

Two New Records of the Family Callionymidae (Pisces:Perciformes) from Korea

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Two species of the dragonet (Callionymidae), *Bathycallionymus kaianus* and *Repomucenus virgis* newly collected from coastal waters of Korea are redescribed and figured. A key to genera and species of the family Callionymidae of Korea is given.

Introduction

The family Callionymidae was intensively reviewed by Fricke (1983) and Nakabo (1982, 1983). In Korea the latest treatment of this family was synopsis by Lee and Kim (1993) who listed fourteen species belonging to 4 genera living around Korea. In the last few years fish collections in the coastal waters of Korea have revealed additional specimens of this family. In this paper we redescribed them as the new records in Korea and provided the keys to species and genera of the Callionymidae of Korea.

Materials and Methods

Measurements and counts were made according to Nakabo (1982) with exception for the formula of preopercular spine and fin ray counts which were followed Fricke (1983). Radiographs by soft x-ray were used in counting the number of vertebrae. The specimens used in this study are deposited at the Department

of Biology, Chonbuk National University, Chonju, Korea (CNUC).

Systematic accounts

Family Callionymidae

Genus *Bathycallionymus* Nakabo, 1982

(New Korean name : Nambang - dotyangtae - sok)

Bathycallionymus kaianus (Günther, 1880)

(Fig. 1, 2)

(New Korean name : Nambang - dotyangtae)

Callionymus kaianus Günther, 1880:44, pl. 19, fig. B (type locality:Ki Isl.);Fricke, 1981:357, fig. 6 (redescription of the holotype).

Bathycallionymus kaianus; Nakabo, 1983 : 203 - 205, fig. 1.

Callionymus ochiaii Fricke, 1981:316, fig. 13.

Material examined:CNUC 20010, a male, 112.1mm in SL, Nampo - dong, Chung - gu, Pusan - shi, Korea, December 27, 1994.

Description:Proportional measurements are shown in Table 1. D₁. IV;D₂. viii, 1;A. viii, 1;P₁. ii, 18;P₂. I, 5;C. i, 3, ii, 2, ii. Body elon-

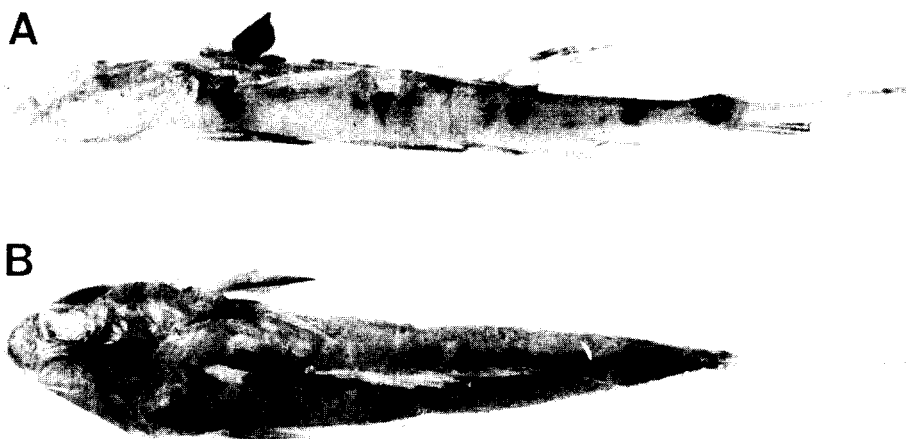


Fig. 1. *Bathycallionymus kaianus*, 112.1mm in SL, male, CNUC 20010, Pusan, Korea.
A) lateral view; B) dorsal view

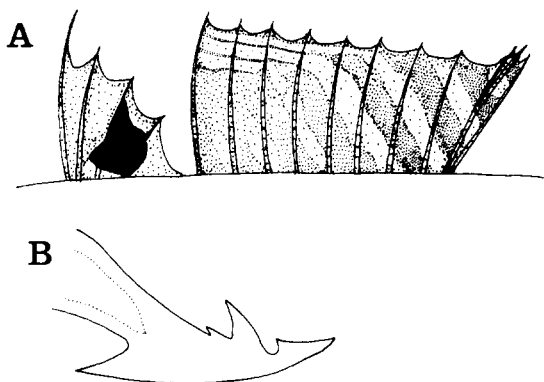


Fig. 2. *Bathycallionymus kaianus*, 112.1mm in SL, male, CNUC 20010, Pusan, Korea. A) dorsal fin; B) preopercular spine

gate and depressed. Head depressed. First dorsal spine elongate. Second dorsal fin distally straight, rays unbranched except for last which is divided at its base. Anal fin rays unbranched except last which is divided at its base. Pectoral fin rays reaching 3rd dorsal ray. Pelvic fin rays short, not reaching 1st anal fin ray. Preopercular spine with one feeble and one strong upward process on inner side; posterior end barbed, elongate, and not curved upward (for-

mula: $1\frac{3}{1}$; Fig. 2β).

