

Taxonomic review of the dottyback genus *Pseudoplesiops* in Japanese waters, with descriptions of two new species (Pseudochromidae: Pseudoplesiopinae)

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Abstract A taxonomic review of the dottyback genus *Pseudoplesiops* (Pseudochromidae: Pseudoplesiopinae) in Japan recognizes five species: *Pseudoplesiops umbrosus* sp. nov., *Pseudoplesiops occasus* sp. nov., *Pseudoplesiops annae* (Weber 1913), *Pseudoplesiops immaculatus* Gill and Edwards 2002, and *Pseudoplesiops rosae* Schultz 1943. *Pseudoplesiops umbrosus* (43 specimens, 11.0–24.6 mm in standard length: SL) and *P. occasus* (5 specimens, 21.5–26.6 mm SL) have previously been misidentified as *P. rosae*, all three species being distinguishable from congeners by the following combination of characters: scales with distinct circular and radial striae (surrounding the former); I, 22 or 23 dorsal-fin rays; I or II (rarely), 13–15 anal-fin rays; and 11 or 12 precaudal vertebrae. However, *P. umbrosus* is distinct in having the dorsal- and anal-fin membrane margins not or barely incised (vs. deeply incised between the fin rays in *P. occasus* and *P. rosae*), the orbital ridge margined with dark brown (except anterodorsally) (vs. a small dorsoventrally elongated black blotch just behind the eye), and greater numbers of dorsal- and anal-fin segmented rays (viz., usually 23 dorsal- and 14 anal-fin segmented rays in *P. umbrosus* vs. 22 and 13, respectively in *P. occasus* and *P. rosae*), in addition to several morphometric characters. *Pseudoplesiops occasus* differs from *P. umbrosus* and *P. rosae* in having a red or reddish-orange body and fins in fresh condition (vs. generally brown to yellow), and greater numbers of predorsal scales [viz., 9–11 predorsal scales and 4 or 5 predorsal scales anterior to anterodorsal parietal pores in *P. occasus* vs. 7 or 8 (usually 7) and 2 or 3 (2), respectively, in *P. umbrosus*; 7–10 (8) and 2 or 3 (2), respectively, in *P. rosae*]. The validity of the three species was also supported by an analysis of partial 12S ribosomal RNA gene sequences. Morphological changes with growth in *P. annae* and *P. umbrosus*, notes on morphological and color variations in *P. annae*, and the key to the Japanese species of *Pseudoplesiops* are also provided.

Keywords Crypto-benthic reef fishes · Cryptic diversity · *Pseudoplesiops occasus* · *Pseudoplesiops rosae* · *Pseudoplesiops umbrosus*

Introduction

In their descriptions of three new genera of the pseudochromid subfamily Pseudoplesiopinae, Gill and Edwards (1999) redefined the genus *Pseudoplesiops* Bleeker 1858, following comprehensive morphological comparisons. As redefined, *Pseudoplesiops* currently includes nine valid species: *Pseudoplesiops annae* (Weber 1913), *Pseudoplesiops collare* Gill, Randall and Edwards 1991, *Pseudoplesiops howensis* Allen 1987, *Pseudoplesiops immaculatus* Gill and Edwards 2002, *Pseudoplesiops occidentalis* Gill and Edwards 2002, *Pseudoplesiops revillei* Schultz in Schultz, Herald, Lachner, Welander and Woods 1953, *Pseudoplesiops rosae* Schultz 1943, *Pseudoplesiops typus* Bleeker 1858, and *Pseudoplesiops wassi* Gill and Edwards 2003.

In Japanese waters, a species of *Pseudoplesiops* was initially recorded by Kishimoto (1984), who identified a single specimen collected from Iriomote-jima Island (Yaeyama Islands, southern Ryukyu Islands) as *P. rosae*. Subsequently, Yoshida et al. (2013a) and Koeda et al. (2017) recorded *P. annae* and *P. immaculatus* from Iwo-jima Island (Osumi Islands) and Taira-jima Island (Tokara Islands, northern Ryukyu Islands) as the first records from those respective localities. Recently, many records of *P. annae* and *P. rosae* from southern Japan have been published, mostly on the bases of checklists compiled from ichthyofaunal surveys (e.g., Motomura and Harazaki 2017; Mochida and Motomura 2018; Nakae et al. 2018; Fujiwara and Motomura 2020; Motomura and Uehara 2020; Jeong and Motomura 2021). Notwithstanding, details of morphological features of the Japanese species of *Pseudoplesiops* have remained poorly known. Additionally, a species of *Pseudoplesiops* reported from Yakushima Island (Osumi Islands) by Motomura and Aizawa (2011) has at no time been formally identified.

The large number of Japanese specimens of *Pseudoplesiops* examined in the present study revealed two undescribed species, previously misidentified as *P. rosae*. In addition, their

validity was supported by molecular analysis, with one of the two undescribed species also being confirmed from Papua New Guinea and the Coral Sea on the basis of voucher specimens deposited in the Australian Museum. The two undescribed species are formally described herein as new to science. Detailed morphological descriptions of the other Japanese species of *Pseudoplesiops* are provided.

Materials and methods

Morphological observations. Specimens used in this study were indicated in each species' account and in the comparative material examined (see below). Counts and measurements followed Gill and Edwards (2002, 2003), with the following additions: predorsal scales anterior to anterodorsal parietal pores—counted from the scale located above the anterodorsal parietal pore to the anteriormost predorsal scale (see Fig. 1). Standard length (SL) was measured to the nearest 0.1 mm. Other measurements were made to the nearest 0.01 mm using needle-point calipers under a dissecting microscope (ZEISS Stemi DV4). Cephalic lateral-line canal pore terminology follows Gill and Edwards (2002: figs. 2, 4). Osteological features and caudal-fin rays were determined from radiographs of selected specimens.

Statistical analysis. To test the relationships between morphometric measurements (as percentages of SL) and standard length (mm), Pearson's correlation coefficients and their corresponding *p*-values were calculated using Microsoft Excel. In this study, a relationship was considered statistically significant when both of the following criteria were met: (1) the absolute value of Pearson's correlation coefficient exceeded 0.6; and (2) the *p*-value was less than 0.005.

Genetic analysis. Genetic analyses were conducted on a subset of the specimens examined [all from Japan; details see Electronic Supplementary Material 1 (ESM 1) Table

S1]. Total genomic DNA of each specimen was extracted from a fin clip preserved in 99.5% ethanol, using proteinase K digestion following the standard phenol-chloroform method (Sambrook and Russell 2001). The partial 12S ribosomal RNA gene was amplified using the primers MiFish-U-F and MiFish-U-R (Miya et al. 2015). The PCR proceeded for 32–40 cycles, with denaturation at 94°C for 15 s, annealing at 52°C for 15 s, and extension at 72°C for 30 s. The PCR products were visualized on 1.2% agarose gels. Sequencing of the samples was performed at Dragon Genomics Center, Takara Bio Inc., Otsu, Japan. The sequences determined here were aligned using Clustal W (Thompson et al. 1994), and the best evolutionary model found by MEGA X (Kumar et al. 2018), the Kimura 2-parameter model being selected. A neighbor-joining (NJ) tree was reconstructed using MEGA X, with branch support measured using nonparametric bootstrapping with 1,500 replications, based on the same algorithm (Saitou and Nei 1987). *Labracinus cyclophthalmus* (Müller and Troschel 1849) and *Labracinus ocelliferus* (Fowler 1946) were used as an outgroup [sequences provided by Ito et al. (2021)]. The sequences determined here have been deposited in the DNA Data Bank of Japan (DDBJ), under accession numbers LC732016 to LC732030.

Preparation of figures. Photographs of preserved specimens, except for the lectotype of *Nematochromis annae* and the holotype of *Pseudoplesiops rosae*, were taken with a Nikon D850 camera equipped with Nikon AF-S Micro NIKKOR 60mm f/2.8G ED lens, using an internal focus bracketing function. Photographs of scales were taken with an OLYMPUS OM-1 camera equipped with M.ZUIKO DIGITAL ED 90mm F3.5 Macro IS PRO lens and M.ZUIKO DIGITAL 2x Teleconverter MC-20, using an internal focus stacking function. Sets of multifocal images were collated into a composite image, using CombineZP 1.0, Adobe Photoshop, or an internal function of OLYMPUS OM-1 camera. The distribution maps were prepared using GMT 5.3.1, with data from GSHHG (Wessel and Smith 1996). All images were processed using Adobe Photoshop and Adobe Illustrator.

Other notes. Institutional codes follow Sabaj (2020). “Islands” and “Island” in the text

are abbreviated as “Is.” and “I.” respectively. The names and grouping of islands in southern Japan (belonging to Kagoshima and Okinawa prefectures) follow Motomura and Matsunuma (2022: fig. 5.2). Characters described in detail in “Diagnosis” and “Morphological description of Japanese species” (see below) were not repeated in the species descriptions. Diagnoses of *P. annae* and *P. rosae* were based on specimens listed in each species account and “Comparative material examined”. Diagnosis of *P. immaculatus* was based on a Japanese specimen examined in this study and Gill and Edwards (2002). In species descriptions, the numbers of specimens examined are indicated in parentheses, with holotypes indicated by asterisks.

***Pseudoplesiops* Bleeker 1858**

Diagnosis (adapted from Gill and Edwards 1999, 2003). A genus of Pseudochromidae defined by the following characters: single tubed lateral-line scale; medial laminae of pelvic bones expanded dorsally (Gill and Edwards 1999: fig. 11B); scales in lateral series 26–42; lower lip complete (uninterrupted at symphysis); preopercular pores usually 7 (rarely 6 or 8), a pore present on upper terminus of preopercle.

Morphological description (applicable to all Japanese species confirmed in this study, viz., *Pseudoplesiops umbrosus* sp. nov., *Pseudoplesiops occasus* sp. nov., *P. annae*, *P. immaculatus*, and *P. rosae*). Counts and proportional measurements of all examined specimens given in ESM 2. Head and body well compressed. Body depth variable, more or less elongate. Snout length somewhat variable (generally short throughout the Pseudochromidae). Snout profile in lateral view straight, not inflated or concave. Interorbital region very narrow, flattened. Anterior nostrils with distinct membranous tubes, located about midway between anterodorsal tip of upper lip and anterior margin of eye; posterior nostrils

circular, without membranous tubes, located just before eye, horizontally level with anterior nostrils. Mouth terminal, obliquely inclined anterodorsally, forming angle of ca. 30–40° with body axis. Upper- and lower-jaw lengths similar, anterior tips on same vertical line. Maxilla expanded posteriorly, its maximum depth less than pupil diameter; posterior margin rounded, located below middle of eye. Overall widths of upper and lower lips similar. Upper jaw with two pairs of curved, enlarged caniniform teeth anteriorly, a single pair anteriorly on lower jaw; villiform teeth in 1 or 2 rows on upper and lower jaws, respectively. Gill rakers tiny, tips well pointed.

Cephalic lateral-line canal pore openings: nasal pores 2, anterior interorbital pores 1; posterior interorbital pores 0; supraotic pores 2; suborbital pores 8; posterior otic pores 0; preopercular pores 7; dentary pores 4; intertemporal pores 1; anterior temporal pores 0; posttemporal pores 1; parietal pores 2; all pores bilaterally paired.

Body covered with ctenoid scales (size and morphology variable), except for anterior part with cycloid scales. Scales in lateral series 26–36. Cheek and opercular region completely covered with relatively large cycloid scales. Predorsal region variably scaled. Dorsal- and anal fins without scale sheaths, although often with scales intermittently overlapping fin bases.

Dorsal and anal fin shapes variable, comprising a single tiny spine (rarely anal fin with two spines) plus 22–27 and 13–17 segmented rays, respectively; segmented rays mostly unbranched, but posteriormost 4–8 and 3–6 rays, respectively, each with a branched tip; posteriormost rays branched to base. Pectoral fin rounded, comprising 14–18 branched segmented rays (except uppermost and lowermost). Pelvic fins ribbon-like, comprising a single tiny spine and 3 or 4 (A. Gill, pers. obs.) unbranched segmented rays; second segmented ray longest. Caudal fin rounded or truncate to slightly emarginate.

***Pseudoplesiops umbrosus* sp. nov.**

(New English name: Shady Dottyback; new standard Japanese name: Donguri-tanabatamegisu)

(Figs. 1a, 2, 4a, b, 5, 10, 11, 12a–c; Tables 1–3, 5)

Pseudoplesiops rosae (not of Schultz): Randall et al. 1997: 131, unnumbered fig. (Coral Sea); Allen and Erdmann 2012: 322, unnumbered fig. (West Papua, Indonesia); Nakae et al. 2018: 241 (in part; Amami-oshima I., Amami Is., Ryukyu Is., Japan); Allen and Erdmann 2024: 341, unnumbered fig. (West Papua, Indonesia)

Holotype. KAUM–I. 62502, 24.6 mm SL, Tean, Amami-oshima I., Amami Is., Ryukyu Is., Japan (28°09'41"N, 129°17'28"E), 10–16 m depth, 23 June 2014, hand net, H. Motomura et al.

