

Trimma maiandros, a new species of pygmy goby (Gobiidae) from the Indo-west Pacific

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Abstract

A new species of the genus *Trimma* is described. *Trimma maiandros* n. sp. is characterized by having reduced predorsal scales, usually not crossing the midline; a dark ring around the eye and a dark triangular shaped spot extending ventrally and posteriorly from the eye and dark lines forming a zigzag pattern on the upper half of body; a very shallow interorbital groove and shallow or no postorbital groove; scales present on the pectoral and pelvic fin bases but not on the cheeks or opercles; and an unbranched fifth pelvic fin ray that is 25-50% of the length of the fourth ray. *Trimma maiandros* n. sp. has been found from numerous localities from Cocos (Keeling) Islands in the Indian Ocean and from Japan, Marshall and Mariana Islands to Samoa and Australia in the Pacific. Considerable geographical variation occurs in coloration and other morphological features, and more than one species may be represented.

Zusammenfassung

Beschrieben wird eine neue Art der Gattung *Trimma*. *Trimma maiandros* n. sp. lässt sich durch folgende Merkmale kennzeichnen: reduzierte Zahl an prä dorsalen Schuppen, die normalerweise nicht über die Mittellinie hinausgehen; dunkler Ring um das Auge, dunkler dreieckiger Fleck, der sich vom Auge bauchwärts und nach hinten erstreckt, sowie dunkle Zickzacklinien auf der oberen Hälfte des Rumpfs; sehr flache Interorbitalfurchung und flache oder ganz fehlende postorbitale Furchung; Schuppen vorhanden an den Ansätzen der Brust- und der Bauchflosse, aber nicht auf den Wangen oder Kiemendeckeln; unverzweigter fünfter Bauchflossenstrahl, der 25-50 % der Länge des vierten Flossenstrahls ausmacht. *Trimma maiandros* n. sp. konnten an zahlreichen Orten festgestellt werden: von den Cocos-(Keeling-)Inseln im Indischen Ozean und Japan, Marschall- und Marianen-

Inseln bis hin zu Samoa und Australien im Pazifik. Nach Färbung und anderen morphologischen Merkmalen gibt es erhebliche geografische Unterschiede, und möglicherweise handelt es sich um mehrere Arten.

Résumé

Est décrite ici une nouvelle espèce du genre *Trimma*. *Trimma maiandros* n. sp. est caractérisée par des écailles prédorsales réduites, ne dépassant habituellement pas la ligne médiane; un anneau foncé autour de l'œil et une tache sombre triangulaire partant de l'œil et s'étendant vers le ventre et l'arrière, et des lignes sombres formant un motif en zigzag sur la moitié supérieure du corps; un sillon interorbital très peu profond, un sillon postorbital peu profond ou absent; des écailles présentes à la base des nageoires pectorales et pelviennes mais absentes des joues ou des opercules; et sur la pelvienne, un cinquième rayon non ramifié, d'une longueur de 25-50% de celle du quatrième rayon. *Trimma maiandros* n. sp. a été trouvée dans de nombreuses localités, des Îles Cocos (Keeling) dans l'Océan Indien, du Japon, des Îles Marshall et Mariana jusqu'aux Samoa et l'Australie dans le Pacifique. Une variation géographique considérable se remarque dans la coloration et d'autres caractéristiques morphologiques, si bien que plus d'une espèce pourraient être représentées.

Sommario

In questo articolo si descrive una nuova specie del genere *Trimma*. *Trimma maiandros* n. sp. presenta le seguenti caratteristiche: ridotte scaglie predorsali, in genere non incrocianti la linea mediana; un anello nero attorno all'occhio, una macchia scura triangolare che si estende ventralmente e posteriormente all'occhio e linee scure a zigzag sulla metà superiore del corpo; una fossa interorbitale poco profonda e una postorbitale quasi piana o assente; scaglie presenti alla base delle pinne pettorali e pelviche ma assenti

sulla guancia e sull'opercolo; infine, il quinto raggio pelvico non ramificato e con una lunghezza pari al 25-50% di quella del quarto raggio. *Trimma maiandros* n. sp. è stata rinvenuta in numerose località tra cui le Isole Cocos (Keeling) nell'Oceano Indiano e, nel Pacifico, in Giappone, alle Isole Marshall e alle Isole Marianne fino a Samoa e all'Australia. Esistono considerevoli variazioni geografiche nella colorazione e in altre caratteristiche morfologiche tanto che potremmo essere di fronte a più di una specie.

