*Zootaxa* 4455 (3): 525–536
http://www.mapress.com/j/zt/


**Article**

ISSN 1175-5326 (print edition)
**ZOOTAXA**
ISSN 1175-5334 (online edition)

https://doi.org/10.11646/zootaxa.4455.3.8
http://zoobank.org/urn:lsid:zoobank.org:pub:0D9ACB6D-8CD9-4895-B4D3-377A3E482212

# *Pseudanthias emma* new species, with notes on a collection of anthiadine serranid fishes from off Myanmar (eastern Indian Ocean)

ANTHONY C. GILL[1,2] & PETER N. PSOMADAKIS[3]

[1]*Macleay Museum and School of Life and Environmental Sciences, A12—Macleay Building, The University of Sydney, New South Wales 2006, Australia. E-mail: anthony.c.gill@sydney.edu.au*

[2]*Ichthyology, Australian Museum, 1 William Street, Sydney, New South Wales 2010, Australia.*

[3]*Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, 00152 Rome, Italy. E-mail: Peter.Psomadakis@fao.org*

## Abstract

Recent exploratory trawling off the coast of Myanmar by the R/V *Dr Fridtjof Nansen* has resulted in the collection of six species of anthiadine serranid fishes. Four of the species are represented by specimen vouchers: *Pseudanthias emma* **sp. nov.**, *P. gibbosus* (Klunzinger), *Odontanthias rhodopeplus* (Günther) and *Plectranthias* sp. 1. The remaining two species are represented only by photographs: *Plectranthias* sp. 2 and *Sacura sanguinea* Motomura, Yoshida & Vilasri. *Pseudanthias emma* is described from the 107 mm SL holotype. It is distinguished from congeners in having the following combination of characters: dorsal rays X,16; pectoral rays 18; lateral-line scales 42; third dorsal-fin spine longest, prolonged; no papillae on posterior margin of orbit; soft part of dorsal with low scaly sheath; subopercle and interopercle indistinctly serrated; caudal fin weakly concave centrally, with elongate filaments extending from second to uppermost and second to lowermost branched rays. *Plectranthias* sp. 1 is a probable new species closely allied to *P. sagamiensis* (Katayama), from which it appears to differ in having fewer segmented dorsal rays and fewer rows of cheek scales. *Plectranthias* sp. 2 is a probable new species closely allied to *P. alcocki* Bineesh, Akhilesh, Gopalakrishnan & Jena, from which it appears to differ in lacking a large black spot on the operculum and dusky ventral spot on the abdomen. New character, habitat and distribution information is provided for all six species. *Pseudanthias vizagensis* Krishna, Rao & Venu is suggested as a probable junior synonym of *P. pillai* Heemstra & Akhilesh.

**Key words:** *Pseudanthias gibbosus*, *Plectranthias sagamiensis*, *Odontanthias rhodopeplus*, *Sacura sanguinea,* taxonomy, ichthyology

## Introduction

Members of the serranid fish subfamily Anthiadinae are found world-wide in temperate to tropical waters. Currently over 220 species are recognised in the subfamily, with greatest diversity in the Indo-Pacific region (Anderson in press). However, many species are associated with relatively deep reef habitat, and are thus poorly known and not well represented in museum collections (Allen & Walsh 2015).

In 2013 and 2015, the EAF-Nansen Programme (formerly EAF-Nansen Project) of FAO, in cooperation with the Myanmar government, conducted two trawl surveys using the Norwegian R/V *Dr. Fridtjof Nansen* off the coast of Myanmar to obtain biological and environmental information for the study area, and identify local species diversity for the compilation of an FAO marine species identification guide for fishery purposes. During these cruises, specimens of six species of anthiadines representing four genera were documented. Specimens collected during the 2013 expedition were photographed but not retained. Five species were collected during the 2015 expedition, of which specimens representing four species were retained. We herein report on the specimens, including description of a distinctive new species of the genus *Pseudanthias* Bleeker (1871).

*Accepted by W. Holleman: 26 Jun. 2018; published: 3 Aug. 2018*

## Materials and methods

Methods of counting and measuring follow Gill *et al.* (2017). In the description of the new species, bilateral counts are presented in the form left count/right count. Osteological details were determined from x-radiographs and CT scans taken at Sydney Imaging. Comparisons with related species are largely based on literature accounts. Specimens are deposited in the South African Institute for Aquatic Biodiversity (SAIAB), Grahamstown, South Africa.

## Taxonomy

***Pseudanthias emma*** **new species**
Figure 1; Tables 1–2
Emma's basslet

**Holotype.** SAIAB 203722, 107 mm SL, off Tanintharyi coast, Myanmar, Andaman Sea, Indian Ocean (11°39.96' N, 97°16.16'E), 105 m, R/V *Dr. Fridtjof Nansen*, stn 149, bottom trawl, 25 May 2015, collected by P. N. Psomadakis.

