



# Article

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## A new species of prickleback, *Dictyosoma tongyeongensis* (Perciformes: Stichaeidae) from the South Sea of Korea

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### Abstract

A new prickleback is described based on six specimens collected by fish trap in southern Korea (water depth 5–12 m) in 2009 and 2010. The new prickleback is most similar to *Dictyosoma burgeri* and *Dictyosoma rubrimaculatum* in general morphology, but differs in the following combination of characters: dorsal contour of head almost a straight line; anal-fin rays 45–47; vertebrae 70–74; no blackish-brown blotches on head. In addition, mitochondrial DNA cytochrome oxidase subunit I (COI) sequences and recombination activating gene 2 (RAG2) sequences were analyzed for clarifying their genetic relationship. The neighbor-joining tree using mtDNA COI and nDNA RAG2 shows the reciprocal monophyly of the new prickleback. Accordingly, our specimens are regarded as a new species, named *Dictyosoma tongyeongensis*, after its type locality (Tongyeong).

**Key words:** Stichaeidae, *Dictyosoma tongyeongensis*, mitochondrial DNA cytochrome oxidase subunit I (COI), recombination activating gene 2 (RAG2), new species, Korea

### Introduction

The genus *Dictyosoma* comprising two species, *Dictyosoma burgeri* Van der Hoeven, 1855 and *Dictyosoma rubrimaculatum* Yatsu, Yasuda and Taki, 1978 (see Eschmeyer, 2012), which are restricted to East Asia (Yatsu *et al.* 1978; Mecklenburg, 2004). The genus *Dictyosoma* is characterized by the following morphological features: head and body elongated and compressed; pelvic fin absent or rudimentary; lateral line system forming a complicated network; body covered with small cycloid scales (Yatsu *et al.*, 1978; Hatooka, 2002). These species inhabit rocky shores, tidal pools, and subtidal zones in temperate seas (Nelson, 2006). In the original description of *D. burgeri*, Van der Hoeven (1855) provided brief morphological features, excluding counts and measurements. Later, Makushok (1958) and Shiogaki and Dotsu (1972) reported on geographic variations in *D. burgeri*, mentioning the necessity of future study. Yatsu *et al.* (1978), in their extensive morphological study of *D. burgeri* from Korea, Japan, and China, revealed an additional species, *D. rubrimaculatum*, which is easily distinguished from *D. burgeri* by the presence of the 3<sup>rd</sup> lateral line and by the number of vertebrae, dorsal fin spines, and anal fin rays. In addition, Yatsu *et al.*, (1978) noted two distinct morphotypes of *D. burgeri*, having different geographical distribution and meristic characters (Table 2). Type A is found in Taiwan and the Pacific coast of Japan, while type B in southern Korea, to western Kyushu, Japan and northern Japan (Fig. 1). Since then, there have been no studies regarding the two types of *D. burgeri*. During taxonomic review of the genus *Dictyosoma* from East Asia, we found six specimens of *Dictyosoma* that were inconsistent with both *D. burgeri* and *D. rubrimaculatum*. In order to reveal the taxonomic status of these specimens, morphological as well as molecular methods were adopted. In recent years, findings of new species have been successfully carried out by the aid of molecular methods (Eakin *et al.*, 2009; Ji and Kim, 2011; Ji *et al.*, 2012). As a result of comparing our six specimens with the two known species, we conclude that they represent a new species, which we describe herein.