Paratypes. Forty-two specimens, 11.0–24.4 mm SL. **JAPAN: Ryukyu Is.:** KAUM–I. 57582, 22.7 mm SL, Tean, Amami-oshima I., Amami Is. (28°09'40"N, 129°17'23"E), 3–25 m depth, 10 Dec. 2013; KAUM–I. 57602, 22.9 mm SL, Atetsu, Amami-oshima I., Amami Is. (28°11'20"N, 129°17'13"E), 3–20 m depth, 11 Dec. 2013; KAUM–I. 62711, 24.4 mm SL, Nominoura, Amami-oshima I., Amami Is. (28°07'41"N, 129°15'54"E), 10–15 m depth, 28 June 2014; YCM-P 46099, 21.1 mm SL, YCM-P 46106, 2 specimens, 20.5–22.3 mm SL, Tonmisaki, Amami-oshima I., Amami Is., 5 Oct. 2016; KAUM–I. 72182, 14.7 mm SL, Chinoura, Kakeroma-jima I., Amami Is. (28°09'50"N, 129°15'28"E), 1–40 m depth, 1 May 2015; YCM-P 26425, Chinoura, Kakeroma-jima I., Amami Is., 30 Aug. 1991; YCM-P 45981, 23.7 mm SL, YCM-P 45983, 24.4 mm SL, Amami or Kakeroma-jima I., Amami Is., 2015 (details of collection date unknown); CMNH-ZF 14660, 21.6 mm SL, CMNH-ZF 14661, 23.9 mm SL, CMNH-ZF 14662, 24.0 mm SL, Agonoura, Asa, Zamami-jima I., Kerama Is. (26°13'44"N,

127°19'21"E), 14 m depth, 8 Mar. 2006; CMNH-ZF 14752, 20.2 mm SL, CMNH-ZF 14753, 19.7 mm SL, CMNH-ZF 14754, 20.3 mm SL, CMNH-ZF 14755, 21.6 mm SL, CMNH-ZF 14757, 22.2 mm SL, CMNH-ZF 14758, 19.6 mm SL, Agonoura, Asa, Zamami-jima I., Kerama Is. (26°13'26"N, 127°19'00"E), 5 m depth, 7 Mar. 2006; CMNH-ZF 14780, 21.9 mm SL, CMNH-ZF 14781, 23.5 mm SL, CMNH-ZF 14814, 19.1 mm SL, Agonoura, Asa, Zamami-jima I., Kerama Is. (26°13'24"N, 127°19'01"E), 5–8 m depth, 9 Mar. 2006; KAUM-I. 53866, 19.9 mm SL, Nagura Bay, Ishigaki-jima I., Yaeyama Is. (24°25'31"N, 124°06'16"E), 10 m depth, 8 Apr. 2012; NSMT-P 64917, 17.8 mm SL, Urazoko Bay, Ishigaki-jima I., Yaeyama Is. (23°28'N, 124°13'E), 15 m depth, 21 Aug. 1996; NSMT-P 64943, 3 specimens, 11.2–21.0 mm SL, Urazoko Bay, Ishigaki-jima I., Yaeyama Is. (23°28'N, 124°13'E), 20 m depth, 23 Aug. 1996; YCM-P 27048, 2 specimens, 17.4–21.9 mm SL, Kabira Bay, Ishigaki-jima I., Yaeyama Is., 3 Oct. 1991; CMNH-ZF 6125, 13.2 mm SL, Funauki Bay, Iriomote-jima I., Yaeyama Is. (24°21'27"N, 124°44'32"E), 20 m depth, 8 July 2003; KPM-NI 5728, 16.3 mm SL, KPM-NI 5730, 22.4 mm SL, Funauki Bay, Iriomote-jima I., Yaeyama Is., 10–13 m depth, 19 Nov. 1998; KPM-NI 5535, 17.1 mm SL, Funauki Bay, Iriomote-jima I., Yaeyama Is., 8–12 m depth, 17 Nov. 1998; SPMN-PI. 49805, 19.4 mm SL, Amitori Bay, Iriomote-jima I., Yaeyama Is., 11 July 1996. **PAPUA NEW GUINEA:** AMS I.17089-046, 17.9 mm SL, AMS I.17089-050, 2 specimens, 19.2–20.9 mm SL, bay on Kranket I., Madang (05°11'S, 145°50'E), 2–8 m depth, 30 May 1970. **AUSTRALIA: Queensland:** AMS I.20784-063, 2 specimens, 20.0–21.2 mm SL, Yonge Reef (14°37'12"S, 145°37'48"E), 1–15 m depth, 1 Dec. 1978; AMS I.22581-067, 3 specimens, 17.0–21.2 mm SL, Escape Reef (15°49'12"S, 145°49'48"E), 10–14 m depth, 29 Oct. 1981.

Diagnosis. A species of *Pseudoplesiops* (Fig. 2) distinguished from other members of the genus by the following combination of characters: dorsal-fin rays I, 22 or 23 (usually 23); anal-fin rays I or II (rarely), 14 or 15 (I, 14); precaudal vertebrae 11; scales in lateral series 26 or 27 (27); predorsal scales 7 or 8 (7); predorsal scales anterior to anterodorsal parietal pores 2

or 3 (2); scales with distinct circular and radial striae (surrounding the former; same as in Fig. 3a); dorsal- and anal-fin membranous margins not or barely incised between rays (Figs. 2, 4a, b); body relatively deep, its depth at dorsal-fin origin 24.9–28.9 (means 26.5) % of SL; snout relatively long, its length 5.5–7.4 (6.5) % of SL; prepelvic length 30.5–34.7 (32.1) % of SL; anal-fin base length 29.9–36.0 (32.7) % of SL; body and all fins (except for distal edges and pectoral fin) generally brown to yellow when fresh (Figs. 2a, 4a, b); and orbital ridge margined with dark brown (except anterodorsally) (Figs. 2, 4a, b).

Description. General appearance as in Figs. 2, 4a, b. Measurements in Table 1. Some fin-ray and scale counts given in Tables 2 and 3, respectively. Prominent intermandibular flap absent. Vertebrae 11 + 17 = 28 (19* specimens). Gill rakers 2 (3), 3 (21*) or 4 (4) + 7 (10), 8 (13*), 9 (3) or 10 (2) = 10 (10), 11 (14*), 12 (1), 13 (2) or 14 (1); pseudobranch filaments 3 (1), 4 (9) or 5 (13*).

Scales in lateral series 26 (9) or 27 (24*); transverse scales 10 (16*), 11 (15) or 12 (2); scales behind eye 1 (27*) or 2 (6); scales to preopercular angle 2 (3), 3 (25*) or 4 (4); circumpeduncular scales 15 (12*) or 16 (18); ctenoid scales beginning at 7th (13), 8th (12*) or 9th (2) longitudinal scale rows behind gill opening. Predorsal scales relatively large, all similarly sized except for rather a small scale just before dorsal-fin origin; anterior margin of predorsal scales reaching slightly behind a line through anterior interorbital pores (Fig. 1a).

Posteriormost 4 (2), 5 (10), 6 (15*), 7 (7) or 8 (2) dorsal-fin segmented rays branched; posteriormost 3 (1), 4 (3*), 5 (31) or 6 (1) anal-fin segmented rays branched. Pectoral-fin rays 15 (2), 16 (34*) or 17 (7), upper 1 (1), 2 (21*) or 3 (13) and lower 1 (3), 2 (27*) or 3 (5) rays unbranched. Principal caudal-fin rays 9 (19*) + 7 (4) or 8 (15*), uppermost 1 (1) or 2 (14*) and lowermost 1 (7*) or 2 (7) rays unbranched; upper procurrent caudal-fin rays 3 (4), 4 (14*) or 5 (1); lower procurrent caudal-fin rays 3 (8*), 4 (9) or 5 (1); total caudal-fin rays 23 (2), 24 (11*), 25 (4) or 27 (1).

Coloration. Fresh coloration based on material depicted in Figs. 2a, 4a, b, plus five

additional specimens. Head and body uniformly brown to brownish-yellow. Upper and lower jaws occasionally reddish-brown (especially dorsal margin). Orbital ridge, except for anterodorsal part, with dark brown to reddish-brown margin, extending from an angle of ca. 8 o'clock from eye to lower supraoptic pores, somewhat narrow anteriorly, becoming broader posteriorly. Iris reddish-brown; pupil black, margined with golden-yellow and red. Dorsal and anal fins brown or brownish-yellow, with a distal translucent white margin above a relatively broad (width ca. half pupil diameter) vivid yellow stripe on both fins (confirmed only in yellow-finned individuals). Caudal and pelvic fins faint brownish to yellow. Pectoral fin translucent white.

Preserved coloration: head and body uniformly brown; dark brown to reddish-brown edging around eye (in fresh specimens) retained; vertical fins uniformly brown to light gray; other fins translucent white to gray.

Distribution. Currently known from the western Pacific Ocean [Japan (Ryukyu Is.), Indonesia (West Papua; Allen and Erdmann 2012, 2024), Papua New Guinea (Madang), and Australia (Coral Sea); Fig. 5].

Etymology. The specific name “*umbrosus*”, from the Latin meaning “shady” alludes to the relatively dusky coloration. It also references the species previous confusion with *P. rosae*, in the sense it was shaded from view.

The new standard Japanese name “Donguri-tanabatamegisu” is proposed for *P. umbrosus* (based on KAUM–I. 62502). “Donguri” means acorns in Japanese in reference to the relatively deep body of the species and “Tanabatamegisu” is the common Japanese name for *Pseudoplesiops*.

***Pseudoplesiops occasus* Fujiwara and Motomura sp. nov.**

(New English name: Sunset Dottyback; new standard Japanese name: Yuhi-tanabatamegisu)
(Figs. 1b, 4c, d, 5, 6, 10, 11, 12a–c; Tables 1–3)

Pseudoplesiops sp.: Motomura and Aizawa 2011: 451, fig. 3G (Yaku-shima I., Osumi Is., Japan); Motomura and Harazaki 2017: 35 (Yaku-shima I.)

Pseudoplesiops rosae (not of Schultz): Motomura and Harazaki 2017: 35 (in part; Yaku-shima I.); Fujiwara and Motomura 2020: 19 (in part; Kikai-jima I., Amami Is., Ryukyu Is., Japan)

Holotype. KAUM–I. 146519, 21.7 mm SL, Shiomichi, Kikai-jima I., Amami Is., Ryukyu Is., Japan (28°20'06"N, 130°00'35"E), 10–15 m depth, 2 Oct. 2020, hand net, K. Fujiwara et al.

Paratypes. Four specimens, 21.5–26.6 mm SL, all from Yaku-shima I., Osumi Is., Japan. CMNH-ZF 13771, 25.9 mm SL, Isso (30°27'13"N, 130°29'26"E), 10 m depth, 27 Oct. 2005; CMNH-ZF 14233, 26.6 mm SL, Isso (30°27'13"N, 130°29'26"E), 5 m depth, 28 Oct. 2005; CMNH-ZF 15400, 21.5 mm SL, Isso (30°27'28"N, 130°29'19"E), 4 m depth, 11 July 2006; KAUM–I. 104721, 24.9 mm SL, Isso (30°27'N, 130°29'E), 8 m depth, 21 July 2017.

Diagnosis. A species of *Pseudoplesiops* (Fig. 6) distinguished from other members of the genus by the following combination of characters: dorsal-fin rays I, 22; anal-fin rays I, 13 or 14; precaudal vertebrae 11; scales in lateral series 27 or 28; predorsal scales 9–11; predorsal scales anterior to anterodorsal parietal pores 4 or 5; scales with distinct circular and radial striae (surrounding the former; same as in Fig. 3a); dorsal- and anal-fin membranous margins deeply incised between rays (Figs. 4c, d, 6); body depth moderate, its depth at dorsal-fin origin 23.6–25.2% of SL; snout moderate, its length 5.3–5.9% of SL; prepelvic length 27.6–31.6% of SL; anal-fin base length 30.2–33.3% of SL; body and all fins (except for distal edges and pectoral fin) generally red or reddish-orange when fresh (Figs. 4c, d, 6a); a small, dorsoventrally elongated black blotch just behind eye (Figs. 4c, d, 6).

Description. General appearance as in Figs. 4c, d, 6. Measurements in Table 1. Some fin-ray and scale counts given in Tables 2 and 3, respectively. Prominent intermandibular flap absent. Vertebrae 11 + 17 (4* specimens) or 18 (1) = 28 (4*) or 29 (1). Gill rakers 3 (5*) + 7 (2) or 9 (3*) = 10 (2) or 12 (3*); pseudobranch filaments 4 (4*).

Scales in lateral series 27 (2*) or 28 (3); transverse scales 10 (2*) or 11 (3); scales behind eye 1 (4*) or 2 (1); scales to preopercular angle 3 (4*); circumpeduncular scales 15 (1*) or 16 (4); ctenoid scales beginning at 7th (3) or 8th (2*) longitudinal scale rows behind gill opening. Predorsal scales somewhat small anteriorly, becoming moderately sized posteriorly, except for small scale just before dorsal-fin origin; anterior margin of predorsal scales reaching slightly behind a line through anterior interorbital pores (Fig. 1b).

Posteriormost 5 (3*) or 6 (2) dorsal-fin segmented rays branched; posteriormost 4 (4*) or 5 (1) anal-fin segmented rays branched. Pectoral-fin rays 15 (1) or 16 (4*), upper 2 (4*) or 3 (1) and lower 2 (5*) rays unbranched. Principal caudal-fin rays 9 (5*) + 7 (2) or 8 (3*), uppermost 2 (4*) and lowermost 1 (1) or 2 (4*) rays unbranched; upper procurrent caudal-fin rays 3 (3*) or 4 (2); lower procurrent caudal-fin rays 3 (3*) or 4 (2); total caudal-fin rays 22 (1), 23 (1), 24 (2*) or 25 (1).

Coloration. Fresh coloration based on material depicted in Figs. 4c, d, 6a. Head and body uniformly red to reddish-orange. Small black blotch just behind eye, blotch slightly elongated dorsoventrally and covering posterior two or three suborbital pores. Iris reddish-brown; pupil black, with golden-yellow and red margin. Dorsal and anal fins red to reddish-orange, with translucent white margin. Caudal and pelvic fins red to reddish-orange and faint whitish-red, respectively. Pectoral fin translucent white.

