 specimens; Mip'o, Dec. 8, 1981, 2 specimens; June 5, 1983, 2 specimens; Ch'ungmu, July 20, 1984, 4 specimens; Mip'o, June 22, 1985, 1 specimen; Naebal, July 23, 1986, 1 specimen; Sangju, Apr. 26, 1990, 2 specimens.

**Distribution:** Korea (Korea Strait, Yellow Sea); Japan; Indo Pacific Ocean.

Order Paxillosida Perrier, 1884 소주불가사리 목

Family Astropectinidae Gray, 1840 가시불가사리 과

Genus *Craspidaster* Salden, 1889 모서리불가사리 속

2. *Craspidaster hesperus* (Müller et Troschel, 1840) 모서리불가사리

**Material examined:** Sögwip'o, Oct. 4, 1991, 1 specimen.

**Distribution:** Korea (Korea Strait); Japan; Indo Pacific Ocean.

Genus *Dipsacaster* Alcock, 1893 마른불가사리 속

3. *Dipsacaster pretiosus* (Döderlein, 1902) 마른불가사리

**Material examined:** Samchönp'o, July 22, 1984, 3 specimens; Chujado, Feb. 6, 1986, 2 specimens; Sögwip'o, Jan. 9, 1990, 2 specimens; Hanrim 130m, Jan. 11, 1990, 1 specimen; Mip'o 190m, Jan. 12, 1990, 5 specimens.

**Remark:** This species is first reported in Korea Strait.

**Distribution:** Korea (Korea Strait, Cheju Island); Japan.

Genus *Astropecten* Gray, 1840 가시불가사리 속

4. *Astropecten scorparius* Müller et Troschel, 1842 전갈가시불가사리

**Material examined:** Do'chöng, Apr. 29, 1990, 3 specimens; Dangsang, Apr. 25, 1990, 1 specimen; Maryang 8-10m, July 5, 1986, 5 specimens.

**Distribution:** Korea (Korea Strait); Japan.

5. *Astropecten polyacanthus* Müller et Troschel, 1842 가시불가사리

**Material examined:** Sangju, Nov. 20, 1980, 3 specimens; May 24, 1981, 3 specimens; Chöngsa, May, 25, 1981, 1 specimen; Sangju, Apr. 26, 1990, 1 specimen.

**Distribution:** Korea (Korea Strait); Japan; Indo Pacific Ocean; Red Sea; East Africa.

Genus *Ctenopleura* Fisher, 1913 측불가사리 속

6. *Ctenopleura ludwigi* (De Loriol, 1899) 루드윅측불가사리

**Material examined:** Chujado 100m, Feb. 6, 1986, 1 specimen.

Distribution: Korea (Korea Strait, Cheju Island); Japan; California.

Order Valvatida Perrier, 1884      연변불가사리 목  
 Family Goniasteridae Forbes, 1841      뽕족불가사리 과  
 Genus *Mediaster* Stimpson, 1857      메디불가사리 속 (신칭)

\*7. *Mediaster brachiatus* Goto, 1914      메디불가사리 (신칭)

*Mediaster brachiatus* Goto, 1914, (p.354, pl. IX, figs. 142-152, pl. X, figs. 153-155); 1915, p. 89; Yamashita, 1979, p.56.

Material examined: Sögwip'o 80m, Jan. 9, 1990, 1 specimen; Hanrim 130m, Jan. 11, 1990, 24 specimens.

Description: R=36-54mm, r=13-19mm, R=2.8r. Disk moderately large and 5 arms long and thin. Abactinal area covered with large paxillae which occasionally bear bivalved pedicellariae. Paxillae of brachial area larger than that of interbrachial area and large paxillae situated in center of disc composed of 10 central and 20 peripheral spinelets. Superomarginal plate covered with large and rough granules and inferomarginal plate also covered with granules similar to those of superomarginal plate but with bivalved pedicellariae. Three rows of spines observed on adambulacral plate. First row of spines present at ambulacral groove, 5 to 6 in number, about the same length, strong and straight. Second row of spines made up of 4, similar to first row of spines but shorter as compared to that. Third row of spines 3 in number and short. Most inner one among many actinolateral plates consists of about 14 plates up to arm and each plates have about 10 spines very similar to paxillae in shape and occasionally pedicellariae with 3 or 4 valves. Oral plate has 7 to 9 spines outwards.

