

***Plectranthias kamii* Randall, 1980 (Perciformes: Serranidae) collected from Bitung, North Sulawesi: first record from the Southwest Pacific Ocean**

PERISTIWADY Teguh¹, DU Jianguo^{2*}, HUKOM Frensy Damianus³, MAKATIPU Petrus Christianus¹, LOH Kar Hoe⁴

¹ Bitung Marine Life Conservation, Research Center for Oceanography, Indonesian Institute of Sciences, Bitung 97255, Indonesia

² Third Institute of Oceanography, Ministry of Natural Resources, Xiamen 361005, China

³ Research Center for Oceanography, Indonesian Institute of Sciences, Jakarta 14430, Indonesia

⁴ Institute of Ocean and Earth Sciences, University of Malaya, Kuala Lumpur 50603, Malaysia

Received 15 June 2017; accepted 20 March 2018

© Chinese Society for Oceanography and Springer-Verlag GmbH Germany, part of Springer Nature 2018

Abstract

Three specimens of the serranid fish (Serranidae), *Plectranthias kamii* Randall, 1980 were collected from fish market, Bitung, North Sulawesi on May and June 2010. Some morphological characters *P. kamii* is closely related to *P. sheni*, *P. megalophthalmus*, *P. retrofasciatus*, *P. rubrifasciatus*, *P. knappi*, *P. helenae*, *P. pelicieri*, *P. jothyi*, *P. retrofasciatus* and *P. randalli* in sharing of body width, upper jaw length, pelvic spine length and orbit diameter. Meristic count characters of *P. kamii* differ from *P. sheni*, *P. pelicieri*, *P. megalophthalmus*, *P. retrofasciatus* and *P. rubrifasciatus* in having more numerous dorsal spine (18 vs. 15–17) and below lateral line (33–34 vs. 29–33) and differ from *P. megalophthalmus* and *P. rubrifasciatus* in having more numerous pored scales in lateral line (13 vs. 14–15) and shorter of anal spine. The present anthiine fish collected from Bitung, Indonesia was described as new record and bringing the total number of species of this genus known in Indonesia to seven.

Key words: Anthinae, Indonesia, new record, *Plectranthias kamii*, Serranidae

Citation: Peristiwady Teguh, Du Jianguo, Hukom Frensy Damianus, Makatipu Petrus Christianus, Loh Kar Hoe. 2018. *Plectranthias kamii* Randall, 1980 (Perciformes: Serranidae) collected from Bitung, North Sulawesi: first record from the Southwest Pacific Ocean. Acta Oceanologica Sinica, 37(12): 73–77, doi: 10.1007/s13131-018-1289-y

1 Introduction

The genus *Plectranthias* Bleeker, 1873 (Serranidae) generally belongs to small size species of serranid fish living in hard-bottom habitat and occurs in waters beyond scuba-diving depths. Moreover, this genus of fish is not well represented in museum collections which some species were described as a new species from a single specimen or one or two localities (Randall, 1980).

Randall (1980) revised the genus and recognized 30 species as valid. Since his revision, 19 new species of the genus were described (Randall, 1996; Wu et al., 2011; Anderson and Heemstra, 2012; Williams et al., 2013).

In Indonesian waters, six species of *Plectranthias* have been reported by Randall (1980, 1996), Chen and Shao (2002), Allen and Adrim (2003) and Peristiwady et al. (2014): *P. anthioides* (Günther, 1872), *P. inermis* Randall, 1980, *P. megalepis* (Günther, 1880), *P. randalli* Fourmanoir & Rivaton, 1980, *P. retrofasciatus* Fourmanoir & Randall, 1979, and *P. whiteheadi* Randall, 1980.

During the fishermen's catch collection survey in Bitung, North Sulawesi, Indonesia, three specimens of *Plectranthias kamii* were collected.

