

Cobitis longicorpus, a New Cobitid Fish from Korea

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韓國産 기름종개 魚類의 1新種, *Cobitis longicorpus*에 關하여

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摘 要

우리나라 南海岸으로 流入되는 蟾津江의 上中流에서 흔히 採集되는 *Cobitis*의 模斑型은 지금까지 기름종개 *Cobitis taenia* Linne라고 하였으나 本屬의 種區分에 있어 重要な 檢索基準인 수컷 가슴지느러미 基部에 2次 性徵으로 出現하는 骨質盤을 비롯하여 體側斑紋과 鰓蓋後部の 1黑色斑點等이 本屬 既知種과는 顯著한 差異를 보이므로 本種을 *Cobitis longicorpus*로 記載하고 韓國名으로는 왕종개로 提唱한다.

The species of *Cobitis* shows the great variations in colour patterns, but it can mainly be distinguished by the difference of the secondary sexual characters (Vladykov, 1935; Ikeda, 1936). Until now the cross-band type of spined loach collected along the Seomjin River in Korea has been regarded as a type of colour variation of *Cobitis taenia* Linne (Uchida, 1939; Chyung, 1961).

In our recent observations (Nalbant *et al.*, 1970; Kim, 1974), it has been shown that the species has also some distinct discontinuities from *Cobitis taenia*, *Cobitis koreensis* and their allied species in view of the secondary sexual characters, the colour pattern on body sides and the geographical distribution. For the reasons the species is described as a new species. All specimens studied have been preserved in 10% formalin at the College of Education Jeonbug National University, Jeonbug, Korea.

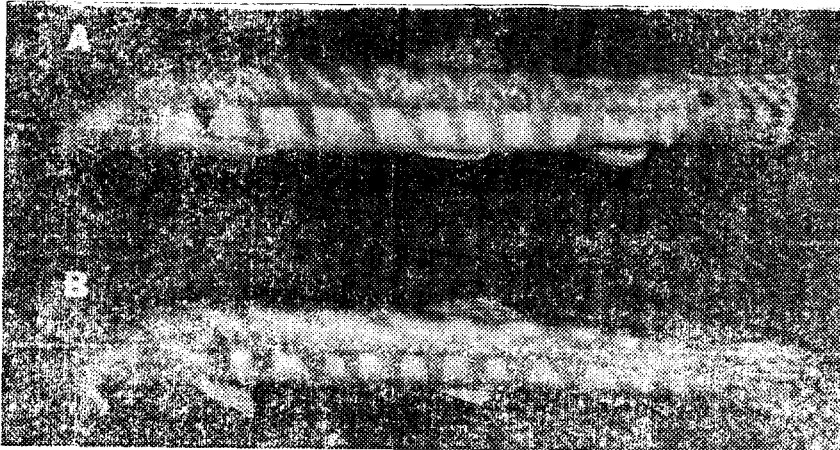


Fig. 1. *Cobitis longicarpus* sp. nov.

A: Holotype, male, BEJU 505 B: Paratype, female, BEJU 506

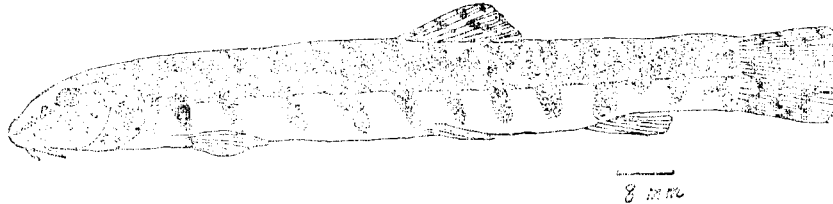


Fig. 2. *Cobitis longicarpus* sp. nov. holotype, male, BEJU 505.

Cobitis longicarpus sp. nov.

(New Korean name; Wang-jonggae)

(Figs 1, 2 and 3)

Materials:

Holotype: BEJU (Biological laboratory, College of Education, Jeonbuk National University) 505, male of 109.7 mm in standard length, collected in the tributary of the Seomjin River at Bogheung Myeon, Sunchang Gun, Jeonrabug Do, on August 3, 1974.

Paratype: BEJU 506, female of 111.6 mm in standard length collected at the same locality and date as the holotype: BEJU 507, male of 114.0 mm in standard length collected at Begun Myeon, Jinan Gun, Jeonrabug Do, on June 5, 1976; BEJU 508, female of 109.4 mm in standard length at the same locality and date as the BEJU 507; BEJU 509, male of 94.05 mm in standard length collected at Namwon Eub, Namwon Gun, Jeonrabug Do on July 1, 1973; BEJU 510, female of 97.4 mm in standard length collected at the same locality and date as the BEJU 509; BEJU 511, male of 92.6 mm in standard length collected at Maryong Myeon, Jinan Gun, Jeonrabug Do on April 11, 1976; BEJU 512, female of 124 mm in standard length collected at Nagsu Myeon, Seungju Gun, Jeonranam Do, on August 7, 1976.