Distribution: Korea (Cheju Island); Japan.

Genus *Stellaster* Gray, 1840      별모양불가사리 속 (신칭)

\*8. *Stellaster equestris* (Retzius, 1820)      별모양불가사리 (신칭)

*Asterias equestris* Retzius, 1820, (p. 12)

*Stellaster equestris* Sladen, 1889, (p. 321); Goto, 1914, (p. 411, pl. XII, figs. 213-218, pl. XIV, fig. 219-220); 1915, p. 89; Imaoka *et al.*, 1991, (p. 64, pl 80, fig. 1).

*Stellaster incei* Fisher, 1919, (p. 326, pl. 80, fig.1)

Material examined: Chujado 100m, Feb. 6, 1986, 6 specimens; Mip'o 190m, Jan. 12, 1990, 2 specimens.

Description: R=62-65mm, r=25-28mm, R=2.2r. Disk large and more or less convex at central portion. Arm short, wide at base and acutely ended. Center of disk and interbrachial area covered with large hexagonal plates but other area covered with small rectangular plates. Two or three long rectangular plates located along interbrachial border of disk. Papular area found mainly in brachial portion and rarely in central and interbrachial portions of disk and situated between plates consists of three to five papulae. Small bivalved pedicellariae situated at majority of abactinal plates. Superomarginal plates 14 to 19 in number, covered with small granules and one or two bivalved pedicellariae. Inferomarginal plate also covered with small granules and larger than superomarginal plates. One flat spine situated at lateral side of inferomarginal plate. Actinolateral plates composed of about 20 plates covered with small granules and sometimes with bivalved pedicellariae. Adambulacral plate small, longer than wide and each have 4 to 7 compressed spines

connected with other spine at lower side of ambulacral plate and usually a flat, obtuse spine located at outer side. Anus placed at center of disk. Oral plate small and has seven or eight compressed furrow spines outwards.

**Distribution:** Korea (Cheju Island); Japan; East China Sea; South China Sea.

Family Linckiidae Perrier, 1875 선불가사리 과

Genus *Certonardoa* 빨강불가사리 속

### 9. *Certonardoa semiregularis* (Müller et Troschel, 1840) 빨강불가사리

**Material examined:** Odongdo, Oct. 5, 1983, 1 specimen; Kap'ado, June 16, 1985, 1 specimen; June 17, 1985, 1 specimen; Kwabutan, June 18, 2 specimens; Piyangdo, June 20, 1985, 1 specimen; Cheju-hang, June 21, 1985, 2 specimens; Mip'o, June 22, 1985, 2 specimens; Söngsanp'o, Oct. 7, 1985, 1 specimen; Pyosön, Oct. 9, 1985, 3 specimens; Cheju-hang 80m, Feb. 6, 1986, 2 specimens; Sögwip'o 5m, Feb. 7, 1986, 2 specimens; Piyangdo, June 20, 1986, 6 specimens; Daehüng 5-10m, Oct. 10, 1986, 1 specimen; Wimi, Oct. 10, 1986, 3 specimens; Namwon 15-20m, Oct. 10, 1986, 1 specimen; Mundo 30m, Jan. 9, 1990, 4 specimens; Pömdo, Oct. 23, 1991, 2 specimens; Chagwido, Oct. 23, 1991, 1 specimen; Marado, Oct. 23, 1991, 1 specimen.

**Remark:** This is the commonest species collected from 13 localities of 19 localities in Cheju Island area examined in this study.

**Distribution:** Korea (Korea strait, Cheju Island); Japan; Indo Pacific Ocean.

Genus *Ophidiaster* Agassiz, 1834 긴팔불가사리 속

### 10. *Ophidiaster cribrarius* Lütken, 1871 긴팔불가사리

**Material examined:** Hwasun, Feb. 8, 1986, 3 specimens; Wimi 15-20m, Oct. 10, 1986, 1 specimen; Jigwido, Oct. 23, 1991, 1 specimen; Söngsanp'o, Oct. 24, 1991, 1 specimen.

