

**A New Acheilognathine Fish, *Acheilognathus somjinensis* (Pisces:
Cyprinidae) from Korea**

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요 약

전라북도 임실군 신평면과 관촌면 일대의 섬진강 수계에서 채집한 납자루속 어류의 표본을 조사한 바 기존의 것과 다른 종이 발견되어 신종 *Acheilognathus somjinensis*로 기재하고 한국명으로는 임실납자루로 명명한다. 본 신종은 유사종인 *Acheilognathus koreensis*에 비해 산란시 암컷의 산란관 길이가 훨씬 길고 난의 형태가 둥글며 초기 발생과정도 현저한 차이가 있다. 또한 유사 종간의 인공 교잡시 발생이 중지되어 주목되었다.

Key words: *Acheilognathus somjinensis* sp. nov., taxonomy, Korea.

In the bitterlings of the genus *Acheilognathus*, six species have been recorded from southern part of Korean Peninsula recently: *Acheilognathus intermedia*, *A. signifer*, *A. yamatsutae*, *A. rhombea*, *A. koreensis* and *Acheilognathus* sp.. Among them *A. koreensis* and *Acheilognathus* sp. were considered to be sibling species based on the differences of egg form and ovipositor length of female, and hybridization experiment between the two (Kim, 1991). Herein we treat *Acheilognathus* sp. as a new species, with the name of *Acheilognathus somjinensis* and discuss the relationships with other *Acheilognathus* species in Korea. The type specimens were preserved in 10% formalin and deposited in the laboratory of Department of Biology, Chonbuk National University (CUB). Method for counts and measurements follows Hubbs and Lagler (1964).

***Acheilognathus somjinesis*, new species**

(Korean name: Imsil-Napcharu 임실납자루) (Fig. 1)

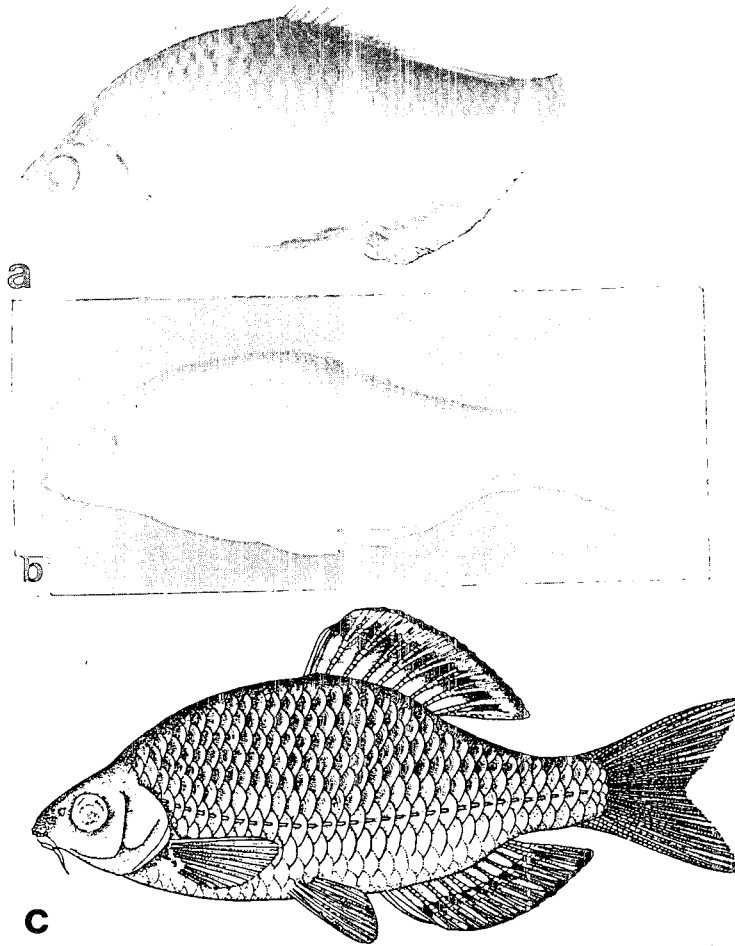


Fig. 1. *Acheilognathus somjinensis* sp. nov. a, c, holotype male (CUB 16419, 68.4mm SL); b, paratype female (CUB 16420, 60.1mm SL).