INTRODUCTION

Trimma is a genus of gobies commonly found in large numbers associated with coral reefs. Most species are small, usually less than 30 mm SL in length. It is one of the most speciose genera of gobies with over 85 species (Hagiwara & Winterbottom 2007). The genus is widely distributed in the Indo-Pacific from Africa to Easter Island and from Japan to Australia. Species are found in a variety of habitats on coral reefs, with some species found in depths of around one metre, while others are known from waters as deep as 100 m.

METHODS

Methods follow Hubbs & Lagler (1958) with the exception that lateral scales are counted from the scale overlapping the distal end of the hypural plate anteriorly along the midlateral septum to the axil of the pectoral fin, and transverse scale row counts begin at the scale adjacent to the anus and follow the scale rows posterodorsally to the scale adjacent to the base of the second dorsal fin. Also the last element in the second dorsal and anal fin is counted as a single ray branched to the base. Gill-raker counts were taken on only some specimens to avoid damage to specimens. In most cases only lower raker counts were taken. Values for holotype of the new species are in bold where appropriate. Papillae have been darkened artificially in Fig. 5 to improve clarity. Abbreviations for institutions of the material examined are as follows. Material used in this study are deposited in the following institutions: Australian Museum, Sydney (AMS), Academy of Natural Sciences of Philadelphia (ANSP), Bernice P. Bishop Museum, Honolulu (BPBM), California Academy of Sciences, San Francisco (CAS), Royal Ontario Museum, Toronto (ROM), National Museum of Nature and Science, Tokyo (NSMT, formerly National Science Museum), Museum and Art Gallery of the Northern Territory, Darwin (NTM); Queensland Museum, Brisbane (QM), National Museum of Natural History, Washington (USNM,

formerly United States National Museum) and Western Australian Museum (WAM).

Trimma maiandros n. sp.

Figs 1-5, Tables I-II

Trimma sp., Hayashi & Shiratori 2003: 44 (Saipan).

Trimma sp. 2, Senou et al. 2004: 108 (Japan).

Trimma sp., Yano 1998: 23 (Iriomote I., Japan).

Material Examined: Type material all from Great Barrier Reef, Queensland.

Holotype: AMS I.20784-050, 20.7 mm SL, male from Yonge Reef, Queensland, (14°37'S, 145°38'E), 1-15 m, AMS party, 1 Dec. 1978.

Paratypes: Great Barrier Reef, Queensland: Tjijou Reef (13°04'S, 143°57'E): AMS I.20956-020, 18(13-22), 3-12 m, AMS party, 22 Feb. 1979; ROM 40549, 3(20-25), 3-12 m, AMS party, 22 Feb. 1979. Outer reef off Cape Melville (13°56'S, 144°36'E): AMS I.20774-117, 31(10-21), 9 Feb. 1979, AMS party. Yonge Reef: AMS I.20784-022, 20(15-22), taken with holotype. Eagle I. (14°42'S, 145°24'E): ROM 39334, 1(22), R. Winterbottom, 19 Sept. 1981. Escape Reef (15°49'S, 145°50'E): AMS I.22574-033, 5(19-23), 3-6 m, AMS party, 22 Oct. 1981; AMS I.22578-062, 5(17-22), 6-10 m, AMS party, 28 Oct. 1981; AMS I.22582-051, 17(11-24), 14-17 m, AMS party, 29 Oct. 1981; AMS I.22616-048, 14(11-22), 5-18 m, AMS party, 2 Nov. 1981, ROM 40606, 5(14-19), 40 m, AMS party, 31 Oct. 1981; ROM 40472, 1(18), 27 m, AMS party, 1 Nov. 1981. Pixie Reef (16°33'S, 145°52'E): WAM P.25322-005, 1(25), G. R. Allen, 3 July 1972. Swains Reefs: QM I.33411, 1(22), Reef 21-484 (21°35'S, 152°22'E), 3-5 m, J. Johnson, 1 Feb. 2001; QM I.33519, 17, (11-23); Reef 21-536 (21°53'S, 152°21'E), 3-5 m, J. Johnson, 6 Feb. 2001. Pompey Group, (21°17'S, 151°31'E): QM I.32046, 5(16-21), 3-5 m, J. Johnson and A. Gill, 13 Mar. 2000.