Color in formalin: Body olive brown with some dark marks above, white below. Back with minute blackish spots, forming rings and blotches. A row of dark brown blotches along the side of the body. Pectoral fin base with a dark area. Head with some irregular dark spots and blotches. First dorsal fin gray with a black blotch basally or centrally on third membrane. Second dorsal fin gray with several vermicular, darker-edged white lines. Upper half of pectoral, pelvic and anal fin faintly dark. Lower half of caudal fin dark.

Distribution and Habitat: Southern Korea (Pusan), Southern Japan, at depths around 100 meters, on sand and mud bottoms (Fricke, 1983): Pacific coast of Japan in south up to Indonesia (Matsubara, 1955), Ki Islands (Günther, 1880).

Remark: The genus *Bathycallionymus* is differ from the related genera *Repomucenus* and *Callionymus* based on the simple tips of two median caudal rays the genus *Bathycallionymus* is recorded for the first time from

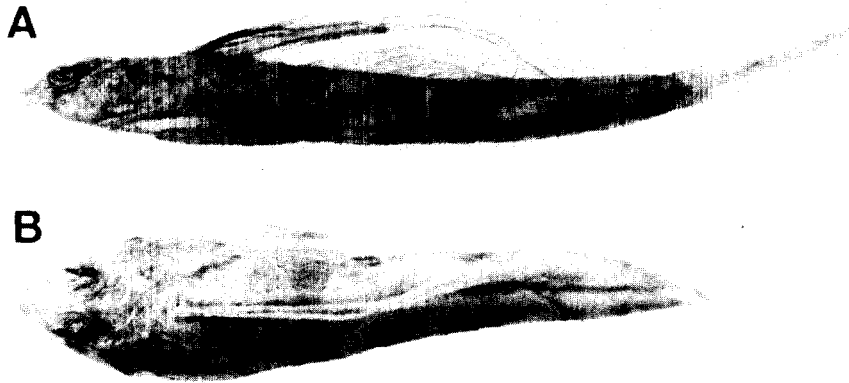


Fig. 3. *Repomucenus virgis*, 83.0 mm in SL, male, CNUC 20011, Sohüksan - do, Korea. A) lateral view; B) dorsal view

Korea in this collection. The shape of dorsal fins and preopercular spine are greatly agreed with the original description of Günther (1880) and the revision of Nakabo (1983).

***Repomucenus virgis*(Jordan and Fowler, 1903)**

(Fig. 3, 4)

(New Korean name: Mangt'o - dotyangtae)

Callionymus virgis Jordan and Fowler, 1903:957, fig. 9 (type locality: Misaki, Japan); Fricke, 1983:293 - 297, fig 1.

Repomucenus virgis; Nakabo, 1983:233 - 235, fig. 1.

Repomucenus sp.; Park and Lee, 1988:83.

Material examined: CNUC 20011 - 20016, 3 male and 3 female, 64.1 - 94.7mm in SL, Kag^o Island(Sohüksan - do), Hüksan - myon, Shinan - gun, Chollanam - do, Korea, 34° 03'N, 125° 05'E, at 30m, May 21, 1988.

