

The Japanese Flatfishes of the Genus *Samariscus*

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The flatfishes of the genus *Samariscus* are among the rare fishes in Japanese waters and have been known only from KAMOHARA's several records. Although he reported three species, *Samariscus maculatus* (GÜNTHER), *S. inornatus* (LLOYD) and *S. japonicus* KAMOHARA (1934: 461; 1936a: 21; 1936b: 1006), he finally recognized the last mentioned two species from Japan (1938: 61).

Recently, having had an occasion to identify a rather large number of the specimens of the flatfishes taken from deep-waters around Japan and the adjacent regions by means of motor-trawlers, we were very fortunate enough to find two kinds of specimens of *Samariscus* which agree well with KAMOHARA's two species (1938: 61). As a result of detailed examinations of these fishes, however, we have found an evidence to indicate that the one form represents an apparently undescribed species which called herein *Samariscus latus* and that KAMOHARA's *Samariscus inornatus* falls into this species. The other one, *Samariscus japonicus*, although rather well marked, is somewhat variable as supplemented in this paper.

The measurements of various parts of body which would appear in the present work were made in exactly the same way as NORMAN had done in his work (1934: 50-51).

The present study is a part of the results of our investigations on the deep-water fishes of Japan and the adjacent regions. The expenses for the studies of the present series were defrayed by the research fund by Mr. Keizo SHIBUSAWA from 1943 to 1945 and by the Ministry of Education from 1948 to 1951. We are also greatly indebted to Messrs. Reizo ISHIYAMA and Akira OCHIAI for their assistances rendered in obtaining the material.

Samariscus latus, new species

Samariscus inornatus (not *Samaris inornata* LLOYD) (?) KAMOHARA, 1936a, p. 21, Mimase, vicinity of Kochi City (short notes).—KAMOHARA, 1938, p. 61, fig. 33, Mimase, vicinity of Kochi City (short description). —(?) KURONUMA, 1940, p. 214 (listed).

Holotype.—No*. 2368 (male), 83.8mm** (103.0mm)***, off Owase, Kumano-Nada, January 4 to 9, 1936.

Paratypes.—No. 15785 (male), 83.0mm (99.8mm), Mimase, vicinity of Kochi City, February 20 to 28, 1951.—Nos. 16050 (female), 16051 (female), 16052 (male), 16053 (male) and 16054 (male), 59.8 to 83.0mm (74.5 to 101.0mm), off Owase, Kumano-Nada, March 7, 1951.

Description.—Dorsal rays 73 (68 to 76)****; anal rays 57 (55 to 58); pectoral rays 5 (5); caudal rays 16 (15 or 16); scales in lateral line 57 (58 to 62); gill-rakers on lower

* MATSUBARA's Fish Coll. No.; **Standard length; ***Total length; ****Paratypes.

limb of outer arch 5 (5 to 9) on ocular side, 6 (7 or 8) on blind side, absent on upper limb of both ocular and blind sides. Head 4.48 (4.56 to 4.82) in standard length; depth 2.07 (2.13 to 2.27). Snout 4.67 (4.17 to 4.94) in head; lower eye 3.11 (2.84 to 3.23); interorbital space 17.00 (12.80 to 17.30); maxillary 3.01 (2.78 to 3.30); lower jaw 2.07 (2.04 to 2.16); depth of caudal peduncle 1.53 (1.41 to 1.71); longest dorsal ray 2.33 (1.87 to 2.18); longest anal ray 2.39 (1.92 to 2.29); caudal 1.02 (0.94 to 1.00); pectoral 0.59 (0.56 to 0.64); longest ventral ray on ocular side 2.52 (2.17 to 2.70); base of ventral on ocular side 3.22 (2.87 to 3.44); same on blind side 3.89 (3.21 to 4.32).