Non-type Material: AUSTRALIA: Great Barrier Reef, Queensland: Raine I. (11°36'S): AMS I.20757-081, 10(18-22), 0-20 m. Great Detached Reef (11°43'S): AMS I.20756-094, 1(17), 8 m; ROM 40631, 1(21), 2-8 m. Tjijou Reef (13°04'S): AMS I.20779-146, 16(13-22), 25 m. Yonge and Carter reefs (14°32-37'S): AMS I.18740-076, 10(9-22), 9-12 m; AMS I.19454-060, 1(22), 1-18 m; AMS I.19456-077, 44(11-21), 5-15 m; AMS I.19472-090, 26(9-23), 7-15 m; AMS I.19481-044, 7(14-22), 2-6 m; ROM 39331, 1(17), 8-13 m.

Table I. Pectoral ray counts in various populations of *Trimma maiandros*

	15	16	17	18	19	Mean
Japan	–	–	4	5	2	17.8
Western Australia	1	10	19	1	–	16.6
Indonesia	–	–	1	–	–	17.0
Samoa	–	–	1	5	–	17.8
Great Barrier Reef	–	14	145*	74	1	17.3
Fiji	–	2	15	16	1	17.5
Philippines	–	–	1	–	–	17.0
Caroline and Marshall Islands	–	1	20	1	–	17.0
Solomon Islands	–	–	1	–	–	17.0
Vanuatu	–	1	2	–	–	16.7

Table II. Lower gill raker counts on outer face of first arch in 3 populations of *Trimma maiandros*

Lower Gill Rakers	12	13	14	15	16	17	Mean
WA	–	–	2	7	1	1	15.1
GBR	6	67	39	–	–	–	13.3
Fiji	–	5	10	4	–	–	13.9

McGillivray Reef (14°38'S): AMS I.19482-136, 6(11-20), 3-25 m. Lizard I. (14°39-42'S): AMS I.18739-080, 12(11-20), 3-10 m; AMS I.19108-089, 6(10-21), 1-11 m; AMS I.19473, 4(10-16), 2-7 m; AMS I.20730-011, 1(18), 20-22 m; AMS I.20762, 1(16), 2-5 m; AMS I.25066, 1(21), 18 m. Escape Reef (15°49'S): AMS I.22573-037, 7(9-21), 14-17 m; AMS I.22580-017, 1(19), 37 m; AMS I.22581-047, 8(12-20), 10-14 m; AMS I.22583-040, 2(18-19), 29 m; AMS I.22586-061, 14(11-22), 2-6 m; AMS I.22587-019, 3(18-19), 40 m; AMS I.22612-031, 13(14-21), 20 m; AMS I.22616-048, 14(11-22), 5-18 m; AMS I.22619-040, 11(12-21), 19-22 m; AMS I.22620-018, 1(21), 38-50 m; AMS I.22621-036, 18(16-21), 5-8 m; AMS I.22633-083, 23(13-20), 2-11 m; AMS I.22634-014, 1(20), 18 m; ROM 40612, 3(15-18). Outer barrier reef off Townsville (17°06'S): AMS I.20965-013, 13(15-19), 10-20 m. Swain Reefs (21°42'S): QM I.33580, 19(12-22), 4.5-6 m. One Tree I. (23°30'S): AMS I.19338-014, 2(12-17), 3-6 m. **Coral Sea:** Osprey Reef (13°56'S): AMS I.25112-032, 1(19), 15 m. Holmes Reef (16°30'S): WAM P.28541-044, 3(17-20), 12-14 m; WAM P.29627-037, 12(15-22), 7-8 m. Herald Cay (16°40'S): WAM P.28537-005, 1(15), 15-25 m. Lihou Reef (17°21'S): WAM P.29640-017, 8(11-20), 20-21 m; WAM P.29641-007, 5(14-18); WAM P.29642-024, 4(9-18). **Timor Sea, north-western**

