

Tomiyamichthys eyraea, a new species of shrimpgoby (Gobiidae) from West Papua, Indonesia

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Received: 14 September 2019 – Accepted: 21 October 2019

Keywords

Taxonomy, ichthyology, sand/rubble-bottom fishes, Indo-Pacific, western Pacific Ocean.

Abstract

A new species of gobiid fish, *Tomiyamichthys eyraea*, is described from the Daram island group in the Southeast Misool marine protected area of the Raja Ampat Archipelago in West Papua Province, Indonesia, on the basis of two male specimens, 21.8-37.7 mm SL. Diagnostic features include 9 segmented dorsal and anal-fin rays, 17 pectoral-fin rays, 55-56 lateral and 14 transverse scales, cephalic sensory system containing pores B', C, D, E, F, G, H, M', N, and O', no prepectoral scales, ctenoid posterior body scales, and color pattern containing 3-4 large diffuse, dark blotches on side of body interspersed with large, irregular white blotches, diagonal orange bands anteroventrally on side, grading to diagonal rows of small orange spots on posterior half of body, head with numerous orange spots and short bands, and rear portion of first dorsal fin and entire second dorsal and caudal fins with orange spots. Type specimens were collected from a gradually sloping, sand/rubble-bottom exposed to moderate to strong currents in 28 m depth.

Zusammenfassung

Eine neue Art der Grundeln: *Tomiyamichthys eyraea*, wird von der Inselgruppe Daram im Meeresschutzgebiet Südost-Misool des Raja-Ampat-Archipels in der Provinz Westpapua, Indonesien, auf der Grundlage von zwei Männchen mit 21,8-37,7 mm SL beschrieben. Zu den Erkennungsmerkmalen gehören: 9 gegliederte Rücken- und Afterflossenstrahlen, 17 Brustflossenstrahlen, 55-56 seitliche Schuppen in Längsrichtung und 14 Querschup-

pen, ein Sinnessystem am Kopf mit den Poren B', C, D, E, F, G, H, M', N und O', keine präpektorale Schuppen (vor dem Brustbereich), Kammschuppen im hinteren Rumpfbereich sowie ein Farbmuster mit folgenden Kennzeichen: 3-4 große diffuse dunkle Flecken an den Körperflanken, durchsetzt von großen unregelmäßigen weißen Flecken, diagonale orangefarbene Bänder seitlich anteroventral (vor dem Bauchbereich), die in diagonale Reihen kleiner orangefarbener Flecken auf der hinteren Rumpfhälfte übergehen, auf dem Kopf zahllose orangefarbene Flecken und kurze Streifen und orangefarbene Flecken auf dem hinteren Anteil der ersten Rückenflosse, auf der ganzen zweiten Rückenflosse und auf den Schwanzflossen. Die Typus-Exemplare wurden über einem allmählich ansteigenden Sand-/Schutt-Grund mit mäßiger bis starker Strömung in 28 m Tiefe gefangen.

Sommario

Una nuova specie di ghiozzo, *Tomiyamichthys eyraea*, è descritta dal gruppo di isole Daram nell'area marina protetta del sud-est Misool, arcipelago di Raja Ampat, Provincia di Papua Occidentale, Indonesia, sulla base di due esemplari maschi di 21,8-37,7 mm SL. Le caratteristiche diagnostiche comprendono: 9 raggi dorsali e anali segmentati, 17 raggi della pinna pettorale, 55-56 scaglie laterali e 14 trasversali, sistema sensoriale cefalico contenente pori B', C, D, E, F, G, H, M', N e O', nessuna scaglia prepettorale, scaglie ctenoidi nella parte posteriore del corpo e colorazione caratterizzata da 3-4 grandi macchie scure diffuse sul lato del corpo intervallate da grandi macchie irregolari bianche, bande diagonali arancioni anteroventralmente sul lato, degradanti in file diagonali di piccole macchie arancioni sulla metà posteriore del corpo, testa con numerose macchie arancioni e corte bande e porzione posteriore del-

la prima pinna dorsale, tutta la seconda pinna dorsale e la caudale con macchie arancioni. Gli esemplari tipo sono stati raccolti su fondale sabbioso/detritico in lieve pendenza a 28 m di profondità, esposto a correnti di moderata-forse intensità.

