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Pseudochromis stellatus, a new species of dottyback from Indonesia (Teleostei: Pseudochromidae)

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Abstract

The *Pseudochromis reticulatus* complex is diagnosed to include species of *Pseudochromis* with the combination of a pointed caudal fin (rounded with middle rays produced), a reticulated colour pattern on the upper part of the body, dorsal-fin rays modally III,26, anal-fin rays modally III,15, and pectoral-fin rays modally 18. Members of the complex include *P. reticulatus* Gill & Woodland, *P. pictus* Gill & Randall, *P. tonozukai* Gill & Allen, *P. jace* Allen, Gill & Erdmann and *P. stellatus* new species. The last-named is herein described from six specimens from Batanta and Batu Hitam in the Raja Ampat Islands, West Papua, Indonesia. It is distinguished from other members of the complex in live coloration, and in having higher mean numbers of scales in lateral series and of anterior lateral-line scales (36–38 and 29–32, respectively), and a deeper body as measured from the dorsal-fin origin to pelvic-fin origin (31.8–33.5 % SL).

Key words: taxonomy, *Pseudochromis reticulatus* complex, Raja Ampat Islands

Introduction

Fishes of the Indo-Pacific genus *Pseudochromis* Rüppell (1835) were revised by Gill (2004), who recognised 57 species. Fourteen new species have been described subsequently (see Gill & Senou 2016), taking the total number of described species in the genus to 71. Additional potentially new species from the Coral Triangle region are currently under study by the present authors. We herein describe one such species, collected from the Raja Ampat Islands, West Papua Province, Indonesia.

Materials and methods

Methods of counting, measuring and presentation follow Gill (2004). Minimum and maximum values are presented for counts and measurements of all type specimens, followed where different by values for the holotype in parentheses. Bilateral counts for the holotype are separated by a slash; the first count is from the left side. Museum codes for type specimens follow Fricke & Eschmeyer (2017). Comparisons with other similar species are based on specimens listed in Gill (2004), Gill & Allen (2004) and Allen *et al.* (2008).

Pseudochromis stellatus **sp. nov.**
Greenhead Dottyback
Figures 1–3; Tables 1–2

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Holotype. MZB 23884, 46.5 mm SL, Indonesia, West Papua Province, Raja Ampat Islands, Batanta, Dayan Channel (0°48’29”S 130°27’47”E), 55 m, M.V. Erdmann, 19 February 2012.

Paratypes. WAM P.33705-002, 1: 44.9 mm SL, collected with holotype; AMS I.47330-001, 1: 36.5 mm SL, Indonesia, West Papua Province, Raja Ampat Islands, Batu Hitam (0°4’57”S 130°4’59”E), 62 m, M.V. Erdmann, 5 December 2011; WAM P.33630-001, 3: 25.5–47.0 mm SL, collected with AMS I.47330-001.

FIGURE 1. *Pseudochromis stellatus*, MZB 23884, 46.5 mm SL, holotype, Dayan Channel, Batanta, Raja Ampat Islands, Indonesia. Photo by M.V. Erdmann.

Diagnosis. A species of *Pseudochromis* with the following combination of characters: dorsal-fin rays III,24–26 (usually III,26); anal-fin rays III,15; pectoral-fin rays 18–19, usually 18; scales in lateral series 36–38; circumpeduncular scales 16; caudal fin pointed (rounded with middle rays extended to form slight to obvious point); and dorsal-fin origin to pelvic-fin origin 31.8–33.5 % SL.

Description. Dorsal-fin rays III,24–26 (III,26), all segmented rays branched; anal-fin rays III,15, all segmented rays branched; pectoral-fin rays 18–19 (18/18); upper procurrent caudal-fin rays 6; lower procurrent caudal-fin rays 6; total caudal-fin rays 29; scales in lateral series 36–38 (38/36); anterior lateral-line scales 29–32 (30/?); anterior lateral line terminating beneath segmented dorsal-fin ray 19–22 (21/21); posterior lateral-line scales 7–11 + 0–2 (10 + 0/11 + 1); scales between lateral lines 3–4 (3/3); horizontal scale rows above anal-fin origin 13–15 + 1 +3 = 17–19 (13 + 1 + 3/14 + 1 + 3); circumpeduncular scales 16; predorsal scales 19–22 (19); scales behind eye 2–3 (3); scales to preopercular angle 5–7 (5); gill rakers 5–7 + 12–13 = 17–19 (5 + 12); pseudobranch filaments 10–12 (12); circumorbital pores 26–31 (29/29); preopercular pores 9–13 (13/12); dentary pores 4; posterior interorbital pores 1–2 (2).