Australia: Ashmore Reef: WAM P.29047-039, 2(17-23), 20-25 m. NTM S.12883, 5(14-22). Cartier Reef: NTM S.12883, 5(14-22), 13-14 m. **Western Australia:** Clerke Reef, Rowley Shoals: NTM S.11222-031, 5(17-23), 3-15 m; WAM P.27662-038, 1(21); WAM P.28021-072, 1(24), 4-10 m; WAM P.28022-061, 1(27), 7-12 m; WAM P.27658-049, 2(10-13), 2-6 m; WAM P.28022-062, 4(23-27), 7-12 m; WAM P.28031-029, 1(17), 2-4 m; WAM P.28031-032, 4(13-23); WAM P.27660-027, 1(18); WAM P.27665-029, 1(26). Scott Reef: NTM S.11371-053, 7(15-21), 2-5 m. **JAPAN:** Ishigaki-Jima I., Ryukyu Is: NSMT-P 49114, 2(15-19), 12 m; NSMT-P 49119, 2(15-16), 9 m; NSMT-P 49223, 5(12-16), 20 m; NSMT-P 49335, 1(14), 12 m; NSMT-P 49336, 1(16), 12 m; NSMT-P 49435, 2(16-22), 10 m. **PHILIPPINES:** Batanes: USNM 293344 1(20), 9-12 m. **INDONESIA:** Bali: ROM 72413, 1(16), 6 m. Ceram: AMS I.18469-140, 1(11), 0-8 m. **PAPUA NEW GUINEA:** Madang: ROM 66971, 1(14). **VANUATU:** Emae: AMS I.17475-052, 3(18-19), 25 m. **SOLOMON ISLANDS:** Guadalcanal, ROM 46036, 4(10-17), 21 m. Savo: AMS I.17491-042, 1(15), 10 m. **FIJI:** Bay of Islands: AMS I.18354-057, 4(19-24), 6 m. Great Astrolabe Reef: ROM 46088, 12(18-22), 10-15 m; ROM 46089, 1(17), 3-10 m; ROM 46090, 2(11-13), 20 m; ROM 46091, 6(12-17), 4-6 m; ROM 46092, 3(11-17),

10-15 m; ROM 46093, 2(15-16), 6-10 m; ROM 46094, 11(13-18), 1-3 m; ROM 46095, 2(16-18); ROM 46096, 6(10-15), 10-20 m; ROM 46097, 4(13-19); ROM 46098, 2(16-18); ROM 991CS, 4(15-21). Nairai I.: ROM 46087, 1(12), 7-11 m. Suva Harbour: ROM 46099, 2(16-17), 6-10 m; ROM 46100, 1(8), 0-1 m. Yasawa Group: ROM 46101, 1(17), 18-21 m; ROM 46102, 1(14), 0-11 m; ROM 46103, 1(17). Rotuma: USNM 283049, 3(10-19); USNM 284522, 1(19). **TONGA:** Euakafa I.: ROM 60679 6(14-19), 14-15 m. **NEW**

CALEDONIA: Ua I.: ROM 64351, 1(25), 0-11 m. **CAROLINE ISLANDS:** Ulithi Atoll: BPBM, 3(13-19), 9 m; Truk: BPBM, 4(14-20), 6-12 m; Kapingamaringi Atoll: CAS 60026, 2(16-16), 0-6 m; Ponape: USNM 223192, 1(18), 0-17 m; Senyavin I.: USNM 298767, 12(9-15), 0-24 m; Palau, Main I. BPBM, 1(22), 6-12 m; ROM 74800, 4(11-17), 6-9 m; ROM 74975, 1(18.5); ROM 76072, 1(9), 14-25 m; ROM 76073, 1(16), 18-34 m; ROM 76074, 1(14), 15-24 m; ROM 76075, 1(16), 3-7 m; ROM 76425, 3(9-15), 15-21 m;

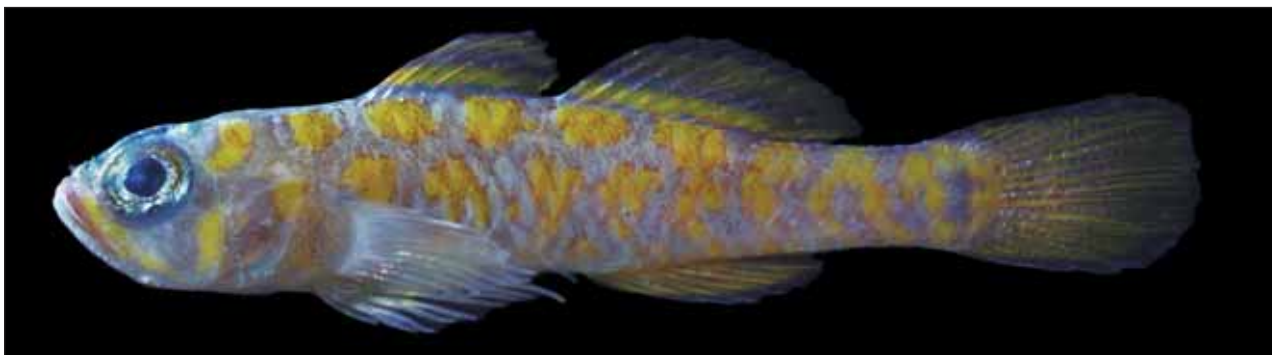


Fig. 1. Freshly collected holotype of *Trimma maiandros*, AMS I.20784-050, 20.7 mm SL, male. Photo by D. Hoese.



