

# First Record of *Icelinus japonicus* (Scorpaeniformes: Cottidae) from Korea

by Byung-Jik Kim

National Institute of Biological Resources, Incheon 404-170, Korea

**ABSTRACT** Three specimens of a small sculpin, *Icelinus japonicus*, were collected from the mid-western coastal waters of the Korean Peninsula firstly. The species is characterized by having two ctenoid scale rows extending posterior end of the second dorsal fin along the dorso-lateral surface of the body, pelvic fin with a spine and two soft rays, and teeth on vomer and palatines. A new Korean name, "Du-jul-bil-neul-hoes-dae", is proposed for the species.

**Key words** : *Icelinus japonicus*, new Korean record, Cottidae, Yellow Sea

The cottid genus *Icelinus* Jordan, 1885 is characterized by having two ctenoid scale rows beneath the bases of dorsal fins, pelvic fin with one spine and two soft rays, and teeth on vomer and palatines (Jordan, 1885; Bolin, 1936). The genus currently contains 11 valid species as follows: *I. borealis* Gilbert, 1896, *I. burchami* Evermann and Goldsborough, 1907, *I. cavifrons* Gilbert, 1890, *I. filamentosus* Gilbert, 1890, *I. fimbriatus* Gilbert, 1890, *I. japonicus* Yabe, Tsumura and Katayama, 1980, *I. limbaughi* Rosenblatt and Smith, 2004, *I. oculatus* Gilbert 1890, *I. pietschi* Yabe, Soma and Amaoka, 2001, *I. quadriseriatus* Lockington, 1880, and *I. tenuis* Gilbert, 1890 (Yabe *et al.*, 2001; Rosenblatt and Smith, 2004). Among them, only two species of *I. japonicus* and *I. pietschi* have been reported from the Western North Pacific, whereas the remaining species from the Eastern North Pacific.

Recently three specimens showing the characteristics of the genus *Icelinus* were collected from a shallow rocky tidal pool, being located at the mid-western coast of the Korean Peninsula. They were subsequently identified as *I. japonicus* that have been known only from Japanese waters to date (Yabe *et al.*, 1980; Nakabo, 2002). Near tidal pool collected *I. japonicus* in the present study, *Porocottus leptosomus* Muto, Choi and Yabe, 2002 has been discovered firstly to science, although the species distributes in all coasts of the Korean Peninsula as well as in Shandong Peninsula, China (Muto *et al.*, 2002; Choi and Yang, 2008; Choi *et al.*, 2008; pers. exam.).

In the present study, *I. japonicus* was described as the

first record not only from Korea but also from Yellow Sea based on these three specimens. Counts and measurements followed those of Hubbs and Lagler (1964) except the last two rays of the dorsal and anal fins were considered separate one. Voucher specimens are deposited in the National Institute of Biological Resources (NIBR-P), Korea.

## *Icelinus japonicus* Yabe, Tsumura and Katayama, 1980

(New Korean name: Du-jul-bi-neul-hoes-dae)  
(Figs. 1-2; Table 1)

*Icelinus japonicus* Yabe, Tsumura and Katayama 1980: 106, figs. 1-2 (type locality: Mano Bay, off Sado Island, Niigata Prefecture, Japan); Nakabo, 2002: 636; Rosenblatt and Smith, 2004: 560.

**Materials examined.** NIBR-P15836, 30.0~33.8 mm SL, 3 specimens, Mohang-ri, Sowon-myeon, Taean-gun, Chungnam-do, Korea, 9 January 2008, collected by B. J. Kim, hand net.

**Description.** Dorsal fin rays X, 12~13; anal fin rays 10~11; pectoral fin rays 15~16; pelvic fin rays I, 2; branched caudal fin rays 9; lateral line scales 33~34+1; scales on dorsal rows 50~53 (50~55 on right side). Proportion as % standard length (SL): Body depth at pelvic fin origin 19.7~24.3 (mean 22.6); head length 41.3~42.9 (41.9); snout to 1st dorsal origin 36.1~37.3 (36.7); snout to pelvic fin origin 28.7~31.4 (30.0); snout to anus 55.0~55.6 (55.3); snout to anal fin origin 58.3~60.7 (59.8); caudal peduncle length 16.3~19.2 (17.9); caudal peduncle depth 8.0~8.9 (8.5); snout length 11.2~11.8

\*Corresponding author: Byung-Jik Kim Tel: 82-32-590-7360,  
Fax: 82-32-590-7250, E-mail: kimbyungjik@gmail.com

