Synopsis of Dragonet Fish, Family Callionymidae (Pisces, Perciformes) form Korea

Chung-Lyul Lee and Ik-Soo Kim*
Department of Biology, Kunsan National University, Kunsan 573-360, Korea.
*Department of Biology, Chonbuk National University, Chonju 560-756, Korea

Fourteen species and four genera of the family Callionymidae from Korea were reviewed and provided a tentative the key to species and genera. The taxonomic position and scientific name of the family Callionymidae were rechecked together with states of their distribution. Among them, two species Callionymus kitaharai and C. doryssus previously described by Chyung(1977), were found to be the same species under synonym of Repomucenus huyuenini. On the other hand, two species Repomucenus leucopoeiclus and Repomucenus sp. were newly added. Seven species, previously reported as the family Callionymidae from Korea, were transferred into another generic name or specific name: Draculo mirabilis into Eleucherochir mirabilis, Callionymus japonicus into Callurichthys japonicus, Callionymus altivelis into Synchirinus altivelis, Callionymus kitaharai into Repomucenus huyuenini, Callionymus richardsoni into Repomucenus curvicornis, Callionymus lunatus into Repomucenus lunatus, Callionymus flagris into Repomucenus valencienni. The species of Callurichthys japonicus, Repomucenus lunatus, Repomucenus curvicornis, Repomucenus huyuenini, Repomucenus valencienni and Synchirinus altivelis were mainly distributed in the South Sea, while the other species of the family were mainly distributed in the Yellow Sea of Korea.

Introduction

The dragonet fishes of the family Callionymidae are a group of benthic marine fishes, mostly living in warm and temperate sea. And most callionymid fishes live on sand or mud bottoms, but a few occur between seaweed, on bottoms consisting of larger gravel or coral sand (Fricke, 1983).

The family Callionymidae was intensively studied by Fricke(1983) and Nakabo(1982, 1983). But they are having different criteria for classification of family Callionymidae, respectively. Chyung(1977) reported that the Callionymidae from Korea were classified into 8 species and two genera. After Chyung(1977), Nakabo and Jeon (1985, 1986 a, b), Nakabo, Jeon and Li(1987, 1991) have added 5 species from Korea, as 4 new records and

1) Present study was supported in part by Basic Science Research Institute Program, Ministry of Education, 1992, Project No. BSRI-92-414.
a new species: *Repomucenus olidus*, *R. beniteguri*, *R. ornatipinnis*, *R. sagitta* and *R. koreanus*.

It is well known that callionymid fishes show remarkable sexual dimorphism, but the identification of the specimens belong to the family Callionymidae had lot of artificial face because they are very resemble each other.

In this study, the classification of the Callionymidae from Korea was made according to the criteria of Nakabo(1982, 1983), together that of Frické(1983). The specimen of the examined fishes were deposited at the Department of Biology, College of Natural Science, Kunsan National University(BKNU).

**Methods**

The majority of specimens were collected from the 14 localities along the coast at areas of Korea from 1988 to 1993 (Fig. 1). The identification of the collected specimens were made according to Nakabo(1982, 1983), Fricke(1983), Masuda et al.(1988) and Shen (1990). The methods of measurement were mainly followed that of Nakabo(1982) but the formula of caudal fin and of preopercular spine followed the method of Frické(1983). And counts of spines and soft rays of each fins and numbers of vertebrae were made using staining skeletal specimens method by Taylor(1967).

**Key to the genera and species of family Callionymidae**

1a. First dorsal fin present. Mouth was moderate or narrow.........................2

1b. First dorsal fin absent. Mouth expanded laterally.......................Genus *Eleucherochir*

.................................................................................................*E. mirabilis* (Snyder)

2a. Infraorbital canal short and did’nt reached below middle of eye. Transverse lateral line placed (or not) on dorsal surface of caudal peduncle without any short branches in middle........................................................................................................3

2b. Infraorbital canal developed and extended below eye. Transverse lateral line commissure on dorsal surface of caudal peduncle with short branches in middle............................

.................................................................................................Genus *Repomucenus*..................4

3a. 1-2 transverse lateral line commissure on dorsal surface of caudal peduncle. No dorsal ray bifurcate (except last ray). Caudal fin very elongate. Preopercular spine elongate, stright and strong, with 5-13 short processes on inner side Genus *Calliurichthys*

..............................................................................................................*C. japonicus* (Houttuyn)

3b. No transverse lateral line commissure on dorsal surface of caudal peduncle. Dorsal ray bifurcate(except posterior branch of last ray). Preopercular spine curved upward with 1-2 precusses........................................................................Genus *Synchiropus*

..............................................................................................................*S. altivelis* (Temminck and Schlegel)

4a. No infraorbital canal branched downward. Preopercular spine elongate and stright.
Fig. 1. Sampling localities of family Callionymidae from Korea.

St. 1: Inchon, St. 2: Iksan, St. 3: Kunsan, St. 4: Okku, St. 5: Puan, St. 6: Mokpo, St. 7: Wando, St. 8: Kohung, St. 9: Tolsando, St. 10: Sachon, St. 11: Pusan, St. 12: Yangsan, St. 13: Youngduk, St. 14: Yangyang.

with many short upward processes on inner side … Repomucenus huguenini (Bleeker)

4b. Infraorbital canal branched, with 1-4 downward. No preopercular spine elongate, with 3-4 upward processes on inner side…………………………………………………………..5

5a. Caudal fin formula with i + 7+ ii. Length of first dorsal ray shorter than last it in males……………………………………………………………………………………………………..6

5b. Caudal fin formula with i + 5+ iv. Length of first dorsal ray longer than last it in males……………………………………………………………………………………………………..-Repomucenus sp.

6a. Infraorbital canal branches short, with 3-4 downward. No oblique line placed below
lateral line in males. Length of dorsal fin spine various..........................7
6b. Infraorbital canal branch short, with one. Oblique line placed below lateral line. Length of dorsal fin spine short, with black band in margin in males..............................-Repomucenus curvicornis (Valenciennes)
7a. Length of the first dorsal spine shorter than first dorsal ray. Standard length shorter than 10cm.................................................................-8
7b. Length of first dorsal spine longer than first dorsal ray. Standard length longer than 10cm.....................................................................-9
8a. First dorsal fin with 3 spine. Caudal fin formula with i +6+ii (ii +5+ii or i +7+ii).................................................................-Repomucenus olidus (Günther)
8b. First dorsal fin with 4 spine. Caudal fin formula with i +7+ii ..............................................................-Repomucenus sagitta (Pallas)
8c. First dorsal fin with 4 spine. Caudal fin formula with i +5+ii ..............................................................-Repomucenus leucopectilus (Fricke and Lee)
9a. Length of first spine almost same with first dorsal ray(without filamentous spine). No various black spots placed in fin membrane of first dorsal and caudal fin. Infraorbital canal with 3 short branches........-Repomucenus koreanus Nakabo, Jeon and Li
9b. Length of filamentous first dorsal spine longer than first dorsal ray. Dorsal fin membrane with small dark spots. Infraorbital canal with 1-4 short branches..................-10
10a. First dorsal spine is long. A lunate black spot placed in membrane behind 4th spine in male. Two rows with blackish bands in the membrane between second dorsal fin rays. Anal fin dark and lower part of caudal fin with dark band. Preopercular spine short with 2-3 upward processes on inner side........................................-Repomucenus lunatus (Temminck and Schlegel)
10b. 2-3 dorsal spine with long filament. Membrane of dorsal fins with various black spots according to species.................................................................-11
11a. No filamentous spine of dorsal fin exceeding the middle part of second dorsal fin base. Infraorbital canal with one short branch........................................-12
11b. Filamentous spine of dorsal fin exceeding the middle part of second dorsal fin base. Infraorbital canal with four short branches. Second dorsal with black spots about 3 rows........................................-Repomucenus valenciennii (Temminck and Schlegel)
12a. Membrane of second dorsal fin with two rows of dark spots in male. Anal fin dark with several oblique white lines on the membrane in male.................................................................-Repomucenus beniteguri (Jordan and Snyder)
12b. Membrane of second dorsal fin with a median row of dark spots in male. Anal fin faintly dark in male.........................................................-Repomucenus ornatipinnis (Regan)
Synopsis of Dragonet Fish. Family Callionymidae (Pisces, Perciformes) from Korea