Lower lip incomplete; dorsal and anal fins without scale sheaths; predorsal scales extending anteriorly to posterior nasal pores; opercle with 5–7 moderately developed serrations; teeth of outer ceratobranchial-1 gill rakers well-developed on tips or distal halves of rakers only, though sometimes with teeth running most of length of upper few rakers; anterior dorsal-fin pterygiophore formula S/S/S+3/1+1/1/1/1/1+1*/1 (S/S/S+3/1+1/1/1/1/1/1+1); dorsal-fin spines stout and pungent; anterior anal-fin pterygiophore formula 3/1+1/1/1+1/1/1+1; anal-fin spines stout and pungent, second spine stouter than third; pelvic-fin spine stout and pungent; second segmented pelvic-fin ray longest; caudal fin pointed (rounded with mid-rays extended to form slight to obvious point), though rounded in smallest (25.5 mm SL) paratype; vertebrae 10 + 16; epineurals 12–13 (13); epurals 3.

Upper jaw with 2–3 pairs of curved, enlarged caniniform teeth anteriorly, and 4–5 (at symphysis) to 2 (on sides of jaw) inner rows of small conical teeth, outermost of rows of conical teeth much larger and more curved than inner rows; lower jaw with 1–3 pairs of curved, enlarged caniniform teeth anteriorly, and 3–4 (at symphysis) to 1 (on sides of jaw) inner rows of small conical teeth, teeth on middle of jaw slightly larger and curved; vomer with 1–2 rows of small conical teeth, forming chevron; palatines with 2–3 rows of small conical teeth arranged in elongate, suboval patch, anterior part of tooth patch more-or-less contiguous with posterolateral arm of vomerine tooth patch; ectopterygoid edentate; tongue moderately pointed and edentate.

FIGURE 2. *Pseudochromis stellatus*, paratypes, AMS I.47330-001 (third from uppermost specimen) and WAM P.33630-001 (all other specimens), Batu Hitam, Raja Ampat Islands, Indonesia. Photo by M.V. Erdmann.

As percentage of SL: head length 27.2–28.6 (27.5); orbit diameter 9.7–11.8 (9.7); snout length 6.2–7.6 (6.2); fleshy interorbital width 5.4–6.0 (5.4); bony interorbital width 4.1–4.5 (4.1); body width 12.5–13.3 (12.7); snout tip to posterior tip of retroarticular bone 14.8–16.1 (14.8); predorsal length 33.5–35.7 (35.1); prepelvic length 30.7–32.6 (32.5); posterior tip of retroarticular bone to pelvic-fin origin 17.6–18.6 (18.3); dorsal-fin origin to pelvic-fin origin 31.8–33.5 (32.9); dorsal-fin origin to middle dorsal-fin ray 32.9–35.1 (35.1); dorsal-fin origin to anal-fin origin 43.5–45.2 (45.2); pelvic-fin origin to anal-fin origin 27.8–32.1 (30.5); middle dorsal-fin ray to dorsal-fin termination 23.7–26.7 (23.7); middle dorsal-fin ray to anal-fin origin 28.1–30.2 (28.6); anal-fin origin to dorsal-fin termination 34.0–37.6 (34.0); anal-fin base length 25.4–29.3 (25.4); dorsal-fin termination to anal-fin termination 16.0–17.8 (17.0); dorsal-fin termination to caudal peduncle dorsal edge 10.9–12.9 (11.6); dorsal-fin termination to caudal peduncle ventral edge 19.4–21.6 (20.2); anal-fin termination to caudal peduncle dorsal edge 20.3–22.0 (20.6); anal-fin termination to caudal peduncle ventral edge 12.0–13.3 (12.7); first dorsal-fin spine 2.2–3.9 (2.6); second dorsal-fin spine 5.2–7.1 (5.6); third dorsal-fin spine 7.1–9.8 (7.1); first segmented dorsal-fin ray 10.8–11.7 (10.8); fourth last segmented dorsal-fin ray 16.5–19.8 (17.2); first anal-fin spine 1.7–2.5 (1.7); second anal-fin spine 4.2–5.5 (4.3); third anal-fin spine 6.0-8.2 (6.7); first segmented anal-fin ray 9.4–12.5 (10.8); fourth last segmented anal-fin ray 14.5–17.2 (15.1); third pectoral-fin ray 14.8–17.2 (14.8); pelvic-fin spine 10.5-12.2 (10.8); second segmented pelvic-fin ray 20.8–26.3 (21.1); caudal-fin length 27.8–36.7 (30.3).