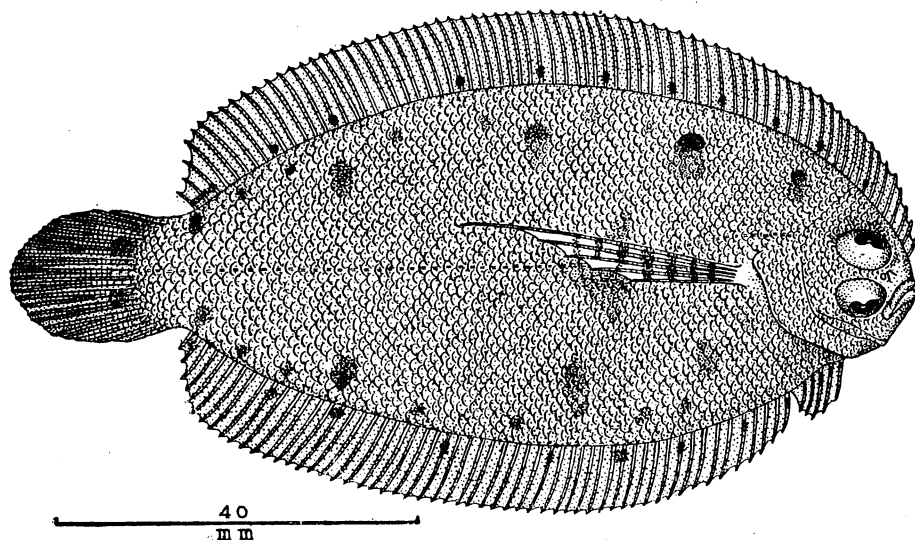


Fig. 1 *Samariscus latus*, n. sp., in lateral view, from the holotype (M. F. C. No. 2386), 83.8mm in standard length. Drawing by K. MTSUBARA and H. TAKAMUKI.

Body elliptical, and both dorsal and ventral contours evenly arched; it is rather high, only a little lower than half the length of body. Head obtuse, small, always less than half the depth of body, the upper profile not concave before the origin of dorsal. Snout measured to anterior end of lower eye 1.50 (1.38 to 1.63) in diameter of eye and shorter than a fourth the length of head. Eye rather large, approximately equal to a third the length of head; eyes separated by a narrow, flattish, scaled space, their anterior margins about level or the lower slightly in advance of the upper. Nostrils on ocular side tubular, the anterior tube much longer than the posterior one and much nearer eye than tip of snout; posterior nostril lies between anterior ends of eyes.

Mouth oblique, symmetrical, the right maxillary extending below anterior one-fourth of eye; lower jaw a little shorter than half the length of head, projecting slightly in advance of the tip of upper jaw when mouth is closed. Teeth villiform, on jaws only, set irregularly in two series anteriorly, becoming uniserial posteriorly, the band on ocular side more or less longer than that of the blind side (Fig. 2 B • C).

Gill-rakers similar in shape on both sides of body, compressed, rather flexible and their tips rounded, and each one supported by an axial skeleton (Fig. 2D).

Scales ctenoid on both sides of body, but the denticulations stronger on those of

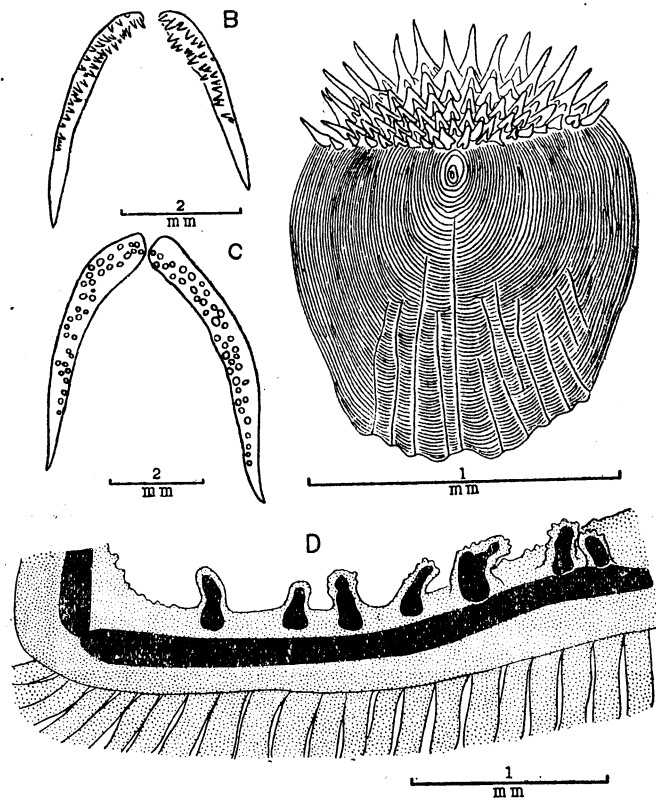


Fig. 2 Scale on ocular side below middle of base of dorsal fin (A), upper jaw (B), lower jaw (C) and gill-rakers on lower limb (ocular side) of outer arch in *Samariscus latus*. The bands of teeth on ocular side (left limb in B and right limb in C) are more or less longer than those of blind side in both jaws. A, B and D, from a male specimen, 83.0mm in standard length (M. F. C. No. 16052). C, from a male specimen, 79.8mm in standard length (M. F. C. No. 16054). Drawings by K. MATSUBARA and H. TAKAMUKI.