Preserved coloration: head and body uniformly brown; small black blotch just behind eye (in fresh specimens) retained; vertical fins uniformly brown to light gray; other fins translucent white or gray.

Distribution. Currently known only from southern Japan [Yaku-shima I. (Osumi Is.)

and Kikai-jima I. (Amami Is., Ryukyu Is.); Fig. 5].

Etymology. The specific name “*occasus*” is derived from Latin, meaning “sunset”, in reference to the red or reddish-orange body and fins, which constitute the most obvious diagnostic character of the new species.

The new standard Japanese name “Yuhi-tanabatamegisu” is proposed for *P. occasus* (based on KAUM–I. 146519). “Yuhi” means sunset in Japanese.

***Pseudoplesiops annae* (Weber 1913)**

(English name: Anna’s Dottyback; standard Japanese name: Kamereon-tanabatamegisu)

(Figs. 3b, 7a, b, 8a–d, 9, 10, 12d–f, 13, 14; Tables 2, 4, 5)

Nematochromis annae Weber 1913: 265, fig. 66 (original description; syntypes type locality: Sarasa I., Postillon Is., Indonesia and Solor Strait, Indonesia)

Pseudoplesiops annae: Gill et al. 1991: 75 (designation of lectotype of *Nematochromis annae*); Allen and Erdmann 2012: 231, unnumbered fig. (Halmahera, Indonesia); Yoshida et al. 2013a: 104, unnumbered figs. (Iwo-jima I., Osumi Is., Japan); Yoshida et al. 2013b: 43, fig. 1I (Iwo-jima I.); Motomura and Harazaki 2017: 35 (Yaku-shima I., Osumi Is., Japan); Nakae et al. 2018: 241 (Amami-oshima I., Amami Is., Ryukyu Is., Japan); Yoshida 2018: 107, unnumbered figs. (Amami-oshima I.); Yoshida 2019: 110, unnumbered figs. (Amami-oshima I.); Koeda 2020: 25, fig. 1 (Kochi, Japan); Jeong and Motomura 2021: 25 (Iwo-jima I.); Allen and Erdmann 2024: 340, unnumbered fig. (Halmahera, Indonesia)

Pseudoplesiops rosae (not of Schultz): Randall et al. 1990: 131, unnumbered fig. (Coral Sea); Hayashi 1997: 282, unnumbered fig. (Amami-oshima I.); Motomura and Aizawa 2011: 451, fig. 3F (Yaku-shima I.)

Non-type specimens. Forty-five specimens, 13.9–29.8 mm SL, all from Japan. **Shikoku:** BSKU 103907, 29.8 mm SL, Kuboura, Okino-shima I., Sukumo, Kochi, 15–20 m depth, 21 July 2010. **Kyushu:** KAUM–I. 89772, 29.8 mm SL, Sato, Kamikoshiki-shima I., Koshiki Is., Kagoshima (31°51'12"N, 129°53'57"E), 15–18 m depth, 18 June 2016; KAUM–I. 147428, 29.8 mm SL, east of Kashima, Shimokoshiki-shima I., Koshiki Is., Kagoshima (31°46'05"N, 129°48'12"E), 15–25 m depth, 17 Oct. 2020. **Osumi Is.:** KAUM–I. 30617, 24.8 mm SL, west of Iwo-jima I. (30°47'04"N, 130°15'42"E), 2–22 m depth, 27 June 2010; KAUM–I. 31411, 26.7 mm SL, KAUM–I. 31412, 21.8 mm SL, west of Iwo-jima I. (30°47'04"N, 130°15'42"E), 2–22 m depth, 24 July 2010; CMNH-ZF 13984, 27.7 mm SL, Issu, Yaku-shima I. (30°27'13"N, 130°29'26"E), 12 m depth, 31 Oct. 2005; KAUM–I. 67979, 27.1 mm SL, KAUM–I. 67981, 26.6 mm SL, KAUM–I. 67988, 25.9 mm SL, KAUM–I. 68005, 19.0 mm SL, Issu, Yaku-shima I. (30°27'45"N, 130°29'40"E), 10–15 m depth, 26 Dec. 2014; KAUM–I. 61820, 28.0 mm SL, KAUM–I. 61821, 25.2 mm SL, KAUM–I. 61822, 28.2 mm SL, off Kamifuruta Fishing Port, Nishinoomote, Tanega-shima I. (30°48'N, 131°01'E), 10–18 m depth, 10 June 2013; KAUM–I. 62142, 24.0 mm SL, off Urata, Nishinoomote, Tanega-shima I. (30°49'36"N, 131°02'11"E), 10–15 m depth, 13 June 2013; KAUM–I. 66222, 26.9 mm SL, off Takesaki Fishing Port, Minamitane, Kumage, Tanega-shima I. (30°22'05"N, 130°57'26"E), 1–8 m depth, 17 Sept. 2014. **Ryukyu Is.: Amami Is.:** KAUM–I. 57516, 17.8 mm SL, KAUM–I. 57542, 15.2 mm SL, Sakinome, Amami-oshima I. (28°11'25"N, 129°15'50"E), 5–25 m depth, 9 Dec. 2013; KAUM–I. 57580, 21.3 mm SL, KAUM–I. 57581, 22.3 mm SL, KAUM–I. 57592, 24.1 mm SL, Tean, Amami-oshima I. (28°09'40"N, 129°17'23"E), 3–25 m depth, 10 Dec. 2013; KAUM–I. 62503, 24.9 mm SL, Tean, Amami-oshima I. (28°09'41"N, 129°17'28"E), 10–16 m depth, 23 June 2014; KAUM–I. 62601, 22.4 mm SL, KAUM–I. 62602, 24.7 mm SL, north of Sanekumisaki, Amami-oshima I. (28°11'43"N, 129°11'34"E), 10–20 m depth, 25 June 2014; KAUM–I. 62625, 22.3 mm SL, KAUM–I. 62626, 22.6 mm

SL, south of Sanekumisaki, Amami-oshima I. (28°11'39"N, 129°11'30"E), 5–15 m depth, 25 June 2014; KAUM–I. 62648, 20.4 mm SL, west of Shiba, Amami-oshima I. (28°11'38"N, 129°13'21"E), 5–13 m depth, 26 June 2014; KAUM–I. 72022, 26.0 mm SL, Sakinome, Amami-oshima I. (28°11'32"N, 129°15'54"E), 4–28 m depth, 27 Apr. 2015; KAUM–I. 72026, 16.5 mm SL, KAUM–I. 72030, 23.8 mm SL, KAUM–I. 72038, 25.2 mm SL, north of Sanekumisaki, Amami-oshima I. (28°11'43"N, 129°11'32"E), 4–28 m depth, 27 Apr. 2015; KAUM–I. 72171, 26.5 mm SL, Nominoura, Amami-oshima I. (28°07'41"N, 129°15'54"E), 1–25 m depth, 1 May 2015; YCM-P 24563, 19.1 mm SL, YCM-P 24586, 21.2 mm SL, Sakinome, Amami-oshima I., 28 Aug. 1990. **Ryukyu Is.: Okinawa Is.:** KAUM–I. 121062, 26.5 mm SL, Toguchi Beach, Okinawa-jima I. (26°22'13"N, 127°44'02"E–26°21'51"N, 127°44'16"E), 30 Sept. 2018; URM-P 38598, 22.2 mm SL, Seragaki, Okinawa-jima I., 23 Sept. 1997; KPM-NI 8414, 16.8 mm SL, KPM-NI 8415, 17.5 mm SL, KPM-NI 8416, 25.7 mm SL, Ie-jima I., 50 m depth, 17 Sept. 2001. **Ryukyu Is.: Yaeyama Is.:** NSMT-P 64962, 13.9 mm SL, Urazoko Bay, Ishigaki-jima I. (23°28'N, 124°13'E), 20 m depth, 23 Aug. 1996; NSMT-P 64975, 22.7 mm SL, NSMT-P 65011, 22.6 mm SL, NSMT-P 65021, 15.5 mm SL, Yonehara, Ishigaki-jima I. (23°28'N, 124°11'E), 18.6 m depth, 20 Aug. 1996; KPM-NI 5616, 19.9 mm SL, Funauki Bay, Iriomote-jima I., 15 m depth, 18 Nov. 1998. **Ogasawara Is.:** KAUM–I. 83170, 26.5 mm SL, off Higashi Port, Haha-jima I. (26°41'41"N, 142°09'05"E), 3 m depth, 27 June 2015.

Diagnosis. A species of *Pseudoplesiops* (Fig. 7a, b) distinguished from other members of the genus by the following combination of characters: dorsal-fin rays I, 25–27 [usually 25 or 26 (depending on locality)]; anal-fin rays I or II (rarely), 14–17 (I, 15); precaudal vertebrae 12 (rarely) or 13 (13); scales in lateral series 32–36 (34); scales with distinct anterior radial striae only (Fig. 3b); prominent intermandibular flap absent; and striped and spotted patterns absent on head and basal parts of dorsal and anal fins, respectively (Fig. 8a–d).

Description of Japanese specimens. General appearance as in Figs. 7a, b, 8a–d.

Measurements in Table 4. Some fin-ray counts given in Table 2 (including data on specimens from outside Japanese waters). Vertebrae 13 + 17 (1), 18 (12) or 19 (2) = 30 (1), 31 (12) or 32 (2). Gill rakers 2 (8), 3 (22) or 4 (2) + 8 (6), 9 (15), 10 (8) or 11 (3) = 10 (1), 11 (10), 12 (10), 13 (8) or 14 (3); pseudobranch filaments 4 (5), 5 (25) or 6 (1).

Scales in lateral series 32 (1), 33 (12), 34 (15) or 35 (4); transverse scales 11 (8), 12 (15) or 13 (9); scales behind eye 1 (3) or 2 (24); scales to preopercular angle 3 (2), 4 (16), 5 (4); circumpeduncular scales 14 (1), 15 (6) or 16 (24); ctenoid scales beginning at 13 (13), 14 (6) or 16 (1) longitudinal scale rows behind gill opening. Predorsal scales 7 (2), 8 (22) or 9 (2), all similarly smallish; anterior margin of predorsal scales just reaching a line through anterodorsal parietal pores (no scale rows anterior to parietal pores).

Posteriormost 5 (22), 6 (17), 7 (1) or 8 (1) dorsal-fin segmented rays branched; posteriormost 4 (30), 5 (9) or 6 (1) anal-fin segmented rays branched. Dorsal- and anal-fin membranous margins not or barely incised between rays. Pectoral-fin rays 15 (2), 16 (34) or 17 (8), upper 2 (11) or 3 (19) and lower 2 (10) or 3 (20) rays unbranched. Principal caudal-fin rays 9 (15) + 7 (3) or 8 (12), uppermost 2 (14) and lowermost 1 (3) or 2 (10) unbranched; upper procurent caudal-fin rays 3 (9) or 4 (6); lower procurent caudal-fin rays 3 (9) or 4 (6); total caudal-fin rays 23 (7), 24 (7) or 25 (1).

Coloration. Fresh coloration based on material depicted in Fig. 8a–d, plus 22 specimens. Head and body uniformly reddish- to yellowish-brown. Upper and lower jaws, snout, and anterior occipital region occasionally reddish-orange. Posterior part of orbital ridge sometimes with very weak dark brown to red margin. Iris reddish-brown; pupil black, with golden-yellow and red margin. Membranes of vertical fins brown or brownish-yellow, with translucent white margin; fin rays brownish-red. Pelvic fins translucent white, brownish-yellow, or faint red. Pectoral-fin membrane translucent white; fin rays faint brownish-red.

Preserved coloration: head and body uniformly brown; vertical fins uniformly brown to light gray; pelvic fins translucent white, melanophores sometimes scattered on membrane;

pectoral fin translucent white.

Distribution. *Pseudoplesiops annae* is widely distributed in the western Pacific Ocean. Specimens examined in this study were collected from southern Japan (Fig. 9), Philippines (Caban I.), Indonesia (Flores I. and Solor I.), Timor-Leste (Dili), and Solomon Is. (Nggela Is. and Santa Cruz Is).

***Pseudoplesiops immaculatus* Gill and Edwards 2002**

(English name: Immaculate Dottyback; standard Japanese name: Hanasaki-tanabatamegisu)
(Figs. 8e, f, 9; Table 2)

Pseudoplesiops immaculatus Gill and Edwards 2002: 20, figs. 1, 2 (original description; type locality: Raine I., Great Barrier Reef, Queensland, Australia); Allen and Erdmann 2012: 321, unnumbered fig. (Nusa Penida, Indonesia); Koeda et al. 2017: 56, figs. 1, 2 (Taira-jima I., Tokara Is., Ryukyu Is., Japan); Allen and Erdmann 2024: 341, unnumbered fig. (Nusa Penida, Indonesia)

Non-type specimen. KAUM–I. 86962, 30.1 mm SL, Haenohama Port, Taira-jima I., Tokara Is., Ryukyu Is., Japan (29°40'37"N, 129°32'01"E), 18 m depth, 23 Apr. 2016.

Diagnosis. A species of *Pseudoplesiops* distinguished from other members of the genus by the following combination of characters: dorsal-fin rays I, 26–28 (usually 27); anal-fin rays I–II, 16–18 (I, 17); scales in lateral series 32–39 (35 or 36); scales with distinct anterior radial striae only (same as in Fig. 3b); prominent intermandibular flap present (Fig. 8e, f); a large dark opercular blotch absent (Fig. 8e, f).

Distribution. *Pseudoplesiops immaculatus* is widely distributed in the eastern Indian

Ocean and western Pacific Ocean, ranging from the Maldives to southern Japan and Vanuatu (Gill and Edwards 2002; Koeda et al. 2017). In Japanese waters, the species is currently known only from Taira-jima I., Tokara Is., Ryukyu Is. (Koeda et al. 2017; Fig. 9).

