

First Record of a Clingfish, *Lepadichthys frenatus* (Perciformes: Gobiesocidae), from Korea

Byung-Jik Kim*, You-Bong Go¹ and Kazuhiro Nakaya²

Marine and Environmental Research Institute, Cheju National University, 3288 Hamdeok-ri, Jocheon-eup, Bukjeju-gun, Jeju-do 695-814, Korea;

¹Faculty of Ocean Science, College of Ocean Science, Cheju National University, 1, Ara 1-dong, Jeju-si, Jeju-do 690-756, Korea;

²Research Faculty of Fisheries Sciences, Hokkaido University, 3-1-1, Minato-cho, Hakodate, Hokkaido 041-8611, Japan

A single specimen (59.3 mm in SL) of the family Gobiesocidae was collected from the northern coast of Jeju Island, Korea. It was identified as *Lepadichthys frenatus* by its having dorsal and anal fins with 17 and 13 rays, respectively, both fins connected to the caudal fin, and a reddish-brown body color. We describe the specimen as the first record from Korea, and propose a new Korean name “keun-ip-hak-chi” for the species.

Key words : Gobiesocidae, *Lepadichthys frenatus*, Jeju Island, new Korean record

The clingfishes (family Gobiesocidae), comprising about 36 genera with about 120 species, are small teleostean fishes distributed in most of the warm-temperate and tropical coasts throughout the world, and are characterized by having pelvic fins modified into a thoracic sucking disc for adhering to the substrate (Briggs, 1955; Allen, 1984; Nelson, 1994). The gobiesocid genus *Lepadichthys* Waite, 1904, consisting of about 10 species in the world (The Catalog of Fishes On-line: www.calacademy.org), is characterized by having a relatively short and broad snout, a small sucking disc, and a row of conical teeth on lower jaw (Briggs, 1955).

During an investigation of coastal fishes of Jeju Island, Korea, we collected a single specimen belonging to *Lepadichthys* from the northern coast of the island. It was identified as *L. frenatus* Waite, 1904, which has not been reported from Korea until now. The species has been known from the Western Pacific Ocean, including Southern Japan, Australia, Lord Howe Island

and Norfolk Island. In the present study, we describe *L. frenatus* as the first record from Korea based on the specimen.

Counts and measurements follow Hubbs and Lagler (1958), and median fin rays and vertebrae were counted by radiographs. The present specimen was deposited in the Marine and Environmental Research Institute, Cheju National University (MRIC), Korea.

Genus *Lepadichthys* Waite, 1904

(New Korean name: Keun-ip-hak-chi-sok)
Lepadichthys Waite, 1904: (139) 180 (type species: *Lepadichthys frenatus* Waite, 1904).

***Lepadichthys frenatus* Waite, 1904**

(New Korean name: Keun-ip-hak-chi)
(Fig. 1; Table 1)

Lepadichthys frenatus Waite, 1904: 180, pl. 24 (fig. 2) (type locality: Lord Howe Island); Briggs, 1955: 139 (Lord Howe Island; Australia, Japan); Yoshino in Masuda *et al.*, 1984: 342 (Japan) Francis, 1993: 158 (Lord Howe and Norfolk Islands).

*Corresponding author: kimbyungjik@cheju.ac.kr



Fig. 1. *Lepadichthys frenatus*, MRIC 1225, 59.3 mm SL, from Jocheon-eup, Bukjeju-gun, Jeju-do, Korea.

Table 1. Comparison of meristic counts in *Lepadichthys frenatus*

	MRIC 1225	Waite (1904)	Briggs (1955)*	Hayashi and Hayashi (1985)
Total length (mm)	65.5 (n=1)	52.3~53.0 (n=2)	-	-
Standard length	59.3	-	?~52.5 (n=26)	19.4~53.8 (n=31)
Dorsal fin rays	17	16	16 (15~17)	16~17
Anal fin rays	13	13	14 (12~15)	13 (12~14)
Pectoral fin rays	27	29	28 (25~31)	26 (25~27)
Pelvic fin rays	I, 4	I, 4	-	-
Vertebrae	34	34	-	34 (34~35)

*including holotype

Material examined. MRIC 1225, 59.3 mm SL, Sinheung-ri, Jocheon-eup, Bukjeju-gun, Jeju-do, Korea, 2 July, 2003, collected by B. J. Kim, J. H. An, and I. J. Kim.

Description. Dorsal fin rays 17; anal fin rays 13; pectoral fin rays 27; branched caudal fin rays 12; vertebrae 1+20. Proportion as % SL: head length (HL) 34.1; head depth 14.0; head width 23.1; body depth 20.9; body width 19.1; snout length 10.5; eye diameter 5.7; interorbital width 8.4; snout to dorsal fin origin 66.4; snout to anal fin origin 72.2; snout to anus 61.4; snout to disc 25.6; dorsal fin base 22.7; anal fin base 17.2; disc length 19.7; disc width 18.9; pectoral fin length 13.5. Proportion as % HL: head depth 41.1; head width 68.7; body depth 61.4; body width 55.9; snout length 30.7; eye diameter 16.8; interorbital width 24.8.

Body slender, depressed anteriorly and compressed posteriorly. Head moderately depressed. Eye rather large, interorbital space broad and slightly convex. Mouth rather elongate, its posterior tip not reaching below to anterior margin of

eye. Anus much closer to origin of anal fin than to posterior margin of ventral disc. Dorsal and anal fins consisting of only unbranched rays, in paired position on posterior part of body, and their posterior ends connected with caudal fin. Ventral disc a single type and connected dorsally to pectoral fin with fin membrane. Many ventral disc papillae on regions both A and B, but region C (*sensu* Briggs, 1955) without papillae. Number of sensory canal openings on head: nasal canal openings 2; postorbital 2; lachrymal 2; preopercular 2; mandibular 0.