**Distribution:** Korea (Cheju Island); Japan; New Caledonia; Samoa Island; Tongga.

Order Spinulosida Perrier, 1894 유극불가사리 목

Family Asterinidae Gray, 1840 별불가사리 과

Genus *Asterina* Nardo, 1834 별불가사리 속

### 11. *Asterina batheri* Goto, 1914 볼록별불가사리

**Material examined:** Mijo, July 31, 1980, 2 specimens; Pokildo, July 22, 1981, 1 specimen; Kömundo, Aug. 12, 1985, 1 specimen; Piyangdo, Feb. 6, 1986, 1 specimen; Wonp'o, Aug. 6, 1986, 1 specimen; Dangsan, Apr. 25, 1990, 1 specimen; Pija, Apr. 27, 1990, 1 specimen; Wonp'o, Aug. 7, 1990, 1 specimen; Hönbokdong, Sep. 20, 1990, 5 specimens; Apr. 22, 1992, 4 specimens; Sögwip'o, Oct. 4, 1991, 6 specimens; Udo, Oct. 5, 1991, 3 specimens.

**Remark:** This species is first recorded from the areas of Korea Strait.

**Distribution:** Korea (Korea Strait, Cheju Island); Japan.

### 12. *Asterina pectinifera* Müller et Troschel, 1842 별불가사리

**Material examined:** Mijo, May 28, 1980, 4 specimens; Aug. 1, 1980, 2 specimens; Ganolim Bay, Oct. 1980, 2 specimens; Sangju, May 23, 1981, 2 specimens; Mip'o, June 5, 1983, 2 specimens; June 6, 1983, 1 specimen; Pijindo, July 19, 1984, 1 specimen; Ch'ungmu, July 20, 1984, 2 specimens; Nükdo, July 22, 1984, 11 specimens; Samchönp'o, July 22, 1984, 7 specimens; Udo, Oct. 7, 1985, 1 specimen; Sögwip'o, Feb. 6, 1986, 1 specimen; Wondong, June 21, 1986, 19 specimens; Kunnae, June 22, 1986, 5 specimen; Mangnam, June 22, 1986, 5 specimens; Chukdo, June 22, 1986, 1 specimen; Maryang 8-10m, July 6, 1986, 2 specimens; Nokdong, July 21, 1986, 1 specimen; Singüm, July 22, 1986, 2 specimens; Naebal, July 23, 1986, 1 specimen; Kunnae (Dolsando), Aug. 6, 1986, 7 specimens; Wonp'o, Aug. 7, 1986, 1 specimen; Mulkön, Aug. 8, 1986, 1 specimen; Dangjō, Aug. 8, 1986, 1 specimen; Wando, May 24, 1988, 5 specimens; Mip'o, Jan. 12, 1990, 4 specimens; Kunnae (Dolsando), Feb. 6, 1990, 6 specimens; Sangju, Apr. 25, 1990, 1 specimen; Dangsan, Apr. 25, 1990, 2 specimen; Sönchang, Apr. 26, 1990, 23 specimens; Sangju, Apr. 26, 1990, 6 specimens; Pija, Apr. 27, 1990, 10 specimens; Chukdo, Apr. 27, 1990, 7 specimens; Ayesong, Apr. 27, 1990, 13 specimens; Dochöng, Apr. 28, 1990, 13 specimens; Apr. 29, 1990, 3 specimens; Sinhüng, Apr. 29, 1990, 9 specimens; Chujado, July 22, 1990, 1 specimen; Yundo, Aug. 6, 1990, 1 specimen; Wonp'o, Aug. 7, 1990, 1 specimen; Yochön, Aug. 8, 1990, 1 specimen; Kahag, Sep. 18, 1990, 1 specimen; Gulp'o, Sep. 19, 1990, 2 specimens; Chukrim, Sep. 20, 1990, 12 specimens; Hönbokdong, Sep. 20, 1990, 4 specimens; Sep. 21, 1990, 4 specimens; Kusöng, Jun. 26, 1991, 3 specimens; Pöljöng, June 28, 1991, 3 specimens; Pyongildo, June 28, 1991, 3 specimens; Ch'ungdo, June 29, 1991, 2 specimens; Yonghae, Nov. 5, 1991, 1 specimen.