the ocular side; the exposed area thickly covered with denticulations which become longer and stronger toward the margins of the scales (Fig. 2A). Snout and jaws naked; fins, except caudal at basal part, also scaleless. Lateral line straight, rising slightly at the anterior part of pectoral.

Dorsal inserted before the eye, the rays gradually becoming longer posteriorly. Anal similar in shape with dorsal. Pectoral filamentous and long, the uppermost one only slightly shorter than twice the length of head, extending halfway between base of pectoral and that of caudal; the succeeding ones abruptly becoming shorter toward the lowermost ray; no pectoral on blind side. Ventrals two, the rays as well as the base on ocular side longer than those of the blind side. Caudal rounded, both the uppermost and lowermost two rays simple, but the other ones branched.

Coloration.—General ground color of body in formalin greyish brown, with a series of well separated five blackish blotches running submarginally along the upper contour of body and a row of four blotches along lower contour of body; a much larger one on lateral line opposite the middle of pectoral; a series of about six less well-defined

smaller blackish blotches extending along bases of both dorsal and anal fins. Fins paler than body; dorsal, anal and right ventral spotted with same color; a pair of dark spots near base of caudal; pectoral crossed with seven dark bars. Left side of the body whitish.

Eggs.—Female specimens (Nos. 16050 and 16051) taken on March 7, 1951 from Kumano-Nada are provided with well developed eggs. The eggs are roundish in shape and have a diameter of $0.74-0.84 \times 0.68-0.78$ mm. The spawning may probably be taken place in spring.

Comparison.—As indicated in Table 1, our specimens thus far examined agree well with the description and figure of *Samariscus inornatus* given by KAMOHARA (1938: 61, fig. 33) except for having rounded caudal which slightly notched at the tip in the latter, but differs considerably from LLOYD's *Samaris inornata* (1909: 160, pl. 47, figs. 7 and 7a) and NORMAN's *Samariscus inornatus* (1927: 46; 1934: 407, fig. 295) in having larger number of both dorsal and anal rays, shorter head, higher body, larger eye, longer maxillary, higher caudal peduncle and especially much longer pectoral.

The present species, on the other hand, closely related to *Samariscus macrognathus* FOWLER (1934: 343, fig. 97) known from west coast of Luzon, but differs from it in having much smaller mouth, higher body, smaller head and shorter pectoral (In latter species: maxillary reaches below middle of lower orbit; depth 2.50 and head 3.80 in body length; pectoral extending beyond halfway between base of pectoral and that of caudal).

Table 1. Comparison of counts and proportionate measurements of bodily parts between present new species and *Samariscus inornatus* (*Samaris inornata* in LLOYD) of various authors. Items marked with asterisks are those derived from text-figures.

Items \ Species	<i>S. latus</i>	<i>S. inornatus</i> (<i>Samaris inornata</i> in LLOYD)		
		KAMOHARA (1938)	LLOYD (1909)	NORMAN (1927•1931•1934)
Dorsal rays	68-76	71-75	61	63-67
Anal rays	55-58	52-58	48	48-50
Pectoral rays	5	5	5	5
Caudal rays	15-16	-	16	16
Gill-rakers on lower limb of first arch	5-9	-	-	8-9
Scales in lateral line	57-62	60	-	63
In standard length:				
Head	4.48-4.82	4.4-4.6	4 $\frac{3}{8}$	3 $\frac{3}{4}$ -4
Depth	2.07-2.27	2.2	2 $\frac{3}{5}$	2 $\frac{2}{5}$
In head length:				
Snout	4.17-4.94	4.2-5.6	4.2*	4.5*
Eye	2.84-3.23	3.0-3.5	3 $\frac{1}{2}$	4.0
Lower jaw	2.04-2.16	2.0*	-	2 $\frac{1}{2}$
Maxillary	2.78-3.30	3.0*	3 $\frac{1}{2}$	3 $\frac{1}{2}$ -3 $\frac{2}{3}$
Depth of Caudal peduncle	1.41-1.71	1.2*	1.8*	2.0*
Longest dorsal ray	1.87-2.33	1.7*	1.8*	1.8*
Longest anal ray	1.92-2.39	2.2*	1.6*	1.8*
Caudal	0.94-1.02	-	1.0*	1.1*
Pectoral	0.56-0.64	0.55*	1.0*	0.9*
Base of ventral fin on ocular side	2.87-3.44	3.0*	4.5*	4.5*

