Cerithiidae (Gastropoda: Mesogastropoda) from Korean Waters

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한국산 짚부락고둥 과 (복족강 : 중복족목)
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적 요

1965년 8월부터 1991년 10월까지 한국 해안 12개 지점에서 채집된 짚부락고둥류의 표본들을 동정, 분류한 결과 모두 6속 7종이었으며 이들중 Bittium variegatum, B. craticulatum, Ataxocerithium abnormale 등 3속은 한국 미지속종으로 밝혀져 이들에 대해 하여 제기체를 하였다.

Key words: Systematics, Cerithiidae, Mesogastropoda, Gastropoda, Mollusca, Korea.

INTRODUCTION

Regarding the systematic study of Korean Cerithiidae, four species in four genera have been recorded by previous workers (Lee, 1956; Lee, 1958; Higo, 1973) since Adams and Reeve (1848) reported for the first time Rhinoclavis (Longicerithium) longicaudata as a Korean species.
Despite the results of these systematic studies, most species of them are not appropriate in their scientific name, and their descriptions are not enough for identifying the specimens. For these reasons, it is necessary to review overall those previous works. Therefore, the object of this study is to classify and describe cerithiids which were collected from South Korean waters.

MATERIALS AND METHODS

The materials examined in this study were collected at 12 localities in South Korean waters during the period from August 1965 to October 1991 (Fig. 1). Most of the materials were preserved in 95% ethanol directly and some of them were narcotized with 2-phenoxyethanol before fixing with ethanol.

The specimens were observed for their taxonomical characteristics using a stereoscopic dissecting microscope. In “Material examined” in the description of each species, ind(s). represents individual(s).

RESULTS

Systematic list of cerithioid species (*: New to the fauna of Korea)

Phylum Mollusca Linné, 1758 연체동물문
Class Gastropoda Cuvier, 1797 복족강
Subclass Prosobranchia Milne-Edwards, 1848 전세아강
Order Mesogastropoda Thiele, 1925 중복족목
Superfamily Cerithioidea Fleming, 1822 쨡부하고등상과
Family Cerithiidae Fleming, 1822 쨡부하고등과
Genus Bittium Leach, 1847

*1. Bittium variegatum Kuroda and Habe, 1971 갈줄고등
*2. Bittium craticulatum Gould, 1860 눈줄고등
Genus Ataxocerithium Tate, 1893

*3. Ataxocerithium abnormale (Sowerby, 1903) 치마고등
Genus Clypeomorus Jousseaume, 1888
4. Clypeomorus humilis (Dunker, 1861) 오디짜부하고등
Genus Cerithium Brugiére, 1789
5. Cerithium kobelti Dunker, 1877 갈장짜부하고등
Genus Ochetoclava Woodring, 1928
6. Ochetoclava kochi (Philippi, 1848) 쨡부하고등
Genus Rhinoclavis Swainson, 1840
Subgenus Longicerithium Houbrick, 1978

7. Rhinoclavis (Longicerithium) longicaudata (A. Adams and Reeve, 1848) 송곳짜부하고등
Fig. 1. Map showing the collecting localities from South Korean waters
1, Namūl-ri (Mokp'o); 2, Chindo; 3, Kōmundo; 4, Sangju (Namhaedo); 5, Kujora (Changsŭng'o); 6, Sehwa; 7, Cheju Harbour; 8, Ch'agwido; 9, Mosúlp'o; 10, Pŏmsŏn; 11, Sŏgwip'o; 12, Sŏngsanp'o

Key to the species of Korean Cerithiidae
1  A stout axial rib present on leftside of body whorl ........................................... 2
   A stout axial rib absent on leftside of body whorl ........................................... 4
2(1) Spire high turret-shaped and sharply tapering ............................................ Ochetoclava kochti
   Spire roundly cone-shaped and obtusely tapering ........................................... 3
3(2) Light or dark brown in shell color ...................................................... Cerithium kobelti
   Black in shell color .................................................................................. Clypeomorus humilis
4(1) Aperture with undeveloped siphonal canal .................................................. 5
Aperture with developed siphonal canal ........................................... 6
5(4) Spiral ribs forming beadlike granule lines and dark brown in ground color of each whorl ...... Bittium craticulatum
Spiral ribs not forming beadlike granule lines and with dark brown band in lower part of each whorl ........................................... Bittium variegatum
6(4) Siphonal canal very short and toward strictly .................................. Ataxocerithium abnormale
Siphonal canal very long and bending toward leftside of aperture ............................ Rhinoclavis (Longicerithium) longicaudata