**Diagnosis.** The following combination of characters distinguishes *Pseudanthias emma* from congeners: dorsal rays X,16; pectoral rays 18; lateral-line scales 42; third dorsal-fin spine longest, prolonged; no papillae on posterior margin of orbit; soft part of dorsal with low scaly sheath; subopercle and interopercle indistinctly serrated; caudal fin weakly concave centrally, with elongate filaments extending from second to uppermost and second to lowermost branched rays.

**Description.** Dorsal rays X,16, all segmented rays branched; third dorsal-fin spine longest, with fleshy pennant extending from tip; anal rays III,7, all segmented rays branched; pectoral rays 18/18, all rays branched except upper 2/2, no serrations on rays; pelvic rays 1,5; caudal fin weakly concave centrally, with elongate filaments extending from second to uppermost and second to lowermost branched rays; principal caudal rays 9 + 8; branched caudal-fin rays 7 + 6; upper procurrent caudal-fin rays 7; lower procurrent caudal rays 7; lateral-line scales 42/42; scales above lateral-line to origin of dorsal fin (counted upwards and forwards from lateral line) 6/6; scales above lateral-line to base of fifth dorsal spine (counted upwards and forwards from lateral line) 4/3; scales above origin of anal fin origin to lateral line (counted upwards and forwards from anal origin) 18/18; circumpeduncular scales 26; gill rakers 11 + 22; branchiostegal rays 7; pseudobranch filaments 20.

Vertebrae 10 + 16; predorsal formula 0/0+0/2/1+1; main shaft (proximal component) of first dorsal pterygiophore roughly perpendicular to long axis of body; no trisegmental pterygiophores associated with dorsal and anal fins; ribs present on vertebrae 3 through 10; epineurals present on vertebrae 1 through 13; paired parapophyses present on first caudal vertebra (see Baldwin 1990: fig. 21B); parhypural and hypurals autogenous; well-developed hypurapophysis on parhypural; epurals 3; single uroneural (posterior uroneural absent); ventral tip of cleithrum with well-developed posteroventral process.

Morphometric values are summarised in Table 1.

Mouth large, slightly oblique, posterior margin of maxilla reaching to vertical through posterior edge of pupil; mouth terminal, lower jaw projecting slightly; premaxilla with an enlarged recurved canine anterolaterally, a band of small conical teeth about five rows wide at symphysis reducing to two rows on sides of jaw, with the outer row teeth larger and slightly curved, and inner pair anteriorly nearest symphysis enlarged and caniniform, directed inwards; dentary with a band of small conical teeth about six rows wide, reducing to single row posteriorly on sides of jaw, an enlarged, curved canine tooth on sides of jaw, and an anteriorly pointing canine tooth anterolaterally; vomer with a triangular patch of small conical teeth, five rows wide in midline; palatine with a narrow band of small conical teeth, three rows wide at widest point; ectopterygoid, mesopterygoid and tongue edentate.

Opercle with 3 flat spines, middle spine longest, upper spine mostly concealed by scales; posterior margin of preopercle with 35/37 fine serrations, these gradually increasing in size until angle of preopercle; no serrations on ventral part of preopercle; interopercle with 1/2 indistinct serrations; subopercle with 2/2 indistinct serrations; posttemporal with about 5 indistinct serrations; no apparent serrations on supracleithrum. Anterior nostril positioned at middle of snout, tubular with elongate flap on posterior rim, flap reaching posterior nostril when laid back; posterior nostril at mid-upper, anterior border of orbit. No papillae on posterior rim of orbit. Snout not hypertrophied at symphysis.

Scales ctenoid with peripheral cteni (Roberts 1993); lateral line broadly arched over pectoral fin following body contour to caudal-fin base; head fully scaled except for lips, and areas in front of and immediately below nostrils; no auxiliary scales on body, a few auxiliary scales on cheeks and operculum; low scaly sheath on soft dorsal and anal fins, with indistinct small scales present between segmented rays; caudal fin with scaly basal sheath, with small scales extending over almost all of fin, except for fin tips and posterior part of membranes of middle rays; pectoral fins with basal, wedge-shaped sheath of small scales; pelvic fins with small scales extending on to basal half of fins.