**Remark:** This is the commonest species collected 219 specimens of total 690 specimens from 43 localities of total 69 localities examined in the South Sea.

**Distribution:** Korea (Sea of Japan, Korea Strait, Cheju Island, Yellow Sea); Japan; Vladivostok; Sachalin.

Family Echiniasteridae Verrill, 1867 애기불가사리 과

Genus *Henricia* Gray, 1840 애기불가사리 속

**13. *Henricia regularis*** Hayashi, 1940 네모애기불가사리

**Material examined:** Chujado, Feb. 6, 1986, 1 specimen; Chujado 15m, July. 2, 1990, 1 specimen.

**Distribution:** Korea (Sea of Japan, Korea Strait, Cheju Island); Japan.

**14. *Henricia nipponica*** Uchida, 1928 애기불가사리

**Material examined:** Mip'o, May 16, 1981, 1 specimen; Sangju, May 20, 1981, 1 specimen; Kunnae, July 24, 1981, 1 specimen; Mip'o, May 23, 1982, 2 specimens; Odongdo, Oct. 5, 1983, 1 specimen; Sin-sudo, July 21, 1984, 1 specimen; Samchönp'o, July 21, 1984, 1 specimen; Nükdo, July 22, 1984, 1 specimen; Sögwip'o, July 12, 1985, 2 specimens; Mangnam, June 22, 1986, 2 specimens; Kunnae, June 22, 1986, 1 specimen; Wonp'o, Aug. 7, 1986, 8 specimens; Mulkön, Aug. 8, 1986, 1 specimen; Dangjō, Aug. 8, 1986, 1 specimen; Sangju, Nov. 22, 1988, 1 specimen; Dangsan, Apr. 25, 1990, 4 specimens; Sönchang, Apr. 26, 1990, 1 specimen; Imok, Apr. 26, 1990, 2 specimen; Nodo, Apr. 27, 1990, 1 specimen; Pija, Apr. 27, 1990, 8 specimens; Chukdo, Apr. 27, 1990, 8 specimens; Ayesong, Apr. 27, 1990, 1 specimen; Dochöng, Apr. 28, 1990, 3 specimens; Sinhüng, Apr. 29, 1990, 2 specimens; Kusöng, June 26, 1990, 1 specimen; Kunnae (Dolsando), Aug. 6, 1990, 1 specimen; Wonp'o, Aug. 7, 1990, 6 specimens; Mulkön,

Aug. 19, 1990, 5 specimens; Chujado 15m, Sep. 2, 1990, 1 specimen; Gulp'o, Sep. 19, 1990, 3 specimen; Sep. 20, 1990, 3 specimens; Hönbokdong, Sep. 20, 1990, 8 specimens; Chukrim, Sep. 20, 1990, 2 specimen; Sep. 21, 1990, 1 specimen; Ayesong, Sep. 27, 1990, 2 specimens; Kusöng, Oct. 5, 1990, 2 specimens; June 26, 1991, 3 specimens; Hönbokdong, Apr. 21, 1992, 1 specimen.

**Remark:** This is also common species collected 98 specimens of total 690 species from 27 localities among total 69 localities in the South Sea.

**Distribution:** Korea (Sea of Japan, Korea Strait, Cheju Island); Japan.

**15. *Henricia ohshimai*** Hayashi, 1935 오오지마에기불가사리

**Material examined:** Cheju-hang, June 21, 1985, 1 specimen; Wimi 15-20m, Oct. 10, 1986, 1 specimen; Sögwip'o, Oct. 4, 1991, 1 specimen.

**Distribution:** Korea (Cheju Island); Japan.

Family Solasteridae Forbes, 1839 햇님불가사리 과

Genus *Solaster* Forbes, 1839 햇님불가사리 속

**16. *Solaster uchidai*** Verrill, 1880 우치다햇님불가사리

**Material examined:** Dangsang, Apr. 25, 1990, 2 specimens; Ayesong, Apr. 27, 1990, 10 specimens; Wando, June 27, 1987, 7 specimens.