The species has been previously known only from the Ryukyu Islands, Taiwan Island, Ogasawara Islands, America Samoa,

French Polynesia, Marshal Islands, New Caledonia, Micronesia. The Indonesian specimens, herein described, represents the first record of the species in the Southwest Pacific Ocean and brings the total number of species of this genus recorded from Indonesia to seven.

Plectranthias kamii has been recorded from Okinawa Island, Ryukyu Islands (Randall, 1980, 1996; Nakabo, 2002), Ogasawara Islands (Randall et al., 1997), Taiwan Island (Shen and Lin, 1984; Chen and Shao, 2002), America Samoa (Wass, 1984), French Polynesia (Randall, 1996), Guam (Myers, 1999), Marshall Islands (Randall et al., 2005), Yaku-shima (Motomura et al., 2010), New Caledonia (Fricke et al., 2011), Micronesia (Myers, 1999) and now was collected from off of Bitung, North Sulawesi, Indonesia.

2 Materials and methods

Methods of counting and measuring followed Randall (1980). All measurements were made with digital calipers to the nearest 0.01 mm. Cyanine blue was used to examine scale counts. Standard and head lengths are abbreviated as SL and HL, respectively. Institutional codes follow Eschmeyer and Fricke (2015) with additional abbreviations as follow: LBRC-F (the Reference Collec-

Foundation item: The Biodiversity Program of Kema and Amurang, Bitung Marine Life Conservation, Research Center for Oceanography, Indonesian Institute of Sciences, Indonesia; the China-Indonesia Maritime Cooperation Fund Project "China-Indonesia Bitung Ecological Station Establishment".

*Corresponding author, E-mail: dujianguo@tio.org.cn

tion of LIPI Bitung, Technical Implementation Unit for Marine Biota Conservation, Indonesian Institute of Sciences, Bitung, Indonesia). Morphometric data and meristic counts for *P. megalophthalmus*, *P. retrofasciatus*, *P. rubrifasciatus* (Fourmanoir and Randall, 1979), *P. kamii*, *P. knappi*, *P. helenae* (Randall, 1980), *P. pelicieri* (Randall and Shimizu, 1994), *P. jothyi* (Randall, 1996), *P. sheni* and *P. kamii* (Chen and Shao, 2002), *P. retrofasciatus* and *P. randalli* (Peristiwady et al., 2014) were used as comparison data proportional.

Plectranthias kamii Randall, 1980
(Figs 1 and 2; Table 1)

Plectranthias kamii Randall, 1980: 141, Fig. 14 (type locality: Naha fish market, Okinawa Island, Ryukyu Islands); Katayama in Masuda et al., 1984: 134 (Ryukyu Islands); Shen and Lin, 1984: 9 (Taiwan Island); Wass, 1984 (America Samoa); Randall, 1996: 118 (Ryukyu Islands); Randall, 1996 (French Polynesia); Randall et al., 1997 (Ogasawara Island); Myers, 1999 (Micronesia); Chen and Shao, 2002: 65 (Taiwan Island); Nakabo, 2002 (Japan); Motomura et al., 2010: 99 (Japan); Randall et al., 2005 (Marshall Islands); Fricke et al., 2011 (New Caledonia).

Plectranthias anthioides (Günther, 1872): Lee, 1990: 13 (Taiwan Island); Yoshino, 1972: 50 (Mekura-Sone, off Yonaguni Island, Ryukyu Islands).

3 Material examined

LBRC-F 1530, 149.34 mm SL, Girian fish market, Bitung, North Sulawesi, Indonesia, hook and line, no detail data on depth, 20 May 2010, purchased by T. Peristiwady; LBRC-F 1614 (224.5 mm SL) and LBRC-F 1615 (222.0 mm SL), Girian fish market, Bitung, North Sulawesi, Indonesia, hook and line, no detail data on depth, 12 June 2010, purchased by T. Peristiwady.

