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First Record of the Longlure Flatfish, *Asterorhombus filifer* (Pleuronectiformes: Bothidae), from Japan

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Five specimens (10.4–86.5 mm standard length) of the Indo-West Pacific flatfish *Asterorhombus filifer* Hensley and Randall, 2003 were collected at depths of 12–21 m on sandy bottoms at Yoron Island and Amami-oshima Island, Ryukyu Islands, Japan. These specimens represent the first records of *A. filifer* from Japan and the northernmost records of this species.

Key Words: Teleostei, Bothidae, *Asterorhombus filifer*, Japan, new record.

Introduction

Hensley (2005) reviewed the flatfish genus *Asterorhombus* and recognized three species: *A. cocosensis* (Bleeker, 1855), *A. intermedius* (Bleeker, 1865), and *A. filifer* Hensley and Randall, 2003. According to Hensley and Amaoka (2001) and Hensley (2005), *Asterorhombus* is characterized by having first dorsal-fin ray elongate, lure-like, and separated from other rays, gill rakers palmate, and teeth uniserial in both upper and lower jaws. Amaoka *et al.* (1994) reported on the remarkable resemblance of the first dorsal-fin ray of *A. cocosensis* (their *A. fijiensis*) to a small fish or crustacean and called it a lure. Shirai and Kitazawa (1998) observed that *A. intermedius* in an aquarium rotated the first dorsal-fin ray when offered frozen krill as food. Amaoka *et al.* (1994) and Senou *et al.* (1994) observed similar behavior in *A. cocosensis* (their *A. fijiensis*) underwater, but they did not observe any prey attracted by the movement of the "lure".

During fish faunal surveys around Yoron Island (Motomura and Matsuura 2014) and Amami-oshima Island in the Ryukyu Islands, five specimens of *Asterorhombus filifer* were collected, representing the first record of this species in Japan. These specimens are described below in detail.

Materials and Methods

Counts and measurements follow Hubbs and Lagler (1958) and Hensley and Randall (2003). Standard length is abbreviated as SL, and head length as HL. Vertebrae were counted on soft X-ray radiographs. The specimens examined in this study, including comparative material of the other two congeneric species, are deposited in the Laboratory of Marine Biology, Faculty of Science, Kochi University, Kochi (BSKU); Kagoshima University Museum, Kagoshima (KAUM); National Museum of Nature and Science, Tsukuba (NSMT); and South African Institute for Aquatic Biodiversity, Grahamstown (SAIAB).

In order to estimate genetic divergence between species of *Asterorhombus*, a small portion of the muscle (*ca.* 0.25 g) was excised from one fresh or 99.5% ethanol-preserved specimen of each of the three congeners. Total genomic DNA was extracted using Gentra Puregene Tissue kit (Qiagen), in accordance with the manufacturer's protocols. Nine fish-versatile PCR primers were used in various combinations to amplify the contiguous, overlapping segments of the mitochondrial cytochrome oxidase subunit I (COI) sequences. A list of the PCR primers used in this study is available from the second author upon request. The PCR was carried out following protocols previously described (Miya and Nishida 1999), and the products were purified using ExoSAP-IT enzyme (GE Healthcare) and subsequently sequenced with dye-labelled terminators (BigDye terminator ver. 3.1, Applied Biosystems). The primers used were the same as those for PCR. Sequencing reactions were conducted following the manufacturer's instructions, followed by electrophoresis on a 3130xl Genetic Analyzer (Applied Biosystems). Sequence data were edited and analyzed with AutoAssembler ver 2.1 (Applied Biosystems) and DNASIS ver 3.2 (Hitachi Software Engineering). For sequence comparisons, pairwise genetic distances were quantified based on the Kimura 2-parameter (K2P) distance model (Kimura 1980) using PAUP* ver. 4.0b10 (Swofford 2002). All the sequences determined here are deposited in GenBank, with the following accession numbers: *A. filifer*, AB908991; *A. intermedius*, AB908990; *A. cocosensis*, AB908989.

Voucher specimens for genetic analysis were as follows: