

Two New Records of Zygometridae and Colobometridae (Echinodermata: Crinoidea: Comantulida) in Korea

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ABSTRACTS

Taxonomic study for the comatulid crinoids collected from the Korea Strait and Jeju Island was conducted. Two species of comatulids, *Captoptometra rubroflava* belongs to the family Zygometridae and *Gephyrometra versicolor* belongs to the family Calometridae, were identified and both of them were turned out to be new to the Korean fauna. The family Zygometridae is newly reported in Korea.

Key Words: Taxonomy, Zygometridae, Colobometridae, Crinoidea, Korea.

INTRODUCTION

In Korean waters, 12 species of comatulid crinoids had been reported (Clark, 1909; Shin, 2001; Won and Rho, 2001; Shin, 2002; Shin and Won, 2002) and they belong to four families, Comasteridae, Colobometridae, Calometridae, and Antedonidae. Comasteridae is easily distinguished by their comblike structures on its proximal pinnules, and Colobometridae has distinct cirrus segments with a transverse ridge or tubercles. Calometridae and Antedonidae are also easily identified. The first pinnules of calometrid crinoids are delicate and flexible and the first two segments of the pinnules are enlarged, while the other pinnules are stiffened. Antedonidae has closely and regularly spaced brachial syzygies.

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This study was carried out on the crinoids specimens collected from the Korea Strait (Mipo, Indaedo, Chungmu, Sangju) and Jeju Island (Seogwipo, Pyosun). The specimens were preserved in 70% methyl alcohol and deposited in the Natural History Museum of Ewha Womans University and Sahmyook University. We have identified on bases of the morphological characteristics and report herein two species which are newly recorded in Korean waters, *Calometra rubroflava* belonging to the family Zygometridae and *Gephyrometra versicolor* belonging to the family Calometridae. Zygometridae is different from others in their perisome covered by round plates and their proximal brachial ossicles with syzygies and is revealed new to the Korean fauna. Therefore, 14 crinoid species of five families have been reported to be distributed in Korea so far.

SYSTEMATIC ACCOUNTS

Phylum Echinodermata Klein, 1734 극피동물문

Class Crinoidea Müller, 1821 바다나리강

Order Comatulida Clark, 1908 바다나리목

Family Zygometridae A. H. Clark, 1908 연접갯고사리과(신칭)

I_{Br} series united by syzygy; arms ten or more in number; perisome of disk more or less completely covered by rounded plates, which do not, however, form a solid pavement; lateral perisome of pinnules may contain a few calcareous spicules.

Genus *Catoptometra* A. H. Clark, 1908 매끈발갯고사리속(신칭)

Cirri stout and strongly recurved with cirrus segment smooth, with no dorsal processes; distal cirrus segments only slightly shorter than the proximal ones.

Type species: *Antedon hartlaubi* A. H. Clark, 1907

***Catoptometra rubroflava* (A. H. Clark, 1907) 띠매끈발갯고사리(신칭) (Fig. 1)**

Antedon rubroflava A. H. Clark, 1907, pp. 127, 150.

Catoptometra rubroflava: A. H. Clark, 1941, p. 133, pl. 8, fig. 27, pl. 9, figs. 30, 33; Utinomi and Kogo, 1968, p. 49; Liao and Clark, 1995, p. 31; Kogo, 1998, p. 55, fig. 43.

Material examined. Indaedo, 4 individuals, 10 Jul. 1964; Mipo, 1 ind., 15 May 1980; Sangju, 5 ind., 14 Jul. 1983; 1 ind., 3 Nov. 2002, 7 m deep diving; Chungmu, 6 ind., 19 Jul. 1984.

Diagnosis. Arms 11-14 in number, 100-180 mm long; I_{Br} series 4(3+4); cirri short and stout, strongly and evenly recurved with 15-20 segments, few or none of which longer than broad; color in life is bright yellow broadly and regularly banded with bright red.