Remarks. A synonym list and detailed morphological variations of *P. immaculatus* have been provided by Gill and Edwards (2002), and a description of the present specimen by Koeda et al. (2017). Additional Japanese examples of the species have not been collected.

***Pseudoplesiops rosae* Schultz 1943**

(English name: Rose Island Dottyback; standard Japanese name: Tanabatamegisu)

(Figs. 1c, 3a, 4e–h, 5, 7c, d, 10, 11, 12a–c; Tables 2, 3, 4)

Pseudoplesiops rosae Schultz 1943: 117, fig. 11 (original description; type locality: Rose I., Samoa); Schultz *in* Schultz et al. 1953: 401, fig. 65 (Rose I.); Kishimoto 1984: 137, pl. 349C (Iriomote-jima I., Yaeyama Is., Ryukyu Is., Japan); Shibukawa et al. 2003: 58, unnumbered fig. (Bitung, Indonesia); Randall 2005: 189, unnumbered fig. (Vanuatu); Motomura 2009: 96, unnumbered figs. (Andaman Sea, Thailand); Yoshida 2014: 177, unnumbered figs. (Yoron-jima I., Amami Is., Ryukyu Is., Japan); Motomura and Harazaki 2017: 35 (in part; Yaku-shima I., Osumi Is., Japan); Mochida and Motomura 2018: 20 (Tokuno-shima I., Amami Is., Ryukyu Is., Japan); Nakae et al. 2018: 241 (in part; Amami-oshima I., Amami Is., Ryukyu Is., Japan); Yoshida 2018: 107, unnumbered figs. (Yoron-jima I.); Yoshida 2019: 110, unnumbered figs. (Yoron-jima I.); Fujiwara and Motomura 2020: 19 (in part; Kikai-jima I., Amami Is., Ryukyu Is., Japan); Motomura and Uehara 2020: 30 (Okinoerabu-jima I., Amami Is., Ryukyu Is., Japan)

Non-type specimens. Twenty-eight specimens, 9.7–26.3 mm SL, all from Ryukyu Is., Japan.

Amami Is.: KAUM–I. 62555, 19.2 mm SL, west of Tachigamijima, Amami-oshima I. (28°13'50"N, 129°09'44"E), 8–17 m depth, 24 June 2014; KAUM–I. 72074, 11.9 mm SL, Atetsu, Amami-oshima I. (28°10'49"N, 129°16'24"E), 5–25 m depth, 28 Apr. 2015; NSMT-P 75456, 13.1 mm SL, Kaitsu-saki, Amami-oshima I., 12 m depth, 15 Nov. 2006; YCM-P 29152, Nishikomi, Amami-oshima I., 31 Aug. 1993; KAUM–I. 146622, 21.7 mm SL, Tekuzuku, Kikai-jima I. (28°17'00"N, 129°55'58"E), 10–15 m depth, 3 Oct. 2020; KAUM–I. 66579, 25.4 mm SL, KAUM–I. 66580, 24.7 mm SL, off Yonama Fishing Port, Tokuno-shima I. (27°53'09"N, 128°53'29"E), 14 m depth, 30 Sept. 2014; KAUM–I. 143790, 22.7 mm SL, south of Aze Prince Beach, Tokuno-shima I. (27°50'34"N, 128°58'10"E), 11–20 m depth, 2 July 2020; KAUM–I. 90046, 23.1 mm SL, Kasaishi Beach, Okinoerabu-jima I. (27°24'40"N, 128°40'26"E), 1 m depth, 13 July 2016; KAUM–I. 90385, 23.8 mm SL, Inobe Port, Okinoerabu-jima I. (27°25'07"N, 128°38'32"E), 5–12 m depth, 15 July 2016; KAUM–I. 90622, 9.7 mm SL, Naikina Port, Okinoerabu-jima I. (27°23'57"N, 128°35'40"E), 11 m depth, 17 July 2016; KAUM–I. 122376, 23.1 mm SL, west of Okidomari Port, Okinoerabu-jima I. (27°23'54"N, 128°33'00"E), 10–18 m depth, 23 Oct. 2018; KAUM–I. 55161, 23.4 mm SL, off Maehama, Yoron-jima I. (27°01'13"N, 128°26'26"E), 12–15 m depth, 1 July 2013; KAUM–I. 58438, 17.6 mm SL, KAUM–I. 58439, 15.4 mm SL, KAUM–I. 58440, 21.8 mm SL, off Tomori, Yoron-jima I. (27°02'N, 128°24'E), 10–12 m depth, 23 Jan. 2014; KAUM–I. 58478, 21.0 mm SL, off Tomori, Yoron-jima I. (27°01'N, 128°24'E), 10–17 m depth, 24 Jan. 2014; KAUM–I. 70981, 20.5 mm SL, off Chabana, Yoron-jima I. (27°03'38"N, 128°24'32"E), 9 m depth, 15 Mar. 2015; KAUM–I. 71154, 21.2 mm SL, west of Yoron Port, Yoron-jima I. (27°03'07"N, 128°24'02"E), 9–10 m depth, 18 Mar. 2015; KAUM–I. 101537, 22.4 mm SL, off Shinaha Beach, Yoron-jima I. (27°03'47"N, 128°24'44"E), 8–16 m depth, 29 June 2017; KAUM–I. 103866, 22.0 mm SL, off Ukachi Beach, Yoron-jima I. (27°04'10"N, 128°25'02"E), 5–25 m depth, 30 June 2017. **Okinawa Is.:** KPM-NI 4805, 25.4 mm SL,

KPM-NI 4806, 21.6 mm SL, Ie-jima I., 7 m depth, 16 June 1998; URM-P 36938, 20.9 mm SL, Sesoko-jima I., 13 Dec. 1996. **Kerama Is.:** CMNH-ZF 14714, 26.3 mm SL, CMNH-ZF 14715, 24.9 mm SL, CMNH-ZF 14716, 22.6 mm SL, CMNH-ZF 14717, 16.2 mm SL, Gahijima I. (south of Zamami-jima I.), 26°12'44"N, 127°17'19"E, 6 m depth, 6 Mar. 2006.

Diagnosis. A species of *Pseudoplesiops* (Fig. 7c, d) distinguished from other members of the genus by the following combination of characters: dorsal-fin rays I, 22 or 23 (usually 22); anal-fin rays I, 13 or 14 (13); precaudal vertebrae 11 or 12 (11); scales in lateral series 26–28 (27); predorsal scales 7–10 (8); predorsal scales anterior to anterodorsal parietal pores 2 or 3 (2); scales with distinct circular and radial striae (surrounding the former; Fig. 3a); dorsal- and anal-fin membranous margins deeply incised between rays (Fig. 4e–h); body depth moderate, its depth at dorsal-fin origin 22.6–26.5% (mean 24.4) of SL; snout moderate, its length 4.3–6.2 (5.3) % of SL; prepelvic length 28.1–32.2 (29.7) % of SL; anal-fin base length 24.2–32.4 (28.3) % of SL; body and all fins (except for distal edges and pectoral fin) generally brown to yellow in fresh condition (Fig. 4e–h); and a small, dorsoventrally elongated black blotch just behind eye (Fig. 4e–h).

Description of Japanese specimens. General appearance as in Figs. 4e–h, 7c, d. Measurements in Table 4. Some fin-ray and scale counts given in Tables 2 and 3 (including data on specimens from outside Japanese waters), respectively. Prominent intermandibular flap absent. Vertebrae 11 (14 specimens) or 12 (1) + 17 (15) = 28 (14) or 29 (1). Gill rakers 2 (6), 3 (13) or 4 (1) + 6 (4), 7 (13) or 8 (3) = 8 (1), 9 (7), 10 (9) or 11 (3); pseudobranch filaments 3 (1), 4 (12) or 5 (3).

Scales in lateral series 26 (4), 27 (14) or 28 (6); transverse scales 10 (7) or 11 (15); scales behind eye 1 (13) or 2 (10); scales to preopercular angle 3 (18) or 4 (5); circumpeduncular scales 15 (10) or 16 (15); ctenoid scales beginning at 7th (1), 8th (19) or 9th (2) longitudinal scale rows behind gill opening. Predorsal scales relatively large anteriorly, becoming moderately sized posteriorly, except for a small scale just before dorsal-fin origin;

anterior margin of predorsal scales reaching slightly behind a line through anterior interorbital pores (Fig. 1c).

Posteriormost 4 (3), 5 (11), 6 (8) or 7 (1) dorsal-fin segmented rays branched; posteriormost 3 (2), 4 (17) or 5 (4) anal-fin segmented rays branched. Pectoral-fin rays 14 (1), 15 (2), 16 (22) or 17 (2), upper 2 (15) or 3 (8) and lower 1 (4), 2 (13), 3 (5) or 4 (1) rays unbranched. Principal caudal-fin rays 9 (15) + 7 (5) or 8 (10), uppermost 1 (1) or 2 (11) and lowermost 1 (8) or 2 (7) unbranched; upper procurent caudal-fin rays 3 (10) or 4 (5); lower procurent caudal-fin rays 3 (5) or 4 (10); total caudal-fin rays 22 (1), 23 (5), 24 (7) or 25 (2).

Coloration. Fresh coloration based on material depicted in Fig. 4e–h, plus 15 specimens. Head and body uniformly brown to brownish-yellow. Small black blotch just behind eye, slightly elongated dorsoventrally, posteriorly covering two or three suborbital pores. Upper and lower jaws, snout, and suborbital region occasionally reddish-orange (especially in brown finned individuals). Iris reddish-brown; pupil black, with golden-yellow and red margin. Vertical fins yellowish-brown to yellow, with translucent white margin. Pelvic fins very light brown to yellow. Pectoral fin translucent white.

Preserved coloration: head and body uniformly brown; small black blotch just behind eye (in fresh specimens) retained; vertical fins uniformly brown to light gray; other fins translucent white or gray.

Distribution. *Pseudoplesiops rosae* is widely distributed in the eastern Indian Ocean and western Pacific Ocean, plus Samoa and the Cook Is. Specimens examined in this study were collected from southern Japan (Ryukyu Is.), Guam, Papua New Guinea, Australia (Timor Sea and Coral Sea), Vanuatu, New Caledonia, Fiji, Tonga, Samoa, and Cook Is. (Fig. 5). In addition, Shibukawa et al. (2003) and Motomura (2009) recorded *P. rosae* from Indonesia (Bitung) and Thailand (Andaman Sea), respectively.

Remarks. Although Randall et al. (1990) included an underwater photograph attributed to *P. rosae* in their book of fishes from Great Barrier Reef and the Coral Sea, this individual

was subsequently identified as *P. annae* by the second author.

Molecular analysis. A NJ tree based on partial 12S ribosomal RNA gene sequences is given in Fig. 10, and pairwise uncorrected genetic distances (*p* distances) between each examined sample of *Pseudoplesiops* in ESM 1 Table S2. In addition to morphological characters, the tree suggests that the above-mentioned five species, except for *P. immaculatus* (viz., *P. umbrosus*, *P. occasus*, *P. annae*, and *P. rosae*; *P. immaculatus* not included in the tree), are also supported by molecular data. The four clades in the tree (corresponding to each species in this study) diverge from each other by 6.5–29.8% genetic distance. In contrast, each species is genetically uniform, with intra-group differentiation of only 0–0.8%.

Discussion

Comparisons and comments on diagnostic characters. Species of *Pseudoplesiops* can be divided into two groups based on scale structure [viz., scales with distinct circular and radial striae (surrounding the former) vs. with distinct anterior radial striae only; Gill and Edwards 2002; Fig. 3]. *Pseudoplesiops umbrosus* sp. nov. and *P. occasus* sp. nov. fall into the former group, including *P. occidentalis*, *P. typus*, and *P. rosae* (Gill and Edwards 2002, 2003). Among these five species, *P. umbrosus*, *P. occasus*, and *P. rosae* are easily distinguished from the others by having I, 22 or 23 dorsal-fin rays (vs. II, 23 in *P. occidentalis*; II, 24 or 25 in *P. typus*), I or II (rarely), 13–15 anal-fin rays (vs. II, 14; II–III, 14–16), and 11 or 12 precaudal vertebrae (vs. 10; 11) (Gill and Edwards 2002; this study).

Pseudoplesiops umbrosus is distinct from *P. occasus* and *P. rosae* in having the following characters: (1) dorsal- and anal-fin membranous margins not or barely incised

between rays (vs. deeply incised between rays; Figs. 2, 4, 6) and (2) orbital ridge with dark brown margin, except anterodorsally in both fresh and preserved specimens (vs. marginal color absent, but a small, dorsoventrally elongated black blotch just behind eye; Figs. 2, 4, 6). Although these characters may be equivocal in damaged and/or long term preserved specimens (e.g., Fig. 7c, d), *P. umbrosus* is further distinguished from *P. occasus* and *P. rosae* by greater numbers of dorsal- and anal-fin segmented rays (viz., usually 23 dorsal- and 14 anal-fin segmented rays in *P. umbrosus* vs. 22 and 13, respectively in *P. occasus* and *P. rosae*; Table 2). As a consequence of the greater number of anal-fin segmented rays, the anal-fin base length (represented as percentage of standard length) of *P. umbrosus* is greater than those of *P. occasus* and *P. rosae* (Fig. 11d; Tables 1, 4). In addition, morphological data based on a large number of specimens revealed that body depth at the dorsal-fin origin, snout length, and prepelvic length are helpful for distinguishing *P. umbrosus* from *P. occasus* and *P. rosae* (Fig. 11a–c; Tables 1, 4).

