

New Record of Ricefish, *Oryzias latipes sinensis*
(Pisces, Oryziidae) from Korea

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한국산 송사리 1 미기록 아종 *Oryzias latipes sinensis*

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적 요

1986년 4월부터 1991년 2월까지 한국의 서남해로 유입하는 하천과 인접 도서 지방에 서식하는 송사리 *Oryzias latipes*의 표본을 조사한 바, 조사수역의 모든 표본은 척추골 수가 28-31개이고, 가슴지느러미 기조수는 9개이며, 2n 염색체 수가 46개 이었다. 이러한 특징은 동해로 유입하는 하천과 남해의 인접 도서지방에 분포하는 *O. latipes latipes*와는 구별되고, 중국산 *O. latipes sinensis*와 일치되어 한국 미기록 아종으로 보고하고 이 아종의 국명은 대륙송사리로 명명한다.

Key words: *Oryzias latipes sinensis*, ricefish, taxonomy, Korea.

INTRODUCTION

Since *Oryzias latipes* has been known to be distributed throughout Japan, China mainland and Korea, the species was divided into two groups of 48 chromosomal form of Japan and 46 chromosomal form of eastern China by Uwa (1986). And these two chromosomal forms were also found in Korean Peninsula

(Kim and Moon, 1987; Uwa and Jeon, 1987). Chen *et al* (1989) described the *Oryzias latipes* from Yunnan, China as a distinct subspecies, *O. latipes sinensis* in having the lesser vertebrae number, lesser pectoral fin rays, and diploid chromosomal number of 46. Morphological and chromosomal studies of *O. latipes* from the western Korea agree well with the diagnostic characters of *O. latipes sinensis* from China. Herein we report that *O. latipes* in Korea is *O. latipes sinensis* which is the first record from Korea.

O. l. sinensis is redescribed from the specimens collected from western Korea, with comments on the distribution of this subspecies.

Table 1. Comparison of some measurements and meristic counts between *O. latipes sinensis* from different localities of Korea and type specimens.

	Localities			*Type specimens (Kunming, China)
	Kangwha	Chonju	Kurye	
No. of specimens	30	35	3	184
Standard length(mm)	24.1-29.1	22.7-28.0	29.0-31.8	15.8-28.1
% to Standard length				
Head length	27.5±0.9 (26.2-29.1)	26.9±0.9 (22.7-28.0)	26.9±0.6 (26.4-27.6)	24.7±1.2
Predorsal-fin length	79.1±1.4 (76.1-81.8)	77.6±1.2 (75.3-80.0)	76.7±2.8 (73.6-78.9)	77.5±1.3
Preanal length	58.3±1.1 (54.0-60.5)	56.7±1.5 (53.6-60.0)	57.2±1.4 (55.7-58.5)	54.7±1.3
Preanal-fin length	60.8±1.5 (57.2-63.1)	59.8±1.3 (57.9-63.4)	60.6±2.6 (57.7-62.6)	58.1±1.5
No. of				
Vertebrae	30.4±0.7 (29-31)	29.6±1.0 (28-31)	30.0±1.0 (29-31)	28.9±0.6 (28-30)
Dorsal fin rays	6	6	6	6
Anal fin rays	18.1±1.1 (17-21)	17.9±0.8 (17-19)	18±1.0 (17-19)	17.7±0.7 (16-20)
Pectoral fin rays	9	8.7±0.5 (8-9)	9	9
Ventral fin rays	6	6	6	6
Free pterygiophore	4	4	4	4
Branched caudal fin rays	9	9	9	9
Caudal fin ray on hypural	5+4	5+4	5+4	5+4
Branchiostegal	5	5	5	5
1st rib on 2nd or 3rd vertebrae	2nd	2nd	2nd	2nd

* Chen *et al.* (1989)

Oryzias latipes sinensis Chen, Uwa et Chu (New Korean Name: Daeruksongsari) 대륙송사리 (Fig. 1)

Materials: CUB 15798-15824, Twenty-five specimens 24.1-29.1 mm in standard length (SL). Kanghai-gun, Kyonggi-do, November 4, 1990; 6 specimens 20.2-23.5 mm SL. Paju-gun, Kyonggi-do, February 6, 1991; 6 specimens 21.8-29.3 mm SL. Iksan-gun, Chollabuk-do, March 28, 1987; 21 specimens 22.5-28.7 mm SL. Kimje-si, Chollabuk-do, April 9, 1990; CUB 15345-15380, 35 specimens 22.7-28.0 mm SL. Chonju-si, Chollabuk-do, April 6, 1990; 17 specimens 21.9-27.8 mm SL. Okgu-gun, Chollabuk-do, April 8, 1988; 4 specimens 25.3-29.7 mm SL. Naju-gun, Chollanam-do, June 9, 1987; 3 specimens 29.0-31.8 mm SL. Kurye-gun, Chollanam-do, June 13, 1987.