INTRODUCTION

The Indo-Pacific gobiid fishes of the genus *Tomiyamichthys* Smith 1956 inhabit sand/rubble bottoms where they live symbiotically with alpheid snapping shrimps. There are 17 currently recognized species (Fricke et al. 2019): *T. alleni* Iwata, Ohnishi & Hirata 2000 from the Western Pacific Ocean (Japan and Bali to Fiji), *T. dorsostigma* Bogorodsky, Kovačić & Randall 2011 from the Red Sea, *T. emilyae* Allen, Erdmann & Utama 2019 from the Western Pacific Ocean (Ryukyu Islands, Philippines, Malaysia, and Indonesia), *T. fourmanoiri* (Smith 1956) from the Western Indian Ocean, *T. gomezi* Allen & Erdmann 2012 from the Philippines and Indonesia, *T. lanceolatus* (Yanagisawa 1978) from the Western Pacific Ocean (Japan, Philippines, Indonesia, New Guinea, and Guam), *T. latruncularius* (Klausewitz 1974) from the Red Sea to Western Pacific Ocean (Indonesia, New Guinea, and Great Barrier Reef), *T. levisquama* Hoese, Shibukawa & Johnson 2016 from northern Australia, *T. nudus* Allen & Erdmann 2012 from Brunei, Malaysia, Indonesia, and New Guinea, *T. oni* (Tomiyama 1936) from the Western Pacific (Japan to Andaman Sea and eastward to New Caledonia), *T. praealtus* (Lachner & McKinny 1980) from Seychelles, *T. reticulatus* Greenfield 2017 from Fiji, *T. russus* (Cantor 1849) from the Eastern Indian and Western Pacific oceans, *T. smithi* Chen & Fang 2003 (Japan, Taiwan, Sabah and Papua New Guinea), *T. stuarti* Allen, Erdmann & Brooks 2018 from Papua New Guinea, *T. tanyaspilus* Randall & Chen 2007 from Indonesia and New Guinea, and *T. zonatus* Allen 2015 from Papua New Guinea. Eleven species from the East Indian region (Andaman Sea to Solomon Islands), including two undescribed taxa, were diagnosed and illustrated in colour by Allen & Erdmann (2012). Hoese et al. (2016) provided valuable data for differentiating the various species on the basis of fin-ray counts, cephalic sensory pore patterns, and scalation.

The present paper describes a new species that was first brought to our attention by American diver and coral reef fish enthusiast Janet Eyre, who photographed it near Daram Island in the Southeast Misool marine protected area (MPA) in West Papua,

Indonesia. We subsequently visited the same locality on three separate occasions during the first half of 2019, resulting in the collection of two specimens.

MATERIALS AND METHODS

Type specimens are deposited at the Museum Zoologicum Bogoriense, Cibinong, Java, Indonesia (MZB) and the Western Australian Museum, Perth (WAM). Lengths are given as standard length (SL), measured from the median anterior point of the upper lip to the base of the caudal fin (posterior end of the hypural plate); body depth is measured at both the origin of pelvic fins and the origin of the anal fin, and body width at the origin of the pectoral fins; head length is taken from the upper lip to the posterior end of the opercular membrane, and head width over the posterior margin of the preopercle; orbit diameter is the greatest fleshy diameter; snout length is measured from the median anterior point of the upper lip to the nearest fleshy edge of the orbit; upper-jaw length is from the same anterior point to the posterior end of the maxilla; cheek depth is the least distance between the ventral edge of the preoperculum and the lower edge of the eye; caudal-peduncle depth is the least depth, and caudal-peduncle length the horizontal distance between verticals at the rear base of the anal fin and the caudal-fin base; lengths of spines and rays are measured to their extreme bases; caudal- and pectoral-fin lengths are the length of the longest ray; pelvic-fin length is measured from the base of the pelvic spine to the tip of the longest pelvic soft ray.

The count of scales in longitudinal series is made from above the dorsal end of the gill opening to the base of the caudal fin; scales in transverse series are counted from the origin of the anal fin upwards and backwards to the base of the first dorsal fin; gill rakers are counted on the first gill arch, those on the upper limb listed first; rudiments are included in the counts

Counts and measurements in the description are given for the holotype followed by the paratype in parentheses if different. Proportional measurements expressed as percentage of the standard length are presented in Table I and are also compared with either standard length or head length in the description.

Terminology and abbreviations for cephalic pores follow those presented by Akihito (1984). Cyanine Blue 5R (acid blue 113) stain was used to make pores, papillae, and scale outlines more obvious (Akihito et al. 1993; Saruwatari et al. 1997).

Tomiyamichthys eyreae n. sp.

Janet's Shrimpgoby

Figs 1-5, Tables I–III.