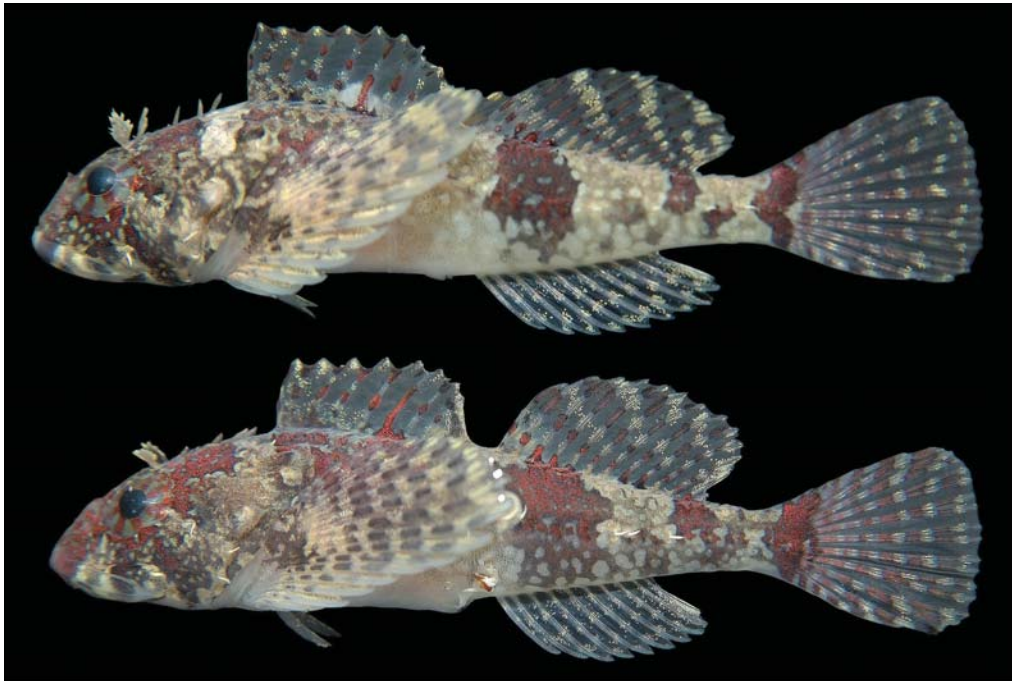


Fig. 1. Male (above, 33.0 mm SL) and female (below, 33.8 mm SL) of *Icelinus japonicus*, NIBR-P15836, collected from Tae'an, Korea.

(11.6); orbital diameter 12.1 ~ 13.3 (12.7); upper jaw length 19.7 ~ 21.7 (20.7); postorbital length 20.3 ~ 21.5 (20.9); first dorsal fin base 21.3 ~ 25.5 (24.0); second dorsal fin base 25.1 ~ 27.6 (26.4); pectoral fin base 14.7 ~ 16.4 (15.6); anal fin base 19.5 ~ 24.7 (22.3); pectoral fin length 36.1 ~ 37.3 (36.7); pelvic fin length 11.3 ~ 12.1 (11.7).

Body robust, slightly compressed posteriorly. Head relatively large and slightly depressed; snout short and steep. Mouth terminal; upper jaw slightly longer than lower jaw, its posterior tip reaching a vertical at posterior margin of orbit; teeth on both jaws small conical in bands; small teeth on vomer and palatines. Nasal spine stout. Eye relatively large; interorbital space narrow and slightly concave. No spines on dorsal surface of head. Four preopercular spines, dorsalmost spine longest and slightly bifid or simple, other three spines short and simple. Gill membranes united, free from isthmus. First dorsal fin spinous without filamentous, its origin above gill opening; second dorsal fin separated from first dorsal fin by short distance. Basal length of second dorsal fin slightly longer than that of anal fin. Pectoral fin large, its posterior tip far extending a vertical at origin of second dorsal fin. Pelvic fin small, inserted slightly after origin of lowermost pectoral fin ray. Caudal fin round, all rays unbranched, except for inner nine rays. Body scaleless except for lateral line scales from above opercular flap to caudal fin base and two dorsal scale rows from below origin of first dorsal fin, extending end of last ray of second dorsal fin to near caudal fin base along dorsal profile; no scales on pectoral axilla. A large palmate flat cirrus at

