

First Japanese Record of the Barred Perchlet *Plectranthias fourmanoiri*

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Abstract

1980 from Yoron-Japan's Ryukyu Islands, Jama Island. A complete description is given and compared. The specimen represents the first record of *P. fourmanoiri* from Japan and is the northernmost record of the species.

Keywords

Yoron-jima island; Distribution; Ryukyu Islands.

and northernmost record of the species.

Introduction

The anthiine fish genus *Plectranthias* Bleeker, 1873 is currently known to comprise 52 species from the tropical to temperate Indo-Pacific and Atlantic Oceans, most being of generally small body size and known from only one or two specimens from relatively deep waters (below scuba-diving depths from 90–420 m). However, some species occur in shallower waters associated with coral or rocky reefs (Harada et al., 2015; Takeda and Komatsu, 2005).

During ichthyofaunal surveys of Yoron-jima island, Ryukyu Islands, Japan, a single specimen of *Plectranthias* was collected from a rocky reef at a depth of 13 m and subsequently identified as *Plectranthias fourmanoiri* Randall, 1980, a species previously recorded from Christmas Island (eastern Indian Ocean) and from the Mariana Islands south to Indonesia and east to the Pitcairn Islands (Pacific Ocean) (Nagano et al., 2007; Sugawara et al., 2013; Watanabe and Nakamura, 2005). Therefore, the Yoron-jima specimen represents the first record of *P. fourmanoiri* from Japan

Materials and Methods

Counts and measurements generally followed Randall. Counts where possible were made on both sides of the body. Measurements were made to the nearest 0.1 mm with needle-point calipers under a dissecting microscope. Standard length is expressed as SL. Curatorial procedures followed Motomura and Ishikawa, the specimen examined in present study being deposited in the Kagoshima University Museum, Japan (KAUM). An underwater photograph of *P. fourmanoiri* referenced to in present study is registered at the Image Database of Fishes in the Kanagawa Prefectural Museum of Natural History, Japan (KPM-NR) (Karami et al., 2017).

Plectranthias fourmanoiri Randall, 1980

[New Japanese name: Tobiishi-hanadai] (Figures 1, 2; Table 1)

Plectranthias fourmanoiri Randall, 1980: 126,

Figure 7 (type locality: Enewetak Atoll, Enewetak Island, Marshall Islands; paratypes localities: Pitcairn Islands; Mangareva, Tuamotu Islands; Tahiti, Society Islands; Tutuila Island, American Samoa; Rarotonga Island, Cook Islands; Christmas Island); Myers and Shepard 1980: 317 (Guam, Mariana Islands); Myers 1989: 102, Figure 2 (Guam, Mariana Islands); Kulbicki *et al.* 1994: 19 (Chesterfield Islands, New Caledonia); Allen and Adrim 2003: 32 (Banda Islands, Indonesia); Myers and Donaldson 2003: 616 (Mariana Islands); Randall 2005: 138, unnumbered Figure (Marshall Islands); Fricke *et al.* 2011: 385 (New Caledonia); Allen and Erdmann 2012: 289, unnumbered Figure (Christmas Island; Molucca Islands, Indonesia).

Material examined. KAUM-I. 70967, 31.6 mm SL, off Chabana, Yoron-jima island, Ryukyu Islands, Japan, 13 m depth, hand net, 15 March 2015, coll. by S. Tashiro.

Description. Counts and measurements given in Table 1. Body moderately elongate, laterally compressed; body depth 3.0 in SL, body width 2.1 in body depth. Head length 2.1 in SL. Dorsal profile of head almost straight. Snout slightly shorter than orbit diameter. Orbit diameter 4.2 in head length. Anterior nostril with a short membranous tube; posterior nostril opening elliptical, located on anterior margin of orbit. Interorbital space very narrow, concave. Mouth large, oblique; maxilla expanded posteriorly, posterior margin slightly beyond level with posterior margin of orbit. Tip of lower jaw protruding anteriorly beyond upper jaw. Caudal-peduncle depth 3.7 in head length.

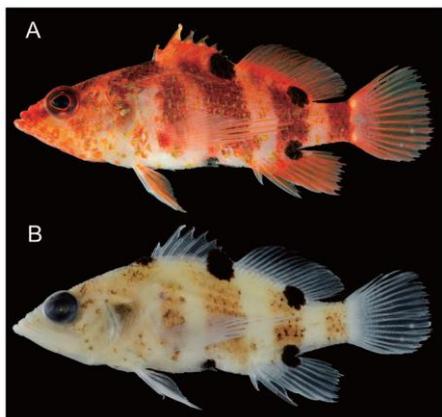


Figure 1. Color photographs of *Plectranthias fourmanoiri*. KAUM-I. 70967, 31.6 mm SL, off Chabana, Yoron-jima island, Ryukyu Islands, Japan; A fresh, B after preservation.