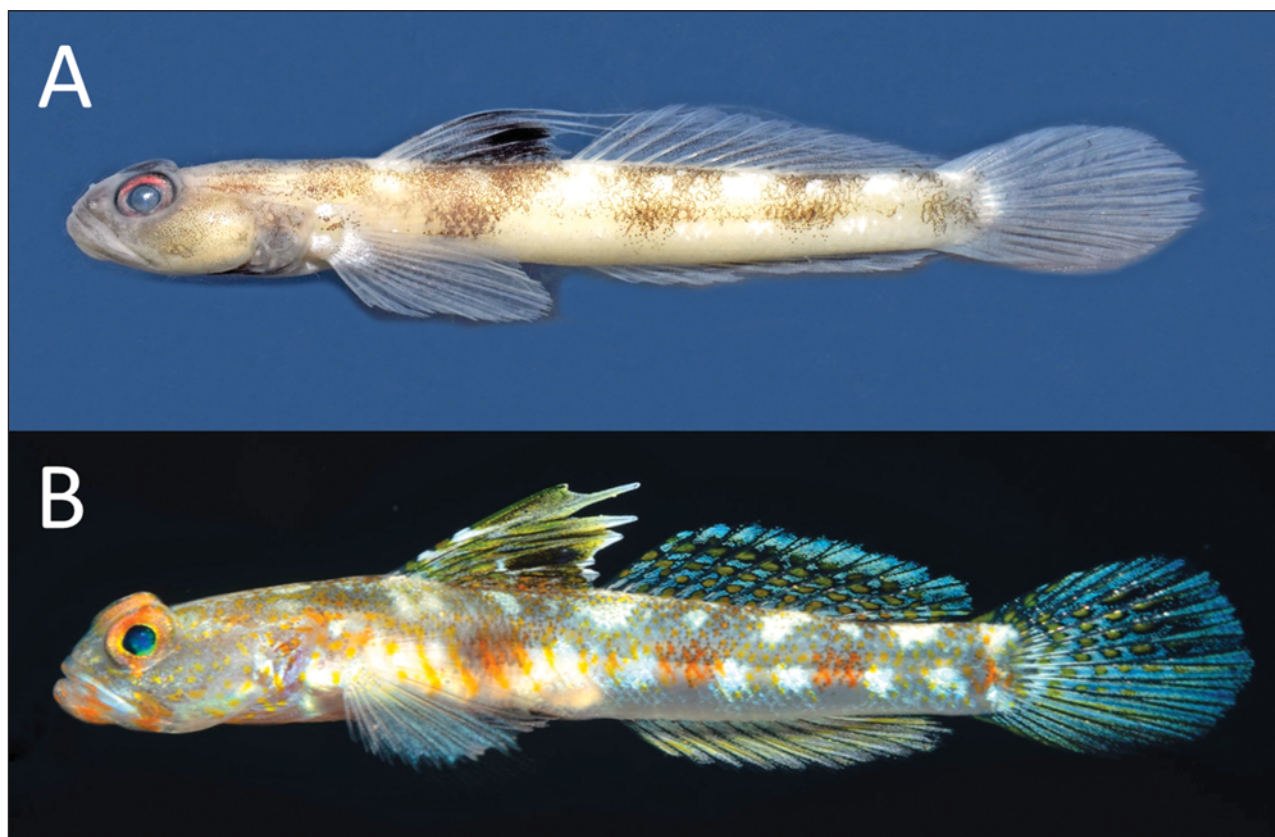
Holotype: MZB 25112, male, 37.7 mm SL, Daram Island, SE Misool MPA, Raja Ampat Archipelago, West Papua Province, Indonesia, 02° 09.867' S, 130° 56.419'E, 28 m, clove oil, M. V. Erdmann, 16 April 2019.

Paratype: WAM P.34998-001, immature male, 21.8 mm SL, same data as holotype except collected 21 May 2019.

Diagnosis: Dorsal rays VI-I,9; anal rays I,9; pectoral rays 17; lateral scales 55-56; transverse scales 14; scales cycloid, except weakly ctenoid on caudal peduncle and base of caudal fin; gill opening extending slightly forward of level of posterior margin of preopercle; first dorsal fin with elongate filaments on second to fourth spines; caudal fin ovate, about equal to head length, 3.5 in SL; cephalic sensory system includes pores B', C, D, E, F, G, H, M', N, and O'; grey to grey-brown in life

with 3-4 large diffuse, dark blotches on side of body interspersed with large, irregular white blotches, and diagonal orange bands anteroventrally on side, grading to diagonal rows of small orange spots on posterior half of body; head with numerous orange spots and short bands; rear portion of first dorsal fin and entire second dorsal and caudal fins with orange spots.