Samariscus japonicus KAMOHARA

? *Samariscus maculatus* (not *Samaris maculatus* GÜNTHER) KAMOHARA, 1934, p. 461, Mimase, vicinity of Kochi City (short notes).

Samariscus japonicus KAMOHARA, 1936b, p. 1006, fig. 1, Mimase, vicinity of Kochi City (original description). — KAMOHARA, 1938, p. 61, Mimase, vicinity of Kochi City (short description).

Material examined.—No. 1878 (male), 90.8 mm (112.8 mm), off Owase, Kumano-Nada, May 1, 1936. — No. 1985 (female), 77.0 mm (95.2 mm), off Owase, May 27, 1936. — No. 2387 (female), 91.3 mm (110.5 mm), off Owase, January 4 to 9, 1936.

Description.—Dorsal rays 69 to 73; anal rays 53 to 56; pectoral rays 5; caudal rays 15 or 16; scales in lateral line 59 to 64; gill-rakers on lower limb of first arch 8 on ocular side, 7 on blind side. Head 4.32 to 4.68 in standard length; depth 2.34 to 2.56. Snout 4.45 to 4.95 in head; lower eye 2.78 to 3.35; interorbital space 17.8 to 19.5; maxillary 2.91 to 3.30; lower jaw 1.95 to 2.12; depth of caudal peduncle 1.56 to 1.76; longest dorsal ray 1.89 to 2.24; longest anal ray 1.81 to 2.21; caudal 0.90 to 1.00; pectoral 0.88 to 1.02; longest ventral ray on ocular side 2.50 to 2.86; base of ventral on ocular side 3.25 to 4.56; same on blind side 3.75 to 5.20.

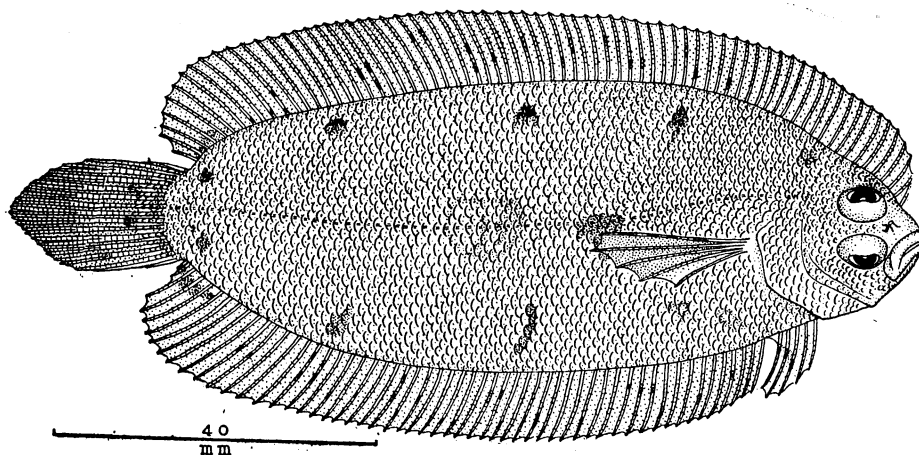


Fig. 3 *Samariscus japonicus* KAMOHARA, in lateral view, from a male specimen, 90.8 mm in standard length (M. F. C. No. 1878). Drawing by K. MATSUBARA and H. TAKAMUKI.