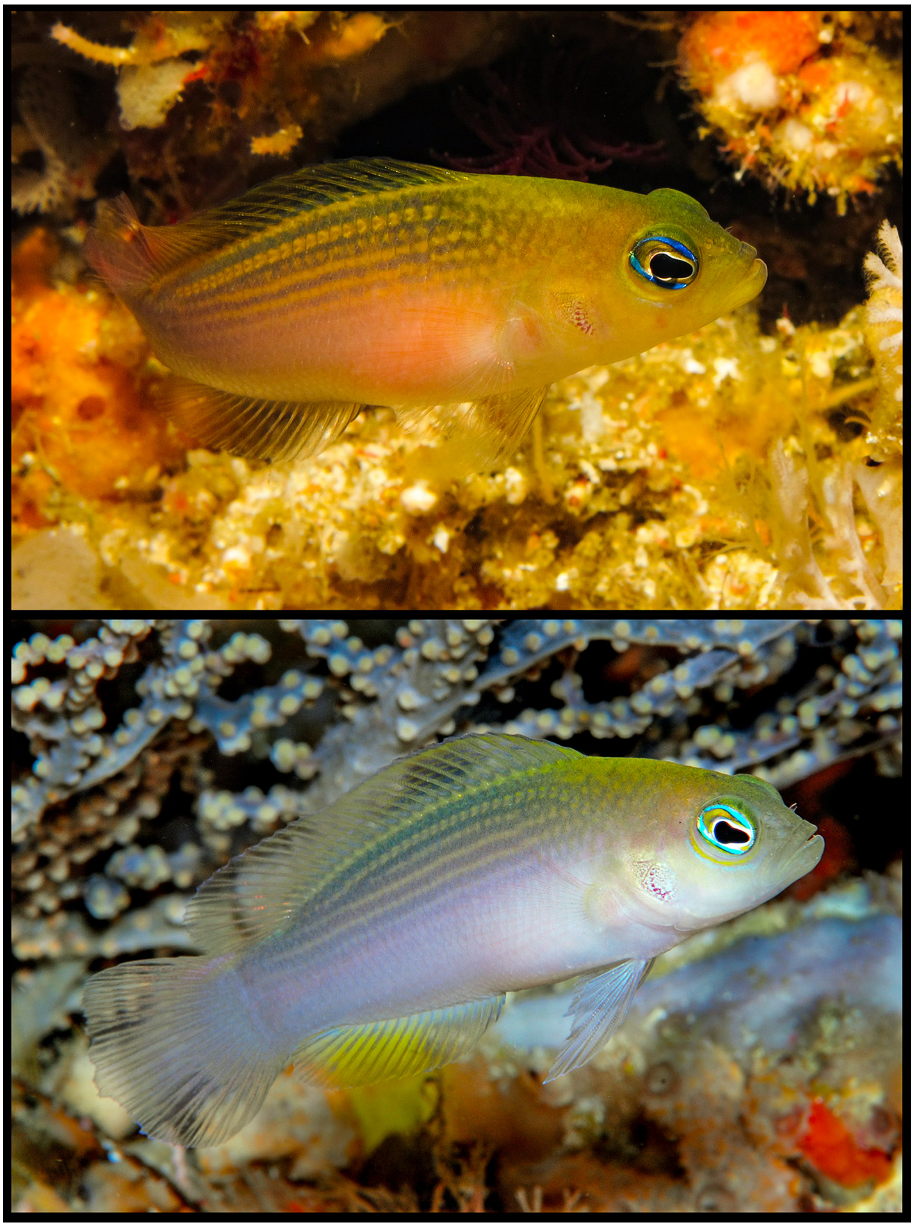

FIGURE 3. *Pseudochromis stellatus*, underwater photos, Batu Hitam, Raja Ampat Islands, Indonesia. Photos by M.V. Erdmann.