Description. Centrodorsal discoidal, broad, 5-8 mm in diameter, 1-2 mm high. Polar area bare, slightly concave, 3.5-6 mm across. Cirrus sockets arranged in two crowded alternating marginal rows. Cirri stout, XXXV-XLV, 16-23, up to 17 mm long. First segment about twice as broad as long. Second and third slightly broader than long, those following about as long as broad. Proximal segments with a strong central constriction. No dorsal spine at all. Penultimate segment bears a short and small opposing spine. Terminal claw stout, considerably longer than opposing spine. Cirri compressed laterally in outer two-thirds. Arms 15-21, up to 110 mm long, 1.5 mm wide at

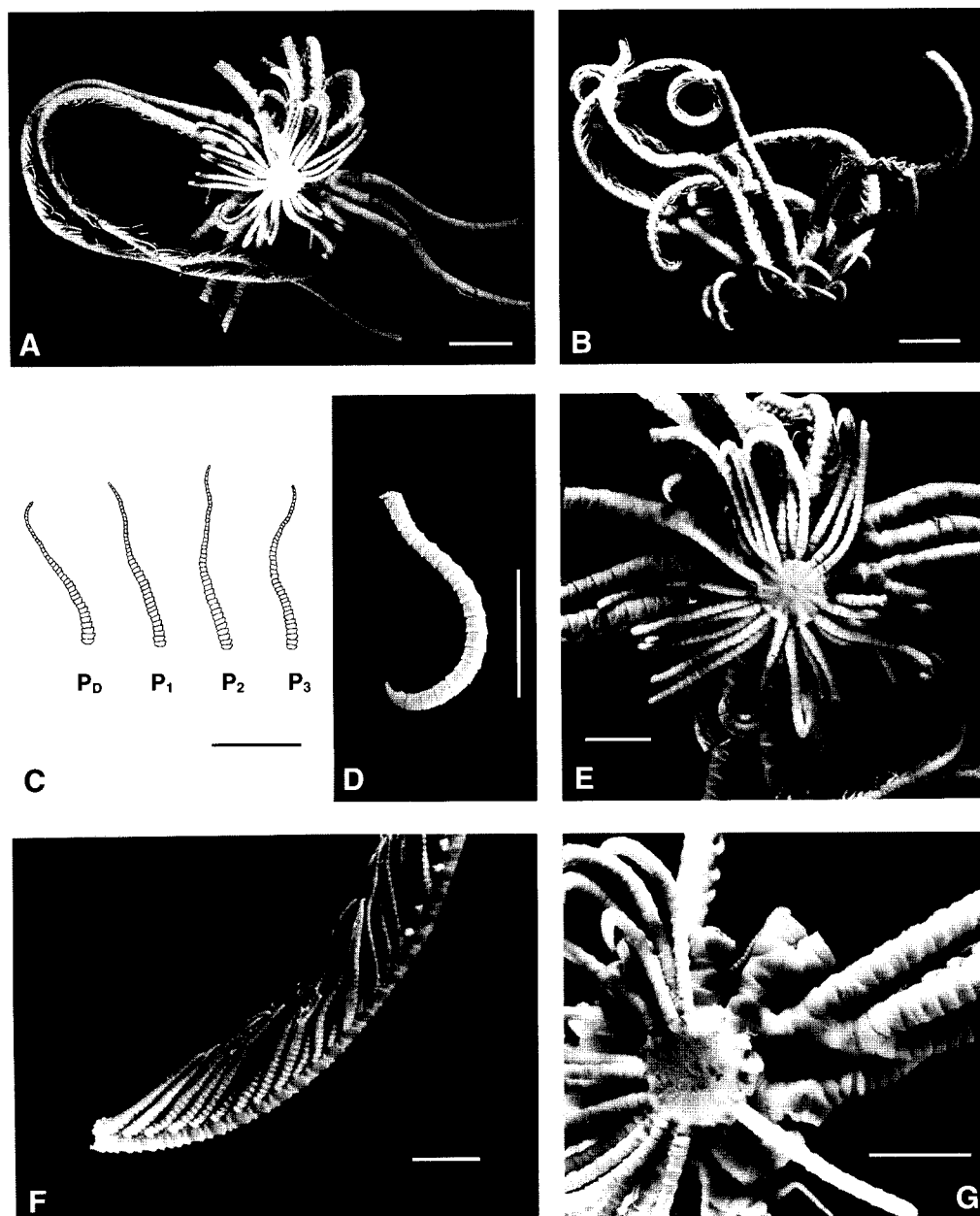


Fig. 1. *Coptometra rubroflava* (A.H. Clark, 1907). A, dorsal view; B, lateral view; C, proximal pinnules; D, cirrus; E, centrodorsal; F, pinnules; G, arm bases. Scale bars = 10 mm (A, B), 5 mm (C-G).

first syzygy. First 11 or 12 brachials oblong, over twice as broad as long, those following becoming triangular, not quite so long as broad, distal brachials wedge-shaped, about as long as broad. Distal edges of brachials with fine spines. Brachial syzygies not abundant, spaced irregularly. First at 3+4, again from 11+12 to 18+19, and distally at intervals of 3-8 muscular articulations.