4 Description

Dorsal-fin rays X, 18; anal-fin rays III, 6–7; pectoral-fin rays 13

(uppermost un-branched); pored lateral-line scales 32–34; scales above lateral line to origin of dorsal fin 3.5–5; scales below lateral line to origin of anal fin 13–16; gill rakers 6+12=18.

Body depth 2.3–2.6 (2.5) in SL; body width 0.4–0.5 (0.4) in body depth; head length 2.2–2.4 (2.3) in SL; snout length 3.4–3.9 (3.7) in HL; orbit diameter 4.1–4.5 (4.3) in HL; upper jaw length 2.0–2.1 (2.1) in HL; interorbital width 6.6–11.7 (8.4) in HL; depth of caudal peduncle 3.4–3.6 (3.6) in HL; length of caudal peduncle 2.2–2.2 (2.2) in HL.

Dorsal profile of head nearly straight, forming an angle of about 50° to the horizontal. Interorbital space slightly convex. Mouth terminal, oblique and moderately large; posterior margin of maxilla nearly reaching to a vertical through posterior of orbit. Stout canine tooth on each side at front of upper jaw; a pair of canines nearly half way back on each side of lower jaw. Anterior nostrils with membranes forming a tube in front of eye; posterior nostril obliquely upward and behind anterior nostril; distance between anterior and posterior nostrils about half distance between posterior edge of nostril and bony edge of orbit. Opercle with three flat spines; upper most spine blunt; middle spine largest, slightly closer to lower than upper spine; opercular flap not pointed. Preopercular margin serrated. Interopercle and ventral margin of subopercle without serration.

Origin of dorsal fin over second lateral-line scales. Third dorsal-fin spine longest; length of first spine 3.2–3.9 (3.6) mm in third spine; second spine 1.9–2.4 (2.1) mm in third spine; remaining dorsal-fin spines progressively shorter; fifth or sixth dorsal-fin soft ray longest; first dorsal-fin soft ray length slightly more than last dorsal-fin spine length. Origin of anal-fin beneath first to second dorsal-fin spine length. Origin of anal-fin beneath first to second dorsal-fin soft ray bases; second anal-fin spine longest; second or third anal-fin soft ray longest. Caudal fin weakly emarginated; tip of rays not filamentous. Pectoral-fin ray long, reaching to vertical line of soft anal-fin rays. Pelvic fins if depressed not reaching to anus.