Fig. 2. Freshly collected specimen of *Trimma maiandros* from Yonge Reef, Queensland, AMS I.19454-060, 20 mm SL. Photo by D. Hoese.

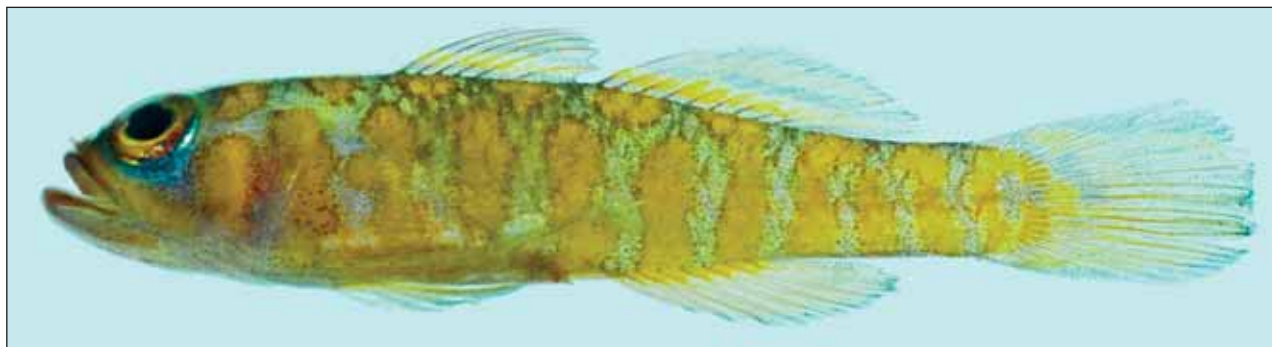


Fig. 3. Freshly collected specimen of *Trimma maiandros* from Palau, ROM 74975, 18.5 mm SL, male. Photo by R. Winterbottom.

ROM 76448, 3(10-18), 0-9 m; ROM 80340, 2(14-18), 25-41 m; ROM 80345, 1(15), 20-34 m; ROM 80448, 4(10-18), 5-18 m; ROM 80461, 9(15-19), 7-17 m; ROM 80483, 1(14), 5-12 m. Palau, Southwest I: ROM 83312, 1(9), 0-20 m. **MARIANA ISLANDS:** Guam: BPBM, 1(20), 37-55 m; AMS (formerly UG 6647) 2(20-21), 3-8 m. **MARSHALL ISLANDS:** Enewetak: BPBM 15074, 2(18-18); BPBM 22382 3(17-18). **AMERICAN SAMOA:** Tutuila I.: AMS I.21996-002, 6(18-20), 27 m.

Diagnosis: A species of *Trimma* with predorsal partly scaled, midline naked or partly naked, cycloid scales at sides of nape reaching to above a point between posterior margin of operculum and eyes; cheek and operculum naked; pectoral base usually fully scaled, posterodorsal 2 scales slightly enlarged; prepelvic covered with small cycloid scales in 5-6 rows; interorbital narrow, with moderate groove; no groove or very shallow groove behind eyes (shallow between eyes and absent behind eyes in juveniles); low distinct ridge at posterior end of interorbital; gill opening extending forward to below posterior margin of pupil; nape crest low from first dorsal origin to above posterior opercular margin, extending into shallow median groove; groove extending to just behind eyes; pectoral rays unbranched or with 1-5 rays branched at extreme tips; fifth pelvic ray unbranched, rest of rays with 2 terminal tips; second dorsal rays usually I,9; anal rays usually I,8; pelvic fins largely separate, connected only at base; fins widely separate, distance between 2 fins greater than

base of single pelvic fin; pelvic scale covering membrane; fifth ray about one-fourth to one-half length of fourth ray; dark brown spot or bar extending posteroventrally from eye, body with irregular brown interconnecting bars, forming zigzag pattern.