Description: Dorsal rays VI-I,9; anal rays I,9; all dorsal and anal soft rays branched except first, last ray branched to base; pectoral rays 17, all rays branched except uppermost and lowermost; pelvic rays I,5, all soft rays branched with 2-3 branch points; pelvics joined medially with membrane; segmented caudal rays 16 (17); branched caudal rays 14 (13); upper and lower unsegmented caudal rays 6 and 5 respectively; lateral scales 56 (55); transverse scale rows 14; predorsal scales 10 (absent from midline of immature paratype); prepelvic region with embedded scales; circumpeduncular scales 15 (14); gill rakers poorly developed 2 + 3; vertebrae 26.



Figs 1A-B. *Tomiyamichthys eyreae*, preserved male holotype (A), 37.7 mm SL, and freshly collected male paratype (B), 21.8 mm SL, Daram Island, SE Misool MPA, Raja Ampat Archipelago, West Papua Province, Indonesia. Photos by G. R. Allen & M. V. Erdmann.

Body elongate, depth at pelvic-fin origin 8.2 (6.2) in SL; body compressed, width at pectoral-fin origin 1.1 (1.3) in body depth; head length 3.7 (3.5) in SL; head compressed, width 0.8 (0.9) in body depth at pelvic origin; snout short, length 5.4 in head length; orbit diameter 3.4 (3.6) in head length; interorbital space extremely narrow, eyes nearly in contact with each other; caudal-peduncle depth 3.0 (3.5) in head length; caudal-peduncle length 1.5 (1.8) in head length.

Mouth terminal, oblique, and large, forming angle of about 34° to horizontal axis of body reaching vertical near middle of pupil, upper-jaw length 2.5 (2.6) in head length; upper jaw with about 16-18 slender, slightly incurved teeth on each side, progressively larger towards front of jaw; also inner row of about 10-12 slender, teeth and 4-5 large, strongly retrorse canines at front of upper jaw; front of lower jaw with 2-3 rows of incurved teeth nearly as large as those of upper jaw, ending in three large recurved, well-spaced canines towards front of jaw; remainder of jaw with single row of small incurved teeth, including group of 4 stouter teeth about midway back in jaw; no teeth on

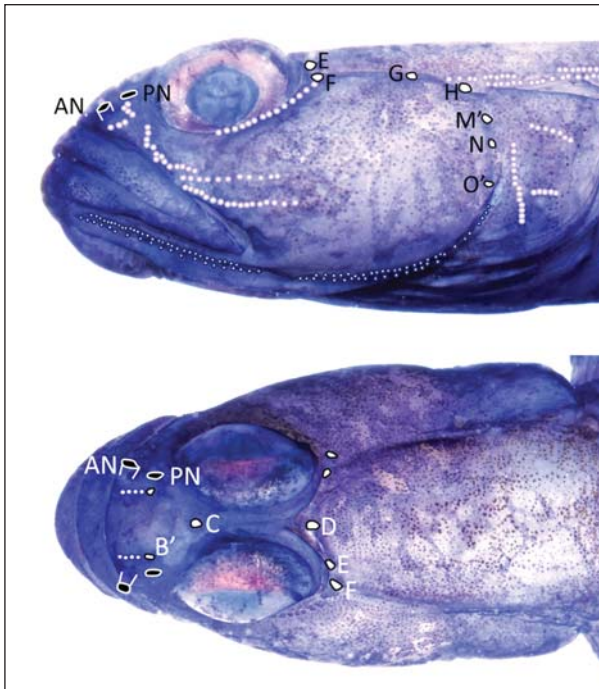


Fig. 2. *Tomiyamichthys eyreae*, preserved holotype, 37.7mm SL, lateral and dorsal view of head showing sensory papillae (white dots) and pores (white-edged black spots). Anterior and posterior nasal openings indicated by AN and PN respectively. Specimen stained with cyanine blue. Photo by G. R. Allen.

Table I. Proportional measurements of type specimens of *Tomiyamichthys eyreae* expressed as percentage of the standard length.

	Holotype MZB 25112	Paratype WAM P.34998
Sex	male	male
Standard length (mm)	37.7	21.8
Body depth (P2 origin)	12.2	14.4
Body depth (A origin)	12.0	12.4
Body width	11.6	11.2
Head length	27.4	28.6
Head width	15.2	15.7
Snout length	5.1	5.3
Orbit diameter	7.9	8.0
Cheek depth	6.9	6.6
Upper-jaw length	11.1	10.9
Caudal-peduncle depth	9.0	8.2
Caudal-peduncle length	18.4	15.6
Predorsal length	32.7	36.0
Preanal length	57.8	55.5
Prepelvic length	30.2	29.2
Base of dorsal fins	49.1	49.4
First dorsal spine	25.1	20.6
Third dorsal spine	33.9	21.5
Fifth dorsal spine	15.1	12.6
Spine of Second dorsal fin	11.6	9.7
Longest dorsal ray	22.9	16.5
Base of anal fin	24.5	27.1
Anal spine	6.5	6.9
Longest anal ray	18.8	15.8
Caudal-fin length	29.0	28.3
Pectoral-fin length	28.4	22.8
Pelvic-spine length	6.3	6.4
Pelvic-fin length	22.4	22.9

vomer or palatines; edge of lips smooth; tongue tip broadly triangular; no distinct mental flap. Gill opening extending forward to level of middle of opercle; gill membranes attached only anteriorly to isthmus, with no free fold; gill rakers poorly developed, first arch with only 5 rakers.