Color when fresh. Head and body uniformly reddish brown with yellowish dorsal, anal and caudal fins. A somewhat darkish bar from snout passing backward through eye.

Color after preservation. Head and body uniformly yellowish with a faint brownish bar on posterior region of eye.

Distribution. Known from the Western Pacific Ocean: Southern Japan (Hayashi and Hayashi, 1985), Korea (Jeju Island; present study) to Australia, Lord Howe Island, and Norfolk Island (Briggs, 1955; Francis, 1993).

Remarks. The present specimen agrees well with the original description of *Lepadichthys frenatus* and also with the subsequent description of the species by Briggs (1955) and Hayashi and Hayashi (1985), thus we identified the specimen as *L. frenatus* (Table 1).

Aspamichthys ciconiae (Jordan and Fowler, 1902) is the only other gobiesocid fish in Korea to date (Briggs, 1955; Chyung, 1977; Youn, 2002; Kim *et al.*, 2005). Although Chyung (1977: 612) described *A. ciconiae* (as *Aspasma ciconiae*) with a short note and three photographs, he gave a photograph (Color Plate 140, fig. 5) of *L. frenatus* under the name of *Aspasma ciconiae*. The living specimen in this color photograph is not given its locality, but it is only a citation from "Yasuda (1971)". Chyung (1977) did not give a list of refer-

ences, and it is impossible to know "Yasda (1971)". However, as Chyung (1977) always gave the locality and total length to the specimens taken in Korea, the specimens of *L. frenatus* in Chyung (1977) does not appear to have been collected in the Korean waters. Therefore, present specimen is the first record of *L. frenatus* in the Korean waters.

L. frenatus is clearly distinguishable from the other Korean gobiesocid *A. ciconiae* by having larger number of each fin rays (17 dorsal fin rays vs. 11 in the latter; 13 anal fin rays vs. 8; 27 pectoral fin rays vs. 21) (Kim *et al.*, 2005). The species is also easily distinguished from its most similar species, *L. coccotaenia* Regan, 1921, which is distributed in southern Japan, by larger number of dorsal (15~19 vs. 11~12 in the latter) and anal fin rays (12~14 vs. 10) (Hayashi and Hayashi, 1985).

We propose a new Korean name, "keun-ip-hak-chi", for the present species.

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Literature Cited

- Allen, L.G. 1984. Gobiesociformes: development and relationships. In: Moser H.G. *et al.*, (eds.), Ontogeny and systematic of fishes. Spec. Publ. No. 1, Amer. Soc. Ichthyol. and Herp., pp. 629~636.
- Briggs, J.C. 1955. A monograph of the clingfishes (Order Xenopterygii). Stanford Ichthyol. Bull., 6+1~224.
- Chyung, M.K. 1977. The Fishes of Korea. Ilgisa, Seoul, pp. 1~727. (in Korean)
- Francis, M.P. 1993. Checklist of the coastal fishes of Lord Howe, Norfolk, and Kermadec Islands, southwest Pacific Ocean. Pac. Sci., 47 : 136~170.
- Hayashi, M. and H. Hayashi. 1985. Two new records of gobiesocid fishes from Japan, and the morphological study of their key characters. Sci. Rep. Yokosuka City Mus. (30): 49~67. (in Japanese).
- Hubbs, C.L. and K.F. Lagler. 1958. Fishes of the Great Lakes Region. Cranbrook Inst. Sci. Bull. No. 26 : vii~xi+1~213.
- Jordan, D.S. and H.W. Fowler. 1902. A review of the clingfishes (Gobiesocidae) of the waters of Japan. Proc. U. S. Natl. Mus., 25 : 413~416.
- Kim, I.S., Y. Choi, C.L. Lee, Y.J. Lee, B.J. Kim and J.H. Kim. 2005. Illustrated book of Korean fishes. Kyo-Hak Publishing, Seoul, Korea. pp. 1~615.
- Nelson, J.S. 1994. Fishes of the world, Third edition. John Wiley & Sons, New York. v~xvii+1~600.
- Waite, E.R. 1904. Additions to the fish fauna of Lord Howe Island, No. 4. Rec. Aust. Mus., 135~186
- Yoshino, T. 1984. Gobiesocidae. In: Masuda, H., K. Amaoka, C. Araga, U. Uyeno and T. Yoshino (eds.), The fishes of the Japanese Archipelago. Tokai Univ. Press, Tokyo, pp. 326~327.
- Youn, C.H. 2002. Fishes of Korea with pictorial key and systematic list. Academi Seojeok, Seoul., pp. 1~747. (in Korean)

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한국산 학치과 (농어목) 어류 1미기록종, *Lepadichthys frenatus*

김병직 · 고유봉¹ · Kazuhiro Nakaya²

제주대학교 해양과환경연구소, ¹해양과학대학,

²Research Faculty of Fisheries of Sciences, Hokkaido University, Japan

제주도 북부 연안에서 농어목 학치과에 속하는 어류 1개체 (표준체장, 59.3 mm)가 채집되었다. 본 종은 아직 국내에서는 보고된 적이 없는 한국미기록종인 *Lepadichthys frenatus*로 동정되었다. 본 종은 체색이 적갈색으로, 등지느러미와 뒷지느러미 후단이 꼬리지느러미와 연결되어 있으며, 등지느러미와 뒷지느러미의 기조수가 각각 17개, 13개인 특징이 있다. 본 종의 신한국명은 '큰입학치'라 명명하였다.