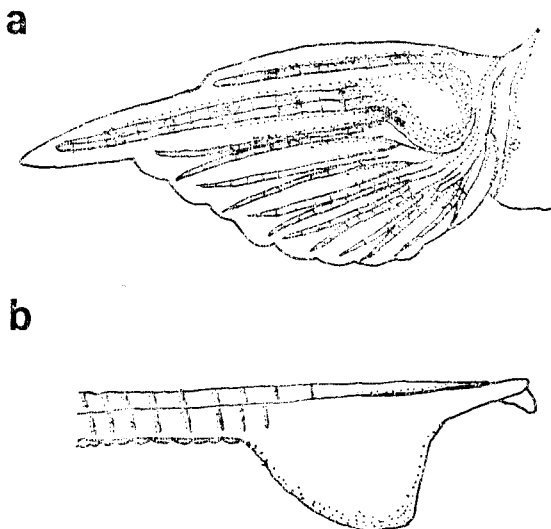


Fig. 3. Left pectoral fin and its rays of *Cobitis longicorpus* sp. nov.
 a: Dorsal view of pectoral fin of a male.
 b: Dorsal view of basal part of second pectoral ray and lamina circularis of the same.

Diagnosis:

A very elongate *Cobitis*, with 10 or more dark brownish vertical blotches, longer than other species of genus *Cobitis*, with the first blotch at the back of operculum being more blackish than other. Male has a peculiar lamina circularis at the base of pectorals (Fig. 3).

Description:

Body proportional measurements and counts for the holotype are as follows: D. with 7 branched, 8 principal rays; A. with 5 branched, 6 principal rays; P. 8; V. 7; C. with 14 branched, 16 principal rays. Measurements expressed in hundreds of standard length; greatest body depth 14.5, minimum depth 10.8, head length 18.1, length of caudal peduncle 15.1; snout length 45.2 in head length, eye diameter 15.5, 3rd pair of barbels 21.1.

Body elongate and laterally compressed but its thickness highly variable. Head elongate, compressed, and with profile convex, snout long, produced, and bluntly rounded; eye small, superior, lateral, and intermediate between tip of snout and the gill opening; mouth small, inferior, and with fleshy lips, lower divides and with two lobes; barbels 3 pairs, the longest pairs, the 3rd one of barbels 21.1 in head length; nostrils nearer the eye than the tip of snout, close together, and anterior pair in a short tube; interorbital space narrow and convex; suborbital spine bifid, thick and slightly curved.

Origin of dorsal nearer base of caudal than tip of snout, and a little in front of ventrals; predorsal length 54.7 and preventral length 57.0. Caudal peduncle shorter than head and compressed. Body covered by minute oval scales with large and excentric forcal area. Lateral line short, not exceeding the length of pectorals.

Color in formalin pale yellowish, dark above; a series of 14 dorsal median dus-

ky gray spots arranged as follows; 7 predorsal, 3 subdorsal and 4 postdorsal. A series of 11 dark brownish blotches of broad, long vertical shape on body sides and with brownish, cloudy speckles on upper part. The first crossband blotch at the back of opercula blackish. The medio-lateral intermuscular septum visible, blackish. Pigmentation of head and its sides based on minute dots. A dusky gray line from the front of eye to the tip of snout on each side of head. Conspicuous black spot on the caudal base above. Dorsal and caudal have rows of dark speckles.

Measurements of other specimens:

In addition to the above described holotype, a number of specimens were obtained from four localities in the Seomjin River. Body measurements of 7 individuals are shown in Table 1.

Table 1. Body proportional measurements of *Cobitis longicarpus* sp. nov.