Description: Dorsal fin rays 6, anal fin rays 17-21, pectoral fin rays 8-9, ventral fin rays 6, branchiostegals 5, vertebrae 28-31, 1st rib on 2nd vertebrae. Head length in standard length $27.0 \pm 0.9\%$, predorsal $78.2 \pm 1.6\%$, pre-anus $57.5 \pm 2.0\%$, pre-anal fin $60.2 \pm 1.6\%$. Eye very large, interorbital space flat, snout short, lower jaw slightly projecting, peritoneum dense black within, body wall bright silvery. Dorsal fin short, its origin above middle of anal; anal base very long, extending to base of caudal when depressed; pectorals inserted partly below median line of body; ventrals pointed, short, just reaching vent when depressed; caudal truncate.

Color in formalin: light brownish, silvery coating of peritoneum showing through walls of abdomen; a narrow, median, dusky stripe extending along back from occiput to dorsal; sides of body sparsely stippled with black, edges of scales dusky; a median, dusky line extending along sides of body from tip of pectoral to base of caudal; membranes of fins dusky, color deepening toward edges; ventrals black; a narrow light area on base of caudal; body translucent with silvery peritoneum through abdominal walls; a straight black

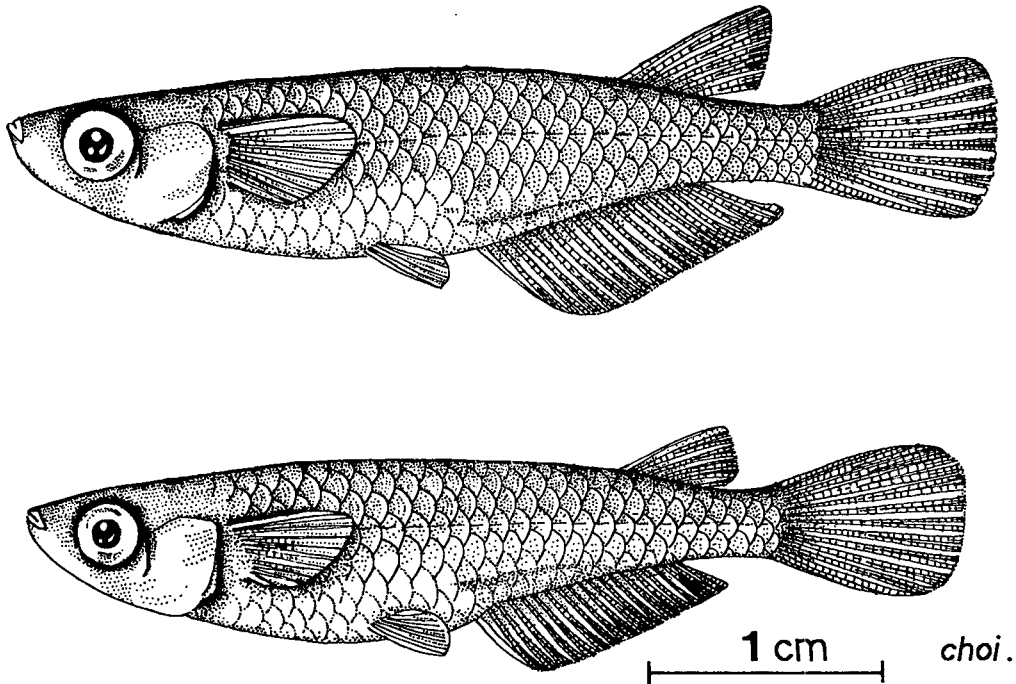


Fig. 1. *Oryzias latipes sinensis*, 25.6mm SL, male (upper), 25.1mm SL, female (lower), Chonju, CUB 15348-15349.

stripe on side extending from over ventral fins to base of caudal fin.