**Description of species**

Family Cerithiidae
Genus Bittium Leach, 1847

1. **Bittium variegatum** Kuroda and Habe, 1971 갈돌고둥 (신칭) (Fig. 2A; Pl. 1, fig. 1)

*Bittium variegatum* Kuroda and Habe, 1971 (p.108, 71, pl. 107, fig. 17); Higo, 1973 (p. 62); Inaba, 1982 (p. 88); Okutani and Habe, 1983 (pp. 68, 275).
*Bittium aleutaceum* Habe, 1964 (p. 40, pl. 12, fig. 12. (non Gould, 1861)).

**Type locality.** Sagami Bay (Japan).


**Description.** Shell small, elongated conical shape. Whorls 9 in number and distinctly distinguished by well impressed suture. Each whorl surface with 12-13 axial ribs and 4-5 spiral cords granulated owing to intersecting between them. Body whorl with a stout axial rib on the dorsal side of aperture occupying 2/5 of shell in height, slightly slender and bearing 13-14 axial and 13 spiral ribs. Among spiral ribs in body whorl, 8 prominent ribs in base becoming weak toward lower part of aperture in thickness. Aperture subquadrate ovate with trace of dark brown band in inner part. Outer lip rather thickened and arch shape. Callus without umbilicus. Grayish brown color with dark brown striation in the lower part of each whorl. Height of shell 5.8 mm, breadth 2.2 mm.

**Distribution.** Korea (Sögwp’o, Pömsööm, Söngsanp’o), Japan (Honshu (Boso Peninsula as northern limit), Shikoku, Kyushu, Sagami Bay).

**Habitat.** On gravelly bottom between tide mark down to 20m deep.

2. **Bittium craticulatum** Gould, 1860 눈돌고둥 (신칭) (Fig. 2B; pl. 1, fig. 2)

*Bittium craticulatum* Gould, 1860 (p. 387); Habe, 1961 (p. 28, pl. 12, fig. 14); Habe, 1964 (p. 40, pl. 12, fig. 14); Okada, 1967 (p. 62); Higo, 1973 (p. 62); Inaba, 1982 (p. 88).
*Bittium glareosum* Gould, 1860 (p. 387); Okutani et al., 1986 (pp. 82-83).

**Type locality.** Hong Kong.
Material examined. 1 ind., Songsanp’o, Jan. 18, 1985 (B.L. Choe).

Description. Shell minute, turret form and dark brown in color. Whorls 8 in number and suture distinctly impressed. Shell surface with many axial ribs forming 3 granule lines spirally at intersection. Granules more light than ground surface in color. Among 3 granule lines on each whorl, uppermost more weak than others in strength. Body whorl with smooth base occupied 1/3 of shell in height. Aperture subquadrate ovoide with short and narrow canal, outer margin curved roundly. Height of shell 2.7mm, breadth 1.2mm.

Distribution. Korea (Songsanp’o), Japan (Boso Peninsula, Honshu, Ryukyu), China.

Fig. 2. A, Bittium variegatum Kuroda and Habe, 1971; B, Bittium craticulum Gould, 1860

Genus Ataxocerithium Tate, 1893

3. Ataxocerithium abnormare (Sowerby, 1903) 처마고등 (신청) (Fig. 3; pl. 1, fig. 5)

Triforis abnormalis Sowerby, 1903, (p. 179; cited from Kuroda et al., 1971).
Colina (Ataxocerithium) abnormalis: Kanamaru, 1932 (p. 279, textfig. 31).
Ataxocerithium abnormare: Yokoyama, 1931 (p. 29); Habe, 1961 (p. 28, pl. 12, fig. 17); Habe, 1964 (p. 40, pl. 12, fig. 17); Okada, 1967 (p. 62); Kuroda et al., 1971 (p. 109, p. 72, pl. 16, figs. 20-21); Higo, 1973 (p. 63); Inaba, 1982 (p. 90); Okutani and Habe, 1983 (pp. 68, 187); Okutani et al., 1986 (p. 83).

Type locality. Schizum (=Nishizu in correct), Wakasa Bay along the Japan Sea coast of Honshu.