**TABLE 1**. Morphometric values for *Pseudanthias emma* **sp. nov.** expressed as percentage SL, with comparable data for *P. pillai* (after Heemstra & Akhilesh 2012). * indicates where data for *P. pillai* is lacking or not comparable.

| | *P. emma* SAIAB 203722 Holotype | *P. pillai* Male holotype and female paratype |
|---|---|---|
| SL (mm) | 107 | 100–119 |
| Greatest body depth | 37.9 | 35–39 |
| Body depth at anal-fin origin | 34.0 | * |
| Body width | 17.9 | 16–16.8 |
| Head length | 34.3 | 37–38 |
| Snout length | 7.6 | 7.3–9.1 |
| Orbit diameter | 9.6 | 8.7–9.1 |
| Bony interorbital width | 9.3 | 8.1–8.2 |
| Upper jaw length | 14.5 | 15 |
| Maxilla width | 6.3 | 5.9–6.3 |
| Caudal peduncle length | 20.5 | 19–22 |
| Caudal peduncle depth | 16.4 | 12–13 |
| Predorsal length | 33.1 | 33 |
| Preanal length | 65.6 | 64–65 |
| Prepelvic length | 37.0 | * |
| Dorsal fin base length | 61.0 | 62–63 |
| First dorsal spine | broken | 5.6–6.6 |
| Third dorsal spine | 23.9 | 16–18 |
| Fourth dorsal spine | 14.8 | 14–15 |
| Tenth dorsal spine | 11.8 | 13–14 |
| First segmented dorsal ray | 13.9 | * |
| Longest segmented dorsal ray (number) | 18.2 (13) | 24–25 (*) |
| Anal fin base length | 17.0 | * |
| First anal spine | 7.2 | 8.2–10 |
| Second anal spine | 16.9 | 15–17 |
| Third anal spine | 15.2 | 15 |
| First segmented anal ray | 21.1 | * |
| Longest segmented anal ray (number) | 25.9 (3) | * |
| Caudal fin length | 45.1 | 27–29 |
| Caudal concavity | 17.8 | 2 |
| Pectoral fin length | 28.3 | 29–30 |
| Pelvic fin spine | 19.3 | 17 |
| Pelvic fin length | 35.2 | 28–31 |

**TABLE 2**. Comparison of coloration features of male *Pseudanthias emma* **sp. nov.** and *P. pillai*

| | *P. emma* | *P. pillai* | |
|---|---|---|---|
| | | Heemstra & Akhilesh 2012: fig. 40 | Krishna *et al.* 2017: fig. 1 |
| Dark spots on scales of upper body and nape | absent | present | present |
| Sides of body | mostly orange | orange with bright pink stripes | orange with bright pink stripes |
| Soft part of dorsal fin | orange, bright red distally | bright yellow, rays purple or yellow | bright yellow, rays purple or yellow |
| Pink band along upper part of body | distinct | diffuse | diffuse |
| Orange-red blotch on breast | present | absent | absent |
| Caudal fin | pinkish red on basal third, pinkish hyaline on middle third, and bright red on distal third | magenta with posterior margin bright yellow | magenta with posterior margin bright yellow |
| Anal fin | pale pink to white, with distal portion of soft part of fin bright red | bright pinkish purple with some yellow, pale pink anteriorly | bright pinkish purple with some yellow, pale pink anteriorly |
| Pelvic fin | pale pink to white with distal part abruptly bright red | pale yellow to pale pink | pale yellowish pink |

Colour of male holotype when freshly dead (described from two photos, one with a white background that shows fin coloration better but is not of publishable quality, and Figure 1): head pink, pale pink ventrally, with orange bar extending almost vertically from about 1 o'clock position of orbital rim over nape; two orange stripes, one narrow and from front of eye to snout tip, the other broad and from behind lower half of eye to pectoral-fin base, the stripes bordered ventrally by continuous bright pink (on head) to silvery pink (on pectoral-fin base) stripe; iris bright yellow, with short black crescent near anterior border of eye; body mostly orange, with bright pink band from dorsal-fin origin along dorsal part of body to upper edge of caudal peduncle, the band broader beneath middle of dorsal fin, extending ventrally almost to lateral line; lower part of body silvery white anteriorly on breast, becoming pale pink on lower part of caudal peduncle, separated from orange part of body by narrow silvery white stripe; a large (eye-sized) orange-red blotch on breast, between bases of pectoral and pelvic fins; spinous part of dorsal fin bright orange-yellow with fins spines pink, and distal part of fin behind seventh spine narrowly bright red; soft portion of dorsal fin orange with distal third to half of fin bright red; anal fin pale pink to white, with distal half of soft part of fin bright red; caudal fin narrowly bright pink dorsally and pale pink ventrally, the remainder of fin pinkish red on basal third, pinkish hyaline on middle third, and bright red on distal third, with filamentous tips pale pink to hyaline; pelvic fin pale pink to white with distal tip abruptly bright red; orange stripe on pectoral fin base extends on to fin, becoming reddish orange, this bordered dorsally and ventrally by narrow bright pink (dorsally) or silvery pink to white (ventrally) stripes, the remainder of fin pinkish hyaline.