Division series smooth dorsally and well separated laterally. Radials mostly concealed. IBr series 2(1+2), IBr₁ very short, oblong and IBr₂ low, triangular about three times as broad as long. IIBr and IIIBr series 4(3+4). Proximal pinnules comparatively long, slender, flagellate. P_D about 35, 9-11 mm; P₁ 35-40, 12-15 mm; P₂ similar to P₁, 35-42, 11-16 mm; P₃ 35-38, 13-14 mm; following pinnules gradually decrease in length to 7 mm then slowly increase distally. Proximal segments of lower pinnules with a prominent dorsal cardination.

Distribution. Korea (Korea Strait); Japan (Sagami Bay)-Hongkong.

Remarks. We couldn't examine the color of live specimens but we are not confused to identify them with other morphological characters.

Family Calometridae A. H. Clark, 1911 단단한갯고사리과

Genus *Gephyrometra* A. H. Clark, 1912 연결갯고사리속 (신칭)

Arms about 20 in number, with all division series 2; interradial extensions on the radials rarely present, and the bases of the IBr₁ meet over them.

Type species: *Antedon versicolor* A. H. Clark, 1907.

***Gephyrometra versicolor* (A. H. Clark, 1907) 얼룩연결갯고사리 (신칭) (Fig. 2)**

Antedon versicolor A. H. Clark, 1907, p. 132.

Gephyrometra versicolor: A. H. Clark, 1947, p. 351, pl. 36, fig. 189, pl. 39, fig. 204; Utinomi and Kogo, 1968, p. 50; Liao and Clark, 1995, p. 51, fig. 28; Kogo, 1998, p. 85.

Material examined. Seogwipo, 2 individuals., 15 Dec. 1969; 1 ind., 9 Feb. 1971; 2 ind., 20 Oct. 1973; 1 ind., 24 Jan. 2002, 25 m deep diving; 1 ind., 20 Feb. 2003, 20 m deep diving; Pyosun, 1 ind., 9 Oct. 1985.

Description. Centrodorsal low discoidal 3.5-5 mm in diameter, about 1 mm high. Polar area broad, bare, and flat or slightly convex. Cirrus sockets arranged mainly in a single marginal row and partly in two rows. Cirri moderately stout, 20-24 in number, 41-47 segments, 20-25 mm long. Proximal half cirrus segments nearly as long as broad and distal half gradually decreasing in length to about twice as broad as long with a prominent dorsal spine. Terminal claw rather weak and moderately curved. Arms 15-20 in number, 70-90 mm long, about 1 mm wide at first syzygy. Syzygial pairs occurring irregular, first at 3+4, second at from 9+10 to 11-12 and then at intervals of 2-4 muscular articulations. Division series broad with everted ventrodorsal expansions. Radials visible in interradial areas. IBr series 2. IBr₁ oblong about 3 times as broad as long in lateral contact and IBr₂ broad pentagonal, about twice as broad as long in lateral free. IIBr series 2, resemble IBr but somewhat more slender. P₁ 5.5-7.5 mm long, slender, delicate, and flexible, with 25-30 segments, first two segments greatly expanded and others very small and square. P₂ 8-8.5 mm long, stiff and spinelike, 14-16 segments, first two enlarged as in P₁. P₃ 9-12 mm long, resembles P₂ but more elongate with fine spines at distal edges. P₄ 8.5-9 mm long slightly shorter than P₃. Pa always present.

Distribution. Korea (Jeju Island); Southern Japan; Southern China.