Posterior naris a large, nearly round aperture in front of center of eye at fleshy edge of orbit; anterior naris a short membranous tube, anteroventral to posterior naris just above edge of upper lip. Cephalic pores and papilla rows (Fig. 2) well developed, pores consisting of: large pore (B') immediately adjacent to each posterior nostril, two unpaired pores (C and D) at anterior and posterior interorbital, a pore (E), behind rear, upper corner of

orbit, two postocular pores (F and G), and three preopercular pores (M', N & O').

Scales cycloid, except weakly ctenoid on caudal peduncle and base of caudal fin, progressively larger posteriorly; scales absent on cheek, opercle, and pectoral-fin base; no scales on fins except about three rows at base of caudal fin, smaller than last row on caudal peduncle.

Origin of first dorsal fin slightly behind rear base of pelvic fins, predorsal length 3.1 (2.8) in SL; dorsal spines slender and flexible, spines 2-4 with prolonged filaments, longest adpressed filament reaching to base of fourth segmented dorsal ray of holotype; first dorsal spine 1.1 (1.4) in HL; third dorsal spine longest, 0.8 (1.3) in HL; spine of second dorsal fin 2.4 (3.0) in HL; penultimate dorsal soft ray longest, 1.2 (1.7) in HL; origin of anal fin below base of first to second dorsal soft ray, preanal length 1.7 (1.8) in SL; anal spine 4.2 (4.1) in HL; penultimate anal soft ray longest, 1.5 (1.8) in HL; caudal fin ovate, about equal to head length, 3.5 (3.6) in SL; pectoral fins pointed, middle rays

longest, reaching to level of genital papilla, 3.5 (4.4) in SL; prepelvic length 3.3 (3.4) in SL; pelvic fins tips falling well short of anal fin origin, length of pelvic fin 4.5 (4.4) in SL; pelvic spine about one-third length of longest pelvic ray; pelvic frenum thin, membrane nearly reaching tip of pelvic spines.

Colour of freshly collected male paratype (Fig. 1B): head and body generally grey to grey-brown; three large, diffuse brownish blotches on middle of side, first below spinous dorsal fin, second below anterior half of second dorsal fin, third below posteriormost dorsal rays, and fourth (faint) at base of caudal fin; side of body also with double row of large, irregular white blotches, one along upper back and other on ventral half; series of narrow, orange, diagonal bands anteroventrally on side, grading to diagonal rows of small orange spots on posterior half of body; head, including nape with numerous orange spots and bands, large brass-coloured blotch behind jaws, and another encompassing chin and lateral portion of



Fig. 3. *Tomiyamichthys eyrae*, underwater photo of female (left) and male, approx. 40 and 50 mm SL respectively, Daram Island, SE Misool MPA, Raja Ampat Archipelago, West Papua Province, Indonesia. Photo by M. V. Erdmann.

Table II. Fin ray and scale counts for species of *Tomiyamichthys* (adapted from Hoesé et al. 2016 and Allen et al. 2018).

Species	Second dorsal fin	Anal fin	Pectoral fin	Lateral scales	Transverse scales
<i>T. alleni</i>	I,10	I,10	15-17	25-50	7-10
<i>T. dorsostigma</i>	I,12	I,12	17	120-125	27
<i>T. fourmanoiri</i>	I,12	I,12	16	77	24
<i>T. emilyae</i>	I,10	I,10	15-17	66-72	19-21
<i>T. eyrae</i>	I,9	I,9	17	55-56	14
<i>T. gomezi</i>	I,10	I,10	15	47-56	12-13
<i>T. lanceolatus</i>	I,12	I,12	16-18	54-58	16-18
<i>T. latruncularius</i>	I,9	I,9	17-18	47-49	18
<i>T. levisquama</i>	I,10	I,10	18-19	50-70	22-25
<i>T. nudus</i>	I,10	I,10	14-15	0	0
<i>T. oni</i>	I,11	I,11	17-18	83	20-22
<i>T. praealtus</i>	I,10	I,10	18	54	24
<i>T. reticulatus</i>	I,12	I,13	21	57	13
<i>T. russus</i>	I,10	I,10	17	74-95	24-27
<i>T. smithi</i>	I,12	I,12	18	93-96	25
<i>T. stuarti</i>	I,11	I,11	15	51-56	11
<i>T. tanyspilus</i>	I,12	I,12	17-18	78-80	22
<i>T. zonatus</i>	I,11	I,11	17	52-54	13-14