Body elliptical, but much lower than half the length of body. Head bluntly pointed, as long as or longer than half the depth of body, the upper profile shallowly concave before the eye. Snout measured to anterior end of lower eye 1.38 to 1.75 in diameter of eye and shorter than a fourth the length of head. Eyes rather large, separated by a narrow, scaled ridge, the lower slightly advance of upper. Nostrils on ocular side tubular, but the anterior tube much longer than the posterior one and nearer eye than tip of snout; posterior nostril opening between anterior ends of eyes.

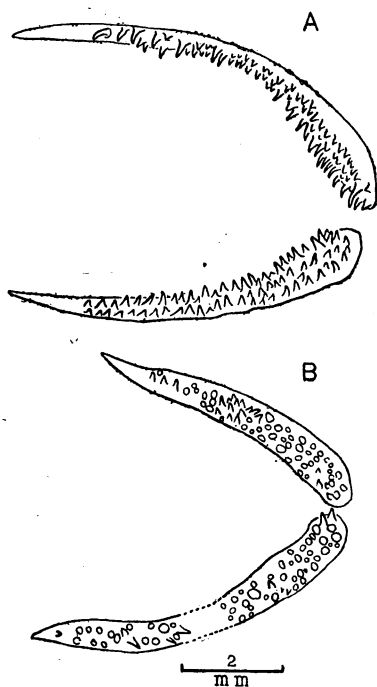


Fig. 4. Teeth on upper (A) and lower (B) jaws in *Samariscus japonicus* KAMOHARA, from a female specimen, 91.3 mm in standard length (M. F. C. No. 2387). The band of teeth on ocular side (upper limb in A and lower limb in B) longer than those of blind side in both jaws. Drawings by K. MATSUBARA and H. TAKAMUKI.

Mouth oblique, symmetrical, the right maxillary extends to below anterior one-fourth of eye; lips rather thick; lower jaw about as long as half the length of head, a little projecting beyond tip of upper jaw when mouth is closed. Teeth villiform, on jaws only, set irregularly in three series anteriorly, becoming biserial posteriorly, the band on ocular side more or less longer than that of the blind side (Fig. 4 A·B).

Gill-rakers tubercular, compressed and more or less flexible, but each supported by an axial skeleton.

Scales ctenoid on both sides of body as in those of *S. latus*, and the denticulations becoming longer and stronger toward margins of the scales. Lateral line straight, gently elevated above the pectoral fin.

Dorsal and anal similar in shape, the rays become gradually longer posteriorly; interspace between anal and caudal narrower than that between dorsal and caudal. Pectoral not filamentous, the next one from the upper the longest, about as long as head, extending two-sevenths the way between base of pectoral and that of caudal; the succeeding ones not so abruptly becoming shorter toward the lowermost ray; no pectoral on blind side. Ventral on ocular side

larger than that of the blind side. Caudal rather pointed at the tip, the rays all branched except for two rays both in upper and lower ends of the fin.

Coloration.—In formalin the body greyish brown, with a series of five well separated dark brown blotches running submarginally along both upper and lower edges of body; a row of two large, but less well-defined blotches along lateral line. Median fins paler than body; dorsal and anal with irregular blackish dots and more or less darker margins; a pair of dark blotches near the base of caudal. Pectoral uniformly dark or crossed with about five dark bars. Ventral pale, with several dark dots. Left side of body uniformly pale.

Comparison.—Our specimens agree well with KAMOHARA's *Samariscus japonicus* (1936b: 1006, fig. 1) with the exception of its having more or less larger number of dorsal rays, 69 to 73 instead of 63 to 71 in the latter, and somewhat larger eye, the diameter 2.78 to 3.35 in head instead of 3.20 to 3.60 in the latter.

The present species resembles *Samariscus huysmani* WEBER, *S. maculatus* (GUNTHER), *S. corallinus* GILBERT and *S. luzonensis* FOWLER at least in having short pectoral and

slender body, especially most closely related to *S. huysmani* rather than *S. maculatus*. When compared with *S. huysmani* (WEBER, 1913: 420, pl. 6, fig. 6; NORMAN, 1927: 47; WEBER and BEAUFORT, 1929: 142, fig. 35; NORMAN, 1934: 409, fig. 297), *S. japonicus* is found to be having fewer number of scales in lateral line (70 to 75 in the former), shorter snout, larger eye (snout about as long as eye, diameter of which is 4.0 in length of head in the former) and shorter maxillary (maxillary 2.0 to 2.5 in length of head in the former).

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