Family Callionymidae from Korea
Genus Eleutherochir Bleeker, 1879 (Min-yang-tae Sog)


1. Eleutherochir mirabilis (Snyder), 1911
(Korean name: Min-yang-tae)


Draculus mirabilis: Jordan, Tanaka & Snyder, 1913: 377 (after Snyder, 1911).


No specimens examined.
Distribution: Western Sea of Korea, Japan.

-5-
Genus Calliurichthys Jordan and Fowler, 1903  
(Ggong-ji-yang-tae Sog, new name)

type species by original designation: Callionymus jaopnicus Houttuyn).

2. Calliurichthys japonicus (Houttuyn), 1782  
(Korean name: Ggong-ji-yang-tae)

Fig. 2. Calliurichthys japonicus (Houttuyn), male, 170.2 mm SL.  
A. Lateral view. B. Left preopercular spine. C. First dorsal fin of female.

(Yokohama/Japan) – Snyder. 1901: 111 (Yokohama, Nagasaki/Japan) – Wu. 1931: 56.  

Callionymus longicaudatus Temminck & Schlegel. 1850: 151–153, pl. 78, figs. 1–2–  
Ishikawa and Masuura. 1892: 37 (Tokyo/Japan) – Ninii. 1834: 41–43, pl. 7, China –  
Boeseman, 1947: 130.

Callionymus longicaudatus Günther. 1861: 148–149 (China) – Bleeker. 1879: 18  
(Nagasaki/Japan) – Karoli. 1882: 168 (Nagasaki/Japan) – Nystrom. 1887: 36 (Japan).

Callionymus reevesii Richardson. 1844: 60–62, pl. 36, figs. 1–3 (type locality: China  
Sea) – Richardson. 1846: 210 (Hong Kong, Macao) – Bleeker. 1854–1857: 7, 28–29  
(Japan) – Bleeker. 1873: 127 (Macao, Hongkong) – Bleeker. 1879: 18 (Nagasaki/Japan).

Callionymus japonicus Jordan & Fowler, 1903: 942–943, fig. 2 (Nagasaki, Wakanoura/  
Japan) – Smith & Pope. 1906: 493 (Urado, Yamagawa, Kochi/Japan) – Snyder. 1912: 446
Synopsis of Dragonet Fish. Family Callionymidae (Pisces, Perciformes) from Korea


Calliurichthys japonicus McCulloch, 1926: 196 - 197 (Australia) - Fricke, 1980: 60 (listed) - Fricke, 1982: 68.


Description: D. Ⅰ - 9; A. 8; P₁, ii + 15 - 19; P₂, 1. 5; C. i + 7 + ii.

Body elongate and depressed. Head depressed. Occipital region with two high bony protruberances. Preopercular spine strong, stright or slightly downcurved and elongate, with 5 - 13 short processes on inner side. Infraorbital canal not extending below middle part of eye with downward branch and antrose branch near ventroposterior edge of eye. Posterior commissure connected to preoperculomandibular canal. 5 - 8 pairs cross short canal on the body surface between both lateral lines. Preoperculomandibular canal with 4 short downward branch at base. First and second spines of first dorsal fin long and filamentous in males, but not in females. Pectoral fin reaching 2nd anal fin ray. Pelvic fin nearly reaching lst anal fin ray. Caudal fin very elogate, longer in males than in females. Urogenital papilla elongate in males, shorter in females.

Color in 10% formalin: Head and body surface showed nearly deep brown or almost black. First dorsal fin light, with irregular brownish bloches and lines varying in number and position. Third membrane with a large black bloch on a whitish background, reach-
ing to second membrane. Second dorsal fin with many short longitudinal darkish bands and small dark spots in the fin membrane. Lower half of anal fin black. Lower margin of caudal fin blackish of dark brown.

**Sexual dimorphism**: In the males, the first and second spine of first dorsal fin long filamentous, a longer caudal fin and longer urogentiral papilla than those of females.

**Distribution**: South—Western Sea of Korea. Japan, Thailand. Philippins, Papua New Guinea, Western Australia.

**Remarks**: Chyung(1977) and Fricke(1983) was already reported that this species was correspond to genus *Callionymus*. Otherwise, this species from Korea was classified into subspecies, *Callionymus japonicus japonicus*, by Fricke(1983) but Nakabo(1983), Masuda *et al.* (1988) and Shen(1990) classified into a species belong to genus *Calliurichthys*, based on the transverse branch across the dorsal surface between both lateral lines. I also agree with opinion of the latters.

**Genus Synchiropus Gill, 1860**

(Do—hwa—yang—tae—Sog, new name)


3. *Synchiropus altivelis* (Temminck and Schlegel), 1845

(Korean name: Do—hwa—yang—tae)

*Callionymus altivelis* Temminck and Schlegel. 1845: 155, pl. 79, fig. 1 (type locality: Ohomura Bay, Nagasaki)—Gunther, 1846: 147—Nystrom. 1887: 36 (Japan)—Jordan and Fowler, 1903: 948—Franz. 190: 84. (Yokohama)—Jordan, Tanaka and Snyder, 1913:
Fig. 3. *Synchiropus altivelis* (Temminck and Schlegel), male, 148.9 mm SL.
A. Lateral view. B. Left preopercular spine. C. First dorsal fin of female.


*Synchiropus pallidus* Fowler, 1941 : 23, fig. 14 (Type locality : Philippins).

*Synchiropus calauropomus* Kuroda, 1951 (not of Richardson) : 38 (Suruga Bay).

*Callionymus calauropomus* Kamohara, 1952 (not of Richardson) : 89 (Tosa bay).


**Description**: D. IV - 8 ; A. 7 ; P₁ ( - II) + 17 - 20 ; P₂. 1.5 ; C. ii + 7+ ii.

Body elongate, preopercular spine strong with an upward process on inner side, posterior end curved upward. Ventral margin and base smooth(formula : \( \frac{1}{-1} - 1 \)).