lower jaw; iris red-orange with narrow yellow ring around pupil; first dorsal fin greyish-brown with white distal spine tips, pair of small white spots on basal portion of first dorsal spine, eye-sized black spot (with thin white ventral rim) between fourth and fifth dorsal spines, and orange spots on posteriormost part of fin; second dorsal fin translucent with four longitudinal rows of orange spots; caudal fin translucent with transverse rows of orange spots; anal fin pale yellow; pelvic fin translucent whitish; pectoral fins translucent with orange spots on bases.

Colour of large adult male in life (Figs 3 & 5A): Similar to fresh paratype except three large dark blotches on side more reddish, lowermost part of opercle dark blue-grey with well-contrasted orange lines and spots, first dorsal fin with diagonal orange bands between first five spines and absence of large black spot, and pectoral fins with longitudinal rows of small yellow spots.

Colour of adult female in life (Figs 3–4 & 6A): similar to live male, but colours less intense and large brown spot between fourth and fifth dorsal spines.

Colour in alcohol (Fig. 1A). generally cream-white to pale tan with four large brown sad-

dle light markings extending from upper back to lower side, first below first dorsal fin and last at caudal-fin base, interspersed with large irregular-shaped, white spots; broad, faint brownish band across cheek from upper margin of preopercle to upper jaw, and pair of broad, brownish saddles across dorsal nape; first dorsal fin with large black spot between fourth and fifth spines and small pale spots on rear part of fin; remainder of fin translucent whitish.

Sexual dimorphism. The sexes differ noticeably with regards to first-dorsal fin shape. The female has a triangular fin that lacks protruding filaments (Fig. 6A) in contrast to the male fin, which is characterized by filamentous extensions of the second to fourth spines (Fig. 5A). Smaller males (below about 30 mm SL), have very short filaments as possessed by the paratype (Fig. 1, lower).

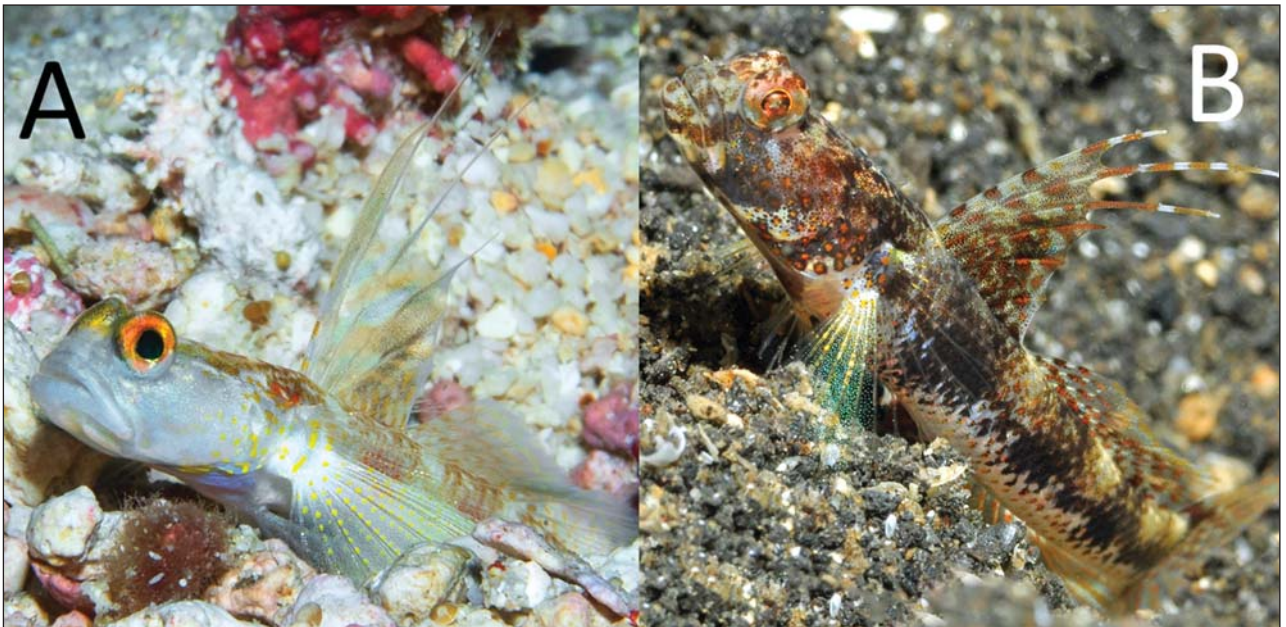
Comparisons. A comparison of salient head pore and scalation features for the known species of *Tomiyamichthys* is presented in Tables II–III. The new species differs from all congeners, including the 10 described species reported from the East Indian region (Allen & Erdmann 2012 and Allen et al. 2018), in having the combination of characters that includes 9 segmented dorsal and anal-fin rays,