Description: Proportional measurements are shown in Table 1. D₁. IV; D₂. viii, 1; A. viii, 1; P₁. i, 16 - 18, i; P₂. I, 5; C. i, 7, ii. Body elongate and depressed. Head depressed. In male, first dorsal fin high and broad like a sail, dor-

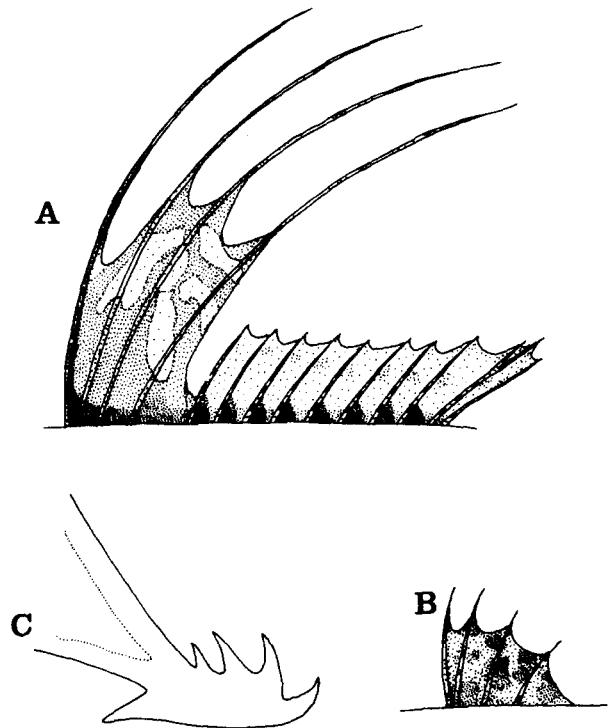


Fig. 4. *Repomucenus virgis*, 83.0mm in SL, male, CNUC 20011, Sohüksan - do, Korea. A) dorsal fin in male; B) first dorsal fin in female; C) preopercular spine

Table 1. Proportional measurements as the percent of standard lengths in the *Bathycallionymus kaianus* and *Repomucenus virgis* from Korea.

	<i>B. kaianus</i>		<i>R. virgis</i>	
	CNUC 20010		CNUC 20011 - 20016	
Sex(number of specimen)	male(n=1)		male(n=3)	female(n=3)
Standard length(mm)	111.4		83.0 - 94.7	64.1 - 75.3
In % of SL				
Head length	23.6		20.8 - 21.9	20.3 - 22.8
Body width	18.0		17.9 - 21.1	18.7 - 21.8
Body depth	10.4		8.6 - 12.3	10.0 - 10.7
Eye diameter	10.1		7.3 - 8.1	7.7 - 8.6
Interorbital width	2.0		2.1 - 2.9	2.1 - 2.8
Snout length	7.0		6.5 - 7.2	6.6 - 7.4
Caudal peduncle length	18.2		11.8 - 14.4	12.6 - 13.6
Caudal peduncle depth	3.9		4.4 - 5.4	4.2 - 4.5
Length of 1st dorsal spine	16.5		46.3 - 56.9	14.9 - 15.6
Length of 2nd dorsal spine	113.9		71.3 - 78.0	12.9 - 14.1
Length of 3rd dorsal spine	12.7		61.7 - 80.5	10.9 - 12.8
Length of 4th dorsal spine	8.6		52.3 - 68.4	8.9 - 10.1
Predorsal length	27.9		23.4 - 27.6	26.3 - 29.5
Length of 1st dorsal ray	16.7		20.8 - 22.7	18.4 - 20.3
Length of last dorsal ray	18.0		21.7 - 26.1	13.0 - 15.6
Length of 1st anal ray	8.7		9.0 - 9.6	7.8 - 9.6
Length of last anal ray	10.0		12.0 - 13.7	10.2 - 12.1
Length of pectoral fin	18.9		20.6 - 22.7	20.2 - 24.5
Length of pelvic fin	25.1		24.9 - 27.6	26.5 - 27.8
Length of caudal fin	33.2		28.7 - 33.3	25.9 - 26.9
Length of preopercular spine	5.3		3.9 - 4.3	4.0 - 4.8

sals spines filamentous. But, in female first dorsal fin small, no dorsal spine filamentous. Pectoral fin rays reaching 3rd dorsal ray. Caudal fin rounded. Preopercular spine short, with an antrorse process at base, 3 upward processes on inner side; posterior end not curved (formula: 1 $\frac{3}{1}$; Fig. 4C). Infraorbital canal extending below middle of eye with an antrorse branch near ventroposterior edge of eye.

Color in formalin; Body brown above; ventral surface pale, dorsal parts of head and body with many small dark spots and many light blotches. First dorsal fin in the male light, with a number of vertical white lines and white spots (Fig. 4A). Second dorsal fin in the male each ray dark and each membrane with a basal dark blotch. Anal fin in male light, with irregu-

lar oblique darkish streaks. Upper half of caudal fin with some small dark spots.

Sexual dimorphism: The male has a higher first dorsal fin than the female with four long filaments and a different color pattern, a longer urogenital papilla, and a different color pattern of the second dorsal and anal fins (Fricke, 1983).

Distribution and Habitat: Southern West Sea of Korea (Sohüksan - do) at depths around 30 - 50 meters, on sand and mud bottoms: Southern Japan, East China Sea, on shallow waters and tide pools (Fricke, 1983; Fricke and Wu, 1992; Lindberg and Krasnyukova, 1975).

Remark: This species differ from other species of the genus *Repomucenus* in having different shape and color pattern of the first dorsal

fin. Males and females specimens collected from Korea was very agreed with the original description from Japan by Jordan and Fowler (1903), Nakabo (1983) and Fricke (1983).

Key to the genera and species of the Family Callionymidae from Korea

- 1a. first dorsal fin present2
- 1b. First dorsal fin absentGenus *Eleutherochir**E. mirabilis* (Snyder)
- 2a. Soft rays of second dorsal fin simple except last ray branched3
- 2b. Soft rays of second dorsal fin bifurcate except for first short ray Genus *Foetorepus**F. altivelis* (Temminck et Schlegel)
- 3a. A transverse lateral line commissure present on dorsal surface of caudal peduncle, 9 or 10 anal ray4
- 3a. No transverse lateral line commissure on dorsal surface of caudal peduncle, 8 anal rayGenus *Calliurichthys**C. japonicus* (Houttuyn)
- 4a. Tips of median caudal ray bifurcateGenus *Repomucenus*5
- 4b. Tips of two median caudal rays simpleGenus *Bathycallionymus**B. kaianus*(Günther)
- 5a. Preopercular spine strongly curved upward at the posterior end, and with 3 - 4 upward processes on the inner side6
- 5b. Preopercular spine straight with many short upward processes on the inner side*R. huguenini*(Bleeker)
- 6a. Infraorbital canal with 1 - 4 short downward branch at anterior part7
- 6b. Infraorbital canal with no short downward branch at anterior part*R. virgis* (Jordan and Fowler)
- 7a. First dorsal spine not filamentous8
- 7b. First dorsal spine filamentous12
- 8a. Infraorbital canal with one short downward branch at anterior part*R. richardsonii* (Bleeker)
- 8b. Infraorbital canal with 3 - 4 downward branch at anterior part9
- 9a. First dorsal fin with 4 spine10
- 9b. First dorsal fin with 3 spine*R. olidus* (Günther)
- 10a. Second dorsal fin with 9 ray11
- 10b. Second dorsal fin with 10 ray*R. koreannus* Nakabo, Jeon et Li
- 11a. Caudal fin with i+5+ii ray*R. leucopocilus* (Fricke et Lee)
- 11b. Caudal fin with i+7+ii ray*R. sagitta* (Pallas)
- 12a. Infraorbital canal with one short downward branch at anterior part13
- 12b. Infraorbital canal with 3 - 4 downward branch at anterior part14
- 13a. Anal fin membranes with dark oblique lines and second dorsal fin with about two rows of dark spots in male; many small white circles on body side*R. beniteguri* (Jordan et Snyder)
- 13a. Anal fin uniformly pale and second dorsal fin with a row of dark spots at middle in male; many white oblong marks on body side*R. ornatipinnis* (Regan)
- 14a. All of caudal fin with many conspicuous dark spots; 1st and 4th dorsal spine elongate and filamentous in adult male*R. valenciennesi* (Temminck et Schlegel)
- 14b. Lower half of caudal fin with longitudinal broad blackish - brown band; first dorsal spine elongate and filamentous in adult male*R. lunatus* (Temminck et Schlegel)

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한국산 돛양태과 어류 2 미기록종

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한국 연안에서 채집한 돛양태과 어류인 *Bathycallionymus kaianus*와 *Repomucenus virgis*을 우리나라의 연안에서 출현함을 처음으로 보고한다. 이들의 외형과 계수 및 계측치를 기록하며, 이들의 국명은 각각 “남방돛양태”와 “망토돛양태”로, 그리고 *Bathycallionymus* 속의 국명은 “남방돛양태속”으로 명명하고, 한국산 돛양태과 5속 15종에 대한 속 및 종 검색표를 작성하였다.