Live coloration (based on colour photographs of the holotype and paratypes when freshly dead, and of live individuals at Batanta and Batu Hitam; Figures 1–3): head and predorsal area yellowish green to olive, becoming greyish green in interorbital area and on snout, the remainder of head pale yellow or pale pink to pale grey; lips bluish to yellowish grey; posterior rim of orbit bright yellow, this edged posteriorly with bluish grey to pale blue curved stripe, which sometimes extends to rear third of upper jaw; anterior part of operculum with series of about 5–10 very short reddish brown bars, these sometimes broken into spots or irregular markings; iris yellow-grey to bright yellow with outer bright blue suboval ring; body bluish grey, becoming pale yellow to pale grey on abdomen and breast, sometimes with upper rear part of abdomen pale pink to pale orange; scales on upper part of body each with a bright yellow basal spot, these becoming less distinct ventrally and posteriorly; dorsal fin greyish hyaline with spines and anterior segmented rays yellow to bright yellow; basal part of dorsal fin bright yellow, this edged dorsally with bluish grey to blue; distal margin of dorsal fin narrowly bluish grey to blue, edged proximally on anterior part of fin with bright yellow; middle part of fin membranes sometimes with indistinct yellow stripes; anal fin greyish hyaline, with basal part of fin pale bluish grey; basal part of caudal fin bluish grey, bordered dorsally and ventrally with pale blue stripes, the remainder of fin greyish hyaline; pectoral fins pinkish to yellowish hyaline; pelvic fins bluish to yellowish hyaline, sometimes with spine and distal tip of second segmented ray pale blue.