17 pectoral-fin rays, 53-55 lateral and 13-14 transverse scales, three preopercular pores (M', N, and O'), no pores (K' and L) above the operculum, prepelvic region scaled, and ctenoid posterior body scales. The species appears to be most similar to *T. latruncularius* Klausewitz 1974 (Figs 5B & 6B), which was originally described from the Gulf of

Aqaba in the Red Sea, but later recorded from the Maldives (Kuitert 1998) and Indonesia (Java Sea and North Sulawesi; Allen & Erdmann 2012). It also occurs at Bintan Island, Indonesia (near Singapore) and Milne Bay district of Papua New Guinea, based on underwater photographs by the first two authors. Additionally, the illustration of



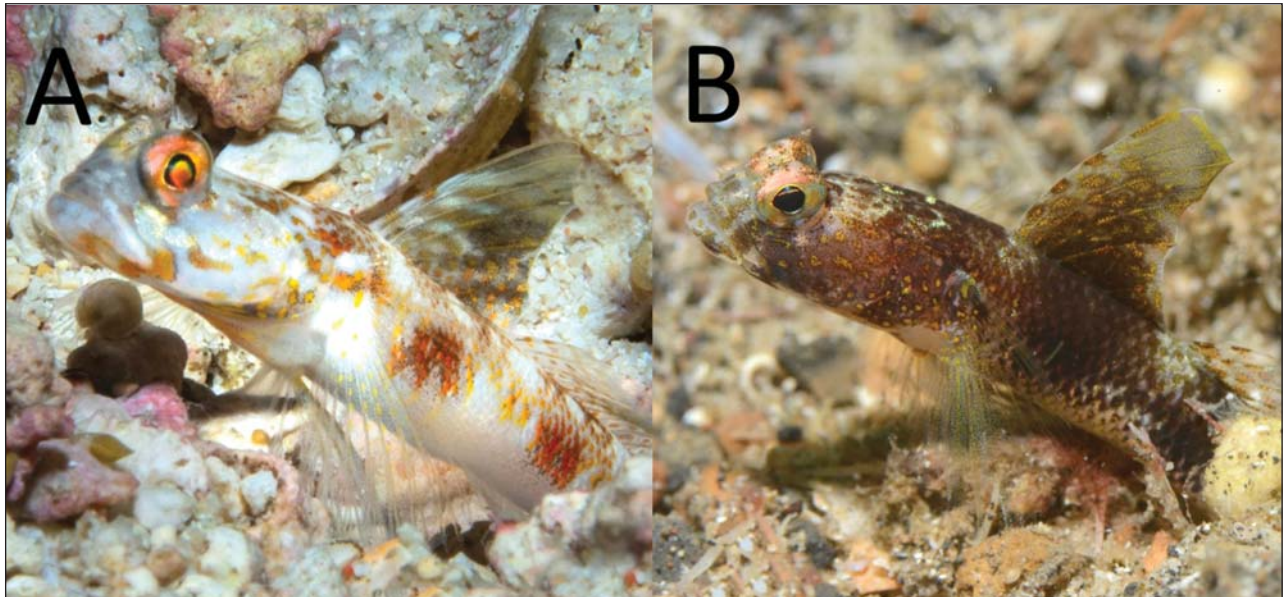
Fig. 4. *Tomiyamichthys eyrae*, underwater photo, female, approx. 35 mm SL with commensal shrimp *Alpheus randalli*, Daram Island, SE Misool MPA, Raja Ampat Archipelago, West Papua Province, Indonesia. Photo by M. V. Erdmann.



Figs 5A-B. Comparison of male coloration and dorsal-fin shape, approx. 45 mm SL: A) *Tomiyamichthys eyrae*, Daram Island, West Papua, Indonesia, and B) *T. latruncularius*, Lembah Strait, North Sulawesi, Indonesia. Photos M. V. Erdmann & G. R. Allen.