Colour in preservative: Head and body tan, with no apparent markings; fins pale tan, without markings.

**Habitat and distribution.** Known only from the holotype, trawled in proximity of a deep coral reef (105 m) off the south east coast of Myanmar in the Andaman Sea (eastern Indian Ocean). The chaetodontids *Roa jayakari* (Norman) and *Heniochus acuminatus* (Linnaeus), the priacanthid *Pristigenys refulgens* (Valenciennes), the lethrinid *Wattsia mossambica* (Smith) as well as several other reef-associated fish species were caught in the same haul.

**Comparisons.** *Pseudanthias emma* closely resembles *P. pillai* Heemstra & Akhilesh (2012) in general form and coloration. The latter species was described on the basis of two specimens from off Charakkadu, Kerala, India (10°30' N, 75°24'E). Subsequently, Krishna *et al.* (2017) described *P. vizagensis* on the basis of 44 specimens trawled off Visakhapatnam in the Bay of Bengal (stated coordinates17°10'N, 18°10'E, which is clearly erroneous; possibly 83°10'E was the intended longitude value). The description of *P. vizagensis* is problematic, not the least of which for the listing of all 44 specimens as "holotypes". Although Krishna *et al.* (2017) compared their new species with *P. pillai*, purported differences in coloration and fin shapes are erroneous, and apparent differences in meristic characters (17 versus 19 pectoral-fin rays; 44–45 versus 36–38 lateral-line scales) may reflect different or inaccurate counting methods. We here suggest that the two nominal species are synonyms, though re-examination of the *P. vizagensis* type specimens (here interpreted as syntypes) will be necessary to reconcile the apparent meristic differences.

Comparison of certain morphometric data provided by Krishna *et al.* (2017) with their figure 1A indicates that their data are either not compatible or not sufficiently accurate for comparison with *P. emma* (e.g., head length 40.44–40.65 stated vs ca 36 % SL from figure, predorsal length 38.20–39.56 vs ca 32 % SL, greatest body depth 39.56–44.94 vs ca 37 % SL). We therefore base our morphometric comparison solely on data provided by Heemstra & Akhilesh (2012), though acknowledge that larger sample sizes are needed for proper comparison. Nonetheless, *P. emma* appears to differ substantially from *P. pillai* in having a deeper caudal peduncle, longer third dorsal-fin spine, shorter head, broader interorbital, and shorter soft dorsal-fin rays (Table 1). Although similar in coloration, the two species differ in various details (Table 2). They also differ in caudal-fin shape. In *P. emma* the caudal fin is weakly concave with the second-to outermost branched rays dorsally and ventrally expanded with long filaments, whereas in *P. pillai* it is weakly convex centrally, with little or no elongation of outer rays (not lunate as stated by Krishna *et al.* 2017). The two species differ in the number of lower gill rakers (22 in *P. emma* versus 28–29 in *P. pillai*). Finally, *P. emma* possibly differs from *P. pillai* in having more lateral-line scales (42 versus 36-38), though this assumes the high numbers (44–45) reported for the syntypes of *P. vizagensis* by Krishna *et al.* are in error.

*Pseudanthias emma* is distinguished from all other congeners in having the following combination of characters: dorsal-fin rays X,16, the third spine prolonged; pectoral rays 18; lateral-line scales 42; gill rakers 11 + 22; no papillae on posterior margin on orbit; soft part of dorsal fin with low scaly sheath; subopercle and interopercle indistinctly serrated; and caudal fin weakly concave centrally, with elongate filaments extending from second to uppermost and second to lowermost branched rays. The fresh coloration is also distinctive for the species.

**Etymology.** The species epithet is for the second author's daughter Emma. It is treated as a noun in apposition.

**FIGURE 1.** *Pseudanthias emma* **sp. nov.**, SAIAB 203722, 107 mm SL, male holotype, off Tanintharyi coast, Myanmar, Andaman Sea, Indian Ocean. Note that filamentous tips of caudal fin were cropped during photography. Photo by Oddgeir Alvheim.

### *Pseudanthias gibbosus* (Klunzinger)
Figure 2; Table 3

*Anthias (Pseudanthias) gibbosus* Klunzinger, 1884: 9 (type locality: Al-Qusair, Red Sea Governorate, Egypt, Red Sea).