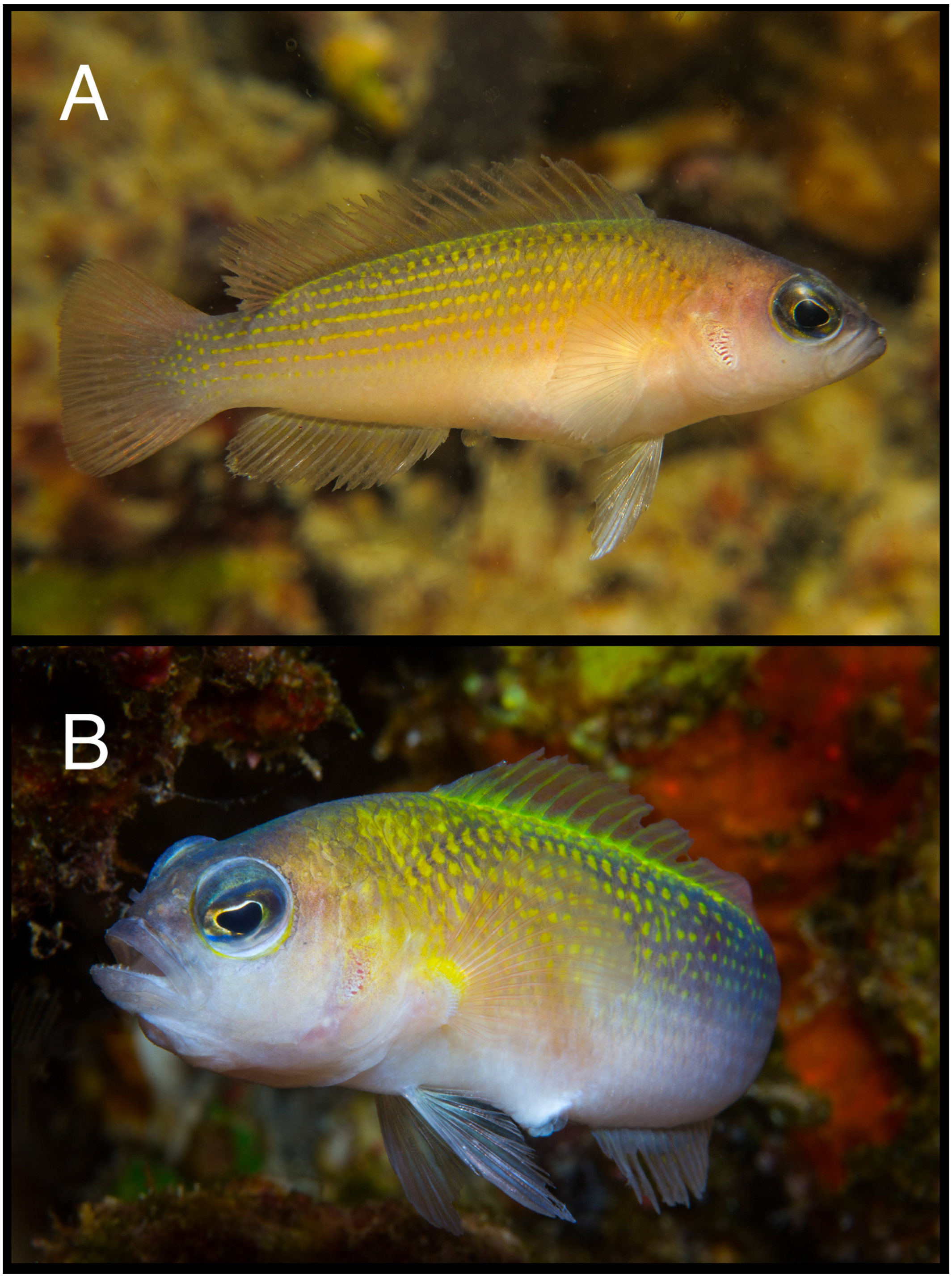

FIGURE 4. Examples of yellow-spotted *Pseudochromis* from A) Rouw, Cendrawasih Bay, West Papua, Indonesia; B) Milne Bay, Papua New Guinea. Photos by M.V. Erdmann.

FIGURE 5. *Pseudochromis* sp., aquarium photo of individual from Cebu, Philippines. Note the fish was photographed under artificial lighting that has imparted a violet/blue cast on the fish. Photo by J. Ma.

Preserved coloration: head and body dark greyish brown dorsally, becoming pale yellowish brown ventrally; yellow spots and markings on head, body and fins become pale yellowish brown; curved blue marking behind eye becomes greyish brown; bluish grey to blue markings on fins become greyish brown.

Habitat and distribution. *Pseudochromis stellatus* is known from Batanta and Batu Hitam in the northern Raja Ampat Islands of West Papua Province, Indonesia, where it has been collected in 55–62 m and observed to at least 70 m depth. The new species is found on deep reef slopes with gentle incline but exposed to strong currents, and is generally found in association with small gorgonian sea fans or low-growing barrel sponges. It is most likely more widely distributed in the region, but confusion with similar yellow-spotted pseudochromids makes underwater identification difficult (see Comparisons). The species possibly ranges to Cebu, Philippines (see Remarks).

Comparisons. *Pseudochromis stellatus* resembles *Pseudochromis reticulatus* Gill & Woodland (1992), *P. pictus* Gill & Randall (1998), *P. jace* Allen, Gill & Erdmann (2008) and *P. tonozukai* Gill & Allen (2004) in having a pointed caudal fin (rounded with middle rays produced), a more-or-less reticulated pattern on the upper part of the body, and similar fin-ray counts (dorsal rays modally III,26; anal rays modally III,15; pectoral rays modally 18). Gill & Allen (2004) originally suggested a close relationship between *P. tonozukai* with *P. bitaeniatus* (Fowler 1931) and *P. lugubris* Gill & Allen (2004), but its morphology is more suggestive of *P. reticulatus* and relatives, which we herein call the *P. reticulatus* complex. *Pseudochromis tonozukai* is readily distinguished from the remaining species in the complex by its distinctive coloration, most notably in having an orange (in females) to dark purple or grey (in males) mid-lateral stripe. The remaining species are distinguished from each other also by live and preserved coloration (though live coloration is unknown for *P. reticulatus*). Most notably, they differ in the degree of development of the reticulated dark stripe on the dorsal part of the body. The stripe is best developed and intense in *P. jace*, where it extends from the upper lip to the eye, then behind the eye to the upper part of the caudal peduncle. It is less distinct in *P. reticulatus*, in which it is broadly interrupted by a pale area between the dorsal edge of the gill opening and the anterior part of the dorsal fin. In *P. pictus*, the stripe is uninterrupted on the head, though indistinct. As such, it is somewhat intermediate between the conditions shown by *P. jace* and *P. reticulatus*. The stripe is least well developed in *P. stellatus*, being present only as a diffuse dark grey area on the dorsal body.

The five species in the *P. reticulatus*-complex also differ in certain scale and gill-raker counts (Table 1) and in various morphometric details (Table 2). *Pseudochromis stellatus* is distinguished from the other four species in having higher mean numbers of scales in lateral series and of anterior lateral-line scales, and in dorsal-fin origin to pelvic-fin origin ratios.

We have collected similar yellow-spotted *Pseudochromis* from various localities in southern and eastern Indonesia and in eastern Papua New Guinea (Figure 4). These specimens are currently under study by us, and appear to represent several different species. They differ most notably from *P. stellatus* in having shorter, rounded caudal fins (caudal-fin length less than 26% SL), and appear to be more closely related to *P. litus* Gill & Randall (1998).