Sexual dimorphism: Sexual dimorphism is recognized by the shape of dorsal and anal fins and urinogenital papilla; the male shows larger dorsal and anal fins than in female, particularly the posterior half of the anal fin is elongated and manifested papilla process on the intersegments of the fin rays. In female, the anal fin does not possess the peculiarities mentioned above.

Karyotypes: *O. latipes sinensis* from western Korea contained a large metacentric pair and showed the diploid chromosome number of 46, consisting of 3 meta-, 8 submeta-, 1 subtelo- and 11 acrocentric pairs. The number of major arms (NF) was 68 (Fig. 2). While *O. latipes latipes* showed $2n = 48$ chromosomes without a large metacentric pair, consisting of 2 meta-, 8 submeta-, 1 subtelo- and 13 acrocentric pairs. The number of major arms (NF) was 68.

Distribution: The present subspecies is distributed in Kangwha Island (Kangwha-gun), Han River (Paju-gun), Kum River (Iksan-gun), Dongjin River (Kimje-si), Mankyong River (Chonju-si), Moonyo Island (Okgu-gun), Yongsan River (Naju-gun), and Somjin River (Kurae-gun).

Remarks: *Oryzias latipes sinensis* was described by Chen *et al* (1989) from the eastern China. Kim and Moon (1987) and Uwa and Jeon (1987) have suggested that *O. latipes* from western Korea is karyotypically related to *O. latipes sinensis* from China since they have the same chromosome number ($2n = 46$) and a large metacentric pair in common.

Oryzias latipes sinensis is similar to *O. latipes latipes* in mostly morphometric characters, but differ from

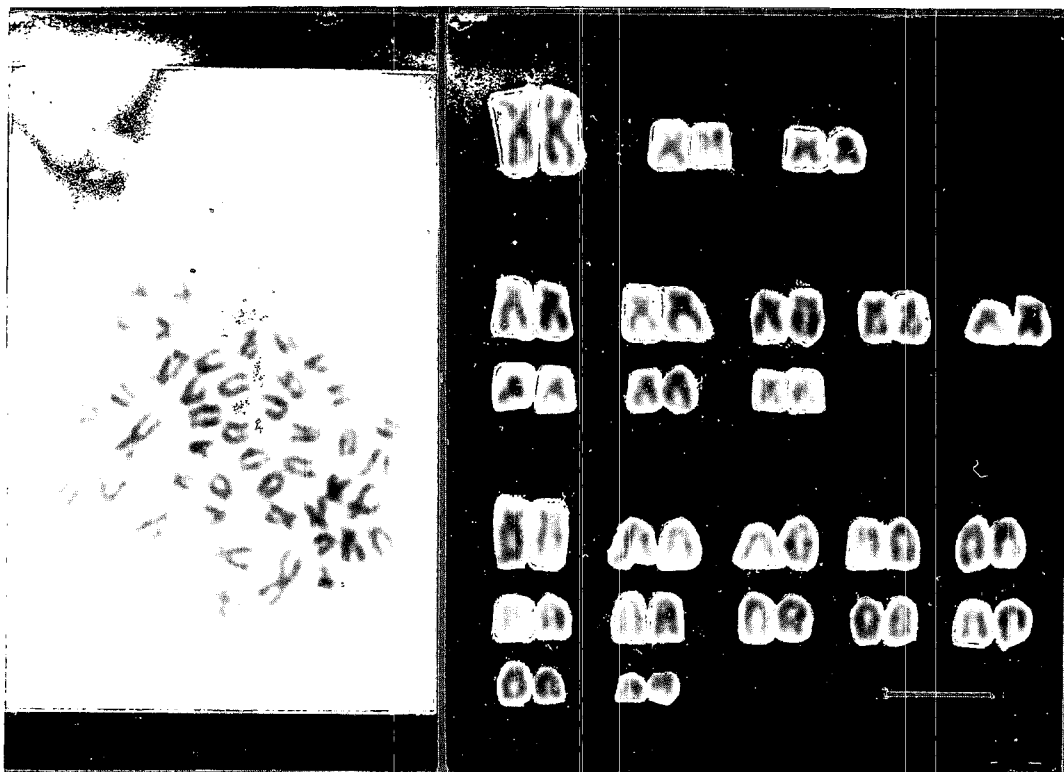


Fig. 2. A metaphase plate and its karyotype of *Oryzias latipes sinensis* from Chonju. The karyotype revealed $2n = 46$, consisting of $3M + 8SM + 1ST + 11A$ pairs (NF = 68). The bar indicates $5\mu\text{m}$.