A single individual (80.9 mm SL) of this species was collected and photographed during the 2015 survey and preserved (Figure 2). It agrees well with published photos and descriptions of the species (e.g., dorsal rays X,16; pectoral rays 18; lateral-line scales 41–42; circumpeduncular scales 25; gill rakers 11 + 26; no papillae on posterior rim of orbit; interopercle and subopercle with indistinct serrations; third dorsal spine longest, 19.4 % SL; no auxiliary scales on body; caudal fin lunate, caudal concavity 20.4 % SL; greatest body depth 38.9 % SL). Morphometric details for the specimen are provided in Table 3. We follow Heemstra & Akhilesh (2012) in considering *Anthias gibbosus* Klunzinger to be a senior synonym of *Franzia fasciatus* Kamohara (1955).

**Material examined:** SAIAB 203720, 80.9 mm SL (same collection data as SAIAB 203722).

**FIGURE 2.** *Pseudanthias gibbosus*, SAIAB 203720, 80.9 mm SL, female, off Tanintharyi coast, Myanmar, Andaman Sea, Indian Ocean, Myanmar. Photo by Oddgeir Alvheim.

### *Plectranthias* sp. 1
Figure 3; Table 3

A single specimen of a possibly new species of *Plectranthias* was collected and photographed during the 2015 survey (Figure 3). Morphometric values for the specimen are provided in Table 3. It closely resembles *P. sagamiensis* (Katayama, 1964) from southern Japan in coloration and in having the following combination of characters: segmented dorsal-fin rays 15; pectoral fin with 14 mostly unbranched rays (8$^{th}$ ray on left side branched, 7$^{th}$ and 8$^{th}$ rays on right side branched); lateral line complete with 29–30 tubed scales; lower part of preopercle with two enlarged antrorse spines; no scales on maxilla; and predorsal scales extending anteriorly to middle of interorbital area (at about vertical through mid-pupil). However, a segmented dorsal-ray count of 15 is unusual for *P. sagamiensis*, with 16 the more usual count (Randall, 1980). The specimen also differs from Randall's (1980) diagnosis of *P. sagamiensis* in having fewer rows of cheek scales (5 versus 6).

The specimen also closely resembles an undescribed species from the Northwest Shelf of Australia in coloration and most meristic details. However, the Northwest Shelf species has more extensive coverage of predorsal scales (extending anteriorly to at least the vertical through the anterior edge of the pupil, sometimes to the posterior nostrils versus to the vertical through the middle of the pupil), as well differing in some morphometric details (e.g. greatest body depth 32.4–39.3 versus 44.4 % SL; head length 42.6–45.7 versus 50.2 % SL; first segmented dorsal-fin ray 14.4–16.6 versus 19.3 % SL). Although it is likely this specimen represents a new species, we refrain from describing it until more specimens become available, and until proper comparisons can be made with *P. sagamiensis*.

**Material examined:** SAIAB 203726, 45.0 mm SL, off Tanintharyi coast, Myanmar, Andaman Sea, Indian Ocean (13°3.21' N, 96°41.62' E) 121–129 m, R/V Dr. *Fridtjof Nansen*, stn 123, bottom trawl, 21 May 2015, collected by P. N. Psomadakis..

**FIGURE 3**. *Plectranthias* sp. 1, SAIAB 203726, 45.0 mm SL, off Myanmar, Tanintharyi coast, Myanmar, Andaman Sea, Indian Ocean. Photo by Oddgeir Alvheim.

### ***Plectranthias* sp. 2**
Figure 4

A single specimen (90 mm TL) of an unidentified species of *Plectranthias* was collected, photographed and preserved during the 2015 survey (Figure 4) but subsequently lost during shipping to SAIAB. The specimen was trawled on the 29 May 2015 off the Tanintharyi coast, Myanmar, Andaman Sea (10°2.91' N, 97°22.78' E) at a depth of 182 m. It was possible to determine some details from the photographs: dorsal rays X,14 (or 15?), fourth spine longest; dorsal fin not deeply notched between soft and spinous parts of fin; pectoral rays 14, rays unbranched (possibly branched at very tips of middle few rays?); caudal fin emarginate with upper rays produced; lateral-line complete with 29 scales; scales below lateral line to anal-fin origin ca 11; pelvic fins short, well short of anus. These details and the live coloration are similar to *P. alcocki* Bineesh, Akhilesh, Gopalakrishnan & Jena (2014), which was recently described from two specimens collected in the Arabian Sea off the south-west coast of India in 180–320 m. However, the Myanmar specimen differs from the *P. alcocki* type specimens in several live coloration details, most notably in lacking a large black spot on the operculum and a dusky spot ventrally on the abdomen. We therefore assume that it represents an undescribed species.