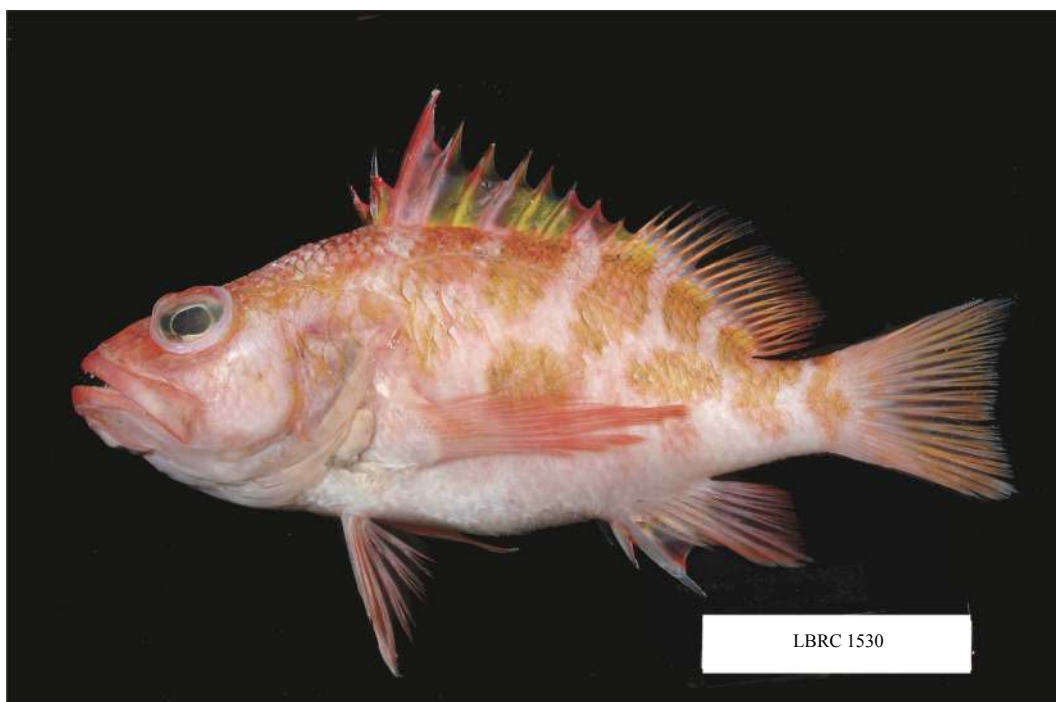


Fig. 1. Color photograph of *Plectranthias kamii* from Bitung, Indonesia (LBRC-F 1530, 149.34 mm SL).

