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Description of a New Freshwater Goby from Japan[1]

By

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Tukugobius flumineus sp. nov.

Head 3.60 in total length without caudal; snout 2.73 in head; eye 5.1; interorbital 8.4; caudal peduncle 1.07; depth of the same 2.27. D. VII-I, 7; A. I, 7; P. 17; V. I, 4; C. 16; thirty-five scales in a lateral series, fourteen scales in a transverse series between the origin of second dorsal and anal.

Body elongate, cylindrical anteriorly; caudal peduncle low and compressed; head long and depressed, with bulging cheeks; eyes on top of head; mouth subterminal and slightly oblique, with thick lips; lower jaw slightly included, the posterior angle of maxillary not extending to eye; jaws with moderately broad bands of small conical teeth; the outer row of these teeth in upper jaw enlarged, including some small caninoid teeth which are not seen in some specimens; the same in lower jaw consisting of similar but much smaller teeth; behind outer row in each jaw, about two rows of minute teeth; tongue with round tip; (glossohyal fan-shaped; gills 4, gill rakers on first gill-arch 2+5, short)[3].

Two dorsals well separated; first dorsal with strongly curved margin, inserted before middle of pectoral, in some males third and fourth spines long and filamentous in the spawning season; second dorsal higher than first dorsal, with subequal rays and gently curved margin; anal inserted below third or fourth ray of second dorsal, with gently curved margin, last ray ending little before that of second dorsal which does not reach caudal when depressed; pectoral without free silk-like rays on the upper margin, with broadly rounded posterior margin, extending below the tip of fourth spine of first dorsal when depressed; ventrals joining each other, to form a circular adhesive disk, in some specimens broader than long, extending a half way to anus; caudal broadly rounded.

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2) Present address: Biological Laboratory, Osaka Gakugei University.

3) These characters were examined with the other specimens.

Body covered with firm ctenoid scales which become smaller towards belly and nape; entire head and nuchal region naked; pectoral bases and the entire region about ventrals naked, including breast and a median stripe behind ventrals which sometimes extend to anus; no lateral line; anal papilla distinct.

Colour in formalin yellowish brown, lighter below, with five longitudinal bands of very faint darkish colour along the middle of each side which unite to be a longitudinal streak or line in some specimens, without distinct marking on head and paired fins; vertical fins faint dusky; brownish spots on rays of second dorsal and caudal arranged in several longitudinal rows.

Type-specimens: Holotype: ♀ (48.8 mm in total length), paratypes: 3♂♂, 2♀♀ (30-VIII-1959, collected by N. MIZUNO).

All the type-specimens are preserved in my collection.

Type-locality: Sôshagawa river at Oshita, in Ochigun District, Ehime Prefecture, Shikoku, Japan.

Habitat: Mountain streams in the southwestern region of Japan, including the Riukiu Islands, as reported on the previous pages.

Remarks: This fish is very variable as seen in Table 1, and has been frequently included in *Rhinogobius similis* GILL, from which it differs in such characters as shown in Table 2. These details were reported on the previous pages.

Table 1. Measurements of *Tukugobius flumineus* collected in several stations.

Station	Head	Snout	Eye	Inter-orbital	Caudal peduncle	D.	A.	P.	C.	Scales	Body length
R. Sôshagawa	3.60	2.73	5.1	8.4	1.07	VII-I,9	I, 7	17	16	35	48.8
	3.70	3.12	4.8	9.1	1.09	VI -I,9	I, 7	16	15	34	46.2
R. Yuragawa	3.26	3.70	4.9	8.8	1.21	VI -I,8	I, 7	17	16	34	59.0
	3.38	2.87	4.6	6.7	1.16	VI -I,8	I, 7	17	16	34	52.4
	3.43	2.98	5.3	4.6	1.15	VI -I,8	I, 8	17	16	35	58.2
	3.55	4.52	4.5	7.5	1.15	VI -I,9	I, 8	17	15	36	52.6
	3.69	4.80	4.8	9.2	1.04	VI -I,9	I, 8	17	16	35	50.9
R. Inukaigawa	3.17	2.95	6.2	7.3	1.24	VII-I,8	I, 8	17	16	34	48.6
	3.33	2.95	5.5	6.3	1.10	VII-I,8	I, 7	16	16	34	50.8
	3.40	2.95	4.8	6.3	1.09	VI -I,8	I, 7	16	15	34	50.8
	3.63	3.51	4.8	6.2	1.05	VI -I,7	I, 7	17	15	36	50.5
R. Kamogawa	3.04	2.64	6.5	6.6	1.15	VI -I,8	I, 7	17	15	33	57.4
	3.32	2.61	5.9	6.7	1.16	VI -I,8	I, 7	16	17	33	57.6
	3.24	2.96	5.5	5.1	1.16	VI -I,8	I, 7	16	15	35	58.3
	3.64	3.48	4.9	6.6	0.97	VI -I,8	I, 7	17	15	35	48.8

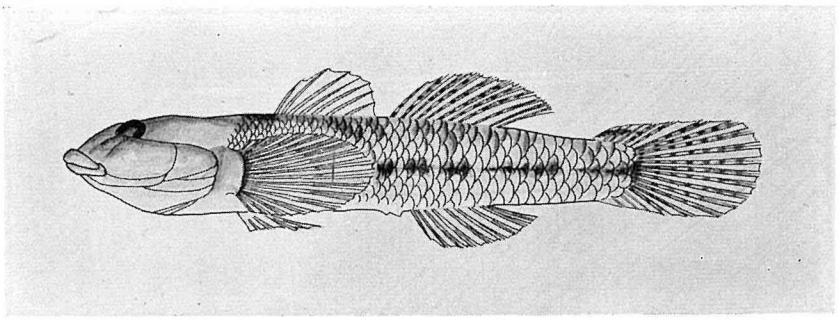

Fig. 1. *Tukugobius flumineus* sp. nov., ♀, of the Sôshagawa river.

Table 2. Distinctive features between *Tukugobius flumineus* and *Rhinogobius similis*.

	Tukugobius flumineus	*Rhinogobius similis*
Number of first dorsal rays	VI or VII	VI
Number of pectoral rays	15～18	18～22
Number of vertebrae	28 (rarely 27)	26
Number of gill rakers	2+5	2+8～9
Size of eggs (mm)	1.4～2.1	0.4～0.8
Number of eggs in a female	Ca. 70～130	Ca. 1000～7000
Size of newly hatched larvae (mm)	Ca. 7.5	Ca. 4.0
Mode of life	fluvial life	Amphidromous life or Lacustrine life