Material examined. 1 ind., Cheju Harbour, Aug. 21, 1982 (B.L. Choe).

Description. Shell small, high turret form and whitish brown in color. Whorls with impressed sutures, 11 in number, sharply attenuating toward top. Commonly 2 slender spiral ribs in the subsutural part of each whorl, which obliquely joining with next. Ornamentation of surface
forming net sculpture in each whorl consisted of many longitudinal and 3 spiral ribs. Body whorl with round periphery, short in height and bearing 4 prominent spiral ribs. Base with 6-7 spiral lines, which becoming faint toward lower part of aperture. Aperture circular and outer lip rather thin. Shortened siphonal canal slightly curved to the leftward of shell. Callus without umbilicus. Height of shell 11.2 mm, breadth 4.4 mm.

Fig. 3. Ataxocerithium abnormale (Sowerby, 1903)

**Distribution.** Korea (Cheju Harbour), Japan (Honshu (Boso Peninsula as north limit), Shikoku, Kyushu, Saga, and Bayj.

**Habitat.** Sandy bottom from low tide mark down to 30 m deep.

Genus Clypeomorus Jousseaume, 1888

4. *Clypeomorus humilis* (Dunker, 1861) 오디짜부락고둥 (pl. 1, fig. 3)

*Cerithium humile* Dunker, 1861 (p. 9, pl. 2, fig. 17); Lischke, 1869 (p. 72); Lischke, 1874 (p. 50, pl. 3, figs. 18-20); Dunker, 1882 (p. 106).

*Clypeomorus humilis*: Kira, 1954 (p. 28, pl. 12, fig. 15); Lee, 1958 (p. 17, pl. 13, fig. 4); Kira, 1962 (p. 26, pl. 13, fig. 15); Okada, 1967 (p. 63); Kang et al., 1971 (p. 58); Kuroda et al., 1971 (p. 112, p. 74, pl. 16, figs. 10-11); Higo, 1973 (p. 64); Yoo, 1976 (p. 62, pl. 9, figs. 12-13); Inaba, 1982 (p. 90); Okutani and Habe, 1983 (pp. 68, 190); Okutani et al., 1986 (p. 84).

**Type locality.** Decima (=Dejima), Nagasaki City (Japan).
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Distribution. Korea (Cheju Is.), Japan [Honshu (Boso Peninsula as north limit), Shikoku, Kyushu, Okinawa, Sagami Bay], Taiwan.

Habitat. On rocks and among gravels between tide mark down to 20m deep.

Genus Cerithium Bruguèire, 1789

5. Cerithium kobelti Dunker, 1877  격장까부락고등 (pl. 1, fig. 4)

Cerithium kobelti Dunker, 1877 (p. 67); Dunker, 1882 (p. 106, pl. 4, figs. 8-9); Yokoyama, 1920 [Foss. Miura (etc.), pp. 66-67, pl. 4, figs. 10a-b; cited from Oyama, 1973]; Kira, 1954 (p. 28, pl. 12, fig. 16); Kira, 1962 (p. 26, pl. 13, fig. 16); Okada, 1967 (p. 64); Kuroda et al., 1971 (p. 113 (in Japanese), p. 75 (in English), pl. 16, figs. 7-9); Higo, 1973 (p. 64); Inaba, 1982 (p. 90); Okutani and Habe, 1983 (pp. 68, 206); Okutani et al., 1986 (pp. 84-85).

Cerithium (Aluco) kobelti: Yokoyama, 1931 (p. 29).

Gourmya (Contumax) kobelti: Kanamaru, 1932 (p. 279).

Terrarctium kobelti: Oyama, 1973 (p. 26, pl. 5, fig. 22).

Type locality. Japan, Nagasaki City (selected as type locality by Kuroda et al., 1971).


Distribution. Korea, Japan [Honshu (Boso Peninsula as north limit), Shikoku, Kyushu, Okinawa, Sagami Bay], Taiwan.

Habitat. On rocks and among gravels between tide marks down to 20m deep.