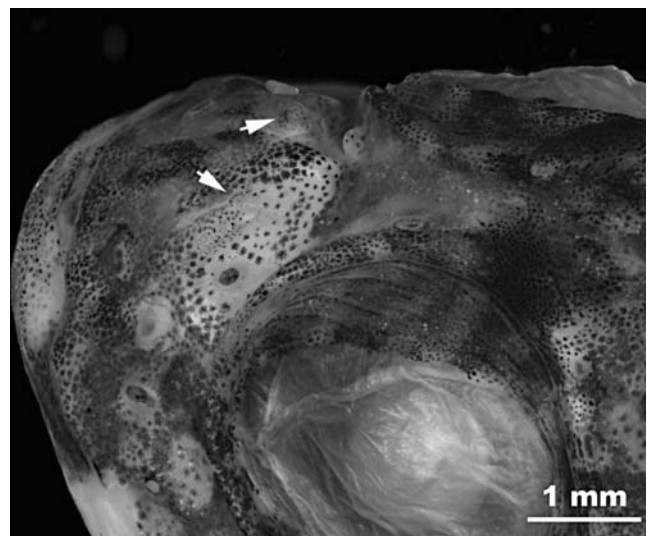


Fig. 2. Nasal cirri (white arrows) of *Icelinus japonicus*, NIBR-P15836 (33.0 mm SL) collected from Korea (Photo: Jung-Hyun An).

upper margin of orbit; a short slender cirrus on inner or outer base of nasal spine present or absent two to three long slender cirrus on frontoparietal ridge; a short cirri on posttemporal, opercular flap, and preopercular margin, on suborbital stay, and posterior margin of maxilla; five to nine (six to 11 on right side) slender cirri on lateral line scales.

*Color when fresh.* Head reddish. Body pale yellowish

Table 1. Comparison of counts and proportional measurements of *Icelinus japonicus*

	Present study	Types
Standard length (SL, mm)	30.0 ~ 33.8 (n=3)	37.2 ~ 48.4 (n=3)
Counts		
Dorsal fin rays	X-12 ~ 13	IX ~ X-12 ~ 13
Anal fin rays	10 ~ 11	10 ~ 11
Pectoral fin rays	15 ~ 16	15 ~ 16
Pelvic fin rays	I, 2	I, 2
Branched caudal fin rays	9	9
Lateral line scales	33 ~ 34+1	33 ~ 34+1
Scales on dorsal scale band	50 ~ 53 / 50 ~ 55	59 ~ 61 / 59 ~ 64
Proportional measurement in SL		
Body depth at pelvic origin	19.7 ~ 24.3 (22.6)	26.0 ~ 26.6 (26.4)
Head length	41.3 ~ 42.9 (41.9)	40.9 ~ 41.9 (41.5)
Snout to spinous dorsal fin origin	36.1 ~ 37.3 (36.7)	36.4 ~ 37.6 (37.0)
Snout to anal fin origin	58.3 ~ 60.7 (59.8)	60.8 ~ 65.9 (63.3)
Snout to pelvic fin origin	28.7 ~ 31.4 (30.0)	29.2 ~ 31.8 (30.8)
Snout to anus	55.0 ~ 55.6 (55.3)	55.7 ~ 61.3 (58.5)
Caudal peduncle length	16.3 ~ 19.2 (17.9)	18.8 ~ 20.1 (19.0)
Caudal peduncle depth	8.0 ~ 8.9 (8.5)	7.2 ~ 8.6 (8.1)
Snout length	11.2 ~ 11.8 (11.6)	11.2 ~ 11.4 (11.3)
Orbit diameter	12.1 ~ 13.3 (12.7)	11.0 ~ 12.4 (11.6)
Upper jaw length	19.7 ~ 21.7 (20.7)	19.9 ~ 20.7 (20.3)
Lower jaw length	20.6 ~ 21.0 (20.8)	18.9 ~ 22.3 (20.6)
Interorbital width	4.1 ~ 5.0 (4.6)	2.9 ~ 3.5 (3.2)
Postorbital length	20.3 ~ 21.5 (20.9)	20.4 ~ 21.7 (20.9)
Longest dorsal fin spine	12.4 ~ 13.7 (12.9)	11.8 ~ 13.0 (12.3)
Longest dorsal fin ray	17.8 ~ 18.8 (18.3)	16.1 ~ 17.5 (16.9)
Longest pectoral fin ray	36.1 ~ 37.3 (36.7)	29.9 ~ 33.1 (31.3)
Longest pelvic fin ray	11.3 ~ 12.1 (11.7)	7.6 ~ 13.7 (10.1)
Longest anal fin ray	16.0 ~ 16.7 (16.2)	12.9 ~ 14.6 (13.5)
Spinous dorsal fin base	21.3 ~ 25.5 (24.0)	27.1 ~ 29.2 (27.8)
Soft dorsal fin base	25.1 ~ 27.6 (26.4)	25.0 ~ 27.0 (25.9)
Pectoral fin base	14.7 ~ 16.4 (15.6)	13.8 ~ 16.7 (15.5)
Anal fin base	19.5 ~ 24.7 (22.3)	20.4 ~ 21.5 (21.1)
Number of cirri		
at base of nasal spine	0 ~ 1	0
at upper posterior margin of orbit	1 (palmate)	1 (palmate)
at middle of fronto-parietal ridge	2 ~ 3	2 ~ 3
at posterior end of maxilla	1	1
at suborbital stay	1	1

with four dark reddish irregular blotches. First dorsal fin with four reddish oblique bars and pale yellowish oblique bars; second dorsal fin with four to five oblique bars and pale yellowish oblique bars. Pectoral fin pale yellowish with five to six reddish bands. Anal fin with yellowish horizontal three to four bars. Pelvic fin with only yellowish small dots on distal margin of ray. Caudal fin with five to six reddish and yellowish vertical bands.