### ***Odontanthias rhodopeplus* Günther**
Figures 5–7; Table 3

*Anthias rhodopeplus* Günther, 1872: 654, pl. 55 (type locality Manado, Sulawesi).

One individual (150 mm TL) of this species was collected and photographed (Figure 5) during the 2013 survey but not retained. The specimen was trawled on the 28 November 2013 off the Ayeyarwady Delta, Myanmar, Andaman

Sea (13°55.75' N, 95°41.10' E) at a depth of 175 m. Two additional specimens were collected and photographed during the 2015 survey (Figures 6–7). The photos and specimens agree well with the diagnosis of the species provided by Randall & Heemstra (2006). However, the specimens will not key unambiguously to that species using either Randall & Heemstra's (2006) or White's (2011) key to species. In both cases, the specimens are ambiguous at couplet 2, having the elongate third dorsal-fin spine of 2a (typical of *O. rhodopeplus*), and the relatively elongate (2.2–2.4 in SL) caudal fin with filamentous tips of 2b. The specimens also extend known variation in the species for numbers of pectoral rays (18–19 versus 17–18 in Randall & Heemstra 2006). Randall & Heemstra (2006) brief diagnosis lacks information on certain characters, which we provide here: principal caudal rays 9 + 8 (counting method follows Gill *et al.* 2017); branched caudal-fin rays 7 + 6; upper procurrent caudal-fin rays 6; lower procurrent caudal rays 6; total caudal-fin rays 29 ; scales above lateral-line to origin of dorsal fin 5–6; scales above lateral-line to base of fifth dorsal spine 3; scales below lateral line to origin of anal fin 17–19; circumpeduncular scales 18; pseudobranch filaments 31–34.

**FIGURE 4**. *Plectranthias* sp. 2, 90 mm TL, off the Tanintharyi coast, Myanmar, Andaman Sea, Indian Ocean, specimen lost. Photo by Oddgeir Alvheim.

**FIGURE 5.** *Odontanthias rhodopeplus*, 150 mm TL, off the Ayeyarwady Delta, Myanmar, Andaman Sea, Indian Ocean, specimen not retained, Photo by Oddgeir Alvheim.

**FIGURE 6.** *Odontanthias rhodopeplus*, SAIAB 203717, 151 mm SL, off Tanintharyi coast, Myanmar, Andaman Sea, Indian Ocean. Photo by Oddgeir Alvheim.

Radiographs and CT scans of the two specimens revealed the following osteological details: vertebrae 10 + 16; supraneurals 2; predorsal formula 0/0/2/1+1; main shaft (proximal component) of first dorsal pterygiophore slanting slightly anterodorsally relative to main axis of body; no trisegmental pterygiophores associated with dorsal and anal fins; ribs present on vertebrae 3 through 10; epineurals present on vertebrae 1 through 12; parhypural and hypurals autogenous; well-developed hypurapophysis on parhypural; epurals 3; single uroneural (posterior uroneural absent); ventral tip of cleithrum with well-developed posteroventral process.

**FIGURE 7.** *Odontanthias rhodopeplus*, SAIAB 203728, 192 mm SL, off Tanintharyi coast, Myanmar, Andaman Sea, Indian Ocean. Photo by Oddgeir Alvheim.

Morphometric values for the two specimens are provided in Table 3.

**Material examined:** SAIAB 203717, 151 mm SL, SAIAB 203728, 192 mm SL, off Tanintharyi coast, Myanmar, Andaman Sea, Indian Ocean (13°55.22' N, 95°42.27' E), 173–176 m, R/V *Dr. Fridtjof Nansen*, stn 90, bottom trawl, 14 May 2015, collected by P. N. Psomadakis

***Sacura sanguinea*** **Motomura, Yoshida & Vilasri**
Figure 8

*Sacura sanguinea* Motomura, Yoshida & Vilasri, 2017: 291, figs 1–2 (type locality: Andaman Sea, Thailand).