Description: Based on over 300 specimens. First dorsal V(1), VI(291), VII(1); second dorsal I,8(28), I,9(302), I,10(4); anal I, 7(5), I,8(317), I,9(11), pectoral rays 15-19 (see Table 1); segmented caudal rays 16(6), 17(206), 18(4); branched caudal rays 10(1), 11(150), 12(18), 13(5); predorsal scale count 0(180), 1(6), 2(1), 3(6), 4(2), 5(3); longitudinal scale count 22(15), 23(125), 24(114), 25(15); transverse scale count (TRB) 6(8), 7(186), 8(11); gill rakers on outer face of first arch (see Table II) 2+1+12(1), 3+1+11(5), 3+1+12(31), 3+1+13(8), 3+1+14(1), 4+1+11(1), 4+1+12(15), 4+1+13(6), 4+1+14(2), 5+1+14(1); pterygiophore formula 3(22110); vertebrae 10+16 (3).

Head slightly compressed, eyes dorsolateral, head depth slightly greater than width at preopercular margin. Anterior nostril at end of tube just above upper lip; posterior nostril with raised rim, 1 nostril diameter from anterior and 2-3 nostril diameters from eye. Nasal sac elevated. Postorbital length about equal to distance from tip of snout to posterior end of eye. Snout short, rounded in dorsal view, slightly convex in side view. Anterior margin of jaws in line with middle of eye in adult; posterior end of jaws under or just behind anterior margin of eye in adult, behind anterior margin by up to one-fifth pupil diameter of eye in juveniles (< 15 mm SL).



Fig. 4. Underwater photo of *Trimma maiandros* from Grotto, Saipan, 15-18 m. Photo by H. Kimura.

Suborbital region between eye and upper lip narrow, about one-third pupil diameter in juveniles to almost half pupil diameter in adults. Cheek slightly bulbous. Mouth very oblique, jaws forming an angle of 45–50° with body axis. Gill rakers on outer face of first arch slender, longer than gill filaments; rakers on inner face of first arch and rakers on other arches denticulate at distal tip. Cephalic sensory papillae a reduced transverse pattern as in Figure 5b, rows *b* and *d* (of Sanzo 1911) moderately developed and consisting of 5–6 small papillae each. Tongue tip truncate to slightly emarginate. Teeth conical and slightly curved. Teeth in outer row of upper jaw wide-set and enlarged; 1–3 inner rows of small teeth tapering laterally to 1 row; innermost row teeth slightly larger than teeth in middle rows. Teeth in outer row of lower jaw wide-set, enlarged, reaching to anterior half of jaw, with single tooth at angle of dentary on each side largest; 1–3 inner rows of small teeth; innermost row slightly enlarged; teeth just behind angle of jaw slightly larger than other teeth in row. Second and third spines of first dorsal fin subequal, none filamentous. First segmented ray of second dorsal fin usually unbranched, other rays

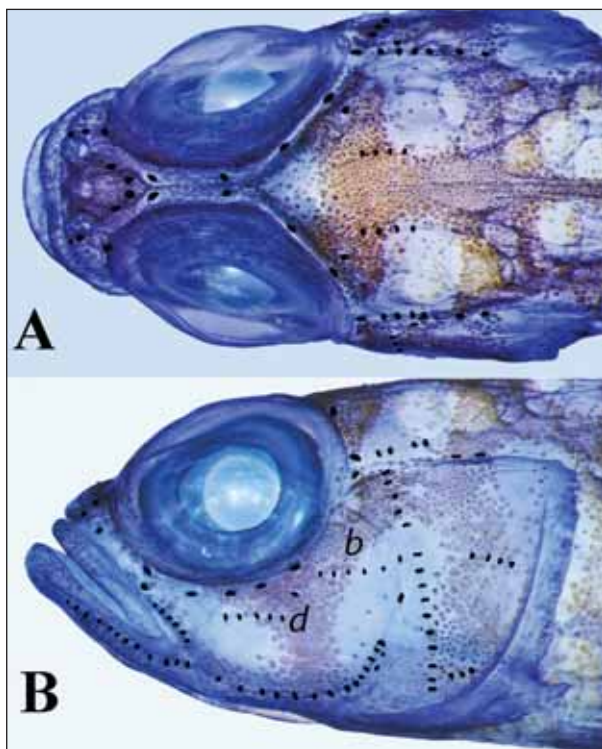


Fig. 5. Head of *Trimma maiandros* based on ROM 80448, 15.5 mm SL from Palau. A. dorsal view. B. lateral view. Photos by R. Winterbottom, image modification by D. Hoese.