Infraorbital canal not reaching middle part below eye, without any branch. Both lateral
line reaching base of caudal fin. not interconnected on the dorsal surface of caudal peduncle. First dorsal spine elongate in both sexes. Second dorsal fin high and broad in males, but not in females. Pectoral fin reaching first or second anal fin ray (4th dorsal ray of dorsal fin). Pelvic fin reaching first anal ray in males, but not in female females. Five median caudal fin rays filamentous in males, but caudal fin rounded in females.

**Color in 10% formalin**: Head and body surface creamy white and with some irregular dark marks above (when in life, head and body surface reddish with some olive brown marks above). Ventral surface of head and body yellowish red in males, whitish in females. First dorsal whitish in males, but large dark mark in third membrane of first dorsal fin of females. Second dorsal fin yellow with many oblique pinkish lines. Pectoral and ventral fin almost whitish (redish in life). Anal and caudal fin whitish (yellow and reddish in life).

**Sexual dimorphism**: Males have a large pectoral, caudal and anal fin, a longer rays of second dorsal fin, the 4–5 median filamentous caudal fin rays and a longer urogenital papilla than those of females.

**Distribution**: Southern Sea of Korea, Japan, China. Philippines.

**Remarks**: *Synchiropus altivelis* is very colorful with redish and pinkish. Fricke (1983) reported that *Foetorepus delandi* (Fowler, 1943) reported by Nakabo (1983) based on specimens from Japan is the same species as the intraspecific variation range of *S. altivelis*. And he had mentioned that *S. altivelis* has a clearly distinct from *S. delandi*. Fricke (1983) emphasized that there is some intraspecific variation between populations from Hawaiian Islands tend to have a lower first dorsal fin and a less filamentous caudal fin than specimens from other areas.

**4. Repomucenus huguenini** (Bleeker), 1858  
(Korean name: Chum – yang – tae)


*Callonymus hugueni*: Jordan & Snyder, 1901 : 111 (listed).


Synopsis of Dragonet Fish, Family Callionymidae (Pisces, Perciformes) from Korea


**Calliurichthys doryssus** Jordan and Fowler, 1903 : 945, fig. 4 (type locality: Nagasaki, Wakanoura, Aomori) - Smith & Pope, 1906 : 493 (Kochi) - Snyder, 1912 : 446 (Hakodate, Shimizu) - Jordan, Tanaka & Snyder, 1913 : 372 (listed) - Jordan & Thompson, 1914 : 294, Fig. 72 (Misaki) - Jordan & Hubbs 1925 : 316 (Toba) - Ui, 1929 : 262 (Kishu) - Katayama, 1940 : 24 (Toyama Bay) - Yanai, 1950 : 22 (Matsue, Hamada) - Kuroda, 1951 : 174 (Suruga Bay) - Kuroda, 1952 : 174 (Suruga Bay) - Kuroda, 1954 : 160 (Suruga Bay) - Mori, 1956 : 23 (Quelpart Isl.) - Bohlke, 1953 : 104 (listed) - Mori, 1956 : 23 (Kasumi, Hamada) - Chu et al., 1962 : 728, fig. 589 (South China Sea) - Chu et al., 1963 : 355, fig. 290 (East China Sea) - Tatara et al., 1965 : 106 (Seto Inland Sea and adjacent water) - Takegawa and Morino, 1970 : 382 (Wakasa Bay) - Ueno, 1971 : 83 (Hokkaido).

**Callionymus doryssus** : Ochiai et al., 1955 : 102, fig. 2 (Japan) - Katayama and Fijioka, 1958 : 1157 (Oshima-gun, Yamaguchi Pref.).


**No specimens examined**

**Distribution** : Korea, Japan, China.

**Remarks** : *Callionymus kitaharai* and *Callionymus doryssus* from Korea reported by Chyung(1977) were identified into same species each other when compared with above two species based on the description of Chyung(1977). And they were corresponed to synonym of *Repomucenus huguenini*.

5. **Repomucenus sp.**

**Material examined** : BKNU 20057, a specimen, male, 98.1 mm SL, Chonbuk Kunsan - shi Haemang - dong. May 1, 1992.

**Description** : D. IV– 9 ; P1.18–19 ; P2. 1,5 ; C. i +5+iv.

Body elongate and depressed. Head depressed. Eye moderately large. Preopercular spine short, with an antrorse precess at base and two upward prosesses on inner side, posterior end upcurved main tip(Formula : 1–2–1). Infraorbital canal extending to preorbital region, with an antrorse short branch near ventroposterior edge of eye and three downward branches below eye, among them two antrorse branches very short. Lateral line reaching from eye to end of fourth branched caudal fin ray (from above). The both lateral lines are interconnected by a transverse branch on the caudal peduncle but posterior canal and transverse commissure line of lateral line almost closed at posterior region. First spine of first dorsal fin in male filamentous, but the rest three spines short filamentous. Second dorsal fin higher than first dorsal fin. First dorsal ray of second dorsal fin longer than last dorsal ray in male. Anal fin beginning below second ray of second dorsal
Fig. 4. *Repomucenus* sp., male. 98.1 mm SL.
A. Lateral view. B. Left preopercular spine.

Table 1. Meristic data of the *Repomucenus* sp., a male. 98.1 mm SL, expressed as hundreths of standard length.

<table>
<thead>
<tr>
<th>Characters</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head length</td>
<td>24.3</td>
</tr>
<tr>
<td>Body depth</td>
<td>13.7</td>
</tr>
<tr>
<td>Eye diametr</td>
<td>7.8</td>
</tr>
<tr>
<td>Preorbital length</td>
<td>8.4</td>
</tr>
<tr>
<td>Interorbital distance</td>
<td>1.2</td>
</tr>
<tr>
<td>Urogenital papilla length</td>
<td>3.5</td>
</tr>
<tr>
<td>Caudal peduncle length</td>
<td>15.0</td>
</tr>
<tr>
<td>Caudal peduncle depth</td>
<td>5.4</td>
</tr>
<tr>
<td>Caudal fin length</td>
<td>36.0</td>
</tr>
<tr>
<td>Width of gill opening</td>
<td>9.7</td>
</tr>
<tr>
<td>Predorsal(1) length</td>
<td>31.5</td>
</tr>
<tr>
<td>Preanal fin length</td>
<td>49.2</td>
</tr>
<tr>
<td>Prepectoral fin length</td>
<td>32.4</td>
</tr>
<tr>
<td>Prepelic fin length</td>
<td>24.3</td>
</tr>
<tr>
<td>First spine length</td>
<td>38.4</td>
</tr>
<tr>
<td>Second spine length</td>
<td>19.8</td>
</tr>
<tr>
<td>Third spine length</td>
<td>19.8</td>
</tr>
<tr>
<td>Fourth spine length</td>
<td>18.3</td>
</tr>
<tr>
<td>First dorsal ray length</td>
<td>20.1</td>
</tr>
<tr>
<td>Last dorsal ray length</td>
<td>17.4</td>
</tr>
<tr>
<td>Last anal ray length</td>
<td>8.4</td>
</tr>
<tr>
<td>Last anal ray length</td>
<td>14.3</td>
</tr>
<tr>
<td>D1 base length</td>
<td>14.7</td>
</tr>
</tbody>
</table>

fin. Pectoral fin morderate, reaching the second anal ray when laid back. Pelvic fin dose not reach to first anal fin ray when laid back. Caudal fin rounded, without any filamentous, with five branches bifurcated but four downward rays of caudal fin did not bifurcate. Urogenital papilla elongate in males.