Because of their considerable variation, the ground color of the body and fins of species of *Pseudoplesiops* have at no time been used as diagnostic characters. This practice was partially followed here for *P. umbrosus*, *P. rosae*, and *P. annae* (see Description; Figs. 2a, 4a, b, e–h, 8a–d). However, the red or reddish-orange body and fins (except for distal edges and pectoral fins) of *P. occasus* are distinctive, since the body and fins of the closely similar species *P. umbrosus* and *P. rosae* are generally brown to yellow (Figs. 2a, 4, 6a). Although the recognition of ground color difference as a diagnostic character may simply provide an initial insight into the taxonomy of *Pseudoplesiops*, such was supported by the molecular analysis (Fig. 10) and differences in scalation on the predorsal region. The smaller predorsal scales of *P. occasus* (especially anteriorly), compared with *P. umbrosus* and *P. rosae* (Fig. 1), was confirmed by the different scale counts [viz., 9–11 predorsal scales and 4 or 5 predorsal scales anterior to anterodorsal parietal pores in *P. occasus* vs. 7 or 8 (usually 7) and 2 or 3 (2), respectively, in *P. umbrosus*; 7–10 (8) and 2 or 3 (2), respectively, in *P. rosae*; Table 3].

In addition to the above-mentioned scale structure (Fig. 3), *P. annae* and *P. immaculatus* differ from *P. umbrosus*, *P. occasus*, and *P. rosae* in several meristic characters [e.g., dorsal-fin segmented rays (25–27 in *P. annae* and *P. immaculatus* vs. 22 or 23 in *P. umbrosus*, *P. occasus*, and *P. rosae*; Table 2); scales in lateral series (32–36 vs. 26–28)]. Moreover, *P. immaculatus* is unlikely to be confused with other Japanese species of *Pseudoplesiops* due to its prominent intermandibular flap (Fig. 8e, f). Detailed comparisons of *P. annae* and *P. immaculatus* have been provided by Gill and Edwards (2002, 2003).

Morphological changes with growth. An assessment of morphological changes with growth, including analyses of 22 measurements taken from 43 specimens (11.0–24.6 mm SL) of *P. umbrosus* and 45 specimens (13.9–29.8 mm SL) of *P. annae*, indicated that the relative head length, predorsal length, and orbit diameter proportions tend to decrease as a percentage of standard length with growth (Table 5; Fig. 12), resulting in the head and eye sizes of *P. annae* and *P. umbrosus* both becoming smaller with growth. Although fewer specimens were examined, similar changes were confirmed in *P. occasus* (5 specimens, 21.5–26.6 mm SL) and *P. rosae* (28 specimens, 9.7–26.3 mm SL) (Fig. 12a–c), suggesting that such changes are probably universal in *Pseudoplesiops*.

Comments on variation in *P. annae*. Comparisons between Japanese specimens of *P. annae* and specimens from other localities (Philippines, Indonesia, Timor-Leste, and Solomon Is.) indicated several morphological and color variations within the species. Japanese specimens had a shallower body compared with the other specimens, as indicated by the body depth proportion at the dorsal-fin origin [viz., 19.1–23.6 (means 21.6) % of SL in the former vs. 22.7–26.8 (24.4) % of SL; Fig. 13]. In addition, the pelvic fin of Japanese specimens was translucent white (sometimes with melanophores scattered on the membrane) whereas that of other specimens occasionally had black dots along the segmented rays (Fig. 14). Despite these differences being relatively large, suggesting the possibility of multiple species in specimens identified as “*P. annae*”, additional distinctive characters were not confirmed. Thus, body

depth difference and variation in pelvic fin pigmentation were tentatively regarded here as intraspecific variations of *P. annae*, pending further investigation.

Key to the Japanese species of *Pseudoplesiops*

- 1a.** 22 or 23 dorsal-fin segmented rays; 26–28 scales in lateral series; scales with distinct circular and radial striae (surrounding the former) **2**
- 1b.** 25–28 dorsal-fin segmented rays; 32–39 scales in lateral series; scales with distinct anterior radial striae only **4**
- 2a.** Usually 23 dorsal- and 14 anal-fin segmented rays; dorsal- and anal-fin membranous margins not or barely incised between rays; orbital ridge with dark brown margin (except anterodorsally) in fresh and preserved specimens; body depth at dorsal-fin origin 24.9–28.9 (mean 26.5) % of SL; snout length 5.5–7.4 (6.5) % of SL; prepelvic length 30.5–34.7 (32.1) % of SL; and anal-fin base length 29.9–36.0 (32.7) % of SL ***P. umbrosus* sp. nov.**
- 2b.** Usually 22 dorsal- and 13 anal-fin segmented rays; dorsal- and anal-fin membranous margins deeply incised between rays; small, dorsoventrally elongated black blotch just behind eye in fresh and preserved specimens; body depth at dorsal-fin origin 22.6–25.8 (mean 24.1) % of SL; snout length 4.5–6.2 (5.5) % of SL; prepelvic length 27.6–32.2 (29.7) % of SL; and anal-fin base length 25.7–33.3 (29.5) % of SL **3**
- 3a.** 9–11 predorsal scales; 4 or 5 predorsal scales anterior to anterodorsal parietal pores; body and all fins (except for pectoral fin) generally red or reddish-orange in fresh specimens ***P. occasus* sp. nov.**
- 3b.** 7–10 (modally 8) predorsal scales; 2 or 3 predorsal scales anterior to anterodorsal parietal pores; body and all fins (except for pectoral fin) generally brown to yellow in fresh specimens ***P. rosae***

- 4a. Prominent intermandibular flap absent *P. annae*
 4b. Prominent intermandibular flap present..... *P. immaculatus*

Comparative material examined. The following comparative specimens of *Pseudoplesiops* were examined during this study—*Pseudoplesiops annae*: ZMA 112.450, lectotype of *Nematochromis annae*, 25.5 mm SL, Sarasa I., Postillon Is., Indonesia; AMS I.21914-044, 2 specimens, 27.1–35.4 mm SL, AMS I.21918-017, 8 specimens, 12.6–29.3 mm SL, Caban I., Philippines; AMS I.34501-026, 4 specimens, 21.2–33.4 mm SL, off Wailiti, Indonesia; AMS I.34504-039, 26.6 mm SL, Batubetumpang, Bangka I., Indonesia; AMS I.46121-075, 21.3 mm SL, east of Dili, Timor-Leste; AMS I.39031-027, 22.7 mm SL, Graciosa Bay, Santa Cruz Is., Solomon Is.; AMS I.17492-034, 2 specimens, 24.2–24.5 mm SL, Florida Is., Solomon Is. *Pseudoplesiops rosae*: USNM 116178, holotype, 18.0 mm SL, Rose I., Samoa; AMS I.39826-001, 21.1 mm SL, Double Reef, Guam; AMS I.20547-060, 24.2 mm SL, Panasesa I., Louisiade Archipelago, Papua New Guinea; AMS I.21318-034, 3 specimens, 16.7–18.8 mm SL, Scott Reef, Western Australia, Australia; AMS I.33739-072, 21.6 mm SL, Ashmore Reef, Western Australia, Australia; AMS I.26752-021, 19.9 mm SL, Cartier I., Northern Territory, Australia; AMS I.20208-024, 23.7 mm SL, One Tree I., Queensland, Australia; AMS I.22583-045, 2 specimens, 16.9–17.9 mm SL, Escape Reef, Queensland, Australia; AMS I.25113-002, 22.2 mm SL, Osprey Reef, Queensland, Australia; AMS I.33751-077, 21.6 mm SL, Portlock Reef, Queensland, Australia; AMS I.49535-013, 2 specimens, 13.2–20.8 mm SL, Lihou Reef, Queensland, Australia; AMS I.37335-048, 22.7 mm SL, Lamén I., Vanuatu; AMS I.47354-027, 20.0 mm SL, Walpole I., New Caledonia; AMS I.18743-015, 21.8 mm SL, Fiji; AMS I.46751-038, 2 specimens, 22.2–24.4 mm SL, Minerva Reef, Tonga; AMS I.46733-024, 2 specimens, 20.4–21.0 mm SL, Niue Beveridge Reef, Cook Is.

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Declarations

Partial financial support was received from the Japan Society for the Promotion of Science, Tokyo to KF and HM and the Kagoshima University, Kagoshima to HM. KF was responsible for the study design, field work, analysis of the data, funding acquisition, and wrote the original draft manuscript. ACG was responsible for analysis of the data, and review and editing on the manuscript. HE was responsible for field work, review and editing on the

manuscript, and supervised the research. KS was responsible for field work, and review and editing on the manuscript. HM was responsible for field work, review and editing on the manuscript, funding acquisition, and supervised the research. All authors read the manuscript and approved the final version.

Conflicts of interest This paper has no conflict of interest.

Ethics approval Fish species, treated in this study, are not listed as threatened or endangered by the IUCN Red List or CITES. Specimens used in this study were collected following national and institutional guidelines and registered in fish collections of natural history museums.

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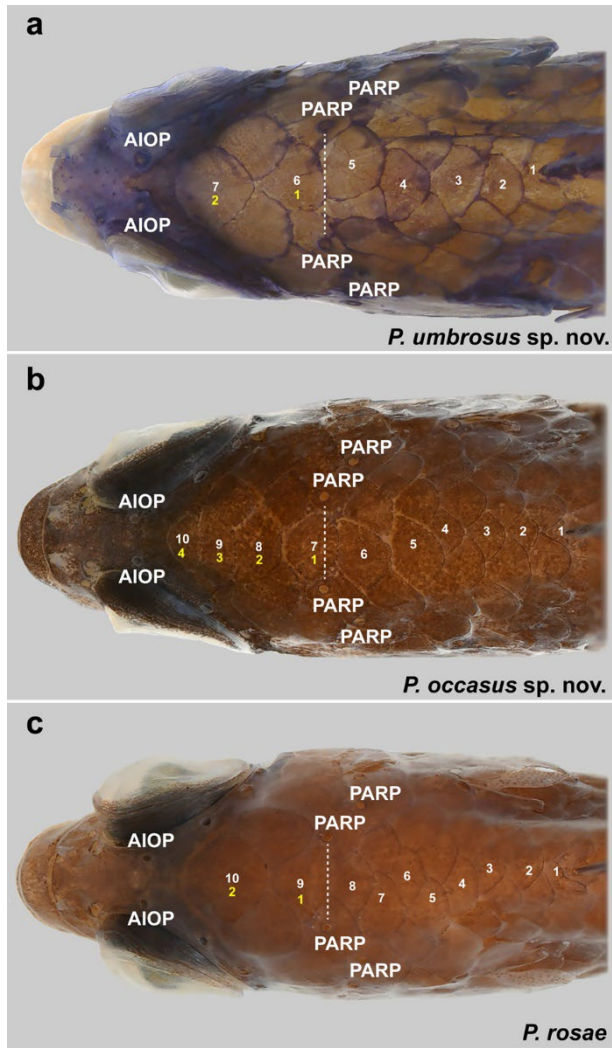


Fig. 1 Predorsal regions of **a** *Pseudoplesiops umbrosus* sp. nov., **b** *Pseudoplesiops occasus* sp. nov., and **c** *Pseudoplesiops rosae*, showing differences in scalation. **a** KAUM–I. 57582, 22.7 mm SL (cyanine stained); **b** KAUM–I. 146519, 21.5 mm SL; **c** KAUM–I. 70981, 20.5 mm SL. *AIOP* anterior interorbital pore, *PARP* parietal pore. *Broken white lines* indicate line between anterodorsal parietal pores. *White* and *Yellow numbers* indicate numbers of predorsal scales and longitudinal scale rows anterior to parietal pores, respectively

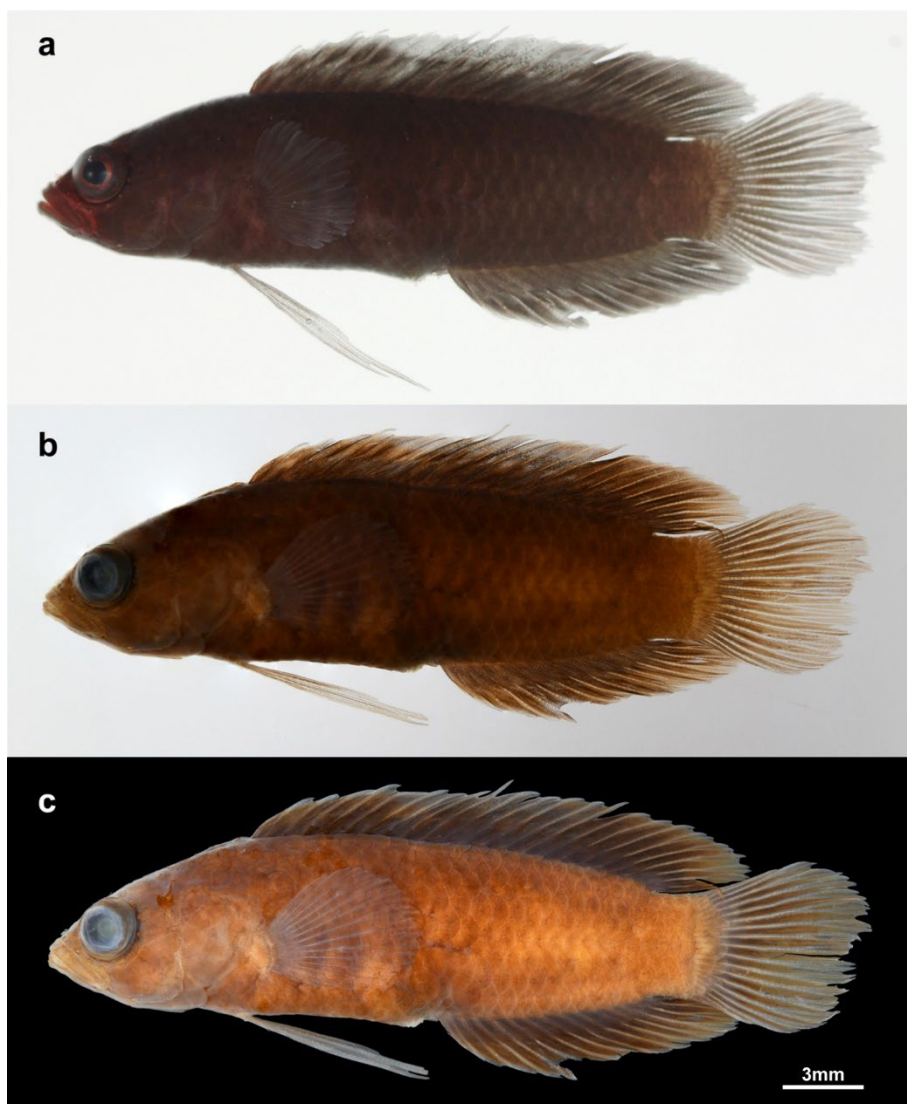


Fig. 2 Holotype of *Pseudoplesiops umbrosus* sp. nov., collected from Amami-oshima I., Amami Is., Ryukyu Is., Japan (KAUM-I. 62502, 24.6 mm SL). **a** Fresh condition; **b**, **c** preserved condition