branched. First segmented ray of anal fin usually unbranched, other rays branched, anterior branch of last ray branched once and posterior branch not subsequently branched. Caudal fin with rounded to truncate margin (upper rays often longer than ventral rays). Operculum and cheek without scales, midline of nape usually naked, but sometimes with 1–5 rows across midline anteriorly, sides of nape scaled to point above posterior end of operculum to posterior end of eye; pectoral base covered with 6–9 cycloid scales in 2 vertical and 4 horizontal rows, posterodorsal 2 scales slightly enlarged, scales often missing in preserved specimens; prepelvic area largely scaled in 5–6 rows of cycloid scales. First haemal arch not expanded, abdominal/caudal vertebral transition of Type B (Winterbottom & Zur 2007: Fig. 3B).

Color of freshly collected material from Great Barrier Reef (based on photos of specimens from Yonge Reef, Raine Island, One Tree Island and Lizard Island, see Figs 1 and 2). Head and body an overall blue or bluish-gray; cheek with yellow or yellowish-orange vertical bar at posterior end of preoperculum; oblique yellow to reddish orange stripe above upper lip; yellow to reddish-orange vertically elongate bar (width slightly less than pupil diameter) immediately behind eye; narrow yellow or yellowish-orange vertical bar at upper posterior end of operculum; body with 6 yellow to reddish orange irregularly shaped spots along back from just before first dorsal fin to end of second dorsal fin; midside of body with 6 yellow to reddish-orange irregularly shaped bands below interspaces of upper spots; series of small vertically elongate yellow to reddish-orange irregularly shaped spots on belly and above anal fin; rarely with midside bands connecting to lower spots; blue to bluish-gray interspaces between dorsal spots and midside spots forming zigzag pattern; caudal peduncle with 3 oblique yellow to reddish-orange bands, sometimes X-shaped; dorsal fins with thin (less than half pupil diameter) yellow stripe just above base and fainter yellow stripe just below distal tip of fins; anal fin with yellow to red pigment on basal two-thirds to three-quarters of fin; caudal fin with yellow to red pigment covering all of fin except distal margins; pelvic and pectoral fins white to translucent.

Color of freshly collected material from Chesterfield Bank, Coral Sea, Palau, Enewetak, Fiji, Samoa and New Caledonia. Similar to fish from Great Barrier Reef, but with yellow to reddish-orange bars on midside more extensive, often connecting to dorsal spots and continuous with ventral spots, forming vertical bands and cheek and opercular vertically

elongate spots larger, width greater than pupil diameter (Fig. 3).

Colour in life (from slides of individuals from Guam and Saipan, Fig. 4; note that coloration differences suggest these could be a separate species, photos are not available of live specimens from Australia): Head with iridescent blue surrounding eye, extending dorsoposteriorly from eye onto cheek; iridescent blue forming zigzag pattern onto posterior head and body; cheek with yellow or yellowish-orange vertical bar covering posterior third of preoperculum; oblique yellowish-orange stripe above upper lip; yellowish-orange vertically elongate bar (width slightly greater than pupil diameter) immediately behind eye; broad yellowish-orange vertical bar at posterior end of operculum, broader dorsally; body with 6 yellowish-orange oval spots along back from just before first dorsal fin to end of second dorsal fin; midside of body with 6 yellowish-orange vertical bands below iridescent blue interspaces of upper spots, extending below and just above anal fin; iridescent blue to bluish-gray interspaces between dorsal spots and midside spots forming zigzag pattern; caudal peduncle largely yellowish-orange bands, with narrow, irregularly shaped iridescent vertical or oblique lines, fins largely translucent, faint yellowish-orange stripe near base of dorsal fins and caudal fin with yellowish-orange over most of fin.

Color in alcohol: Dark shaped triangular mark behind eyes; series of large diamond-shaped marks on sides. Head with bar from eye to operculum and light area at end of operculum and sometimes on operculum; light spot at middle of pectoral base.

Distribution and Habitat: The species is known from the Cocos (Keeling) Islands in the Indian Ocean to Samoa and the Marshall and Mariana Islands in the east and from the Ryukyu Islands to the Great Barrier Reef, Australia and reefs in the Timor Sea off Western Australia. The species is found in depths of 1-55 m. On the Great Barrier Reef the species is found on mid to outer barrier reefs, but is much more common on outer barrier islands and islands in the Coral Sea.