**Color in 10% formalin**: Body surface marbled brown above like the surface of a sandy bottom, but below part whitish. First dorsal fin slightly translucent, with several black marks and small blackish spots in the membrane. Second dorsal fin with about three dark blotches in each rays and some blackish spots in each fin membrane. Lower half of anal fin black in male. Caudal fin pale with several black marks and very blackish spots.

**Distribution**: Western Sea of Korea.
Table 2. Characters distinguishing between three species, *Repomucenus* sp., *R. valencienni* and *R. koreanus*

<table>
<thead>
<tr>
<th>Characters</th>
<th>Repomucenus sp.</th>
<th>R. valencienni</th>
<th>R. koreanus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal caudal fin formula</td>
<td>i, 5, ii</td>
<td>i, 7, ii</td>
<td>i, 7, ii</td>
</tr>
<tr>
<td>Dorsal fin</td>
<td>IV - 9</td>
<td>IV - 9</td>
<td>IV - 10</td>
</tr>
<tr>
<td>First spine length/SL</td>
<td>38.4</td>
<td>48.1</td>
<td>13.9</td>
</tr>
<tr>
<td>Second spine length/SL</td>
<td>19.8</td>
<td>20.8</td>
<td>13.3</td>
</tr>
<tr>
<td>Third spine length/SL</td>
<td>19.8</td>
<td>40.3</td>
<td>13.0</td>
</tr>
<tr>
<td>Fourth spine length/SL</td>
<td>18.3</td>
<td>44.2</td>
<td>10.3</td>
</tr>
<tr>
<td>D₂ first dorsal ray length/SL</td>
<td>20.1</td>
<td>20.0</td>
<td>15.5</td>
</tr>
<tr>
<td>D₂ last dorsal ray length/SL</td>
<td>17.4</td>
<td>29.1</td>
<td>27.8</td>
</tr>
<tr>
<td>Width of gill opening/HL</td>
<td>40.1</td>
<td>32.5</td>
<td>34.3</td>
</tr>
</tbody>
</table>

**Remarks**: This specimen is closely related to *R. valencienni* and *R. koreanus* in its general morphopogy. Particular form of second dorsal fin was very resemble that of *R. valencienni* in black marks. But this specimen differs in caudal formula, the spine length of first dorsal fin, width of gill opening and the length of dorsal ray between first and last (Table 2).

6. *Repomucenus curvicornis* (Valenciennes), 1837

(Korean name: Dong-gal-yang-tae)

![Diagram of Repomucenus curvicornis](image)

Fig. 5. *Repomucenus curvicornis* (Valenciennes). Male. 170.2 mm SL.
A. Lateral view. B. Left preopercular spine. C. First dorsal fin of female.


**Description:** D. IV–9; A. 9; P1. i +17–19; P2. 1–5; C. i +7+ ii.

Body elongate and depressed. Head depressed. Prepercular spine strong and long, and curved inward, with 2–4 upward processes on inner side (formula: \(1 \frac{2-4}{-4-1}\)). Infraorbital canal extending to anterior portion of eye with a downward branch. Ventral fin not reaching first anal fin ray. Under part of lateral line, ventral portion of lateral side of body with many oblique dark line in males. First dorsal fin usually lower than second dorsal fin. Pectoral fin reaching to near second anal ray base when laid back. Caudal fin elongate in the male, pointed. Pelvic fin distally convex, reaching to around second anal ray base when laid back.

**Color in 10% formalin:** Head and body surface brown with many small circles or oblong white spots above, ventrally whitish, sides of body of the males silvery, with many oblique dark lines in males. First dorsal fin darker yellow with some wave-line white mark and blackish distal margin in males. In females, a white-margined large black mark in third membrane of first dorsal fin. Second dorsal fin with many white spots. Anal fin dark on lower half in males, but with transparent in females. Upper half of caudal fin with some dark spots, lower half blackish.

**Sexual dimorphism:** Males have a longer urogenital papilla, a longer caudal fin than females, a different color pattern of body sides, first dorsal fin and anal fin.

**Distribution:** South-western Sea of Korea, Japan, China.

**Remarks:** *Repomucenus curvicornis* is closely related to *R. beniteguri* and *R. ornatusinnis* shapes of its cephalic lateral line system, but it differs in the shape and color pattern of first and second dorsal fin, and the pattern of body side below lateral line in males.

7. *Repomucenus olidus* (Günther), 1873
(Korean name: Kang-jugok-yang-tae)

Fig. 6. *Repomucenus olidus* (Günther), male, 48.3 mm SL.
A. Lateral view. B. Left preopercular spine. C. First dorsal fin of female.

*Callionymus hindsi* (not of Richardson): Herre, 1932: 442 (Canton).


**Description**: D. 7–9; A. 9; P. 1i+17–18; P2. 1. 5; C. ii+i+6 ii (or i+5+ii).


Infraorbital canal extending to preorbital region with an antrorse short branch near below eye and three downward branches below eye. Both lateral line extending beyond caudal peduncle, interconnected on the dorsal surface of caudal peduncle.

First dorsal fin short and small in both sexes and not filamentous, much shorter than distance between first and second dorsal fins. Second dorsal fin ray unbranched except last ray, with anterior part becoming higher than posterior part in adult, but anal fin rays opposite to the former. Pectoral fin relatively large, reaching 2nd anal ray, upper half truncate, lower half rounded. Pelvic fin rounded, not reaching first anal ray.

**Color in 10% formalin**: Head and body surface brown, with many white circles a-
Synopsis of Dragonet Fish. Family Callionymidae (Pisces, Perciformes) from Korea

above. First dorsal fin uniformly dark black. Second dorsal fin transparant, in each ray with several dark small spots. Anal fin transparent.

Sexual dimorphism: Males have a higher first dorsal fin than females and a slightly longer urogenital papilla than females.

Distribution: Western Sea of Korea, Costs of China.

Remarks: Repomucenus olidus has a short standard length. This is closely related to R. planus distributed in the southern coasts of Japanese Archipelage, in having short standard length, similar body pattern and body shapes. But R. olidus differ from R. planus in having 3 dorsal spines (4 in the latter), an antrorse branch of the preoperculomandibular canal near postocular commissure (both branches in the latter), and a retrorse branch of supratemporal canal (three branches in the latter) (Nakabo and Jeon, 1985). Report of this species from Korea was at first by Nakabo and Jeon (1985), which inhabitated in estuary of Kum River.