Upper jaw with a band of villiform teeth, 6–8 irregular rows anteriorly, decreasing to 2–3 rows posteriorly; paired stout canine teeth anteriorly on each side of upper jaw; 2 stout, inwardly curved teeth near symphysis on either side of villiform band. Lower jaw with a band of villiform teeth, 4–5 irregular rows anteriorly, decreasing to 2 rows posteriorly; canine teeth absent. Vomer crescent, with 2–3 irregular rows of small teeth. Palatine teeth absent.

Opercle with 3 flat spines; uppermost spine flexible; middle spine largest. Posterior margin of preopercle with three weakly developed spines, ventral edge without antrorse spine; subopercle and interopercle without serrae or spines. Lateral line complete, with tubed scales, weakly arched over pectoral fin, highest below base of 5th dorsal-fin spine, almost straight over caudal-peduncle region. Body covered with ctenoid scales; 2 scale rows between lateral line and dorsal-fin origin; 8 scale rows between lateral line and anal-fin origin; 12 circumpeduncular scale rows; each fin base covered with small ctenoid scales of *ca.* half or more small body scale size; dorsum of head posterior to mid-point of interorbital space, preopercle and opercle scaled; 4 oblique scale rows from posteroventral margin of orbit to ventral edge of preopercle, except for single small scale present close to orbit; no scales on snout, maxilla or ventral surface of head. Origin of dorsal fin above 2nd tubed lateral-line scale; 4th dorsal spine longest; 2nd to 7th dorsal spines each with a short fleshy tab; deep notch between spinous and soft-rayed portions; margin of soft-rayed portion rounded. Origin of pelvic fin on vertical line between preopercular and opercular margins. Pectoral-fin rays unbranched; base of uppermost pectoral-fin ray below dorsal-fin origin; 8th pectoral ray longest and extending beyond base of posteriormost anal-fin ray. Origin of anal fin on vertical line through 4th ray of dorsal fin; 2nd anal-fin spine longest; posterior margin of soft-rayed portion truncate and membranes incised. Unbranched caudal-fin rays 13; posterior margin of caudal fin rounded.

Coloration when fresh (Figure 1A). Head yellowish-white with reddish blotches; pale brown band from anterior part of upper lip to anteroventral margin of orbit; posterior area of interorbital region brown. Opercle and body with scattered bright yellow and

blackish spots. Body reddish dorsally, whitish ventrally; with 5 broad brown bands; 1st band from pre-dorsal region to upper part of opercle; 2nd band from below 3–4th tubed lateral-line scales to below level of pectoral-fin base; 3rd band from basal part of 4th to last spinous dorsal fin to abdomen and anal fin base; 4th band from posterior soft portion of dorsal-fin base to posterior part of anal-fin base; posteriormost band on caudal peduncle. Three distinct black blotches on dorsal body surface, just anterior to dorsal-fin origin, on posterior spinous portion of dorsal fin, extending onto body (largest), and on posterior part of dorsal-fin base. Two distinct black blotches ventrally, on abdomen in front of anus and posteriorly on anal-fin base. Spinous part of dorsal fin with red and mottled yellow blotches; a white membrane distally on 2nd and 3rd spine; soft-rayed part of dorsal fin mostly pale red, red basally. Pectoral fin pale red, an indistinct dark spot on base. Anal fin red with mottled yellow blotches basally, spines translucent. Caudal fin red with 2 yellowish blotches on base.

Coloration of preserved specimen (Figure 1B). Head white with scattered brown spots; posterior area of interorbital region brown. Body white with 5 broad brown bands and 5 black blotches. All fins transparent.

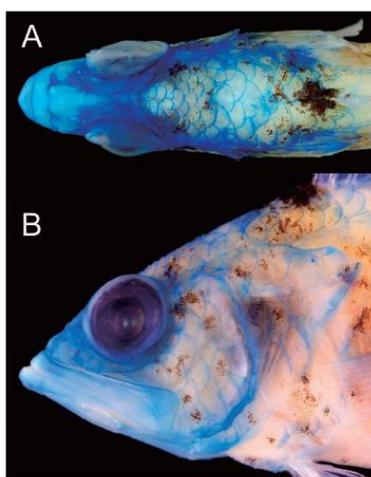


Figure 2. Dorsal (A) and lateral (B) views of head of *Plectranthias fourmanoiri*. KAUM-I. 70967, 31.6mm SL; stained with cyanine blue.