**Color after preservation.** Head with irregular dark brown blotches and anterior margin of lower jaw dark, followed by three darkish bands. Body pale brown with four or five irregular dark brown bars on sides of body; belly without dark markings. First and second dorsal fins with three to four and four to five dark oblique bands, respectively. Pectoral fin with three to four dark brown bands. Pelvic fin white without any dark marking. Caudal fin with about five dark bands.

**Distribution.** Known from the Western North Pacific: Mano Bay of Sado Island, off Yamaguchi Prefecture of Inland Sea of Seto, Japan (Yabe *et al.*, 1980; Nakabo, 2002) and Taean, Chungnam-do, Korea (present study).

**Ecological notes.** All the specimens examined in the present study were collected from the small rocky tidal pool with less than 10 cm depth in lower tide in winter season (January).

**Remarks.** The present species is readily assigned to a member of the genus *Icelinus* by having two ctenoid scale rows beneath the dorsal fin base, pelvic fin with a single spine and two soft rays, and teeth on vomer and palatines (Jordan, 1885; Bolin, 1936). From the Western North Pacific, only two species of *I. japonicus* and *I. pietschi* have been recognized to date (Yabe *et al.*, 1980, 2001). The present specimens collected from Korea agreed with *I. japonicus* in most of the meristic characteristics, except

for the smaller number of total scales on dorsal scale rows (50~55 for Korean specimens vs. 59~64 for type specimens) as shown in Table 1. In body proportion, there were also quite differences between them, *i.e.*, the body depth, length of snout to anal fin origin, and basal length of the first dorsal fin of the Korean specimens were deeper or larger than those of the type specimens collected from the Japanese waters, whereas in some measurements including the length of lower jaw, interorbital width, longest dorsal soft ray, longest pectoral ray and longest anal soft ray, the Korean specimens were longer or wider than those of Japanese one. Additionally, there is not any cirrus at the base of nasal spine in *I. japonicus*, whereas I confirmed the two Korean specimens (30.3~33.0 mm SL) have short slender nasal cirrus (Fig. 2). Although there are some differences compared to the type specimens, I identified finally the present specimens collected from Korea as *I. japonicus*. These differences seem to be resulted from geographic variation or from size differences examined. Further examination is needed for clarification of these differences in the future. *I. japonicus* resembles *I. pietschi* known from the Western North Pacific (Tsushima Islands, Hokkaido, and Miyagi Pref., Japan) in having two scale rows below dorsal fin base. As mentioned by Tsuruoka *et al.* (2006), the former species can be easily distinguished from the latter in extending of dorsal scale rows to the end of the last dorsal fin origin (vs. not extending for *I. pietschi*).

**Comparative materials.** *Icelinus japonicus* (3 specimens): HUMZ (Hokkaido University, Laboratory of Marine Zoology, Japan) 75466, paratype of *I. japonicus*, 48.4 mm SL, Seto Inland Sea, off Yashirojima, Yamaguchi Pref., Japan, Feb. 1951, collector unknown; HUMZ 77652, paratype of *I. japonicus*, 37.2 mm SL, off Mano, Sado Island, Niigata Pref., Japan, collection date and collector unknown; HUMZ 79035, holotype of *I. japonicus*, 41.8 mm SL, Mano Bay, Sado Island, Niigata Pref., Japan, 16 February 1978, 3~15 m depth, dredge, collector unknown.

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## 서해 중부연안에서 채집된 독중개과(Cottidae) 한국미기록종, *Icelinus japonicus*

김병직

국립생물자원관

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**요 약** : 충청남도 태안연안 암반조건대에서 채집된 3개체 (체장 30.0~33.8 mm)를 근거로 독중개과 한국미기록종인 *Icelinus japonicus*를 기재·보고한다. 본 종은 등지느러미 하방에 2열의 즐린이 있고, 배지느러미가 1극조 2연조로 이루어져 있으며 서골과 구개골에 이빨이 있는 특징이 있다. 신한국명으로 '두줄비늘횃대'를 제안한다.

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**찾아보기 낱말** : 한국미기록종, *Icelinus japonicus*, 태안, 독중개과