8. Repomucenus sagitta (Pallas), 1770
(Korean name: Cham – jugok – yang – tae)

Fig. 7. Repomucenus sagitta (Pallas). male. 71.4 mm SL.
A. Lateral view. B. Lefy preopercular spine. C. First dorsal fin of female.


Callionymus maedonaldi Ogilby, 1911: 56–58, pl. 6, fig. 2 – McCulloch, 1926: 205, fig.


*Callionymus sagittata* Here, 1933: 5 (Sanadakan/North Borneo).

*Callionymus serrato-spinosus* Gray, 1835: pl. 90, figs. 3, 3a, 3b (India).


**Description**: D. V IV 9; A. 9; P1. i +18; P2. I . 5 ; C. i +7 + ii.

Body elongate and depressed. Head depressed. Eye moderately large. Interorbital space moderate. Branchial opening dorsal in position and small. Preopercular spine somewhat long with an antrorse process at base and 3–4 upward processes on inner side, its posterior tip upcurved (formula: 1 3 4 1). Cephalic lateral line system well developed. Infraoral canal extending beyond anterior part of eye, with an antrorse short branch and 4 downward branches. Postocular commissure connected with preoperculomandibular canal, dorsal part of preoperculomandibular canal with an antrorse short branch and two retrorse (short and long) branches. Lateral line extending beyond caudal peduncle and reaching near distal tip of median caudal fin ray. The both lateral line interconnected by a transverse commissure across dorsal surface of caudal peduncle. First dorsal fin very small. Second dorsal fin horizontal. Second dorsal and anal fin unbranched distally except branches of last ray divided at base. Pectoral fin reaching near 2nd anal ray and ven-
tral fin not reaching first anal ray when laid back.

**Color in 10% formalin** : Dorsal surface of head and body brown with numerous small white spots and many dark small spots. Head and body ventrally whitish. First dorsal fin black or blackish in females, and pale blackish with small spots in males. Second dorsal fin almost transparent in females, but with some small blackish spots in males. Anal fin transparent with dark spots.

**Sexual dimorphism** : Males have a longer urogenital papilla than females, and a different color pattern of the first dorsal fin in both sexes.

**Distribution** : South-western Sea of Korea, India, Singapore, Java, Thailand, Borneo, Hong Kong and South China.

**Remarks** : Nakabo, Jeon and Li (1991) reported as the new record from Yellow Sea of Korea. Also here they described that *Repomucenus donaldi* is a junior synonym of *R. sagitta*.

**9. Repomucenus leucopoecilus** (Fricke and Lee), 1993

(Korean name : Hwen - jom - yang - tae)

![Fish Illustration](image)

Fig. 8. *Repomucenus leucopoecilus* (Fricke and Lee), male, 84.1 mm SL.
A. Lateral view B. Left preopercular spine. C. First dorsal fin of female.


Description: D, 9–9; A, 9; P₁, 18–19+1; P₂, 1, 5; C, 5+5.

Body elongate and strongly depressed. Head strongly depressed. Branchial open in dorsal position. Occipital region smooth. Preopercular spine with an upcurved main tip, a straight or slightly convex ventral margin, an antrorse spine at its base and three to four curved points at its inner side (formula: 1 \( \frac{3}{4} \) 1).

Urogenital papilla elongate in the males, but shorter in the females. Both lateral line reaching from preorbital region to mid of third branched caudal fin ray, with an interconnected canal by transverse commissure across dorsal surface of caudal peduncle. Infraorbital canal well developed, with an antrorse short branch and three short branches below canal.

First dorsal fin lower than second dorsal fin, without filaments. Distal margin of second dorsal fin straight. Anal fin beginning on a vertical through second ray of second dorsal fin. Pectoral fin length reaching back to third anal fin ray base. Pelvic fin reaching to urogenital papilla when laid back.


Sexual dimorphism: Males have a slightly higher first dorsal fin than females with a different color pattern. longer last rays of pattern, and a longer urogenital papilla.

Distribution: Yelow Sea of Korea.

Remarks: Repomucenus leucopoeiclus was reported by Fricke and Lee(1993) from the Yellow Sea of Korea. R. leucopoeiclus showed the different characters in the caudal fin formula, number of dorsal sines, high between first and second dorsal fin, and length of first spine when compared with two closely allied species. Repomucenus planus and Repomucenus olicos. This is closest to Repomucenus sagitala, but sharply different in caudal fin formula.

10. Repomucenus koreanus Nakabo, Jeon and Li, 1987
(Korean name: Cham-tot-yang-tae)

Repomucenus koreanus Nakabo, Jeon and Li, 1987: 286–290, figs. 1–2, tab. 1
(type locality: Ansan-shi/Korea).

Callionymus richardsoni (not of Bleeker): Li, 1955: 184, fig. 117(Quingdao).

Materials examined: BKNU 77 (1), 90.7 mm SL, Kyongdo-Kanghwa-gun hwado-
Synopsis of Dragonet Fish, Family Callionymidae (Pisces, Perciformes) from Korea

Fig. 9. *Repomucenus koreanus* Nakabo, Jeon and Li, male, 112.7 mm SL.

A. Lateral view B. Left preopercular spine. C. First dorsal fin of female.


**Description**: D. V - 10 ; A. 10 ; P₁. i + 18 ; P₂. I. 5 ; C. i + 7 + ii.

Body elongate and depressed. Head depressed. First dorsal fin lower than second dorsal fin. Spines of first dorsal fin are not long and not filamentous, and first dorsal fin small in both sexes, but a little higher in males than in females. In second dorsal fin of males, posterior part becoming higher than anterior part in adult, but anterior part higher than posterior part in females. Preopercular spine length short, with two upward processes on inner side(formula : $1 - \frac{2}{1}$). Infraorbital canal extending to preorbital region with an antrorse branch and three downward short branches below infraorbital canal. Urogenital papilla elongate in the males, but short in females. Lateral line reaching from eye to end of third of fourth branched caudal fin ray. The lines of both sides are interconnected by a transverse branch across on the dorsal surface of caudal peduncle.
Pectoral fin rounded, second dorsal fin not neachin first anal ray. Pelvic fin rounded, second dorsal fin rays unbranched except the last one. Caudal fin rounded in both sexes, 4–5 median caudal fin frays elongate and filamentous in males.

**Color in 10% formalin**: Head and body surface dark brown or blackish, with 5–6 darkish transverse blotches and many whitish small circle spots above. Ventral part white, lateral side of body with a longitudinal dark line in adults. First dorsal fin slightly dusky with an oblong white mark of each membrane. Second dorsal fin faint dark with 3–4 darker lines and 2–3 white lines on each membrane in males. Upper part of pectoral fin with many small dark spots. Pelvic fin dark brown in males. Anal fin uniformly blackish brown or black in males and white line near distal margin.

**Sexual dimorphism**: Males have a second dorsal fin with a last ray which is longer than that of first ray, but those of females is opposite to the former. In the males, a longer urogenital papilla and the different color of anal fin and large size of first dorsal fin than females.