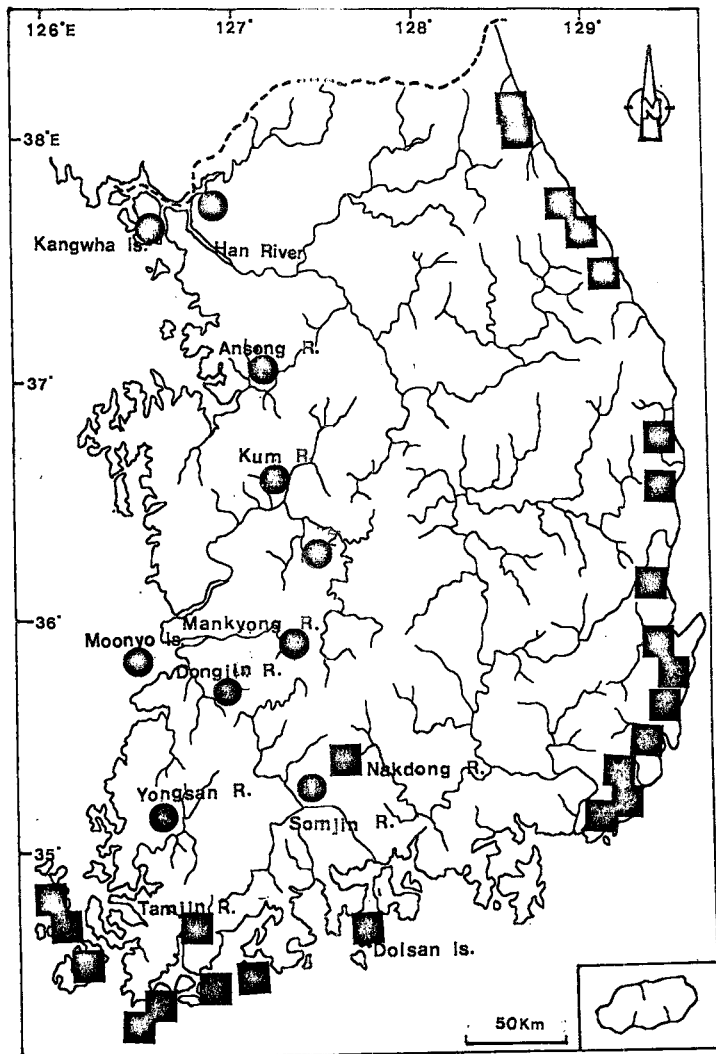


Fig. 3. Collection sites *Oryzias latipes sinensis* (●) and *Oryzias latipes lateipes* (■) in Korea.

O. latipes lateipes by having a small number of vertebrae (28-31 instead of 30-33), the origin of the first rib which is attached to the 2nd (*O. latipes lateipes* is 3rd) rib and a small number of pectoral fin rays (*O. latipes sinensis* is 9 and *O. latipes lateipes* is 10). The populations of *O. latipes sinensis* had $2n$, 46 chromosomes with a large metacentric pair, while *O. latipes lateipes* had $2n$, 48 chromosomes without large metacentrics. The diploid chromosome number of *O. latipes sinensis* is 46 and *O. latipes lateipes* is 48 as shown in Fig. 2. And, *O. latipes sinensis* from western part of Korea tends to have a larger number of vertebrae, longer head length than that of China. So, we considered that these differences represent geographic variation.

O. latipes sinensis was found in the western Korea, while *O. latipes lateipes* was found in fresh-waters flowing into the East Sea and islands of adjacent to the South Sea of Korea (Fig.3). It is remarked zoogeographically that the two subspecies of *Oryzias latipes* are shown disjunct distribution between the western area and the eastern area of Korean Peninsula in relation to the China and Japan.

ABSTRACT

A ricefish *Oryzias latipes sinensis* Chen *et al.* of the family Oryziidae is recorded for the first time from western Korea. The present specimens are similar to *O. l. latipes* in most morphometric characters, but agree well with the original description of *O. l. sinensis* based on the diploid chromosome number of 46 with two large metacentric chromosomes and the lesser vertebrae number.

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