**Distribution:** Korea (Sea of Japan, Korea Strait); Japan; North Pacific Ocean.

Genus *Crossaster* Müller et Troschel, 1840 주름불가사리 속

**17. *Crossaster papposus*** (Linné, 1767) 주름불가사리

**Material examined:** Ganolim Bay, May 1980, 2 specimens; Oct. 1980, 1 specimen; Nov. 1, 1980, 1 specimen; Mip'o, May 25, 1981, 2 specimens; Pokildo, July 21, 1981, 1 specimen; July 22, 1981, 1 specimen; Ayesong, July 23, 1981, 1 specimen; Dochöng, Sep. 25, 1981, 1 specimen; Mip'o, Dec. 10, 1981, 1 specimen; June 5, 1983, 2 specimens; Ayesong, June 22, 1986, 2 specimens; Kunnae, June 22, 1986, 1 specimen; Wando, May 24, 1988, 3 specimens; Mip'o, Jan. 12, 1990, 1 specimen; Dangsang, Apr. 25, 1990, 1 specimen; Apr. 26, 1990, 2 specimens; Sönchang, Apr. 26, 1990, 3 specimens; Chukdo, Apr. 27, 1990, 4 specimens; Ayesong, Apr. 27, 1990, 8 specimens; Mokdo, Apr. 27, 1990, 1 specimen; Baekdo, Apr. 27, 1990, 1 specimen; Sangju, June 3, 1990, 2 specimen; Hönbokdong, Sep. 20, 1990, 1 specimen; Sep. 21, 1990, 2 specimens.

**Distribution:** Korea (Sea of Japan, Korea Strait); Japan; Okhotsk; North Pacific Ocean; Artic Ocean; North Atlantic Ocean.

Order Forcipulata Perrier, 1884 차극불가사리 목

Family Asteriidae Gray, 1840 불가사리 과

Subfamily Labidiasterinae Verrill, 1914 외극불가사리 아과

Genus *Coronaster* Perrier, 1885 왕관불가사리 속



**18. *Coronaster volsellata*** (Sladen, 1889) 왕관불가사리

Material examined: Chujado 100m, Sep. 2, 1990, 1 specimen.

Distribution: Korea (Cheju Island); Japan; Philippines.

Subfamily Coscinasterinae Fisher, 1923 채판불가사리 아과

Genus *Sclerasterias* Perrier, 1891 단단불가사리 속

**19. *Sclerasterias satsumana*** (Döderlein, 1902) 단단불가사리

Material examined: Söngsanp'o, Oct. 3, 1991, 1 specimen.

Distribution: Korea (Cheju Island); Japan.

Genus *Coscinasterias* Verrill, 1867 채판불가사리 속

**20. *Coscinasterias acutispina*** (Stimpson) 팔손이불가사리

Material examined: Mip'o, Dec. 9, 1981, 4 specimens; Piyangdo, June 19, 1985, 1 specimen.

Distribution: Korea (Sea of Japan, Korea Strait, Cheju Island); Japan.

Genus *Distolasterias* Perrier, 1896 디스톨불가사리 속

**21. *Distolasterias nipon*** (Döderlein, 1902) 일본불가사리

Material examined: Sangju, May 23, 1981, 7 specimens; Mip'o, Dec. 9, 1981, 2 specimens; Sinsudo, July 21, 1984, 1 specimen; Samchönp'o, July 28, 1984, 1 specimen.

Distribution: Korea (Sea of Japan, Korea Strait); Japan; Peter the Great Bay; Hongkong.

Subfamily Asteriinae (Verrill, 1914) 불가사리 아과

Genus *Aphelasterias* Fisher, 1923 아펠불가사리 속

**22. *Aphelasterias japonica*** (Bell, 1881) 아펠불가사리

Material examined: Mijo, Aug. 1, 1980, 32 specimens; Ch'ungmu, Aug. 2, 1980, 1 specimen; Nokdong, July 21, 1986, 1 specimen.

Distribution: Korea (Sea of Japan, Korea Strait, Yellow Sea); Japan; Sachalin.

