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New species of *Trimma* (Actinopterygii, Gobiidae) from Indonesia, with comments on head papillae nomenclature

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Abstract

Three new species of the gobiid *Trimma* are described from Indonesian waters, and a partially reformulated nomenclature for the cephalic sensory papillae of members of this genus is provided. *Trimma aturirii* possesses two dark oblique stripes on either side of the pupil (blue, edged with red in life, dark brown in preservative), the lower of which continues posteriorly across the dorsal margin of the opercle, with the dorsal half of the body red and the ventral half abruptly white in life. The species has a narrow bony interorbital ($\leq 50\%$ pupil width), a moderate interorbital trench with a slight groove posterodorsal to the eye, no scales on the cheek, opercle or in the predorsal midline, no elongate spines in the first dorsal fin, 9–10 dorsal and 9 anal fin rays, 17–18 (7–11 branched) pectoral fin rays and an unbranched fifth pelvic fin ray. *Trimma kadium* has a pair of tapering oval red spots which join anteriorly over the anterior region of the hyoid arches, forming an approximate heart-shaped marking on the ventral surface of the head. It has a narrow bony interorbital ($\leq 40\%$ pupil width), a moderate interorbital trench with a slight groove posterodorsal to the eye, 17–18 unbranched pectoral fin rays, 1–5 cycloid scales in the predorsal midline confined to about the middle third of the nape, and a single row of 1–3 cycloid scales along the upper border of the opercle. *Trimma trioculatum* has a large (slightly greater than pupil diameter in width) round, black, ocellated spot in the first dorsal fin between spines 1 and 5, a second, much smaller black or dark red spot just posterior to the spine of the second dorsal fin and above the basal stripe, a yellow body with a dark purplish or gray head with two distinct red bars across the cheek, no round spots of any colour on the nape, opercle or cheek, a small dark (preserved) or white (alive) spot on the upper pectoral fin base, a narrow bony interorbital ($< 70\%$ pupil diameter), no elongate spines in the first dorsal fin, 15–16 pectoral fin rays with the middle 4–8 rays branched, a fifth pelvic fin ray with a single dichotomous branch, and 16–17 total gill rakers on the first gill arch.

Key words: taxonomy, Western Pacific, fish distributions

Introduction

Trimma Jordan & Seale, 1906 (type species: *T. caesiura* Jordan & Seale, 1906) contains 92 valid described species of small (< 30 mm SL), often colourful gobiids, primarily associated with Indo-Pacific coral reefs. Members of the genus may be recognized by the lack of cephalic sensory canal pores, a much reduced cephalic sensory papillae pattern, a wide gill opening extending anteriorly to below the vertical limb of the preopercle or, more usually, anterior to this, a lack of spicules (odontoids) on the outer gill rakers of the first gill arch, fewer than 12 dorsal and anal fin rays, and a fifth pelvic-fin ray that is equal to or more than 40% the length of the fourth pelvic fin ray (Winterbottom, 2011).

Winterbottom (2011, citing unpublished data and based on the 64 valid described species at that time) estimated that there were about 35 known, but currently undescribed, for a total count in the vicinity of 110 species. However, recent research involving the CO1 gene suggests that there could be a plethora of cryptic species in the genus that may well double this number (Winterbottom *et al.*, 2014), depending on whether one accepts a $> 2\%$