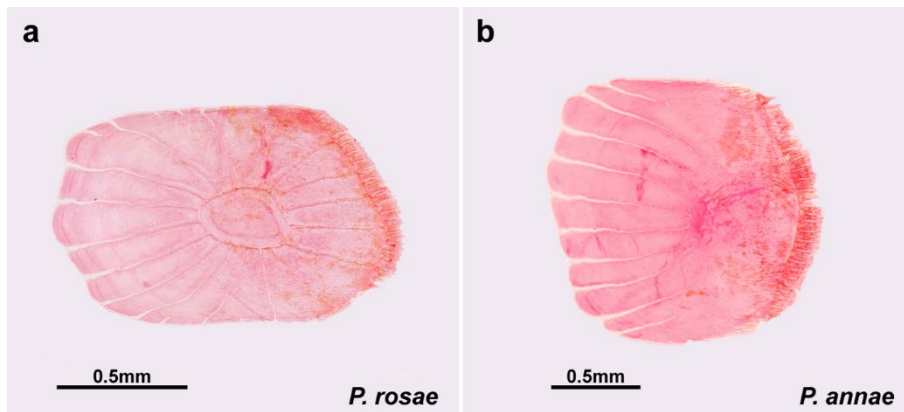


Fig. 3 Alizarin red-stained scales of two species of *Pseudoplesiops* (taken from right side of anal-fin base), showing circular and radial striae. **a** *Pseudoplesiops rosae*, KAUM-I. 66580, 24.7 mm SL; **b** *Pseudoplesiops annae*, KAUM-I. 61820, 28.0 mm SL

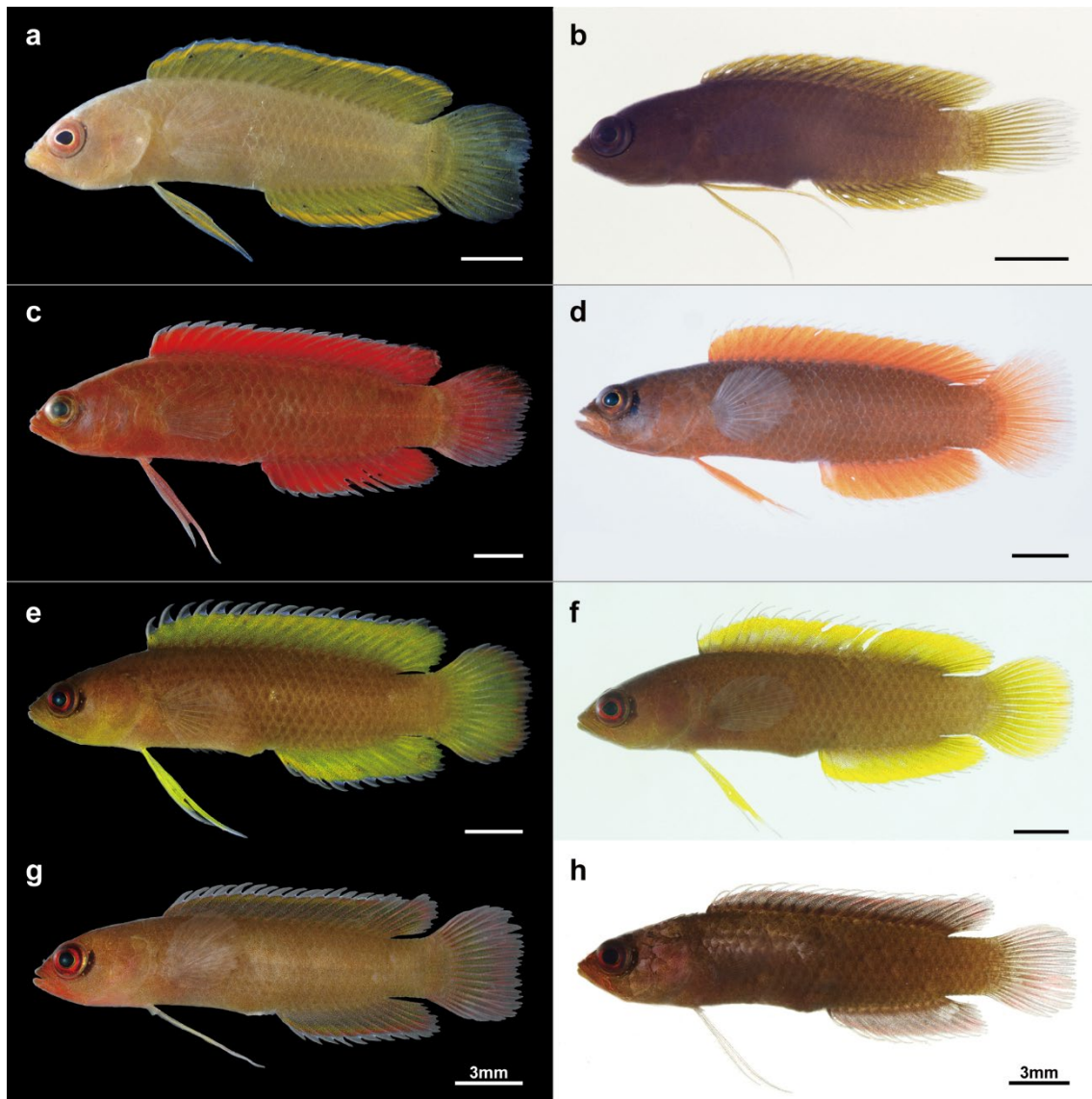


Fig. 4 Fresh specimens of **a, b** *Pseudoplesiops umbrosus* sp. nov., **c, d** *Pseudoplesiops occasus* sp. nov., and **e–h** *Pseudoplesiops rosae*, collected from Japan. **a** SPMN-PI. 49805, 19.4 mm SL, Iriomote-jima I., Yaeyama Is., Ryukyu Is.; **b** KPM-NI 5728, 16.3 mm SL, Iriomote-jima I., photographed by H. Senou; **c** KAUM–I. 104721, 24.9 mm SL, Yaku-shima I., Osumi Is.; **d** CMNH-ZF 15400, 21.5 mm SL, Yaku-shima I., photographed by M. Aizawa; **e** KAUM–I. 71154, 21.2 mm SL, Yoron-jima I., Amami Is., Ryukyu Is.; **f** KAUM–I. 101537, 22.4 mm SL, Yoron-jima I.; **g** KAUM–I. 58438, 17.6 mm SL, Yoron-jima I.; **h** KAUM–I. 70981, 20.5 mm SL, Yoron-jima I.

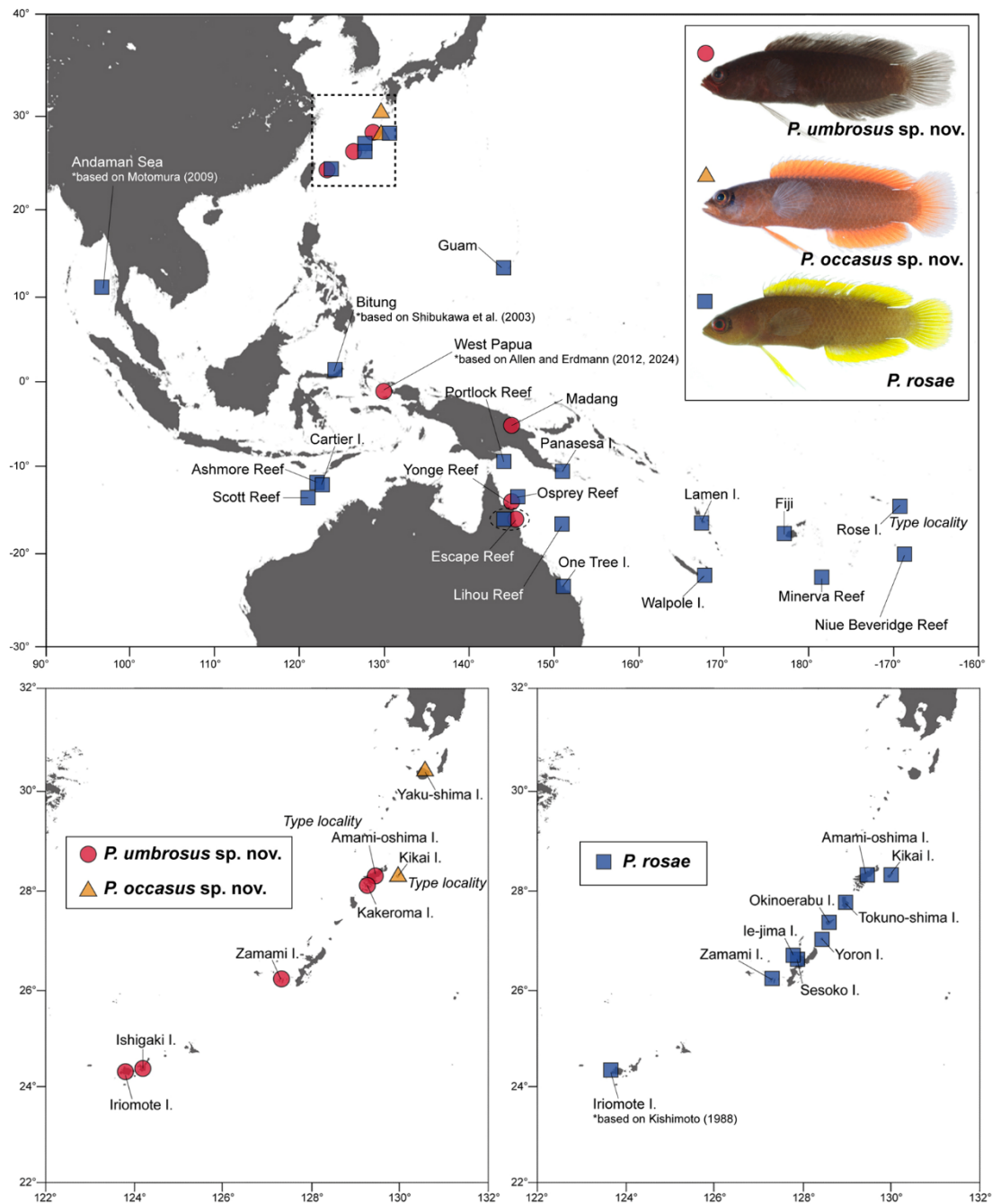


Fig. 5 Distributional maps of *Pseudoplesiops umbrosus* sp. nov. (red circles), *Pseudoplesiops occasus* sp. nov. (yellow triangles), and *Pseudoplesiops rosae* (blue squares), based on specimens examined in this study and from literature (indicated in maps). Upper map showing eastern Indian Ocean and western Pacific Ocean; lower two maps showing southern Japan (close-up of broken-lined square on upper map)