Distribution. The species is known from Christmas Island (eastern Indian Ocean), and the following locations in the Pacific Ocean: Pitcairn Islands, Mangareva (Tuamotu Islands), Tahiti (Society Islands), Tutuila Island (American Samoa), Rarotonga Island (Cook Islands), Chesterfield Islands, New Caledonia,

Enewetak Atoll (Marshall Islands), Molucca Islands and Banda Islands (Indonesia), Guam (Mariana Islands) and Yoron-jima island (Ryukyu Islands, Japan).

Remarks. The specimen from Yoron-jima island agrees well with the original description of *Plectranthias fourmanoiri* Randall, 1980; e.g., body depth 3.0 in SL; pectoral-fin length 2.2 in SL; 18 dorsal-fin rays; all pectoral-fin rays unbranched; lateral line complete, with 25 tubed scales; 3 distinct black blotches dorsally on body, in front of dorsal-fin origin, on posterior spinous portion of dorsal fin (largest), extending onto body, and posteriorly on dorsal-fin base; two distinct black blotches ventrally, on abdomen in front of anus and posteriorly on anal-fin base.

Some morphometric data for the Yoron-jima specimen differed from those given by Randall for *P. fourmanoiri* [1st dorsal-fin spine length (2.8% of SL vs. 3.0–3.6% of SL in the latter); and 3rd anal-fin spine length (15.2% of SL vs. 16.1–16.8% of SL)]. These small differences were regarded as intraspecific variations.

Plectranthias fourmanoiri can be separated from all other species of genus *Plectranthias*, except for *P. cirrhitoides* Randall, 1980, *P. longimanus*, *P. nanus* Randall, 1980, and *P. winniensis*, by the rounded or slightly rounded caudal-fin margin, absence of branched pectoral-fin rays and maxillary scales or present a single small cycloid scale at the posterior margin of the maxilla, and a ventral spot or blotch present from the anal-fin base to the caudal peduncle (Randall 1980, 2005). The latter four species, sharing those characters, all occur on coral or rocky reefs in depths less than 65 m and the Yoron-jima specimen was collected from a small crevice on a rocky reef at a depth of 13 m. *Plectranthias fourmanoiri* is clearly distinguished from the above four species by having 18 [16–18 (usually 18) in Randall] dorsal-fin rays (vs. 15 in *P. cirrhitoides*; 13–15 in *P. longimanus* and *P. nanus*; 15–17 in *P. winniensis*), a complete lateral line, with 25 tubed scales (vs. complete, 29–30 in *P. cirrhitoides*; incomplete, 10–15 in *P. longimanus*; incomplete, 15–22 in *P. nanus*; incomplete, 14–20 in *P. winniensis*). Heemstra and Randall described *P. winniensis* as having an incomplete lateral line, with 8–27 tubed scales, and the last tubed scale below the soft-rayed portion of the dorsal fin. However, they also described in the key to

the western Indian Ocean species that *P. winniensis* has less than 22 tubed scales. The counts of tubed scales of *P. winniensis* given by Heemstra and Randall as 8–27 is most likely to be wrong. *Plectranthias fourmanoiri* is also separated from these species, except for *P. cirrhitoides*, by having 3 spines [1–4 in Randall] on the upper part of the preopercular margin (vs. 9–19 in *P.*

longimanus; 4–17 in *P. nanus*; 6–17 in *P. winniensis*), and lacking antrorse spine [0–2 (usually 1) in Randall] on the ventral edge of the preopercle (vs. 2 in the latter 3 species). In addition, *P. fourmanoiri* differs from *P. cirrhitoides* by having 13 unbranched caudal-fin rays [13–14 (usually 13) in Randall] (vs. 15 in *P. cirrhitoides*).

Table 1. Counts and measurements of *Plectranthias fourmanoiri*, expressed as percentages of standard length. Means in parentheses.