Table III. Head pores, prepelvic scales, and posterior body scales in *Tomiyamichthys* species; number of pores given for preopercular (POP) and for other categories present (+) or absent (-), abbreviations as follows: LC tube = separate tube above operculum or pores K' and L'; LC1 = lateral canal pore above preoperculum or pore G; PO = postorbital or pore E; n = naked, ps = partly scaled (adapted from Hoese et al. 2016 and Allen et al. 2018).

Species	POP	LC tube	LC1	PO pores	Prepelvic scales	Posterior body scales
<i>T. alleni</i>	0	-	-	-	n	cycloid
<i>T. dorsostigma</i>	3	+	+	+	n	cycloid
<i>T. fourmanoiri</i>	3	+	+	+	n	cycloid
<i>T. emilyae</i>	2	-	+	+	n	cycloid
<i>T. eyrae</i>	3	-	+	+	ps	ctenoid
<i>T. gomezi</i>	2	-	+	+	ps	ctenoid
<i>T. lanceolatus</i>	0	-	+	+	n	ctenoid
<i>T. latruncularius</i>	3	-	-	+	n	ctenoid
<i>T. levisquama</i>	3	-	+	+	ps	cycloid
<i>T. nudus</i>	2	-	+	+/-	n	none
<i>T. oni</i>	0	-	-	+	ps	cycloid
<i>T. praealtus</i>	3	-	+	+	n	cycloid
<i>T. reticulatus</i>	0	-	-	+	n	ctenoid
<i>T. russus</i>	2-3	-	+	+	ps	ctenoid
<i>T. smithi</i>	3	+	+	+	n	cycloid
<i>T. stuarti</i>	0	-	+	+	n	ctenoid
<i>T. tanyspilus</i>	0	-	+	+	ps	cycloid
<i>T. zonatus</i>	0	-	+	-	n	ctenoid



Figs 6A-B. Comparison of female coloration and dorsal-fin shape, approx. 35-45 mm SL: A) *Tomiyamichthys eyrae*, Daram Island, West Papua, Indonesia, and B) *T. latruncularius*, Lembeh Strait, North Sulawesi, Indonesia. Photos by G. R. Allen & M. V. Erdmann.

Flabelligobius species 5 (Senou et al. 2004, p. 294) from the Ryukyu Islands of Japan appears to be this species. However, there remains an unsolved problem regarding the status of the Red Sea/Indian Ocean and Pacific Ocean populations, which possibly represent separate taxa. Future genetic analysis would be useful for resolving this enigma.

Both *T. eyrae* and *T. latruncularius* possess 9 dorsal and anal segmented rays (Table II), which is unique for the genus. They also possess similar first-dorsal fin shapes in males and females, characterized by the possession of three elongated filaments on the anterior spines of males. However, these are prominently banded on the first three spines of *T. latruncularius*, compared to uniform whitish on spines 2-4 (filament on fourth spine relatively short) of *T. eyrae*. The first dorsal fin of females lacks filaments in both species. The two species also possess relatively large scales with lateral and transverse counts of 53-55 and 13-14 respectively for *T. eyrae* and 47-49 and 18 for *T. latruncularius*.

Etymology: The new species is named in honour of American diver Janet V. Eyre, whose efforts led to the discovery and description of this species. Janet has been a member of the Reef Environmental Education Foundation (REEF) since 2002 and her excellent underwater survey/observational skills have greatly added to our knowledge of coral reef fish distribution.

Distribution and habitat: The new species is currently known only from the type locality in the Daram island group of the SE Misool MPA in the Raja Ampat Archipelago of West Papua Province. Several individuals were observed by Janet Eyre and the second author in 25-30 m depth on gradually sloping, sand-rubble bottoms exposed to moderate to strong currents. Pairs or solitary individuals shared burrows with the brightly coloured alpheid shrimp *Alpheus randalli* Banner & Banner 1980 (Fig. 4). At all three sites where the species was observed, it was living in close proximity to extensive garden eel colonies.

ACKNOWLEDGEMENTS

We are especially grateful to Janet Eyre for her generous assistance, first informing us of the presence of the new species and providing accurate location details. Dawn Arnall invited us to join a cruise to West Papua Province aboard the charter vessel *Si Datu Bua* in April 2019, allowing the opportunity to collect the first specimen of the new

species. Subsequently, Sabine Templeton, Sue and Mark Atkinson at Misool EcoResort hosted the second author for a week of fish surveys in May 2019 that led to the collection of the second specimen. Mark Allen (WAM) provided x-rays and curatorial assistance. We also thank Ilham Vemandra Utama (MZB) for providing the registration number for the holotype and the people and local governments of Raja Ampat and West Papua province for support of Conservation International's marine conservation initiatives in the Bird's Head region. We are also indebted to the Paine Family Trust for their continued support of our taxonomic research.

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