Item	Holotype				Paratype			
	BEJU 505	BEJU 506	BEJU 507	BEJU 508	BEJU 509	BEJU 510	BEJU 511	BEJU 512
Catalogue number								
Sex	♂	♀	♂	♀	♂	♀	♂	♀
Standard length in mm	108.8	109.3	111.6	108.7	94.1	97.5	91.6	120.2
In standard length:								
Head length	18.1	19.9	19.2	17.7	21.6	20.5	19.4	19.9
Greatest depth	14.5	12.9	14.3	13.1	13.9	14.8	14.1	13.5
Minimum depth	10.8	9.2	10.2	9.3	10.8	8.5	9.4	9.3
Preanal length	80.8	80.4	82.2	82.0	83.5	80.9	82.6	82.0
Predorsal length	54.7	54.4	54.5	52.9	54.9	56.9	54.1	57.2
Preventral length	57.0	56.2	57.4	56.8	57.4	58.4	59.0	58.9
Pectoral-ventral distance	36.8	35.8	37.2	38.4	35.1	36.7	37.7	38.2
Ventral-Anal distance	23.9	25.2	25.9	25.9	27.4	24.9	26.2	24.5
Length of pectoral	15.3	11.5	17.3	11.4	20.2	12.5	18.1	11.8
Length of ventral	10.8	9.9	10.6	9.7	11.3	10.3	11.1	9.9
Base of Dorsal	9.6	8.6	9.2	9.0	9.6	8.7	8.4	9.9
Length of Caudal	15.1	12.3	17.7	14.2	14.2	16.7	14.0	15.3
In head length:								
Snout length	45.2	53.9	50.2	50.5	45.8	48.0	47.8	48.9
Eye diameter	15.5	16.6	14.0	15.6	14.8	14.0	17.7	14.0
3rd pair of barbels	21.1	26.5	22.4	23.2	26.1	26.5	21.9	22.1
In greatest depth:								
Greatest width of body	72.8	78.7	78.8	76.1	72.9	72.6	67.1	65.4

Sexual dimorphism:

Male: As a rule, the male is smaller than female and the length of pectoral fins are longer in male than in female. The pectoral fin is conspicuously elon-

gated with a pronounced beaklike projection at the end. This is due to the elongation of the second ray which is about two or three times as wide as the first ray (Fig. 3). On the first two rays of pectorals, there are three or four rows of small tubercles is very peculiar. It has a round protuberance with its marginal fold in external shape and has a semicircular bony plate which is not separated from the base of the second fin ray on its pectoral fin in its internal shape.

Female: The pectoral fin does not possess the peculiarities mentioned above.

Habitat:

This species is abundant on the clear, stony bottom at the upper and middle courses and tributary streams which have rapid waters.

Distribution:

The present species seems to be distributed only in the Seomjin River flowing into the South Sea in Korea (Fig. 4). The collected localities of *Cobitis longicorpus* are as follows: Begun, Seongsu, and Maryong, Jinan Gun; Gwanchon, Sinpyeong and Unam, Im Sil Gun; Bogheung, Sunchang Gun; Namwon, Jucheon, and Dong Myeon, Namwon Gun; Gogseong, Abrog and Seoggog, Gogseong Gun; Songgwang, Seungju Gun.

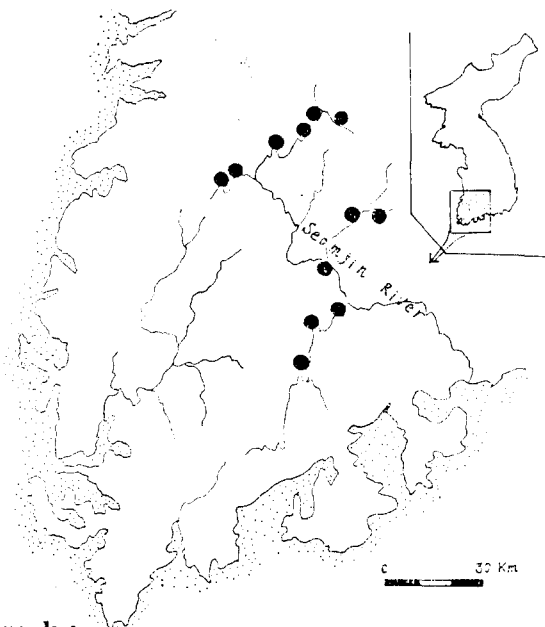


Fig. 4. Distribution of *Cobitis longicorpus* sp. nov. in South Korea.

Remarks:

C. longicorpus resembles both *C. taenia* and *C. koreensis* in Korea, but the former is clearly distinguished from the others by the structure of its lamina circularis at the basal part of pectoral fins in male. In *C. taenia*, the lamina circularis is simple round plate and has no connection with other fin rays, or with the musculature of fin (Vladykov, 1935) and in *C. koreensis*, it has a narrow and elo-

ngated (Kim, 1975). That of *C. biwae* in Japan consist of two parts, a beak shaped apical portion and a round basal one (Ikeda, 1936). But In *C. longicorpus* it has the round protuberance at the basal part of pectoral fin in male whose internal structure with the semicircular body plate which is not separate from the base of the second fin ray.

Moreover on both sides of the body, the vertical length of blotches which has about twice longer than the diameter of eye shows another difference from the other species of genus *Cobitis*.

So it may be said that the vertical length of blotches of the present species is the longest among the species of the genus.