Motomura *et al.* (2017) described *Sacura sanguinea* from three specimens purchased at Pak Nam Ranong Fishing Port, Ranong Province, Thailand. The specimens apparently had been trawled from the Andaman Sea, but details on habitat, depth and precise locality are lacking. A single individual of the species was collected during the 2013 cruise, and photographed but not retained (Figure 8). The specimen, 95 mm TL was trawled on the 24 November 2013 off the Ayeyarwady Delta, Myanmar, Andaman Sea (14°9.57' N, 94°23.97' E) at a depth of 124 m. Photographs of the specimen agree well with Motomura *et al.*'s figure 2 of the female paratype of *S. sanguinea*, particularly in having: a large dark red spot on the dorsal fin between the sixth and tenth spines; a broad yellow stripe from behind the head, this becoming indistinct and red on the middle of the body and extending to the caudal-fin base; and a yellow caudal fin with bright red spots on the central portion of the fin. These coloration characters are sufficient to distinguish *S. sanguinea* from other members of the genus (see Heemstra & Randall 1979). The photographs also show a series of small dark spots behind and beneath the third through tenth dorsal spine bases. These are also apparent in Motumura *et al.*'s fig. 2, though very indistinct. Also apparent on the photo are the following: dorsal rays X,15, second and third segmented rays produced as filaments; fourth dorsal spine slightly longer than third, fifth through tenth spines sequentially shorter; anal rays III,7, all segmented rays branched; pectoral rays 17; lateral line with ca 33 tubed scales. In the three type specimens of *S. sanguinea* (which measure 111–124 mm SL), the third dorsal spine is elongate and much longer than the other dorsal spines. The lack of elongation of the third dorsal spine in the Myanmar individual is most likely due to ontogenetic variation, given its smaller size.

**FIGURE 8**. *Sacura sanguinea*, 95 mm TL, off the Ayeyawady Delta, Myanmar, Andaman Sea, Indian Ocean, specimen not retained. Photo by Oddgeir Alvheim.

**TABLE 3**. Morphometric values, expressed as percentage SL, for Myanmar specimens of *Odontanthias rhodopeplus*, *Plectranthias* sp. 1 and *Pseudanthias gibbosus.*

| | *Odontanthias rhodopeplus* | | *Plectranthias* sp. 1 | *Pseudanthias gibbosus* |
|---|---|---|---|---|
| | SAIAB 203717 | SAIAB 203728 | SAIAB 203726 | SAIAB 203720 |
| SL (mm) | 151 | 192 | 45.0 | 80.9 |
| Greatest body depth | 41.7 | 42.1 | 44.4 | 38.9 |
| Body depth at anal-fin origin | 38.6 | 38.8 | 39.8 | 35.4 |
| Body width | 16.9 | 19.4 | 23.6 | 16.4 |
| Head length | 39.6 | 38.2 | 50.2 | 34.1 |
| Snout length | 7.4 | 9.8 | 10.4 | 7.3 |
| Orbit diameter | 10.0 | 8.7 | 14.7 | 10.1 |
| Bony interorbital width | 10.2 | 10.8 | 4.9 | 8.5 |
| Upper jaw length | 19.2 | 19.5 | 22.0 | 15.2 |
| Maxilla width | 6.6 | 6.5 | 6.7 | 6.8 |
| Caudal peduncle length | 19.9 | 21.2 | 20.4 | 22.6 |
| Caudal peduncle depth | 13.4 | 12.1 | 15.8 | 15.5 |
| Predorsal length | 31.7 | 31.5 | 42.7 | 33.5 |
| Preanal length | 65.9 | 65.1 | 69.8 | 70.6 |
| Prepelvic length | 39.1 | 39.6 | 40.2 | 37.5 |
| Dorsal fin base length | 64.2 | 60.4 | 50.7 | 60.1 |
| First dorsal spine | 6.3 | 5.3 | 7.1 | 7.0 |
| Third dorsal spine | 16.5 | 29.1 | 19.7 | 19.4 |
| Fourth dorsal spine | 13.6 | 12.0 | 21.6 | 16.2 |
| Tenth dorsal spine | 13.0 | 10.5 | 9.1 | 11.2 |
| First segmented dorsal ray | 18.4 | 17.1 | 19.3 | 13.1 |
| Longest segmented dorsal ray (number) | 45.5 (3) | 49.5 (3) | 21.6 (7) | 17.8 (12) |
| Anal fin base length | 22.6 | 21.7 | 14.9 | 16.3 |
| First anal spine | broken | 6.2 | 7.8 | 8.5 |
| Second anal spine | 13.8 | 11.3 | 19.1 | 17.4 |
| Third anal spine | 15.6 | 13.3 | 16.0 | 16.6 |
| First segmented anal ray | 17.1 | 14.7 | 22.0 | 20.5 |
| Longest segmented anal ray (number) | 21.5 (4) | 22.5 (4) | 27.8 (3) | 27.8 (3) |
| Caudal fin length | 44.1 | 44.5 | 44.4 | 48.0 |
| Caudal concavity | 22.9 | 22.9 | n/a | 20.4 |
| Pectoral fin length | 27.4 | 27.1 | 42.9 | 29.9 |
| Pelvic fin spine | 16.8 | 15.1 | 18.0 | 19.3 |
| Pelvic fin length | 35.6 | 48.4 | 33.3 | 28.8 |

