



## The cardinalfish *Fowleria isostigma* in the Red Sea and the validity of *F. punctulata* (Perciformes: Apogonidae)

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### Abstract

The Red Sea has five species of the apogonid genus *Fowleria*, including *F. isostigma*, a Pacific Ocean species not yet known from the western Indian Ocean proper. Previously, *F. isostigma* was placed in the synonymy of *F. punctulata* (Rüppell 1838). However, the taxonomic status of the latter has not been established and in previous works it was placed in the synonymy of *F. aurita* or *F. variegata*. This paper compares Red Sea specimens identified as *F. isostigma* with *F. variegata* and with the type specimens of *F. punctulata*. The presence of *F. isostigma* in the Red Sea is established and *F. punctulata* is confirmed as a junior synonym of *F. variegata*. The holotype of *F. punctulata* is identified by the size given in the original description. A key to the Red Sea species of *Fowleria* is provided.

**Key words:** fish taxonomy, identification key, holotype identification, *Fowleria variegata*, western Indian Ocean

### Introduction

The cardinalfish *Fowleria isostigma* (Jordan and Seale 1906) was described from Western Samoa and is widely distributed in the western and southern Pacific Ocean, from Japan south to Australia, and east through Micronesia to the Tuamotu Archipelago (Hayashi in Masuda *et al.* 1984; Myers 1989; Shen *et al.* 1993; Randall 2005; Randall and Lim 2000). In life this species is purplish or reddish brown with several horizontal series of dark brown to blackish spots, more or less one per scale, along the side of the body. About 70 years earlier another species of *Fowleria*, *Apogon punctulatus* Rüppell 1838, was described from the Red Sea. As implied by the species name and by Rüppell's description, this species also has spots on the body. Although it has not been reported from the western Indian Ocean proper the name *F. isostigma* (Jordan and Seale) was used for a Red Sea species of this genus by Goren and Karplus (1980), albeit without a description or illustration. Dor (1984) followed these authors in his checklist of Red Sea fishes. Paxton *et al.* (1989) recognized *F. isostigma* as a junior synonym of *F. punctulata*, but did not give a reason for their decision. Goren & Dor (1994) did not accept this synonymy and continued to use *F. isostigma* in their revised checklist of Red Sea fishes. Other authors followed Paxton *et al.* (1989) and applied Rüppell's name to northwestern Australian and Pacific fishes (e.g. Randall *et al.* 1990, 1997; Allen 1997; Larson and Williams 1997; Myers 1999; Hutchins 2001; Kimura and Matsuura 2003; Myers and Donaldson 2003).

Gon and Randall (2003) maintained that *F. isostigma* is a valid species occurring only in the Pacific Ocean. They also examined the type series of *F. punctulata* and concluded that it is a junior synonym of *F. variegata* (Valenciennes 1832). While Randall (2005) and Allen *et al.* (2006) accepted this taxonomic decision, the online version of the Catalog of Fishes (Eschmeyer 2010) lists *F. punctulata* (Rüppell) as a valid species. Evidently, there still is disagreement on the validity of *F. punctulata* and whether or not *F. isostigma* occurs in the Red Sea. Recently, the second author collected two large specimens of *Fowleria* in Egypt that we identified as *F. isostigma*. These two fishes were the basis for the inclusion of this species in Golani & Bogorodsky (2010). On recent visits to the Natural History Museum, London, and to the Western Australian