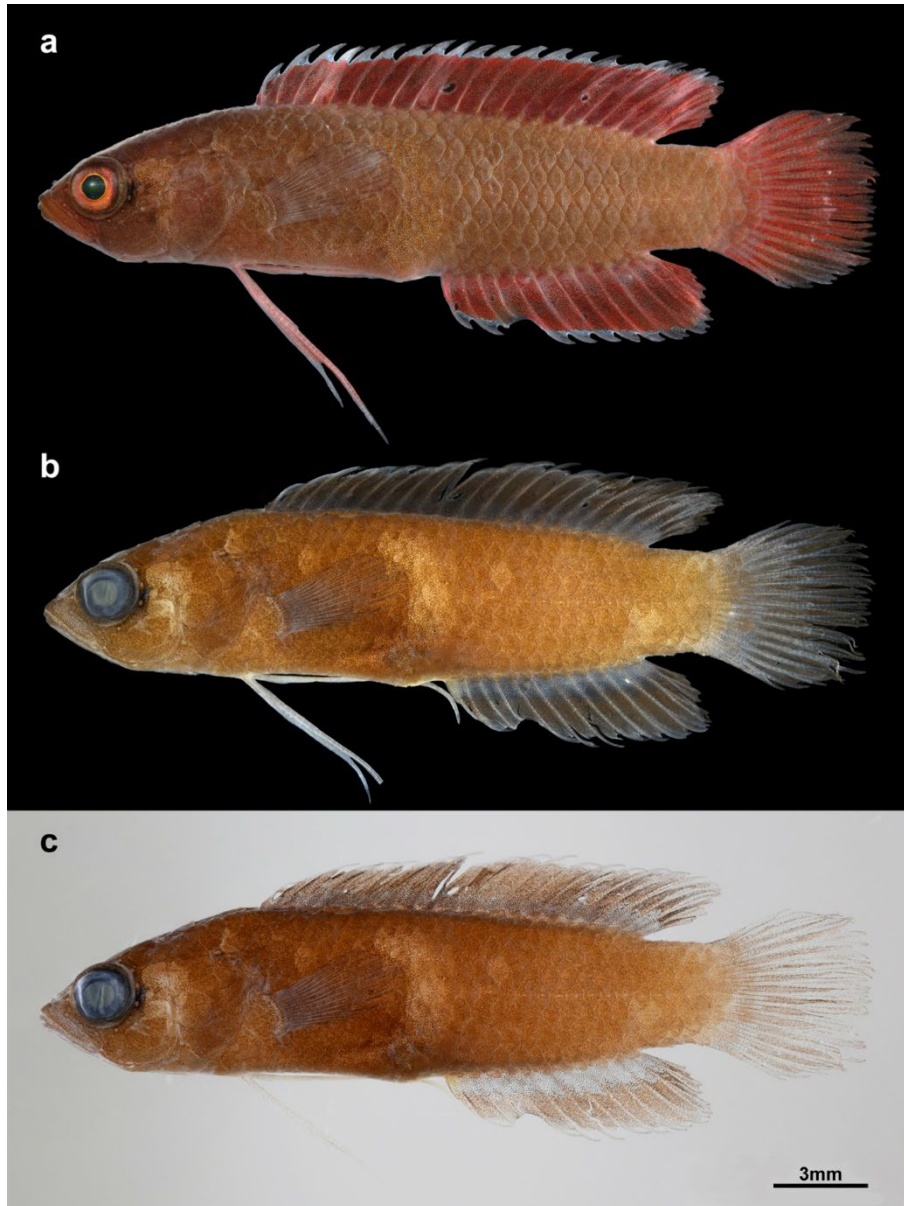


Fig. 6 Holotype of *Pseudoplesiops occasus* sp. nov., collected from Kikai-jima I., Amami Is., Ryukyu Is., Japan (KAUM–I. 146519, 21.7 mm SL). **a** Fresh condition; **b**, **c** preserved condition

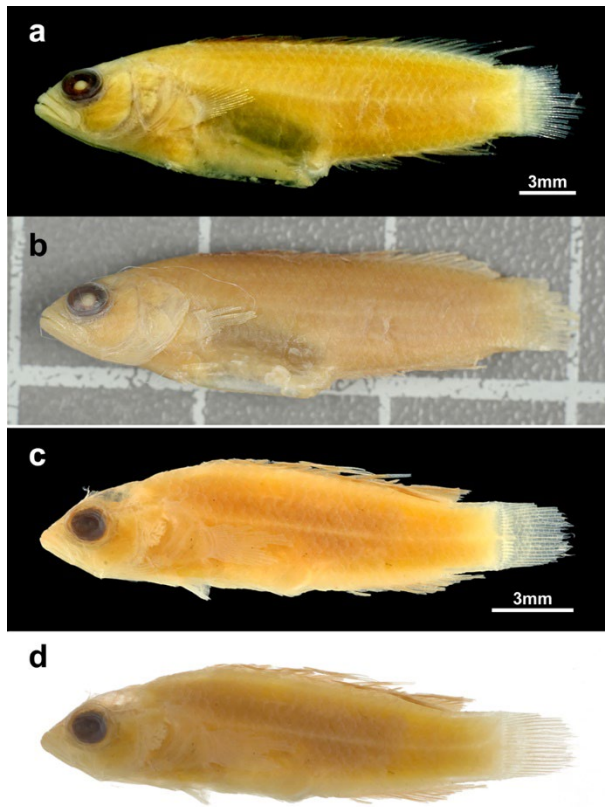


Fig. 7 Type specimens of **a, b** *Nematochromis annae* and **c, d** *Pseudoplesiops rosae*. **a, b** ZMA 112.450, lectotype, 25.5 mm SL, Sarasa I., Postillon Is., Indonesia, photographed by **a** M. Matsunuma and **b** E. Dondorp; **c, d** USNM 116178, holotype, 18.0 mm SL, Rose I., Samoa, photographed by H. Hata



Fig. 8 Fresh (**a–d, f**) and preserved (**e**) specimens of **a–d** *Pseudoplesiops annae* and **e, f** *Pseudoplesiops immaculatus*, collected from Japan. **a** KAUM–I. 61820, 28.0 mm SL, Tanega-shima I., Osumi Is.; **b** KAUM–I. 31411, 26.7 mm SL, Iwo-jima I., Osumi Is.; **c** KAUM–I. 72022, 26.0 mm SL, Amami-oshima I., Amami Is., Ryukyu Is.; **d** KAUM–I. 61822, 28.2 mm SL, Tanega-shima I.; **e, f** KAUM–I. 86962, 30.1 mm SL, Taira-jima I., Tokara Is., Ryukyu Is., photographed by **e** R. Koreeda

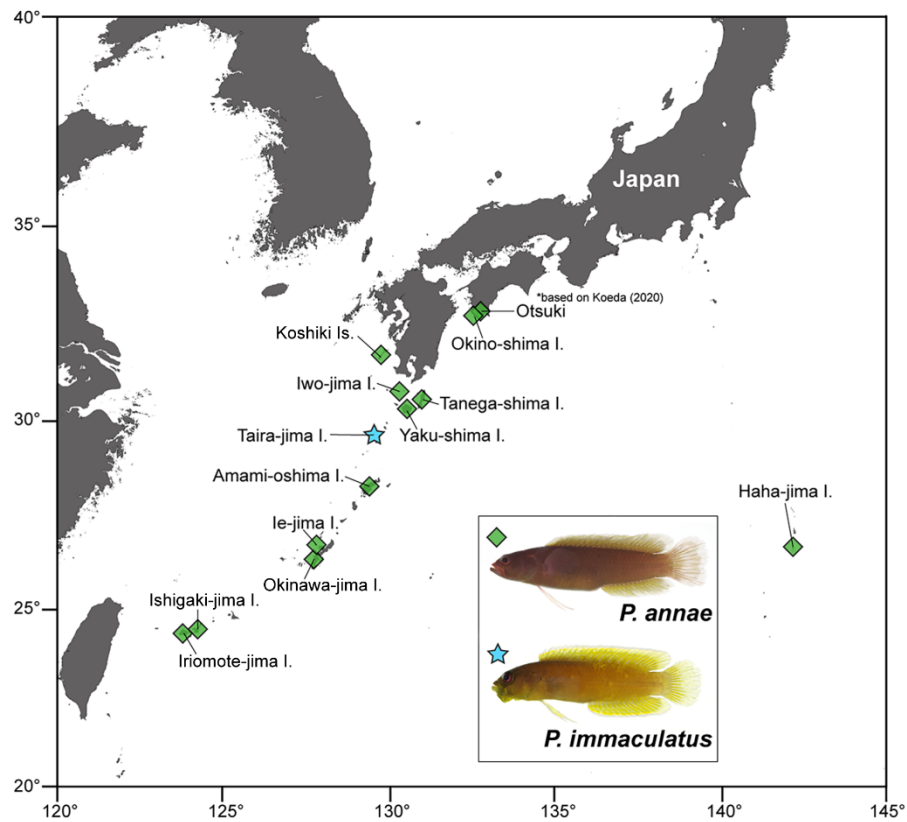


Fig. 9 Distributional map of *Pseudoplesiops annae* (green diamonds) and *Pseudoplesiops immaculatus* (light blue star) in Japanese waters, based on specimens examined in this study and from literature (indicated on map)

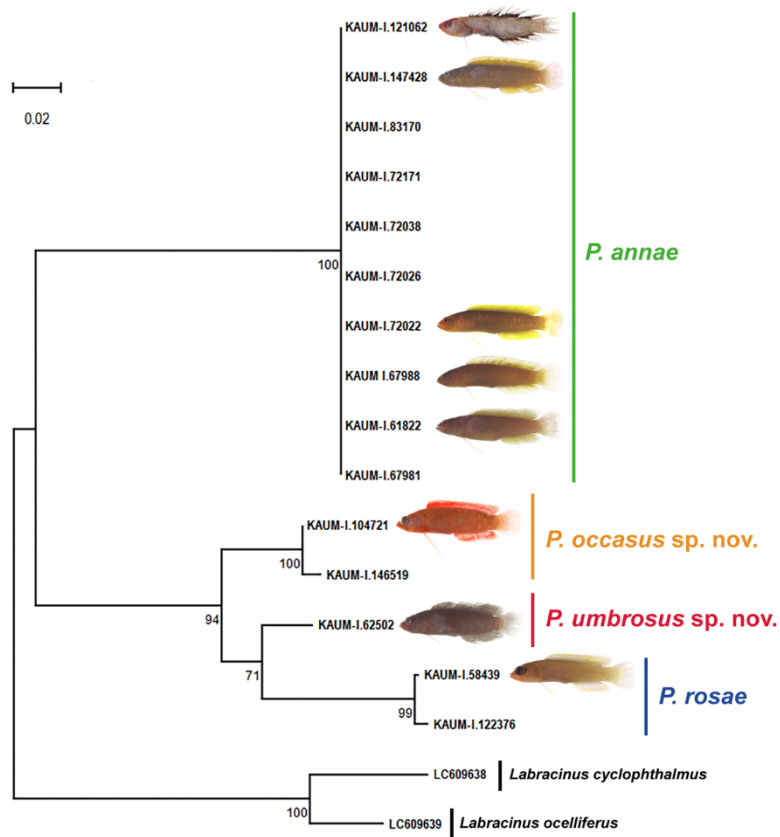


Fig. 10 Neighbor joining tree based on 12S ribosomal RNA gene sequences (124 bp) of four species of *Pseudoplesiops*, with *Labracinus cyclophthalmus* and *Labracinus ocelliferus* as outgroups. Node supports indicated by bootstrap values based on 1,500 replications

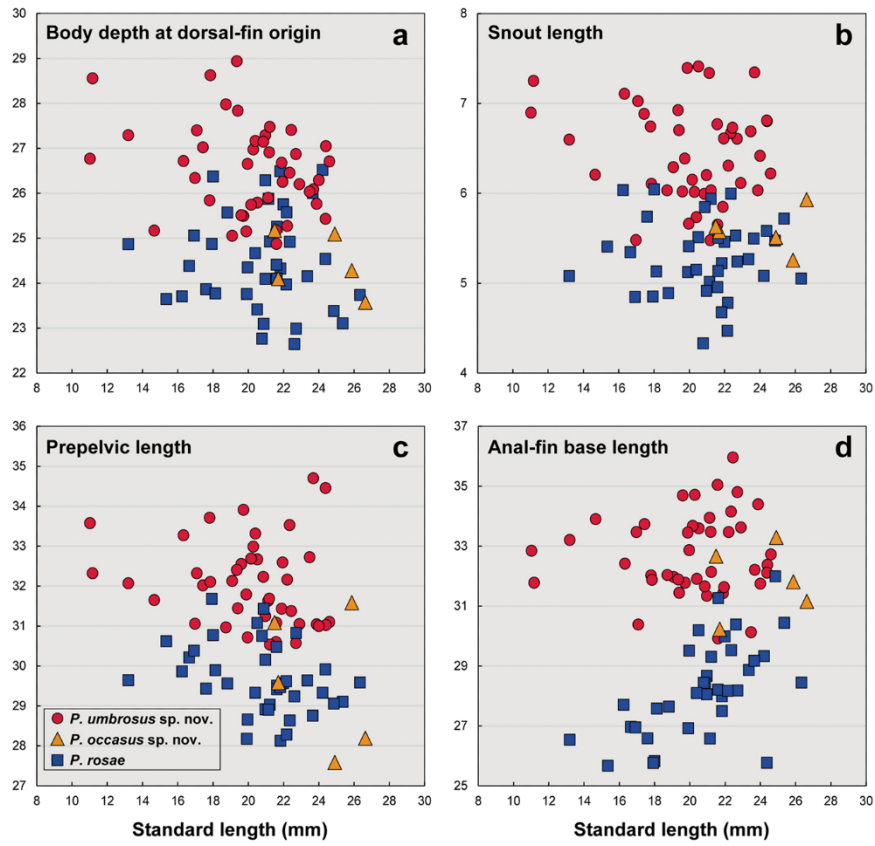


Fig. 11 Relationships of **a** body depth at dorsal-fin origin, **b** snout length, **c** prepelvic length, and **d** anal-fin base length (as % of SL) to standard length (mm) in *Pseudoplesiops umbrosus* sp. nov. (red circles), *Pseudoplesiops occasus* sp. nov. (yellow triangles), and *Pseudoplesiops rosae* (blue squares)