The most conspicuous feature of this species seems to be that the first blotch on its body side is more blackish than the other blotches especially while it is alive and the colour is still preserved for some time in formalin. In *Cobitis* the scales are usually imbricated, oval or round with the forcal area either small and excentric (*C. taenia* and *C. biseli*) or large and almost central (*C. elongata* and *C. macrostigma*) (Nalbant, 1963). Kobayasi (1954, 1956) reported that fishes belonging to *Cobitis* are originally difficult to distinguish by their scales, but *C. multifasciata* and *C. rotundicaudate* are considerably distant from *C. delicata* and *C. tenia* in the scale character. The scales of present species are oval with a large and excentric forcal area, and resemble that of *C. multifasciata* and *C. rotundicaudata* more than that of *C. taenia*, *C. granoei* and *C. biseli*.

In total length composition (Table 2), *C. longicorpus* seems to be shown relatively larger in the ratio of body size compaired to that of other species in genus *Cobitis*. It was common from 100 mm to 120 mm and the largest specimen was 179 mm in its total length. It may not be so much simple environmental variations as a complex of genetic factors.

Table 2. Total length composition of *Cobitis longicorpus* sp. nov. collected in the Seomjin River from April, 1973 to October, 1976.

Total length (mm)	Number of specimens		Total length (mm)	Number of specimens	
	♀	♂		♀	♂
61—70	7	—	121—130	10	7
71—80	5	—	131—140	9	1
81—90	2	3	141—150	10	—
91—100	9	6	151—160	2	—
101—110	9	4	161—170	0	—
111—120	8	9	171—180	1	—
Total				72	30

Nalbant *et al.* (1970) had already pointed out that this species, given the name "*C. taenia*" by Chyong (1961, pl. 86, figs. 406—409) represents an unnamed sub-genus *Cobitis*.

This problem is the subject for a further studies, but it is remarkable that *C. longicorpus* represents the isolation of geographical distribution and distinguished features.

Entimology:

From Latin, longus (long) + corpus (body) refer to the characteristic long body length of the new species.

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SUMMARY

A new species of Cobitid fish, *Cobitis longicorpus* is described, based upon many specimens from several tributaries of the Seomjin River situated in the southwestern part in Korea. *Cobitis longicorpus* was previously reported as the cross-band type of *C. taenia* by all ichthyologists in Korea. This is distributed in the Seomjin River and characterized by the distinctive cross-band color pattern, the black spots at the back of its opercula, and the structure of lamina circularis in male.

REFERENCES

- Chyung, M.K., 1961. Illustrated Encyclopedia, the Fauna of Korea. Vol.2 Fishes, 232—245.
- Ikeda, H., 1936. On the sexual dimorphism and the taxonomical status of some Japanese loaches. (I) *Misgurnus anguillicaudatus* (Canter), *Cobitis biccae* Jordan and Snyder and *Cobitis taenia striata*, subsp. nov. *Zool. Mag.* (Japan) **48** : 983—994.
- Ikeda, H., *ibid.* (II) *Cobitis taenia japonica* Temminck et Schlegel. *ibid* **49** : 4—8.
- Kim, I.S., 1974. Study of *Cobitis taenia* Linne (Spined loach) from Korea. 2. On the secondary sexual characters. *Korean J. Lim.* **7** (3—4) : 49—55.
- Kim, I.S., 1975. A new species of cobitid fish from Korea. *Ditto* **8**(3—4) : 51—57.
- Kobayasi, H., 1954. Phylogenetical considerations of Cobitid-fishes by study of scale character (I). *Bull. Ailei Gakugei Univ.* **4** (Nat. Sci): 40—48.
- Kobayasi, H., 1956. *Ditto* (II). *Ditto* **4** (Nat. Sci) : 24—28.
- Nalbant, T., 1963. A study of the genera of Botiinae and Cobitinae (Pisces, Ostariophysii, Cobitidae). *Trav. Mus. Hist. Nat. "Grigore Antipa"* **4** : 343 : 379.
- Nalbant, T., Helcik, J. and Pivacka, K., 1970. A New Loach, *Cobitis granoei olivai*, ssp. n., From Mongolia, with some Remarks on the *Cobitis elengata-bilesele-macrostigma* group (Pisces, Ostarisphysii, Cobitidae). *Vesnik Ceskeslevenske Spolecnosti Zoologicke* XXXIV-cisio 2 Str.: 121—128.

- Uchida, K., 1939. Freshwater fishes of Corea. Nematogathi and Eventognathi. Chosen sotokuhu suisan shikenje Hokoku 6 : 400—417.
- Vladykne, V.D., 1935. Secondary sexual dimorphism in some Chinese Cobitid fishes. *J. Morph.* 57 : 275—302.