Materials. Holotype: CUB (Department of Biology, Chonbuk National University) specimen number 16419. A male 68.4mm in standard length (SL), collected from the Owon stream, a tributary of the Somjin River at Sinpyong-myon, Imsil-gun, Chollabuk-do, on April 20, 1989. Paratypes: Specimens of five males and seven females (CUB 16420-16431) 40.6-60.1mm in SL, collection data as holotype.

Diagnosis. Body compressed and moderately deep; body size small (40-70mm in adult); female ovipositor long in breeding season; unfertilized by pear-shaped. Color yellow-greenish.

Description. Proportional measurements and counts for holotype and paratypes shown in Table 1. Head compressed, short; eye moderately large; nostrils close together in front of eye above; mouth small, oblique, with a pair of barbels on its both side; gill openings rather large; body outline evenly convex and nape not appreciably elevated. Scales large, cycloid and imbricated on both side; lateral line complete and moderately crook down. Intestine with numerous convolutions.

Pigmentation and sexual dimorphism. No stripes on body, color plain, darkgreen above, white brown middle, straw yellow below, and white abdomen; dorsal fin crook up and margined with black; a white band below margin as wide as a half of pupil, an instinct broad dark band below white; anal fin similar to dorsal fin, but stripes less distinct. Male usually show larger body size and a little higher than female.

Table 1. Proportional measurements and meristic counts of *Acheilognathus somjinensis* sp. nov. (Mean and standard deviation followed by range in parenthesis).

Characters	Holotype	Paratypes	
	Male	Males	Females
Number of specimens	1	5	7
Standard length (mm)	68.4	46.7-59.5	40.6-60.1
In % of standard length			
Body depth	39.5	39.4 ± 1.8 (37.4-41.5)	38.7 ± 1.8 (36.6-41.3)
Head length	24.8	24.9 ± 1.3 (23.4-26.5)	24.8 ± 1.4 (23.2-26.6)
Predorsal length	52.0	52.2 ± 2.0 (49.9-54.6)	52.0 ± 2.1 (49.4-54.8)
Prepectoral length	25.0	24.8 ± 1.8 (22.7-27.0)	24.4 ± 1.8 (22.3-26.6)
Preventral length	47.0	46.9 ± 2.2 (44.5-49.3)	47.2 ± 2.2 (46.6-50.0)
Preanal length	63.5	64.9 ± 2.5 (62.0-68.0)	64.8 ± 2.7 (61.1-68.4)
Caudal peduncle length	20.4	20.8 ± 2.3 (17.4-23.5)	20.4 ± 2.4 (17.0-24.6)
Caudal peduncle depth	13.5	13.7 ± 0.6 (13.0-14.5)	13.5 ± 0.5 (12.9-14.3)
In % of head length			
Caudal peduncle length	82.4	83.5 ± 4.0 (76.8-88.8)	82.2 ± 3.7 (70.0-87.1)
Caudal peduncle depth	54.5	55.0 ± 1.8 (50.4-57.3)	54.5 ± 2.0 (49.6-58.8)
Eye diameter	33.3	33.2 ± 2.1 (30.8-36.6)	33.0 ± 2.0 (29.4-36.0)
Barbel length	25.8	26.0 ± 2.5 (22.7-29.8)	26.1 ± 2.5 (23.2-29.4)
Snout length	30.0	29.7 ± 2.5 (26.6-33.0)	29.0 ± 2.3 (25.7-32.6)
Interorbital width	38.1	38.4 ± 2.0 (35.8-41.1)	38.7 ± 2.0 (35.8-41.8)
Number of			
Dorsal fin rays	III.8	III.8	III.8
Anal fin rays	III.10	III.10 (9-11)	III. 10(9-10)
Scales	35	34-36	34-35

During breeding season, color of male distinct nuptial, with redish anal fin, pearl organs appears on each side of snout and some around orbit, and in female, ovipositor which is longer than head length reaches to middle of caudal fin.