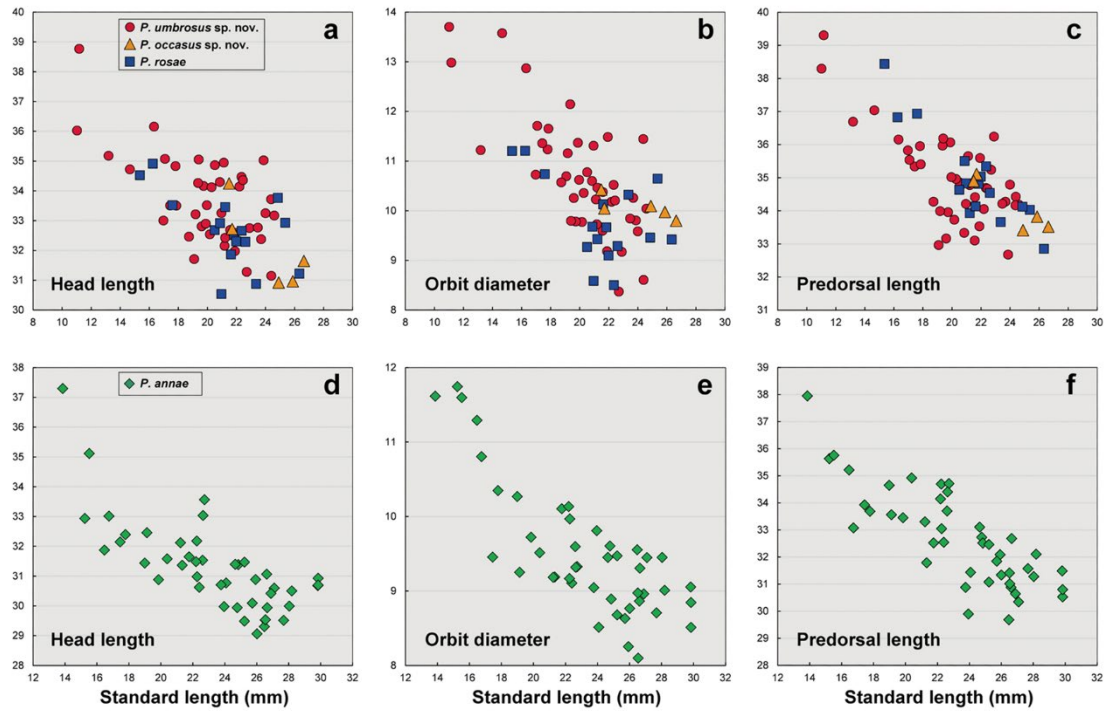


Fig. 12 Relationships of **a, d** head length, **b, e** orbit diameter, and **c, f** predorsal length (as % of SL) to standard length (mm) in *Pseudoplesiops umbrosus* sp. nov. (red circles), *Pseudoplesiops occasus* sp. nov. (yellow triangles), and *Pseudoplesiops rosae* (blue squares), and *Pseudoplesiops annae* (green diamonds), showing morphological changes with growth

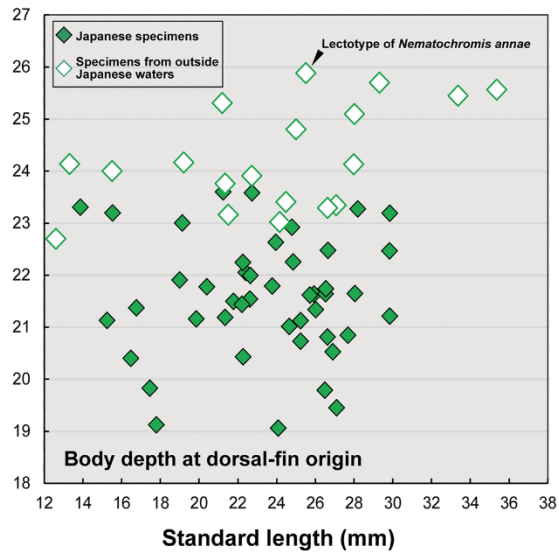


Fig. 13 Relationship of body depth at dorsal-fin origin (as % of SL) to standard length (mm) in *Pseudoplesiops annae*, showing morphological variation. *Closed* and *open diamonds* indicate specimens from Japan and outside Japanese waters (Philippines, Indonesia, Timor-Leste, and Solomon Is.), respectively



Fig. 14 Pelvic fins of preserved specimens of *Pseudoplesiops annae*, showing color variation, photographed by K. Fujiwara. **a** KAUM–I. 147428, 29.8 mm SL, Koshiki Is., Kagoshima, Japan; **b** AMS I.21918-017, 29.3 mm SL, Caban I., Philippines

Table 1 Morphometric measurements (expressed as percentages of SL) of examined specimens of *Pseudoplesiops umbrosus* sp. nov. and *Pseudoplesiops occasus* sp. nov.

	<i>P. umbrosus</i> sp. nov.					<i>P. occasus</i> sp. nov.	
	Holotype Japan KAUM–I. 62502	Paratypes Japan <i>n</i> = 34	Means (Japanese specimens)	Paratypes other localities <i>n</i> = 8	Means (all specimens)	Holotype Japan KAUM–I. 146519	Paratypes Japan <i>n</i> = 4
Standard length (mm)	24.6	11.0–24.4		17.0–21.2		21.7	21.5–26.6
Body depth at dorsal-fin origin	26.7	24.9–28.9	26.4	26.3–28.6	26.5	24.1	23.6–25.2
Greatest body depth	28.6	25.8–30.1	27.6	27.4–30.3	27.9	25.2	25.8–27.3
Body width	15.0	12.8–18.4	15.2	14.3–16.7	15.2	14.3	14.8–15.7
Interorbital width	4.0	3.4–4.9	4.2	3.0–4.0	4.1	3.5	3.0–3.8
Head length	33.2	31.1–38.8	33.8	32.2–34.3	33.7	32.7	30.9–34.2
Snout length	6.2	5.7–7.4	6.6	5.5–6.1	6.5	5.6	5.3–5.9
Orbit diameter	10.0	8.4–13.7	10.7	9.7–11.7	10.7	10.0	9.8–10.4
Upper-jaw length	11.5	9.6–12.5	11.1	10.4–11.8	11.1	9.6	9.6–10.7
Caudal-peduncle depth	15.8	14.8–18.1	16.2	14.9–17.2	16.2	15.1	14.5–16.4
Caudal peduncle length	10.1	9.0–14.8	11.3	9.5–11.4	11.2	12.4	11.9–12.9
Predorsal length	34.2	32.7–39.3	35.0	33.3–35.8	35.0	35.1	33.4–34.9
Preanal length	60.9	57.7–65.8	62.4	60.4–63.9	62.4	60.3	56.6–63.1
Prepelvic length	31.1	30.6–34.7	32.2	30.5–33.3	32.1	29.6	27.6–31.6
First segmented dorsal-fin ray length	9.3	6.6–10.8	8.6	8.8–9.5	8.7	5.9	7.6–9.2
Third from last segmented dorsal-fin ray length	17.6	15.5–20.3	17.4	15.3–16.7	17.2	15.5	12.7–17.0
Dorsal-fin base length	61.7	57.0–65.6	60.8	60.3–66.6	61.2	57.3	58.4–61.7
First segmented anal-fin ray length	8.9	6.2–11.8	9.3	6.7–9.9	9.2	7.3	8.5–9.5
Third from last anal-fin ray length	15.9	14.2–17.5	15.9	14.6–18.9	16.0	14.1	12.3–15.7
Anal-fin base length	32.7	29.9–36.0	32.8	31.7–33.5	32.7	30.2	31.2–33.3
Caudal-fin length	26.1	22.3–29.7	25.4	24.3–25.9	25.4	21.3	20.2–22.1
Pectoral-fin length	23.1	22.0–28.1	25.1	19.9–23.9	24.9	19.8	19.9–20.5
Pelvic-fin length	30.1	25.8–39.4	32.4	28.8–33.1	32.3	27.3	28.2–32.2

Table 2 Frequency distribution of dorsal- and anal-fin segmented ray counts in *Pseudoplesiops umbrosus* sp. nov., *Pseudoplesiops occasus* sp. nov., *Pseudoplesiops rosae*, *Pseudoplesiops annae*, and *Pseudoplesiops immaculatus*

	Dorsal-fin segmented rays					
	22	23	24	25	26	27
<i>P. umbrosus</i> sp. nov.	2	41*				
<i>P. occasus</i> sp. nov.	5*					
<i>P. rosae</i>	47*	3				
<i>P. annae</i>				10	42*	3
<i>P. immaculatus</i>						1

	Anal-fin segmented rays				
	13	14	15	16	17
<i>P. umbrosus</i> sp. nov.		41*	2		
<i>P. occasus</i> sp. nov.	4*	1			
<i>P. rosae</i>	46*	4			
<i>P. annae</i>		1	28	24*	2
<i>P. immaculatus</i>					1

Bold numbers indicate mode; * includes holotype or lectotype

Table 3 Frequency distribution of counts of predorsal scales and predorsal scales anterior to anterodorsal parietal pores in *Pseudoplesiops umbrosus* sp. nov., *Pseudoplesiops occasus* sp. nov., and *Pseudoplesiops rosae*

	Predorsal scales				
	7	8	9	10	11
<i>P. umbrosus</i> sp. nov.	28	6*			
<i>P. occasus</i> sp. nov.			1	2*	1
<i>P. rosae</i>	1	16*	7*	2	

	Predorsal scales anterior to anterodorsal parietal pores			
	2	3	4	5
<i>P. umbrosus</i> sp. nov.	28	3*		
<i>P. occasus</i> sp. nov.			3*	1
<i>P. rosae</i>	17*	7		

Bold numbers indicate mode; * includes holotype

Table 4 Morphometric measurements (expressed as percentages of SL) of examined specimens of *Pseudoplesiops annae* and *Pseudoplesiops rosae*

	<i>P. annae</i>			<i>P. rosae</i>		
	Lectotype Indonesia	Non-types Japan	Means (Japanese specimens)	Holotype Samoa	Non-types Japan	Means (Japanese specimens)
	ZMA 112.450	<i>n</i> = 45		USNM 116178	<i>n</i> = 28	
Standard length (mm)	25.5	13.9–29.8		18.0	9.7–26.3	
Body depth at dorsal-fin origin	25.9	19.1–23.6	21.6	26.4	22.6–25.8	24
Greatest body depth	27.5	19.5–26.4	23.4	26.9	23.2–28.6	25.5
Body width	14.9	11.6–15.1	13.3	13.2	11.9–17.5	13.9
Interorbital width	2.7	1.8–3.9	3.0	4.4	2.8–4.9	3.9
Head length	31.4	29.1–37.3	31.3	34.1	30.3–37.0	33.2
Snout length	5.5	4.5–6.4	5.7	6.0	4.5–6.2	5.5
Orbit diameter	9.0	8.1–11.7	9.5	11.0	7.9–13.1	10.1
Upper-jaw length	9.4	9.7–11.9	11.0	10.4	9.9–12.2	10.8
Caudal-peduncle depth	15.7	12.1–15.1	13.9	15.4	13.7–16.7	15
Caudal peduncle length	8.2	9.4–12.3	10.8	12.1	9.0–15.4	12.9
Predorsal length	32.5	29.7–38.0	32.7	36.3	32.5–39.5	35.4
Preanal length	61.6	58.7–64.0	60.8	62.6	58.5–65.5	61.4
Prepelvic length	30.6	26.8–33.4	28.6	30.8	28.1–32.2	29.7
First segmented dorsal-fin ray length	–	5.1–8.2	6.5	–	6.3–10.9	8.9
Third from last segmented dorsal-fin ray length	–	12.2–16.6	14.5	–	13.0–22.5	17.2
Dorsal-fin base length	63.9	59.2–66.8	62.4	55.5	51.5–63.6	58.9
First segmented anal-fin ray length	–	4.8–8.2	6.2	–	5.2–12.3	8.9
Third from last anal-fin ray length	–	10.2–15.8	13.2	–	13.1–17.5	15.8
Anal-fin base length	32.5	27.4–35.6	32.0	25.8	25.7–32.4	29.1
Caudal-fin length	–	20.1–25.8	22.4	–	16.8–28.8	22.6
Pectoral-fin length	–	18.6–24.1	21.5	–	19.6–29.9	22.3
Pelvic-fin length	–	21.6–34.3	29.0	–	23.3–37.8	31.4

– No data

Table 5 Relationships between morphometric measurements (as percentages of SL) and standard length (mm) in *Pseudoplesiops umbrosus* sp. nov. and *Pseudoplesiops annae*

	<i>P. umbrosus</i> sp. nov.		<i>P. annae</i>	
	<i>n</i> = 43, 11.0–24.6 mm SL		<i>n</i> = 45, 13.9–29.8 mm SL	
	Pearson's correlation coefficient	<i>p</i> -value	Pearson's correlation coefficient	<i>p</i> -value
Body depth at dorsal-fin origin	−0.288	0.061	−0.009	0.954
Greatest body depth	0.064	0.685	0.460	0.001
Body width	−0.220	0.156	0.049	0.747
Interorbital width	−0.177	0.256	0.123	0.420
Head length	−0.624	<0.001	−0.748	<0.001
Snout length	−0.147	0.347	−0.137	0.371
Orbit diameter	−0.752	<0.001	−0.796	<0.001
Upper-jaw length	−0.355	0.020	−0.326	0.029
Caudal-peduncle depth	−0.537	<0.001	−0.006	0.969
Caudal peduncle length	−0.059	0.709	0.247	0.102
Predorsal length	−0.713	<0.001	−0.810	<0.001
Preanal length	0.117	0.456	−0.370	0.012
Prepelvic length	−0.166	0.286	−0.535	<0.001
First segmented dorsal-fin ray length	−0.126	0.420	0.387	0.009
Third from last segmented dorsal-fin ray length	−0.062	0.692	0.114	0.456
Dorsal-fin base length	0.063	0.689	0.530	<0.001
First segmented anal-fin ray length	0.000	0.998	−0.144	0.345
Third from last anal-fin ray length	0.018	0.908	0.214	0.159
Anal-fin base length	0.052	0.743	0.582	<0.001
Caudal-fin length	−0.129	0.411	−0.063	0.681
Pectoral-fin length	−0.307	0.045	0.089	0.562
Pelvic-fin length	0.129	0.410	−0.036	0.815

Values in bold indicate Pearson's $|r| > 0.6$ and $p < 0.005$. Measurements in bold indicate statistically significant relationships with SL