

The Validity of *Helcogramma ishigakiensis* (Aoyagi, 1954) and a Synopsis of Species of *Helcogramma* from the Ryukyu Islands, Southern Japan (Perciformes: Tripterygiidae)

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Helcogramma ishigakiensis (Aoyagi, 1954), originally described as *Lepidoblennius marmoratus ishigakiensis* from the Ryukyu Islands, southern Japan, and subsequently regarded as a junior synonym of *Helcogramma inclinata* (Fowler, 1946), is redescribed here as a valid species. *Helcogramma ishigakiensis* is characterized by the following combination of characters: 13–15 (modally 14) second dorsal-fin spines; 28–39 pored lateral-line scales; 4–5+1+4–6 (typically 4+1+4) mandibular pores; anterior nostril tentacle unbranched; orbital tentacle simple; nape without scales; and bases of dorsal fins and entire caudal fin reddish in mature male. A synopsis of the other species of *Helcogramma* occurring in the Ryukyu Islands and a key to the Ryukyu species of the genus are provided.

Key Words: *Helcogramma aquila*, *Helcogramma fuscipectoris*, *Helcogramma inclinata*, *Helcogramma rhinoceros*, *Helcogramma striata*.

Introduction

The triplefin genus *Helcogramma* McCulloch and Waite, 1918 is characterized by having a single lateral line, the first dorsal fin with three spines, the anal fin with a single spine, the pelvic fin with a single spine and two soft rays, and no scales on the head, pectoral-fin base, and ventral surface of the body (Hansen 1986; Fricke 1997; Holleman 2007). Species of *Helcogramma* are widely distributed in the tropical to temperate waters of the Indo-Pacific Ocean (Hansen 1986; Fricke 1997).

A series of field surveys in the Ryukyu Islands, southern Japan, and our examination of numerous museum specimens collected from these islands has shown the nominal subspecies *Lepidoblennius marmoratus ishigakiensis* Aoyagi, 1954 to be a valid species, although it had been regarded by Fricke (1997) as a junior synonym of *Helcogramma inclinata* (Fowler, 1946). It is redescribed here as *Helcogramma ishigakiensis*. Underwater photographs of males and females taken off Okinawa-jima island are provided. A synopsis of and a key to all species of *Helcogramma* known from the Ryukyu Islands is also provided, based on our examination of specimens collected from the islands.

Materials and Methods

Counts and measurements follow Fricke (1997) and Holleman and Bogorodsky (2012), with the mandibular-pore

formula following Hansen (1986). Measurements were made to the nearest 0.1 mm with needle-point calipers under a dissecting microscope. Standard length is abbreviated as SL. Synonymies in the synopsis species of *Helcogramma* from the Ryukyu Islands are limited to original descriptions and literature related to the Ryukyu Islands and, in one case, southernmost Kyushu. Curatorial procedures for newly collected specimens followed Motomura and Ishikawa (2013). The specimens examined in this study are deposited in the Academy of Natural Sciences of Drexel University, Philadelphia (ANSP), Bishop Museum, Honolulu (BPBM); Hiwa Museum of Natural History, Shobara (HMNH); Kagoshima University Museum, Kagoshima (KAUM); Kanagawa Prefectural Museum of Natural History, Odawara (KPM); National Museum of Nature and Science, Tsukuba (NSMT); Churashima Research Center, Okinawa Churashima Foundation, Motobu (transferred from University of the Ryukyus: URM); and Yokosuka City Museum, Yokosuka (YCM). Comparative materials examined in this study are as follows—*Helcogramma ellioti* Herre, 1944: BPBM 27637, 6 males, 4 females, 28.9–39.1 mm SL, Kovalam, Kerala, India, 0–2 m depth, 10 February 1980, J. Randall and W. Smith-Vaniz; BPBM 27684, 4 males, 5 females, 28.0–37.2 mm SL, Kovalam, Kerala, India, 0–2 m depth, 12 February 1980, J. Randall and W. Smith-Vaniz. *Helcogramma habena* Williams and McCormick, 1990: USNM 300194 (holotype), male, 34.7 mm SL, approximately 0.5 km southeast of Diojo Point, Batan Island, Batanes, Philippines, 20°27'55"N, 121°57'12"E, 3–6 m depth, G. Johnson and W. Smith-Vaniz. *Helcogramma rhinoceros* Hansen, 1986: USNM 222370 (ho-