TABLE 1. Frequencies for selected meristic characters of members of the *Pseudochromis reticulatus* complex. * indicates characters for which bilateral counts are included.

	Scales in lateral series*									
	30	31	32	33	34	35	36	37	38	mean
stellatus	-	-	-	-	-	-	2	3	5	37.3
jace	1	-	-	1	4	-	-	-	-	33.2
pictus	-	-	-	1	1	2	-	-	-	34.3
reticulatus	-	-	-	1	9	4	7	1	1	35.0
tonozukai	-	-	-	-	2	1	1	-	-	34.8
	Anterior lateral-line scales*									
	24	25	26	27	28	29	30	31	32	mean
stellatus	-	-	-	-	-	1	6	2	1	30.3
jace	1	1	3	-	-	-	-	-	-	25.4
pictus	2	-	1	1	-	-	-	-	-	25.3
reticulatus	-	1	4	4	1	1	2	1	-	27.5
tonozukai	-	1	1	1	-	-	-	-	-	26.0
	Circumpeduncular scales							Lower gill rakers		
	16	17	18	19	20	mean		12	13	mean
stellatus	6	-	-	-	-	16.0		5	1	12.2
jace	-	-	1	1	1	19.0		-	3	13.0
pictus	-	-	-	-	2	20.0		2	-	12.0
reticulatus	12	-	-	-	-	16.0		8	4	12.3
tonozukai	2	-	-	-	-	16.0		2	-	12.0

TABLE 2. Comparison of selected morphometric characters of members of the *Pseudochromis reticulatus* complex, expressed as percentages of standard length (SL).

	P. stellatus	*P. jace*	*P. pictus*	*P. reticulatus*	*P. tonozukai*
Number of specimens: SL (mm)	6: 25.5–47.0	3: 37.9–62.5	2: 50.3–66.5	7: 36.0–55.6	2: 62.6–65.9
Head length	27.2–28.6	24.6–28.0	22.7–25.2	23.1–25.4	23.6–24.4
Bony interorbital width	4.1–4.5	4.2–4.5	4.2–4.4	3.6–4.0	3.8–4.6
Dorsal-fin origin to pelvic-fin origin	31.8–33.5	29.1–30.9	30.5–31.2	25.6–27.8	27.6–28.2
Middle dorsal-fin ray to anal-fin origin	28.1–30.2	28.1–28.8	28.9–30.9	24.2–27.4	24.4–25.0
Dorsal-fin origin to middle dorsal-fin ray	32.9–35.1	35.7–36.9	38.0–38.5	34.3–37.4	32.3–34.6
Anal-fin origin to dorsal-fin termination	34.0–37.6	34.9–36.4	37.1–38.0	32.8–34.9	33.8–34.8
Dorsal-fin termination to anal-fin termination	16.0–17.8	16.3–17.3	16.7–18.1	14.7–16.2	14.5–14.7
Anal-fin base length	25.4–29.3	26.4–28.1	28.9–29.4	25.0–27.5	27.5–28.4
Fourth last segmented dorsal-fin ray	16.5–19.8	17.7–18.9	19.8–23.9	17.5–19.5	16.8–18.5
Fourth last segmented anal-fin ray	14.5–17.2	16.9–17.4	17.9–20.3	15.2–17.4	15.8–17.4
Second pelvic-fin ray	20.8–26.3	21.9–25.0	27.4–32.0	22.6–29.2	29.3–30.7
Caudal-fin length	27.8–36.7	32.2–37.4	37.9–41.2	29.4–51.1	29.2–34.7

Remarks. In describing their new species *Pseudochromis litus*, Gill and Randall (1998) commented on three specimens collected by the late R. Lubbock from Cebu Strait, Philippine Islands (BMNH 1983.3.25.186-188). The specimens appear to be more similar to *P. stellatus* than *P. litus*, and are most likely the juveniles of a species that has been photographed by Japanese divers in Cebu. This species is very similar to *P. stellatus* in coloration and caudal fin shape. We are aware of one adult individual that was collected for the aquarium trade (Figure 5), but we are not aware of any additional museum specimens. Material is needed in order to determine whether the Cebu fish are conspecific with *P. stellatus*.

Etymology. The specific epithet is from the Latin, meaning starry or starred, and alludes to the yellow spots on the upper part of the body. The name was selected by high school students as part of a science activity in the Macleay Museum.

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