**Distribution**: Yellow Sea of Korea.

**Remarks**: Nakabo, Jeon and Li (1987) reported at first that *Reopmuconus koreanus* is endemic species to the coast of Yellow Sea, and it dose not occur in adjacent waters. *R. koreanus* is closely related to *R. valenciennesii* (Temminck et Schlegel) and *R. lunatus* (Temminck et Schlegel) in having the same pattern of the cephalic lateral line system (Nakabo et al., 1987) but features of first dorsal fin were different.

**11. Reopmuconus lunatus** (Temminck and Schlegel), 1845

(Korean name: Dot-yang-tae)

Fig. 10. *Repomucenus lunatus* (Temminck and Schlegel), male. 153.1 mm SL.
A. Lateral view. B. Left preopercular spine. C. First dorsal fin of female.


*Repomucenus lunatus* : Nakabo, 1982: 81 (listed) ; 1983: 244-246, fig. 23 (Japan).

*Callionymus inframundus* Gill, 1860: 129 (Japan) - Bleeker, 1879: 18 (Japan).


**Description**: D. IV-9 ; A. 9 ; P₁. i +16-20 ; P₂. 1 , 5 ; C. i +7+ ii.

Body elongate and depressed. Head depressed. Preopercular spine with a relatively long and broad upcurved main tip, two or three upward processes on inner side, posterior end slightly curved upward (formula : 1-3 2)

Infraorbital canal extending to preorbital region with an antorose short branch near ventroposterior edge of eye and three downward branches below eye. Urogenital papilla elongate in the males, but small in the females. Lateral line reaching from eye to end of second or third branched caudal fin ray. The lines of the both sides are interconnected by transverse branch cross the dorsal surface of caudal peduncle. First dorsal spine elongate and filamentous in males, but not in females and young males. Pectoral fin reaching 2nd anal ray.

-23-
**Color in 10% formalin**: Head and body surface deep brownish or blackish, ventrally lighter. Sides of body with large dark blotches and small dark spots. First dorsal fin light in males, with a large ocellated black blotch on the fourth membrane. Anal fin dark blackish in males, lower part of caudal fin with a broad horizontal dark bar. Pectoral and pelvic fins translucent or with small dark spots.

**Sexual dimorphism**: Males have a first dorsal fin with a first longer filamentous spine. a longer urogenital papilla but short in females. the different color and band patterns of first dorsal fin and anal fin in both sexes, respectively.

**Distribution**: South Sea of Korea, Coasts of Japan, Taiwan, China.

**Remarks**: *Callionymus lunatus* was described by Günther (1888) based on the specimens, *Callionymus calcaratus*, from Australia. The species was recorded again by Günther (1980) from the Inland Sea of Japan, but this record was based on *Callionymus valenciennei (= Repomucenus valenciennei)*. First record of *R. lunatus* from Korea was described by Chyung (1954).

### 12. *Repomucenus valenciennei* (Temminck and Schlegel), 1845

*(Korean name: Sil-yang-tae)*

Fig. 11. *Repomucenus valenciennei* (Temminck and Schlegel). male, 98.7 mm SL.
A. Lateral view B. Left preopercular spine. C. First dorsal fin of female.
Synopsis of Dragonet Fish, Family Callionymidae (Pisces, Perciformes) from Korea


*Callionymus lunatus* (non Temminck & Schlegel, 1850) : Regan, 1905: 24–25 (Inland Sea).

*Callionymus richardsoni* (non Bleeker) : Okada, 1955: 403, fig. 362 (Japan).


**Description** : D. 11–9; A. 9; P. 1, 15–18; P. 1, 5; C. 1, 1.

Body elongate and depressed. Head depressed. Preopercular spine short with an up-curved main tip, a smooth and almost straight ventral margin, with 2–3 upward processes on the inner side (formula: 1 2–2 3 1). Infraorbital canal extending to preorbital region, with an antorse short branch near ventroposterior edge of eye to end of fourth branched caudal fin ray. The lines of the both side are interconnected by a commis-
sure each cross the occipital region and across the dorsal surface of the caudal peduncle. First dorsal fin higher in male, spines filamentous, first and fourth spines longest, but lower or short filaments in female. Caudal fin rays filamentous in males, but not in females.

**Color in 10% formalin**: Head and body surface brown and blackish, with white spots, sides of usually with a row of dark gray. When color in life, yellow, goldish and light blue disappeared. Floor of mouth transparent. Eye dark gray, first dorsal fin with irregular darkish spots and distal margin blackish in males, in the females with a pectoral fin translucent. Pelvic fin spotted with dark, large black mark on the third membrane. Second dorsal fin with three rows of dark spots and with irregular small blackish spots.

**Distribution**: South–western Sea of Korea, Japan, South China Sea.

**Sexual dimorphism**: These species in males have a different color pattern of the first dorsal and anal fins, a higher than those of females with different spine proportions and much longer filaments, a longer last ray of the second dorsal fin, a longer caudal fin with filaments, a longer urogenital papilla.

**Remarks**: I think, Jordan and Metz (1913) had confused between *Repomucenus valenciennei* and *R. richardsoni* in identification of two species. Chyung (1977) also had reported that *Callionymus flagris* was confirmed in Pusan. But *R. valenciennei* and *C. flagris* is were considered to be same species each other in various characters and physiognomy. On the other hand, Frielle (1983) described that the result of comparison between the lectotype of *C. valenciennei* and the type material of *C. flagris* is resulted in a synonymization of these two nominal species, and the former is a senior synonym of the latter. At one time, Günther (1880) misidentified specimen as *C. lunatus*. I have examined the materials and found that *C. flagris* is belong to *Repomucenus valenciennei* as the same species.

13. *Repomucenus beniteguri* (Jordan and Snyder), 1900

(Korean name: Nal-tot-yong-tae)

Fig. 12. Repmucenus beniteguri (Jordan and Syder), male, 150.0 mm SL.

A. Lateral view. B. Left preopercular spine. C. First dorsal fin of female.


Callionymus lunatus (not of Temminck and Schlegel) – Schmidt and Lindberg. 1930: 1150 (Tsuruga).


Description: D. Ⅳ–9; A. 9; P₁. i +18–20; P₂. 1, 5; C. i +7+ii.

Body elongate and depressed. Head depressed. Preopercular spine short, with 3 processes upcurved on inner side. (formula: 1 −\( \frac{3}{4} \)−1). Occipital region smooth. Infraorbital canal extending to anterior part of eye, with a downward branch near ventroposterior part and an antrorse caudal fin ray. Both lateral lines connected by transverse branches across the occipital region and across the dorsal surface of the caudal peduncle. First and second dorsal spine long filamentous in males, but short in females. Second dor-
sal fin distally straight. Ray unbranched except last ray which is divided at its base. Pectoral fin reaching to second anal ray base when laid back.

**Color in 10% formalin**: Head and body surface (except ventral portion) brown with many small white circles and darker spots. Ventral surface of body slightly brown. Second dorsal fin with many white small spots. 2 rows of dark spots and blackish band on distal margin. Anal fin blackish brown with many oblique white lines. Upper part of caudal fin with many dark spots. lower part blackish brown.

