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Trimma irinae, (Pisces; Gobioidei) a new species of gobiid fish from Milne Bay Province, Papua New Guinea

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Abstract

A new species of *Trimma, T. irinae*, is described from 65 m off Lawadi, Milne Bay Province, Papua New Guinea. This colourful new species has red-orange spots on the head and anterior trunk, with a yellow to orange body posteriorly. The first dorsal fin has two dark basal spots, and the elongated section of the second dorsal spine is bright white to pale blue in life. There are 8–9 scales in the predorsal midline, usually cycloid scales present along the upper border of the opercle in up to three horizontal rows, no cheek scales, and the middle 9–11 rays of the pectoral fin are branched. The fifth pelvic fin ray branches once dichotomously and is 52–64% the length of the fourth ray, and the basal membrane connecting the inner margins of the fifth pelvic fins rays is less than 15% the length of the fifth ray.

Key words: Systematics, new species, Gobiidae, *Trimma*, Papua New Guinea, coral reefs

Introduction

Trimma Jordan & Seale, 1906 (type species: *T. caesiura* Jordan & Seale, 1906) contains 74 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 Winterbottom (2011, citing unpublished data) estimated that there were about 35 known, but currently undescribed species, for a total count in the vicinity of 110 species. However, recent research involving the CO1 gene suggests that there may be a plethora of cryptic species in the genus that could double this number if one assumes that an approximately 2% difference in CO1 equates to different species (Winterbottom *et al.*, 2014).

Methods

Methods of gathering data and the format of the descriptions follow Winterbottom (2011, and references cited therein). Naming of the cephalic sensory papillae rows (Table 1) also follows Winterbottom (2011), and the photographs were produced from multiple digital images taken with a Canon EOS Rebel XS camera attached to a Zeiss SV-12 dissecting microscope using Zeiss AxioVision 4.8™ software and automatic increments. The image stack was then collated into a single image using Helicon Focus 5.1™ (HeliconSoft). Counts and measurements were input directly into an Excel file with Mitutoyo digital callipers using WinWedge 3.01™ software. Lengths given are Standard Length (SL) in millimetres; values for the holotype are given in bold where appropriate. ROM = Royal Ontario Museum, Toronto.

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mendelssohni (Goren, 1978) has multiple branches in the fifth pelvic fin ray, and *T. nomourai* Suzuki & Senou, 2007 has two branches (for a total of four tips) whereas all the others have a single branch point in this ray. *Trimma lantana* Winterbottom & Villa, 2003 has deep, vertically sided trenches in the interorbital and postorbital regions of the head (vs. moderate trough and none respectively in *T. irinae*). *Trimma cheni* Winterbottom, 2011, and *T. okinawae* (Aoyagi, 1949) have only moderately elongate second dorsal spines that do not extend beyond about the middle of the second dorsal fin when adpressed (vs to last ray or further back). *Trimma papayum* Winterbottom, 2011 appears closest morphologically to *T. irinae* in having a poorly developed postorbital trough or none, in possessing a greatly elongate second dorsal spine, and in several details of colour pattern. However, *T. papayum* has more pectoral fin rays (18–19 vs. 17) and fewer lower gill rakers (13–14 vs. 15–16) than *T. irinae*, in additional to trenchant differences in live and preserved colouration. These include the presence in *T. irinae* of a distinctive dark spot on the branchiostegal membrane below the vertical limb of the preopercle (vs. absent - a larger such spot is also evident in *T. hayashii* Hagiwara & Winterbottom, 2007, which usually lacks scales in the predorsal midline and on the opercle), and two large black spots basally in the first dorsal fin (vs. one small dark spot).

Distribution. *Trimma irinae* is currently known only from the type locality in Milne Bay Province, Papua New Guinea at a depth of 65 m.

Etymology. The species is named in honour of my wife, Irina, as a small token of my appreciation and gratitude for her patience and forbearance of what she once referred to as my "magnificent obsession" with coral reef fishes. This species has been informally referred to as *Trimma* RW sp. 100.

Discussion

Trimma irinae is one of a number of (mostly undescribed) new species of the genus that occur at depths below about 50 m. The greatest diversity of species of *Trimma* seems to be found between 10–30 m, with relatively few species occurring in depths shallower than this. However, the comparison with the number of species found primarily at depths below 50 m is hampered by the general lack of synoptic collections from these depths. That is scarcely surprising given a) the decreased time available to divers, and b) the paucity of collectors willing and able to work in this environment. However, the ratio of undescribed to described species from depths below about 50 m is far higher than for the portion of the environment shallower than this.

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