Genus Ochetoclaa Woodring, 1928

6. Ochetoclaa kochii (Philippi, 1848)  찢부락고등 (pl. 1, fig. 6)

Cerithium kochii Philippi, 1848 (Zeitschr. f. Malak., 5, pl. 21; cited from Kuroda et al., 1971); Philippi, 1849 (Abbild. Beschr. Conchyl., 3, p. 14, pl. 1, fig. 3; cited from Kuroda et al., 1971); Lischke, 1869 (p. 72); Lischke, 1874 (p. 49); Kanamaru, 1932 (p. 279); Lee, 1956 (p. 71); Kang et al., 1971 (p. 58).

Vertagus kochii: Sowerby, 1866 (Vertagus, pl. 5, sp. 26).

Cerithium (Vertagus) kochii: E. A. Smith, 1875 (p. 105); E. A. Smith, 1891 (p. 416).


Clava kochii: Yokoyama, 1931 (p. 28).

Rhinooclavis (Proclava) kochii: Kira, 1954 (p. 29, pl. 12, fig. 18); Houbrick, 1978 (pp. 73-79, pls.
42-47).

Rhinoclaus (?) Ochetoclava? Kochi, 1962 (p. 26, pl. 13, fig. 18); Higo, 1973 (p. 65).

Proclava kochi: Okada, 1967 (p. 63); Okutani and Habe, 1983 (pp. 69, 188).

Ochetoclava kochi: Kuroda et al., 1971 [p. 113 (in Japanese), p. 73 (in English), pl. 16, figs. 22 -23]; Inaba, 1982 (p. 90).


Proclava kochi: Okutani et al., 1986 (pp. 84-85).

**Type locality.** East coast of Africa.

**Materials examined.** 1 ind., Chindo, Jul. 30, 1979 (B.L. Choe); 1 ind., Kujora (Changsungp’o), Jul. 20, 1985 (B.L. Choe); 1 ind., Namul-ri (Mokp’o), Aug. 25, 1986 (B.L. Choe); 1 ind., Sangju (Namhaedo, May, 13, 1991 (S.H. Yoön).

**Distribution.** Korea (T’ong-yong, Yesu, Wollae, Cheju Is.), Japan (Honshu, Shikoku, Kyushu, Sagami Bay). Red sea, Indian Ocean. Widely ranging in the Indo-Pacific Region.

**Habitat.** Fine sandy bottom between tide mark down to 200m deep.

Genus Rhinoclaus Swainson, 1840

Subgenus Longicerithium Houbrick, 1978

7. **Rhinoclaus (Longicerithium) longicaudata** (A. Adams and Reeve, 1848) 송곳자부락고등

Cerithium longicaudatum Adams and Reeve, 1848 (p. 43, pl. 10, fig. 15).

Cerithium attenuatus Philippi, 1849 [Zeitschr. f. Malak., 5(21), pl. 1, fig. 2; cited from Houbrick, 1978].

Vertagus attenuatus: Reeve, 1865 (15, Vertagus, pl. 3, fig. 12); Dunker, 1882 (p. 107).

Cerithium (Vertagus) attenuatum: Tryon, 1887 (9, p. 148, pl. 28, fig. 57).

Rhinoclaus (Longicerithium) longicaudata: Houbrick, 1978 (pp. 85-88, pls. 58-61).

**Type locality.** Korea (C. longicaudatum).

**Distribution.** Korea, Philippines, Solomon Islands, Fiji Island.

**DISCUSSION**

Since A. Adams (1860) had reported Styliferina goniochila from Mino-Sima, Shiba (1934), Lee (1956) and Kang et al (1971) have cited it as a Korean species until now in their own lists without any other additional collecting records and considerations. Therefore, we excluded this species from Korean malacofauna in our study since Mino-Sima is out of Korean sea area actually. On the other hand, we could not confirm whether Clypeomorus chemnitziatus, listed by Kim et al. (1957), is a Korean species or not because his list was not organized taxonomically and involved possibilities of misidentification. For Cerithium citrum and Colina macrostoma which appeared in Je (1989), we could not ascertain his specimens since no further descriptions and collecting records were accompanied.
ABSTRACT

Cerithiid specimens collected in South Korean waters (12 localities) during the period from August 1965 to October 1991 were identified and classified. In the present study, seven species in six genera were identified as Korean Cerithiidae. Among them, three species, *Bittium variegatum* Kuroda and Habe, 1971, *Bittium craticulatum* Gould, 1860 and *Ataxocerithium abnormale* (Sowerby, 1903), are new to Korean malacofauna and fully redescribed with illustrations.

REFERENCES


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