**Sexual dimorphism**: Males have longer urogenital papilla, long filamentous spines in the first, and second dorsal spine of first dorsal fin, a different color pattern of the first dorsal and anal fin between males and females.

**Distribution**: South-western Sea of Korea, Japan, China.

**Remarks**: *Repomucenus beniteguri* is very closely related to *R. ornatipinnis* in its exomorphological features, the nearest related species. But different characters between *R. beniteguri* and *R. ornatipinnis* were showed in the black spots of second dorsal fin and color pattern of anal fin.

**14. Repomucenus ornatipinnis** (Regan), 1905

*(Korean name: Kkot-tot-yang-tae)*

![Diagram of Repomucenus ornatipinnis](image)

Fig. 13. *Repomucenus ornatipinnis* (Regan), male, 138.3 mm SL. 
A. Lateral view B. Left preopercular spine. C. First dorsal fin of female.
Synopsis of Dragonet Fish. Family Callionymidae (Pisces, Perciformes) from Korea


**Description**: D. IV-9: A. 9: P₁. i+18-21: P₂. 1: 5: C. i+7+i.

Body elongate and depressed. Head depressed. Interorbital space very narrow and somewhat concave. Preopercular spine short, with an antrorse process at base, 2-4 upward processes on inner side(formula: 1-3-4-1), posterior end slightly upcurved. Infraciliary canal extending to anterior part of eye with a downward branch near ventroposterior part and an antrorse short branch at posterior edge. In males, first and second dorsal spines long filamentous, but not in females. Pectoral fin almost reaching second anal ray. Pelvic fin short, not reaching first anal ray. Distal margin of second dorsal fin straight or slightly concave, rays unbranched except last ray.

**Color in 10% formalin**: Body marbled brown above like the surface of a sandy bottom, ventral parts of body and thorax whitish, back of body with many white spots and blotches, side of body with a row of dark blotches. First dorsal fin grayish in the males.
with many white spots and with blackish blotches. In the females, first and second membranes whitish, third and fourth membranes blackish. Second dorsal fin translucent, with a horizontal row of black spots and with some irregular small black spots distally and with whitish blotches on the membranes. Anal fin whitish.

**Sexual dimorphism**: Males have a longer urogenital papilla, longer first and second spine of first dorsal fin. First dorsal fin with a different color pattern and the different head color pattern between male and female.

**Distribution**: Coast of Korea, Japan, East China.

**Remarks**: This species is closely related to *Repomucenus beniteguri* in its general physionomy. *R. ornatiopinnis*, however, differed from *R. beniteguri* very much in the second dorsal fin with a horizontal row of black spots and with whitish anal fin.

**Classification and distribution of family Callionymidae in Korea**

The family Callionymidae was studied by Bleeker(1879), Jordan and Fowler(1914), Nin-ni(1934), Fowler(1914). Ochiai et al.(1955), Schultz(1960), Johnson(1971), Fricke(1980, 1983) and Nakabo(1882, 1983). Gill(1860) was the first to divide *Callionymus* into three genera, *Callionymus, Synchiropus* and *Dactylopus*.

The first callionymid fishes from the Indo-Pacific area were described by Pallas(1770): *Callionymus sagitta* and *C. ocellatus* from Amboina. Houttuyn(1782) recorded a new species from Japan, *Callionymus japonicus*, and Bloch and Schneider(1801) from India, *Callionymus orientalis*.

First report of Callionymidae from Korea was described by Jordan and Metz(1913). After that, Mori and Uchida(1934) described three species in the list of fish fauna from Korea. Mori(1952) listed the 7 species and 3 genera. Recently 8 species from Korea were reported by Chyung(1954, 1977). In addition to Chyung's reports(1977), Nakabo and Jeon(1985, 1986a, b), Nakabo, Jeon and Li(1987, 1991) added five species as four new records and a new species from Korea. Recently Fricke and Lee(1993) reported a new species, *Callionymus leucopoeiclus*, from Yellow Sea of Korea.

A great number of species of family Callionymidae were redescribed by Fricke(1983) from various parts of the Indo-Pacific including the larger number of new species, with their distribution. Also Nakabo(1982, 1983) rechecked the species and genera of the family Callionymidae. Here Nakabo(1982, 1983) mentioned that almost all the members of the genus *Repomucenus* have been included in genus *Callionymus* the reported by Fricke (1980, 1982, 1983) from Indo-Pacific. And he described that *Repomucenus* differ from *Callionymus* in the several characters as the form of the preopercular spine, the reaching pattern of the infraorbital canal and the connected branch of both lateral line on the surface.
of caudal peduncle. And then Nakabo(1982) strongly emphasized that genus *Repomucenus* and *Callionymus* should be separated, respectively. But Fricke(1983) classified the *Repomucenus* described by Nakabo(1982, 1983) into *Callionymus* based on the characters of the soft dorsal fin ray unbranched(except for last ray), gill opening dorsal in position and snout usually longer than eye diameter. Nakabo(1982), however, classified into genus *Repomucenus* based on the patterns and position of infraorbital canal extending below eye, commisure line of both lateral line on the surface of the caudal peduncle and the form of preopercular spine, as the different characters against genus *Callionymus*. It appears that the criteria of Nakabo(1982) are more reasonable and more convenient method for classification of family Callionymidae. So family Callionymidae from Korea was classified into fourteen species and four genera according to the method of Nakabo(1982, 1983). Among them, genus *Repomucenus* including a numbers of species had eleven species, and other three genera, *Calliurichthys*, *Synchirops* and *Eleutherochir*, have only one species from Korea, respectively.

Seven species, previously reported as the family Callionymidae from Korea, were transferred into different generic name or specific name: *Callionymus richardsonii* into *Repomucenus curvicornis*: *Callionymus lunatus* into *Repomucenus lunatus*: *Callionymus kitaharai* into *Repomucenus hguenini*: *Callionymus flagiris* into *Repomucenus valencienni*: *Callionymus altivelis* into *Synchirops altivelis*: *Callionymus japonicus* into *Calliurichthys japonicus*: *Draculo mirabilis* into *Eleutherochir mirabilis*.

Table 3. Distribution of family Callionymidae in Korea and other Asia seas

<table>
<thead>
<tr>
<th>Species</th>
<th>Korea</th>
<th>Japan*</th>
<th>China**</th>
<th>Taipei***</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yellow Sea</td>
<td>South Sea</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Repomucenus curvicornis</em></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><em>Repomucenus lunatus</em></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><em>Repomucenus hguenini</em></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><em>Repomucenus valencienni</em></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><em>Repomucenus beniteguri</em></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><em>Repomucenus ornatiopinnis</em></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><em>Repomucenus sagitta</em></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><em>Repomucenus oldus</em></td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td><em>Repomucenus koreanus</em></td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Repomucenus sp.</em></td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Repomucenus leucopecilus</em></td>
<td>+</td>
<td></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td><em>Synchirops altivelis</em></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><em>Eleutherochir mirabilis</em></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td><em>Calliurichthys japonicus</em></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

** refered from Cheng and Zheng(1987)
*** refered from Shen(1984, 1990)
Two species reported by Chyung (1977), *Callionymus kitaharai* and *Callionymus doryssus*, were identified into the same species each other. Nakabo (1983) reported that *Callionymus doryssus* is a junior synonym of *Repomucenus haguenini*. On the other hand, *Callionymus flagiris* was appropriated to the synonym of *Repomucenus valenciennae* as the same species each other. *Repomucenus* sp. was confirmed to live in the Yellow Sea of Korea during this study. This species shows different characters from other related species in many aspects: caudal fin formula, length between first and last dorsal ray of second dorsal fin, length of filamentous dorsal spine, respectively.