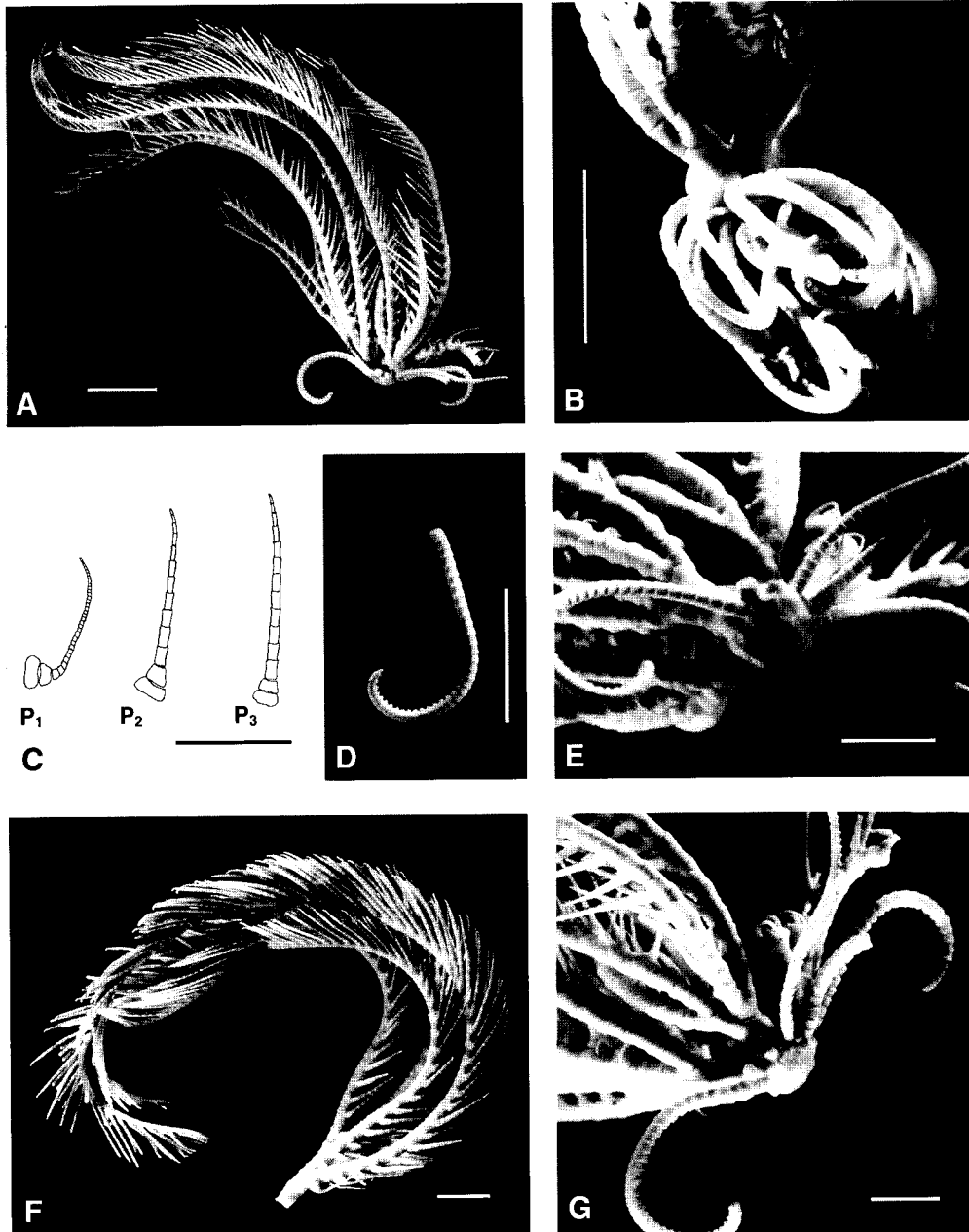


Fig. 2. *Gephyrometra versicolor* (A.H. Clark, 1907). A, lateral view; B, G, cirri and arm bases; C, proximal pinnules; D, cirrus; E, centrodorsal; F, arm. Scale bars = 10 mm (A, B, D), 5 mm (C, E-G).

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연접갯고사리과와 단단한갯고사리과 (극피동물문: 바다나리강: 바다나리목)의
2 한국미기록종

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요 약

대한해협 (미포, 인대도, 충무, 상주)과 제주도 (서귀포, 표선)에서 채집한 바다나리류를 동정·분류한 결과 연접갯고사리과 (Zygometridae)에 속하는 띠대끈발갯고사리 (*Catoptometra rubroflava*)와 단단한갯고사리과 (Calometridae)에 속하는 얼룩연결갯고사리 (*Gephyrometra versicolor*)의 2 한국미기록종이 밝혀져 보고한다. 연접갯고사리과는 우리나라에서 처음으로 보고된다.