Genus *Asterias* (Linnaeus, 1758) 불가사리 속

**23. *Asterias amurensis*** Lütken, 1871 아브르불가사리

Material examined: Mijo, Aug. 1, 1980, 1 specimen; Sangju, Aug. 27, 1980, 2 specimens; Nov. 22, 1980, 12 specimens; May 24, 1981, 13 specimens; Mip'o, Dec. 10, 1981, 21 specimens; June 5, 1983, 2 specimens; Yokjido, Sep. 19, 1984, 1 specimen; Sinsudo, Sep. 21, 1984, 3 specimens; Mip'o, June 22, 1985, 1 specimen; Nükdo, Sep. 22, 1984, 6 specimens; Samchönp'o, Sep. 22, 1984, 2 specimens; Maryang 2 specimens; Yokjido, Sep. 19, 1984, 1 specimen; Sinsudo, Sep. 21, 1984, 3 specimens; Nükdo, Sep. 22, 1984, 6 specimens; Samchönp'o, Sep. 22, 1984, 2 specimens; Mip'o, June 22, 1985, 1 specimen;

**Table 1.** The number of localities and specimens of asteroids collected from Korea Strait and Cheju Island area, Korea

Region	List of species	Number of localities	Number of specimens
Korea Strait	<i>Luidia quinaria</i>	6	35
	<i>Dipsacaster pretiosus</i>	2	8
	<i>Astropecten scorparius</i>	3	9
	<i>Astropecten polyacanthus</i>	2	8
	<i>Stellaster equestris</i>	1	2
	<i>Certonardoa semiregularis</i>	2	3
	<i>Asterina batheri</i>	6	16
	<i>Asterina pectinifera</i>	38	214
	<i>Henricia nipponica</i>	25	95
	<i>Solaster uchidai</i>	3	19
	<i>Crossaster papposus</i>	11	36
	<i>Coscinasterias acutispina</i>	1	4
	<i>Distolasterias nipon</i>	4	11
	<i>Aphelasterias japonica</i>	3	34
<i>Asterias amurensis</i>	15	103	
Subtotal	15		597
Cheju Island Area	<i>Craspidaster hesperus</i>	1	1
	<i>Dipsacaster pretiosus</i>	3	5
	<i>Ctenopleura ludwigi</i>	1	1
	<i>Mediaster brachiatus</i>	2	25
	<i>Stellaster equestris</i>	1	6
	<i>Certonardoa semiregularis</i>	13	34
	<i>Ophidiaster cribrarius</i>	4	4
	<i>Asterina batheri</i>	1	1
	<i>Asterina pectinifera</i>	5	5
	<i>Henricia regularis</i>	1	2
	<i>Henricia nipponica</i>	2	3
	<i>Henricia ohshimai</i>	3	3
	<i>Coronaster volsellata</i>	1	1
<i>Sclerasterias satsumana</i>	1	1	
<i>Coscinasterias acutispina</i>	1	1	
Subtotal	15		93
Total			690

Maryang 8-10m, July 5, 1986, 3 specimens; Nokdong, July 21, 1986, 1 specimen; Sinkŭm, July 22, 1986, 2 specimens; Mip'o, Jan. 13, 1990, 1 specimen; Sangju, Apr. 25, 1990, 2 specimens; Apr. 26, 1990, 18 specimens; Naebal, July 29, 1990, 1 specimen; Kunnae (Dolsando), Aug. 6, 1990, 1 specimen; P'yongildo, June 28, 1991, 2 specimens; Ch'ungdo, June 29, 1991, 1 specimen; Yochŏn, Nov. 5, 1991, 7 specimens.

**Remark:** This is also found to be common species collected 103 specimens of total 690 specimens from 15 localities of 69 localities examined in the South Sea.