Distribution and habitat. The present species seems to be distributed only in the Owon stream, a tributary of the Somjin River in Korea. Specimens were found on the pebbles and muddy bottom, where the fresh water bivalves, *Unio douglasiae* and *Anodonta woodiana* live under slow current, with depth less than one meter.

Remarks. This new species had been considered as the same species of *A. limbata* from Japan (Uchida, 1939; Chyung, 1977). Recently it was found that *A. koreensis* from Korea is different from *A. limbata* from Japan in morphological and embryological characters (Kim and Kim, 1990). The present species resembles *A. koreensis*, a sympatric species in the Somjin River. However it was found that the new species differs from *A. koreensis* in ovipositor length of female and egg form and its development. In comparison of the ratio of ovipositor length to standard length between the two species, the ratio of *Acheilognathus somjinensis* is more than that of *A. koreensis* (*A. somjinensis*: $48.7 \pm 10.7\%$, and *A. koreensis* $22.3 \pm 4.3\%$).

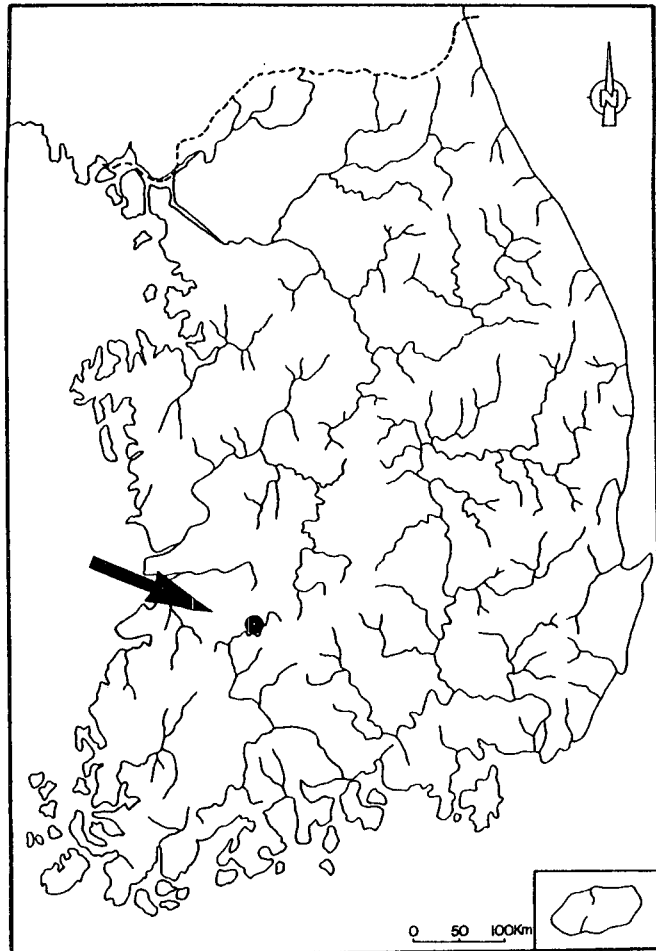


Fig. 2. Type locality of *Acheilognathus somjinensis*, Sinpyong-myon, Imsil-gun, Chollabuk-do province in Korea.

The ripe eggs of *A. somjinensis* are pear-shaped, whereas those of *A. koreensis* are nearly spindly. Thus the long axis of the egg of *A. koreensis* is longer than that of *A. somjinensis* (Kim, 1991). And, it was considered that the two species might be separate cryptic or sibling species based on their hybridization experiments (Kim, 1991). Therefore we consider that *A. somjinensis* is a sympatric sibling species with those are reproductively isolated each other.

Etymology. The specific name *somjinensis* is named after the Somjin River where the new species is discovered first.

ABSTRACT

A new species of cyprinid fish, *Acheilognathus somjinensis* is described based on the specimens collected in the Somjin River, Sinpyong-myon, Imsil-gun, Chollabuk-do province of Korea. In general morphology it is similar to *A. koreensis*, however the new species differs from the latter in having longer ovipositor of female in spawning season and showing

pear-shaped eggs. In hybridization experiments, it was found that *A. somjinensis* is reproductively isolated from *A. koreensis*.

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