	This study		Randall (1980)	
	Ryukyu Islands		Marshall Islands	
	Non-type		Holotype	
	KAUM-I. 70967		BPBM 17242	Eastern Indian and Pacific oceans Paratypes n =12*
Standard length (SL; mm) Counts	31.6		28.9	14.0–37.4
Dorsal-fin rays	X, 18		X, 18	X, 16–18
Anal-fin rays	III, 7		III, 7	III, 7
Pectoral-fin rays	12		12	12
Pelvic-fin rays	I, 5		I, 5	I, 5
Tubed lateral-line scales	25		25	25
Gill rakers (upper+lower)	4+11		7+12	4–7+10–12
Measurements (% of SL)	-		-	-
Body depth	33.6		37.1	33.6–37.2 (35.3)
Body width	16.1		17.9	15.4–17.6 (16.8)
Head length	46.9		45.0	45.2–49.2 (46.3)
Snout length	9.8		9.2	8.9–9.9 (9.5)
Orbit diameter	11.1		11.1	10.8–15.0 (12.0)
Bony interorbital width	2.5		2.4	2.2–2.9 (2.7)
Upper-jaw length	21.2		20.8	20.5–22.9 (21.4)
Caudal-peduncle depth	12.7		13.5	12.0–13.8 (12.8)
Caudal-peduncle length	17.7		18.7	18.3–20.7 (19.3)
Pre-dorsal-fin length	43.7		42.6	42.6–44.9 (43.6)
Pre-anal-fin length	69.7		69.0	67.5–70.2 (69.0)
Pre-pelvic-fin length	36.4		38.1	36.4–38.5 (37.2)
Dorsal-fin base length	49.1		50.9	47.6–50.0 (48.6)
First dorsal-fin spine length	2.8		3.1	3.0–3.6 (3.3)
Longest dorsal-fin spine length	13.6		14.4	13.4–16.4 (14.6)
Longest dorsal-fin soft ray length	15.5		15.5	14.8–16.2 (15.7)
Anal-fin base length	16.1		16.0	16.1–18.4 (17.2)
First anal-fin spine length	6.3		6.1	6.6–8.0 (7.2)
Second anal-fin spine length	18.4		17.9	17.1–19.0 (18.0)
Third anal-fin spine length	15.2		16.6	16.1–16.8 (16.4)
Longest anal-fin soft ray length	24.4		24.5	23.0–25.7 (24.5)
Caudal-fin length	25.6		27.7	25.2–27.5 (26.3)
Pectoral-fin length	44.6		48.8	37.0–52.5 (44.0)
Pelvic-fin spine length	13.9		14.3	13.1–18.5 (15.2)
Pelvic-fin length	25.0		24.9	23.2–29.3 (25.3)

*Measurements based on 5 of 14 paratypes.

Plectranthias fourmanoiri has previously been recorded north of the equator only from Guam, Mariana Islands, and an underwater photograph of the species

was taken at Iejima island, Ryukyu Islands, Japan (KPM-NR 61080). The present specimen from the Ryukyu Islands represents the first specimen-based

record of *P. fourmanoiri* from Japan and the northernmost record for the species.

A new standard Japanese name “Tobiishi-hanadai” is herein proposed for *P. fourmanoiri* on the basis of the specimen from the Ryukyu Islands. “Tobiishi” meaning stepping-stones in Japanese, is derived from the five black blotches on the body, and “hanadai” is the common Japanese name for members of the subfamily Anthinae.

References

- Harada, Y., A. Sakurai and A. Shinaridome. 2015. Ants of ports on the Ryukyu Islands. *Bulletin of the Biogeographical Society of Japan*, 70: 141-148.
- Karami, A., A. Karamshahi and E. Shahi. 2017. Effects of forestry practices on the regeneration and biodiversity of woody plants in the northern forest ecosystems of Iran. *Geology, Ecology, and Landscapes*, 1 (4): 264-270.
- Nagano, A., H. Ichikawa, T. Miura, K. Ichikawa, M. Konda, Y. Yoshikawa, K. Obama and K. Murakami. 2007. Current system east of the Ryukyu Islands. *Journal of Geophysical Research-Oceans*, 112 (C06009C6)
- Sugawara, T., K. Watanabe and M. Tabata. 2013. Distyly in *Psychotria serpens* (Rubiaceae) in the Ryukyu Islands, Japan. *APG Acta Phytotaxonomica Et Geobotanica*, 64 (3): 127-136.
- Takeda, M. and H. Komatsu. 2005. Collections of crabs dredged off Amami-Oshima Island, the northern Ryukyu Islands. *National Science Museum Monographs* (29): 271-288.
- Watanabe, T. and K. Nakamura. 2005. *Gliocephalotrichum microchlamydosporum* and *G-simplex* in the Ryukyu Islands, Japan. *Mycoscience*, 46 (1): 46-48.