Etymology: Named for Maiandros (Gr.), the god of the winding Maeander River in Phrygia (currently the Büyük Menderes River in Turkey), son of Oceanus and his sister Tethys, and origin of the English word "meander", a winding, crooked, or involved course, in allusion to the zigzag pattern of grey to blue lines on the body; treated as a noun in apposition.

Remarks: The species shows considerable geographical variation and it is possible that more than one species is involved. The dark band below the eye (formed by the interspace between the yellow or reddish-orange spots on the cheek) is narrow in material from the north Pacific (extreme at Guam and Enewetak) and broadest in specimens from the Great Barrier Reef and Coral Sea. In specimens from the Great Barrier Reef, the orange bar on the preoperculum is much narrower than in specimens from other areas, although specimens from the Coral Sea have a broad bar, similar to that in specimens from non-Australian localities. Similarly the yellow to reddish-orange midside bands are more extensive in non-Australian localities, but some specimens from Australia are similar in this feature to specimens from other localities. Those specimens with the more extensive midside bands from the Great Barrier Reef have narrow cheek bars as in other Australian specimens. Specimens from the Coral Sea and Great Barrier Reef have the predorsal scales absent from the midline. The scales usually extend to above the posterior end to middle of operculum, but sometimes as far forward as posterior preopercular margin. Specimens from below 30 m tend to have the predorsal scales ending above the posterior preopercular margin, while those from shallower water usually have the scales extending to near the posterior preopercular margin. Juveniles below 12 mm SL have few or no predorsal scales. In most specimens from Western Australia and non-Australian localities only the midline of the nape is naked and the scales reach to or near to the eye. In specimens from Samoa and in some specimens from Western Australia the scales cross the midline behind the eyes, but the midline area before the first dorsal origin is naked. Specimens from off Western Australia tend to average fewer pectoral rays (Table I) and higher gill-raker counts (Table II) than specimens from the Great Barrier Reef and Fiji. Pectoral-ray counts do not show broad-scale geographical variation. Too few specimens and photos of freshly collected specimens are known from most localities, precluding more detailed comparisons. An analysis of the CO1 gene of three specimens from Palau and a single specimen from the Great Barrier Reef revealed a difference of about 27% between the two localities, suggesting that considerable further research is needed on this species or species complex. Because of the large variation in several features, only material from the Great Barrier Reef is included in the type series.

Comparisons: *Trimma maiandros* is a highly distinctive species with uncertain relationships. It is most similar in coloration and fin-ray counts to *Trimma fucatum* Winterbottom & Southcott, 2007, from Thailand. That species differs in having opercular scales and predorsal fully scaled and a red over-all body coloration. Other species with similar fin ray counts usually have a deep interorbital trench, a fully scaled predorsal or a highly distinctive coloration unlike *Trimma maiandros*.

Sensory papilla pattern in *Trimma*: Species of *Trimma* are generally regarded to have a reduced transverse papilla pattern similar to that found in some species of *Priolepis* Winterbottom & Burrige (1993a, 1993b) and Iwata et al. (2007) noted that it is often difficult to distinguish a transverse and longitudinal papilla pattern in species with reduced numbers of papillae. The primary difference between the two patterns is that the transverse pattern is characterised by 4 or more vertical rows of papillae on the cheek and two longitudinal rows (*b* and *d* of Sanzo (1911)), while the longitudinal pattern is characterized by only having longitudinal rows of the cheek. Hoese (1983) proposed a different nomenclature for the papillae based on orientation of the papillae within the line and pointed out the difficulty in determining homologies in the papilla patterns. He noted that in rows *b* and *d* of Sanzo (1911) or LTU and LTB of Hoese (1983) that each papilla axis is at a right angle to the papilla row and that both of these lines are found in that arrangement in the transverse and longitudinal patterns. However, in the longitudinal pattern, two other longitudinal rows (*a* and *c* of Sanzo (1911) or LA1 and LA2 of Hoese (1983)) have the papillae oriented along the axis of the papilla row and in some case there may be additional longitudinal rows. In species of *Trimma* that have been examined, rows *b* and *d* are typically distinct with 4 to 6 papillae. However row *d* is placed higher on the cheek than in many gobioid fishes and that row is sometimes mistaken for row *c*. A row comparable to row *a* is directly below the eye, but that is likely to be formed from the uppermost papilla of the vertical rows, an arrangement thought to be primitive for the group.

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