## Acknowledgements

The EAF-Nansen Programme implemented by the Food and Agriculture Organization of the United Nations (FAO) in close collaboration with the Norwegian Institute of Marine Research (IMR) and funded by the Norwegian Agency for Development Cooperation (Norad) provided us with the opportunity to work with anthiadine specimens collected during the R/V *Dr. Fridtjof Nansen* Myanmar 2015 survey. We are grateful also to Jens-Otto Krakstad (IMR) Htun Thein (Department of Fisheries, Myanmar) and the crew and personnel involved in the Myanmar Nansen survey. Oddgeir Alvheim (IMR) is acknowledged for photos included in this paper and

Roger Bills (SAIAB) for curatorial assistance and loan of specimens. Amanda Hay, Mark McGrouther and Sally Reader (AMS) assisted with processing of loans. The authors wish to acknowledge Sydney Imaging, a core research facility at the University of Sydney, and Zoe Williams in particular for the CT scans and radiographs.

## References

Allen, G.R. & Walsh, F. (2015) *Plectranthias bennetti*, a new species of anthiine fish (Pisces: Serranidae) from the Coral Sea, Australia. *Journal of the Ocean Science Foundation*, 16, 82–89.

Anderson, W.D. Jr. (2018) Annotated checklist of anthiadine fishes (Percoidei: Serranidae). *Zootaxa*. [in press]

Bineesh, K.K., Akhilesh, K.V., Gopalakrishnan, A. & Jena, J.K. (2014) *Plectranthias alcocki*, a new anthiine fish species (Perciformes: Serranidae) from the Arabian Sea, off southwest India. *Zootaxa*, 3785 (3), 490–496. https://doi.org/10.11646/zootaxa.3785.3.10

Gill, A.C., Tea, Y.K. & Senou, H. (2017) *Pseudanthias tequila*, a new species of anthiadine serranid fish from the Ogasawara and Mariana Islands. *Zootaxa*, 4341 (1), 67–76. https://doi.org/10.11646/zootaxa.4341.1.5

Günther, A. (1872) Report on several collections of fishes recently obtained for the British Museum. *Proceedings of the Zoological Society of London*, 1871 (Part 3), 652–675, pls. 53–70.

Katayama, M. (1964) A new genus and species of anthinid fish from Sagami Bay, Japan. *Bulletin of the Faculty of Education Yamaguchi University*, 13 (Part 2), 27–33.

Heemstra, P.C. & Akhilesh, K.V. (2012) A review of the anthiine fish genus *Pseudanthias* (Perciformes: Serranidae) of the western Indian Ocean, with description of a new species and a key to the species. *aqua, International Journal of Ichthyology*, 18, 121–164.

Heemstra, P.C. & Randall, J.E. (1979) A revision of the anthiine fish genus *Sacura* (Perciformes: Serranidae) with descriptions of two new species. *J.L.B Smith Institute of Ichthyology Special Publication*, 20, 1–13.

Kamohara, T. (1955) Eleven additions to the fish fauna of Prov. Tosa, including one new species of the family Serranidae. *Research Reports of Kôchi University*, 3 (No. 26), 1–6, 1 pl.

Klunzinger, C.B. (1884) *Die Fische des Rothen Meeres. Eine kritische Revision mit Bestimmungstabellen. I. Teil*. Acanthopteri veri Owen, Stuttgart, ix + 133 pp., 13 pls.

Krishna, N.M., Rao, V.G. & Venu, D. (2017) *Pseudanthias vizagensis* sp. nov., a new anthiine fish (subfamily: Anthiinae), genus *Pseudanthias*, from India. *Journal of Experimental Zoology, India*, 20 (1), 213–216.

Motomura, H., Yoshida, T. & Vilasri, V. (2017) New species of the anthiadin genus *Sacura* (Perciformes: Serranidae) from the Andaman Sea. *Zootaxa*, 4306 (2), 291–295. https://doi.org/10.11646/zootaxa.4306.2.10

Randall, J.E. (1980) Revision of the fish genus *Plectranthias* (Serranidae: Anthiinae) with descriptions of 13 new species. *Micronesica*, 16, 101–187.

Randall, J.E. & Heemstra, P.C. (2006) Review of the Indo-Pacific fishes of the genus *Odontanthias* (Serranidae: Anthiinae), with descriptions of two new species and a related genus. *Indo-Pacific Fishes*, 38, 1–32.

Roberts, C.D. (1993) Comparative morphology of spined scales and their phylogenetic significance in the Teleostei. *Bulletin of Marine Science*, 52, 60–113.

White, W.T. (2011) *Odontanthias randalli* n. sp., a new anthiine fish (Serranidae: Anthiinae) from Indonesia. *Zootaxa*, 3015, 21–28.