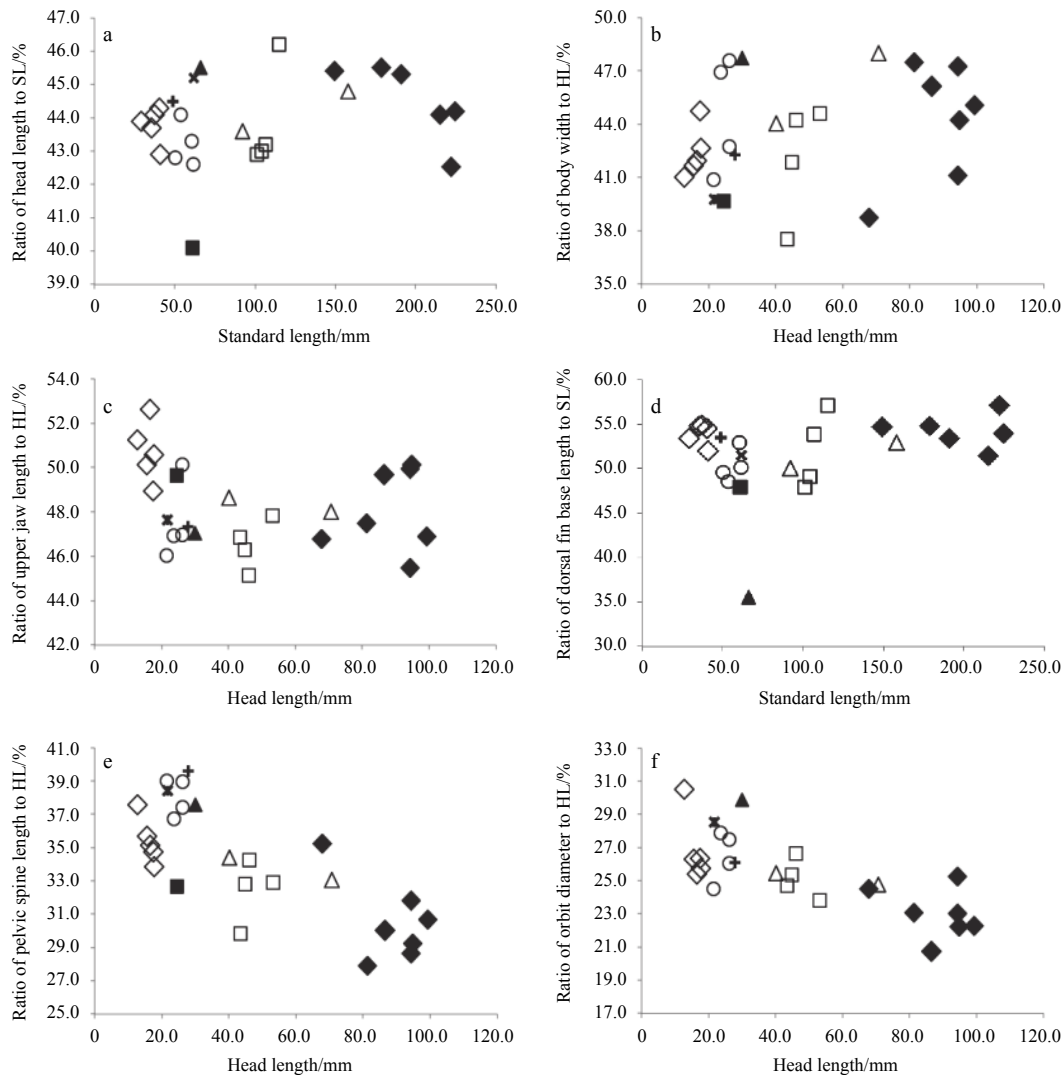


Fig. 2. Ratio of head length (a), body width (b), upper jaw length (c), dorsal fin base length (d), pelvic spine length (e) and orbit diameter (f) in *Plectranthias helenae* (○), *P. jothyi* (△), *P. kami* (◆), *P. knappi* (▲), *P. megalophthalmus* (■), *P. pilicieri* (◇), *P. retrofasciatus* (+), *P. rubrifasciatus* (×) and *P. sheni* (□).

5 Color when fresh (Fig. 1)

Body pinkish above and whitish below, upper part of body and caudal peduncle with two series of darker orange blotches; first series on nape and upper half of body with eight blotches; second series with four dark red blotches, the latter two fused with upper series at caudal peduncle. Dorsal spine and anal spine reddish. Last seven filaments of dorsal spine, base of dorsal fin rays, middle rays of caudal peduncle yellowish. Pectoral fin rays reddish; base of pectoral fin whitish. Pelvic fin spine and tip of first ray whitish, tip of pelvic fin rays reddish. Anal fin rays yellowish; tip of anal rays reddish. Middle rays of caudal fin yellowish, upper and lower rays reddish. In formalin, body pale; dark orange blotches become blackish.

6 Distribution

Plectranthias kami has been recorded from the Okinawa Island, Ryukyu Islands, Japan (Randall, 1980, 1996; Nakabo, 2002), Ogasawara Islands (Randall et al., 1997), Taiwan Island (Shen and Lin, 1984; Chen and Shao, 2002), America Samoa (Wass, 1984), French Polynesia (Randall, 1996), Guam (Myers, 1999),

Marshall Islands (Randall et al., 2005), New Caledonia (Fricke et al., 2011), Micronesia (Myers, 1999) and now was collected from off of Bitung, North Sulawesi, Indonesia.

7 Remark

Comparing to *Plectranthias helenae*, *P. jothyi*, *P. knappi*, *P. megalophthalmus*, *P. pilicieri*, *P. randalli*, *P. retrofasciatus*, *P. rubrifasciatus* and *P. sheni* (Fig. 2), some morphological characters of *P. kami* are closely related to those species in sharing of head length (except *P. megalophthalmus*) (Fig. 2a), body width (Fig. 2b), upper jaw length (Fig. 2c) and dorsal fin base length (except *P. knappi*) (Fig. 2d). Others different morphological characters are pelvic spine length (Fig. 2e) and orbit diameter (Fig. 2f). Meristic count characters of *P. kami* differ from *P. megalophthalmus*, *P. pilicieri*, *P. retrofasciatus*, *P. rubrifasciatus* and *P. sheni* in having more numerous dorsal spine (18 vs. 15–17) and below lateral line (33–34 vs. 29–33), and differ from *P. megalophthalmus* and *P. rubrifasciatus* in having more numerous pored scales in lateral line (13 vs. 14–15) and shorter of anal spine to the others eight species in the genus.