**Distribution:** Korea (Sea of Japan, Korea Strait, Yellow Sea); Japan; North Pacific Ocean.

## DISTRIBUTION OF SPECIES

The distribution of Korean asteroids was reviewed by examining the geographical distribution previously reported in the literatures. The South Sea of Korea corresponds to Korea Strait and Cheju Island area and the distribution pattern of each species was determined on the basis of the numbers of asteroid species and collection localities. By looking at distribution pattern of total 23 species *Dipsacaster pretiosus* and *Asterina batheri* distributed in Cheju Island area were confirmed to be distributed in Korea Strait. As shown in the table 1, *Asterina pectinifera* is the commonest species collected from 43 localities of total 69 localities and collected in the greatest number of individual corresponding to 219 specimens of total 690 specimens examined. In Cheju Island area *Certonardoa semiregularis* is the commonest species collected from 13 localities of total 19 localities. In comparison of between species distributed in each region only and species distributed among regions commonly there existed 8 species including *Asterias amurensis* distributed in Korea Strait, 8 species including *Coscinasterias cribrarius* distributed in Cheju Island area and 7 species including *Asterina pectinifera* distributed ubiquitously both in Korea Strait and Cheju Island area. This shows that 15 species of asteroids were distributed in Korea Strait and Cheju Island area, respectively. As shown in table 2 the oceanic distribution of asteroids revealed that all identified species were found in Japan and among them 12 species were known in China. And 7 species were distributed up to South Pacific Ocean, 2 species were distributed up to Indian Ocean and 1 species was found in Arctic Ocean and Atlantic Ocean, respectively. The distribution pattern of Asteroidea according to water forms determined by considering the ocean current demonstrated that 13 temperate species, 7 tropical species, 3 boreal species were distributed in the coastal area of South Sea in Korea.

## ABSTRACT

For the systematic study of Korean Asteroidea the specimens collected from total 69 localities in the South Sea, Korea during the period from April, 1980 to April, 1992 were identified. As a result, 23 species, 18 genera, 8 families and 5 orders were identified of which two species, *Mediaster brachiatus* and *Stellaster equestris* have not been reported in Korea yet. *Asterina pectinifera* was the commonest species collected from 43 localities of 69 localities. Fifteen species were found in Korea Strait and Cheju Island area, respectively. Fifteen temperate species, 7 tropical species and 3 boreal species were found to be distributed in the South Sea of Korea. The asteroids known so far in Korea turned out to be 43 species.

**Table 2.** Distribution of the Korean asteroids collected from Korea Strait and Cheju Island area according to oceanic region and water form

Species	Ocean											Water form			Distribution			
	Korea				North Pacific			South Pacific	Indian	Arctic	Atlantic	Tropical	Warm temperate	Cold temperate	Boreal	Southern	Temperate	Northern
	Sea of Japan	Korea Strait	Cheju Island	Yellow sea	Japan	China	Others											
<i>Luidia quinaria</i>	+		+	+	+		+					+	+				+	
<i>Craspidaster hesperus</i>			+		+	+	+					+	+				+	
<i>Dipsacaster pretiosus</i>	+	+			+								+					+
<i>Astropecten scorparius</i>	+				+	+							+					+
<i>Astropecten polyacanthus</i>	+				+	+	+	+				+	+				+	
<i>Ctenopleura ludwigi</i>			+		+	+	+						+					+
<i>Mediaster brachiatus</i>			+		+		+	+	+			+	+				+	
<i>Stellaster equestris</i>	+	+			+	+							+					+
<i>Certonaroda semiregularis</i>		+	+		+	+	+					+	+				+	
<i>Ophidiaster cribrarius</i>			+		+		+					+	+				+	
<i>Asterina batheri</i>		+	+		+								+					+
<i>Asterina pectinifera</i>	+	+	+	+	+	+	+					+	+				+	
<i>Henricia regularis</i>	+		+		+								+					+
<i>Henricia nipponica</i>	+	+	+		+	+							+					+
<i>Henricia ohshimai</i>			+		+								+					+
<i>Solaster uchida</i>	+	+		+	+		+							+	+			+
<i>Crossaster papposus</i>	+	+		+	+		+			+	+			+	+			+
<i>Coronaster volsellata</i>			+		+	+	+					+	+				+	
<i>Sclerasterias satsumana</i>			+		+								+					+
<i>Coscinasterias acutispina</i>		+	+		+								+					+
<i>Distolasterias nippon</i>	+	+			+	+							+	+				+
<i>Aphelasterias japonica</i>	+	+		+	+		+							+				+
<i>Asterias amurensis</i>	+	+		+	+	+	+							+	+			+
Total	8	15	15	6	23	12	7	7	2	1	1	7	19	6	3	7	13	3

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## EXPLANATION OF PLATES

### Plate 1

**Figs. 1-6.** *Mediaster brachiatus* Goto, 1914.

1, abactinal side; 2, actinal side; 3, paxillae and superomarginal plates on abactinal side; 4, inferomarginal plates and paxillae on actinal side; 5, mouth part; 6, adamburacral spines on abactinal side. Scale size, 1cm.