The cephalic lateral line system of family Callionymidae from Korea, especially according to the length of infraorbital canal and the form of transverse line on the surface of caudal peduncle, can be separated into three types. A simple infraorbital canal without any short branch, not reaching to middle part of eye and without across line on the dorsal surface of caudal peduncle. Type A, is seen in *Synchiropus altivelis* (Fig. 14A). The branched infraorbital canal with two short branches, but not reaching to middle part of eye and with two across line on the dorsal surface of caudal peduncle. Type B, is seen in *Calliurichthys japonicus* (Fig. 14B). And well developed branched infraorbital canal with one to four downward short branches reaching to preorbital region and with short cross in the across line on the dorsal surface of caudal peduncle. Type C, is seen in *Repomucenus beniteguri, R. ornatipinnis, R. curvocornis, Repomucenus valenciennae, R. olidus, R. sagitta, R. leucopterus, R. lunatus, R. koreanus* and *Repomucenus* sp. (Fig. 14C). Most species of family Callionymidae are a group of benthic marine fishes (except some species). Most callionymid fishes live on sand or mud bottoms of water depths down to about 900 meters (Fricke, 1983).

In this study, 14 species and 4 genera of the family Callionymidae including *Repomucenus* sp. from Korea are rechecked. The species of *Calliurichthys japonicus*, *Repomucenus lunatus, Synchiropus altivelis, Repomucenus curvicornis, R. haguenini* and *R. valenciennae* are distributed in the South Sea, while the other species of the family are distributed in
the Yellow Sea of Korea. The callionymid fishes living in the Yellow Sea and the South Sea of Korea are also distributed in Japan, China and Taipei (Table 4). But Nakabo, Jeon and Li (1987) reported that *Repomucenus koreanus* is endemic species to the Korean coasts of the Yellow Sea, and does not occur in other waters.

**References**


Bleeker, P. 1860. Zesde bijdrage tot de kennis der vischfauna van Japan. Acta Societatis Scien-
tiarm Indo-Neerlandicæ, 8: 1 – 140.*


Bloch, M. E. and J. G. Scheider. 1801. Systema Ichthyologiae iconobus cxilllustratum. Post obi-
tum auctoris opus inchoatum absoluit. correxit, interpolavit Jo. Cottlob Schneider. Saxo. Beroini, 1X+584 pp.*


Böhlke, J. 1953. A catalogue of the type specimens of recent fishes in the Natural History Muse-


Chang, C. L. 1966. The fishes of the Yellow Sea : investigation of fishes from Pohai Strait.
Tsinhtao. 1966(3rd ed)*.
China. pp. 402 - 408.
Cheng, T. H. 1937. A revised Check list of fishes heretofore recorded from Fikien Province. Ling-
Chu, Y. T. 1931. Idex piscium Sinensium. Biological Bull. of St. John. s Univ.. Shanghai, (1) : 1 -
290.
1184 pp.
Chyung, M. K 1954. Korean fishes. Dept. of Commerce and Industry Repub. of Korea. pp. 353 -
356.
Fowler, H. W. 1941. New fishes of the family Callionymidae, mostly Philippins obtained by the
United States Bureau of Fisheries Steamer "Albatross". Proc. U.S. Nat. Mus.. 90(3016) : 1 -
31.*
12(1 - 2) : 67 - 97.
Franz. V. 1910. Die Japanischen Knochenfische der Sammlungen Haberer und Doflein. Beitr. Na-
1 : 1 - 135.*
Fricke, R. 1980. Neue Fundorte und noch nicht beschriebene Geschlechtsunterschiede einiger Ar-
ten der Gattung Callionymus (Pisces, Perciformes, Callionymidae), mit Bemerkungen zur System-
Fricke, R. 1981. On a new species of the family Callionymidae (Pisces, Perciformes, Calli-
ionymoidei), Callionymus stigmatisporus sp. nov. from Mozambique. J. Nat. Hist., 1981, 15 :
161 - 167.
Fricke, R. 1982. New species of Callionymus, with a revision of the varigatus-group of that genus
Fricke, R. 1983. Revision of the Indo-Pacific genera and species of the dragonet family
Fricke, R. 1984. Status of the names Callionymus sagitta Pallas, 1770 and Callionymus filamen-
tous Valenciennes, 1837(Teleostei, Callionymidae), and request to make an exception from Ar-
ticle 75c(4) and (5) for designating a neotype for Callionymus sagitta Pallas. 1770. Z. N. (S).
Fricke, R. and C. L. Lee. 1993. Callionymus leucopoecilus, a new dragonet(Callionymidae) from
130.*
Synopsis of Dragonet Fish. Family Callionymidae (Pisces, Perciformes) from Korea

Günther. A. 1864. Description of a new species of Callionymus from Australia. Annals and Maga-
azine of Natural history. (3) 14 : 197 – 198.
Johnson. C. R. 1971. Revision of the callionymid fishes referable to the genus Callionymus from Aus
tiones zoologicae Japonicae, 3(2 – 3) : 1 – 159.
Kamohara. T. 1938. On the offshore bottom-fishes of prov. Tosa, Shokoku, Japan. Maruzen. To-
yo. 86 pp.*
Chung - Lyul Lee and Ik Soo Kim


-36-
Richardson, J. 1844. Ichthyology, pp. 50–150. In the zoology of the voyage of H.M.S. "Sulphur", under the command of captain Sir Edward Belcher, during the years 1836–42.
Schultz, L. P. and L. P. Woods. 1948. A new name for Synchiropus altivelis Regan, with a key to
Synopsis of Dragonet Fish. Family Callionymidae (Pisces, Perciformes) from Korea

pp. 113–172.


(*) : can't cited directly)

우리나라에서 지금까지 기록된 동물군에서 Callionymus kitaharai와 C. doryssus는 같은 종으로서 R. huenuli의 synonym에 해당하였고, 그 외에도 C. flagiris는 R. valenciennei에, Callionymus richardsoni는 Repomucenus curvicornis에, Callionymus japonicus는 Calliurichthys japonicus에, Callionymus altivelis는 Synchirpus altivelis로, Draculo mirabilis는 Eleucherochir mirabilis로, Callionymus lunatus는 Repomucenus lunatus로 전해 또는 학명 기재가 정정되었다.

우리나라에서 주로 남해에 많이 분포하고 있는 종은 S. altivelis, Calliurichthys japonicus, Repomucenus lunatus, R. curvicornis, R. huenuli, R. valenciennei 등이고, 그 외 종은 대부분 서해에 다양 분포하고 있었다.