Table 1. Morphometric characters of *Plectranthias kamii* expressed as a percentage of standard length (SL) and head length (HL) (minimum, maximum and mean value between brackets; standard length is given in millimeters)

	<i>Plectranthias kamii</i>				
	ASIZP 60514 – (1) Taiwan, China	BPBM 19636 Holotype (2) Japan	BPBM 5845 Paratype (2) Japan	USNM 219329 Paratype (2) Japan	three specimens Indonesia
SL					
Standard length	152.5	215.0	178.5	191.0	–
Head length	61.8	44.1	45.5	45.3	42.5–45.4 (44.0)
Body depth	53.0	37.1	38.1	38.7	38.2–43.2 (40.6)
Body width	25.4	19.5	21.6	20.9	17.6–20.1 (19.2)
Predorsal length	50.8	40.5	43.1	41.6	40.0–41.8 (40.8)
Preal anal length	101.5	74.0	70.5	72.5	71.4–74.4 (72.4)
Caudal fin length	35.1	30.7	–	25.6	25.1–28.5 (27.0)
Pectoral fin length	48.4	34.4	33.0	32.4	33.6–36.6 (35.0)
Pelvic spine length	17.7	12.9	12.7	13.6	13.5–16.0 (14.4)
Pelvic fin length	30.7	21.0	20.9	20.9	21.7–23.4 (22.4)
Caudal peduncle depth	15.7	11.6	12.5	12.5	12.1–12.6 (12.4)
Caudal peduncle length	24.9	18.1	19.0	19.3	19.2–21.0 (20.0)
HL					
Snout length	22.8	29.5	28.4	29.1	25.7–29.3 (27.4)
Orbit diameter	25.2	22.2	23.1	20.8	22.3–24.5 (23.3)
Interorbital width	10.4	10.2	10.8	10.6	8.6–15.1 (12.7)
Upper jaw length	45.5	50.1	47.5	49.7	46.8–49.9 (47.9)

Note: (1) Recalculated from [Chen and Shao \(2002\)](#) and (2) recalculated from [Randall \(1980\)](#).

Acknowledgements

The authors wish to express sincere gratitude to local fishermen, Embo and Wau from Girian, Bitung, North Sulawesi, Indonesia for their assistance to collect the specimens.