### Plate 2

**Figs. 1-5.** *Stellaster equestris* (Retzius, 1820)

1, abactinal side; 2, actinal side; 3, mouth part; 4, inferomarginal plate with a flat spine on actinal side; 5, Adamburacral spines and a stumpy, flat spine of adamburacral plate on actinal side. Scale size, 1cm.

PLATE 1

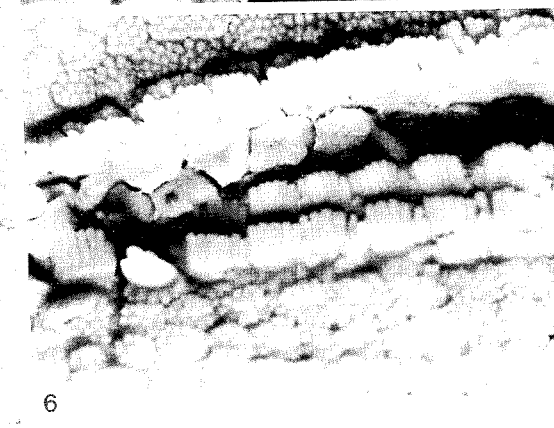
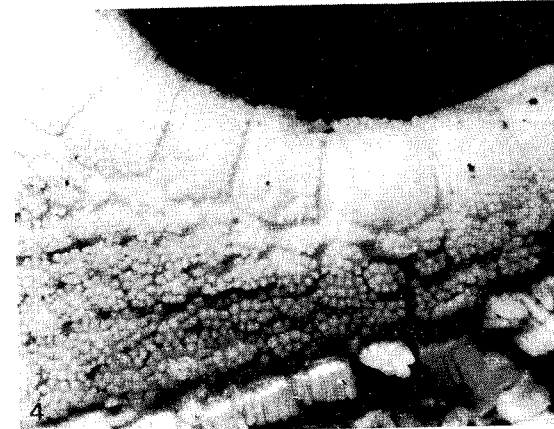
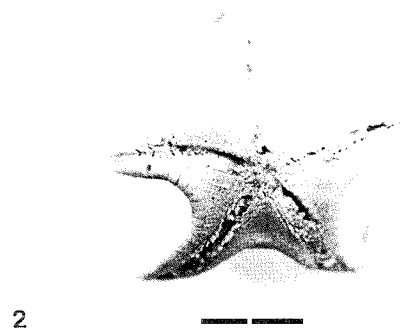
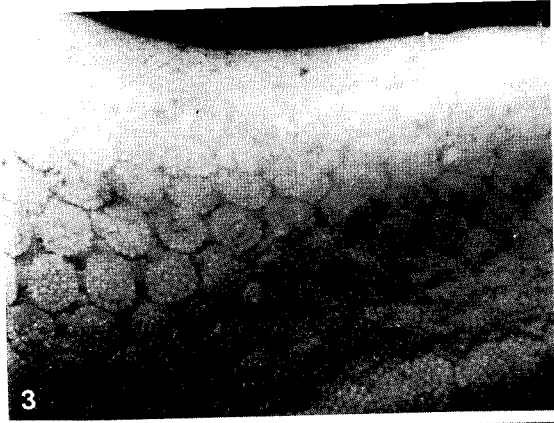
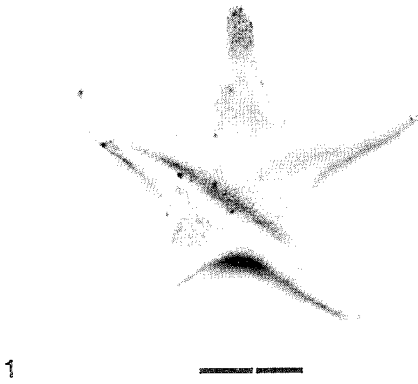


PLATE 2