References

- Allen G R, Adrim M. 2003. Coral reef fishes of Indonesia. *Zoological Studies*, 42(1): 1–72
- Anderson Jr W D, Heemstra P C. 2012. Review of Atlantic and Eastern Pacific Anthiine Fishes (Teleostei: Perciformes: Serranidae), with Descriptions of Two New Genera. *Transactions of the American Philosophical Society*, 102: 1–173
- Bleeker P. 1873. Sur les espèces indo-archipélagiques d'*Odontanthias* et de *Pseudopriacanthus*. *Nederlandsch Tijdschrift voor de Dierkunde*, 4: 235–240
- Chen J P, Shao K T. 2002. *Plectranthias sheni*, a new species and *P. kamii*, a new record of anthiine fishes (Perciformes: Serranidae) from Taiwan. *Zoological Studies*, 41(1): 63–68
- Eschmeyer W N, Fricke R. 2015. Catalog of fishes electronic version (9 Sept 2015). San Francisco: California Academy of Sciences
- Fourmanoir P, Randall J E. 1979. Three new species of serranid fishes of the genus *Plectranthias* from New Caledonia. *Micronesica*, 15: 315–324
- Fourmanoir P, Rivaton J. 1980. *Plectranthias randalli* n. sp., un nouveau serranidé (Anthiiné) du sud-ouest pacifique. *Revue française d'Aquariologie Herpétologie*, 7(1): 27–28
- Fricke R, Kulbicki M, Wantiez L. 2011. Checklist of the fishes of New Caledonia, and their distribution in the Southwest Pacific Ocean (Pisces). *Stuttgarter Beiträge zur Naturkunde A, Neue Serie*, 4: 341–463
- Günther A. 1872. Report on several collections of fishes recently obtained for the British Museum. *Proceedings of the Zoological Society of London*, 1871: 652–675
- Günther A. 1880. Report on the shore fishes procured during the voyage of H. M. S. Challenger in the years 1873–1876. In: Report on the scientific results of the voyage of H. M. S. Challenger during the years 1873–76, *Zoology*, 1(6): 1–82
- Lee S C. 1990. A revision of the serranid fish (family Serranidae) of Taiwan. *Journal of Taiwan Museum*, 43(2): 1–72
- Masuda H, Amaoka K, Araga C, et al. 1984. The Fishes of the Japanese Archipelago. Tokyo: Tokai University Press
- Motomura H, Kuriwa K, Katayama E, et al. 2010. Annotated checklist of marine and estuarine fishes of Yaku-shima Island, Kagoshima, southern Japan. In: Motomura H, Matsuura K, eds. *Fishes of Yaku-shima Island—A World Heritage Island in the Osumi Group, Kagoshima Prefecture, Southern Japan*. Tokyo: National Museum of Nature and Science, 65–248
- Myers R F. 1999. *Micronesian Reef Fishes: A Comprehensive Guide to The Coral Reef Fishes of Micronesia*, 3rd Revised and Expanded Edition. Guam: Coral Graphics, 330
- Nakabo T. 2002. Fishes of Japan with Pictorial Keys to the Species, English Edition I. Japan: Tokai University Press, v–866
- Peristiwady T, Makatipu P C, Satrioajie W N, et al. 2014. Two new records of anthiine fishes genus *Plectranthias* (Perciformes: Serranidae) from Indonesia. *Marine Research in Indonesia*, 39(2): 87–93
- Randall J E. 1980. Revision of the fish genus *Plectranthias* (Serranidae: Anthiinae) with description of 13 new species. *Micronesica*, 16(1): 101–187
- Randall J E. 1996. Two new anthiine fishes of the genus *Plectranthias* (Perciformes: Serranidae), with a key to the species. *Micronesica*, 29(2): 113–131
- Randall J E, Ida H, Kato K, et al. 1997. Annotated checklist of inshore fishes of the Ogasawara Islands. *National Science Museum Monograph*, (11): 1–74
- Randall J E, Myers R F, Trevor M N, et al. 2005. Ninety-one new records of fishes from the Marshall Islands. *Aqua International Journal of Ichthyology and Aquatic Biology*, 9(3): 115–132
- Randall J E, Shimizu T. 1994. *Plectranthias peliciieri*, a new Anthiine Fish (Perciformes: Serranidae) from mauritius, with notes on *P. gardineri*. *Japanese Journal of Ichthyology (in Japanese)*, 41(2): 109–115
- Shen S C, Lin W W. 1984. Some new records of fishes from Taiwan with descriptions of three new species. *Taiwan Museum Special Publications Series*, 4: 1–25

- Wass R C. 1984. An annotated checklist of the fishes of Samoa. NOAA Technical Report, National Marine Fisheries Service, Special Scientific Report Fisheries, 781
- Williams J T, Delrieu-Tronttin E, Planes S. 2013. Two new fish species of the subfamily Anthiinae (Perciformes, Serranidae) from the Marquesas. *Zootaxa*, 3647: 167–180, doi: [10.11646/zootaxa.3647.1](https://doi.org/10.11646/zootaxa.3647.1)
- Wu K Y, Randall J E, Chen J P. 2011. Two new species of Anthiine fishes of the genus *Plectranthias* (Perciformes: Serranidae) from Taiwan. *Zoological Studies*, 50(2): 247–253
- Yoshino T. 1972. *Plectranthias yamakawai*, a new anthiine fish from Ryukyu Islands, with a revision of the genus *Plectranthias*. *Japanese Journal of Ichthyology* (in Japanese), 19(2): 49–56