

First record of the Longfin Escolar *Scombrobrax heterolepis* Roule, 1921 (Perciformes, Scombrobracoidei, Scombrobracidae) from Taiwan

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Abstract

A single specimen of *Scombrobrax heterolepis* Roule, 1921, the sole member of the suborder Scombrobracoidei, was collected off Dong-gang in southwestern Taiwan. Although occurring in tropical and subtropical waters worldwide, the only region of the northwestern Pacific where it had previously been found was Japan. Accordingly, this specimen represents the first record of this suborder from Taiwan.

Key words: deep sea, escolars, ichthyology, new record, Taiwan, taxonomy

Introduction

The longfin escolar suborder Scombrobracoidei contains a single species, *Scombrobrax heterolepis* Roule, 1921 (Scombrobracidae), which reaches a maximum size of 30 cm standard length (SL). Member of the suborder is characterized by ventrally opening bullae on their abdominal vertebrae, large eyes

(diameters equal to snout lengths), lateral lines alongside the dorsal contour, and relatively long pectoral fins that nearly reach their anal-fin origins (Bond and Uyeno, 1981; Nakamura and Parin, 2001). Although *S. heterolepis* is widely distributed in circumtropical regions (except for the eastern Pacific and southeastern Atlantic Oceans; Nakamura

and Parin, 2001), it has previously been recorded only from Japan in the northwestern Pacific (Nakabo and Doiuchi, 2013). During ichthyofaunal surveys in southern Taiwan, a single specimen of *S. heterolepis* was collected off Dong-gang. The specimen, described here in detail, represents the first record of the suborder from Taiwan.

Materials and Methods

Methods for counts and proportional measurements followed Hubbs and Lagler (1947). All measurements were made with digital calipers to the nearest 0.1 mm. Institutions have been abbreviated as follows: Department of Nature Science, Faculty of Science, Kochi University, Kochi, Japan (BSKU), Fisheries Research Institute, Keelung, Taiwan (FRIP), Kagoshima University Museum,

Kagoshima Japan (KAUM), and the National Museum of Nature and Science, Tsukuba, Japan (NSMT).

Results

Family Scombrolabracidae Roule, 1921

***Scombrolabrax* Roule, 1921**

***Scombrolabrax heterolepis* Roule, 1921**

Taiwanese species name: 長鰭帶鰭
(Figure 1)

Specimen examined.

KAUM-I. 113237, 121.6 mm SL, collected off Dong-gang, Pingtung, southwestern Taiwan by mid-water trawl, 7 Mar. 2018.

Description of Taiwanese specimen.

Counts: dorsal-fin rays XII, 16; anal-fin rays II, 17; pectoral-fin rays 18;



Fig 1. Fresh specimen of *Scombrolabrax heterolepis* collected off Dong-gang, Pingtung, southwestern Taiwan: KAUM-I. 113237, 121.6 mm SL. Scale bar=2 cm.

pelvic-fin rays I, 5; pored lateral-line scales 50; gill rakers 12 + 7. Morphometrics (expressed as percentage of SL): head length 33.1; snout length 9.2; orbit diameter 11.1; interorbital width 7.4; maximum body depth 22.1; maximum body width 11.7; caudal-peduncle length 13.4; caudal-peduncle depth 7.5; upper-jaw length 15.3; mandible length 20.2; pre-dorsal-fin length 40.1; pre-anal-fin length 71.2; pectoral-fin length 35.5; pelvic-fin spine length 8.9; dorsal-fin base length 50.8; anal-fin base length 18.6; postorbital length 13.2; distance between snout tip to uppermost point of pectoral-fin insertion 32.9; and distance between snout tip to anteriormost point of pelvic fin 34.9.

Body compressed and moderately elongated. Dorsal profile moderately elevated from snout tip to first dorsal-fin origin, thereafter gently sloping to upper-most point of caudal-fin base. Ventral profile sloping from lower jaw tip to pelvic fin insertion, thereafter parallel to body axis to anal fin origin before gently rising to lower-most point of caudal-fin base. Head stout, compressed, and triangular in outline. Posterior tip of maxilla extending slightly beyond vertical line through center of eye. Both jaws with a single row of canine-like teeth. A pair of large canine teeth on anterior portion of lower jaw. Vomer V-shaped, with several

small, conical teeth. Palatine toothless. Tongue edentate. Eyes large, with round irises. Nostrils paired, slit-like, close to each other, and anterior to eye. Lower jaw projecting, anterior-most point slightly anterior to upper jaw. Posterior edge of preopercle smooth. Corner and lower margin of preopercle serrated. Opercle with two large spines under four smaller spines. Lower region of hind margin and lower edge of preopercle serrated.

Upper-most point of pectoral-fin insertion slightly posterior to posterior-most point of opercle; posterior tip pointed, reaching to a vertical line through origin of 12th dorsal-fin spine and anus, but not through anal-fin origin. Anterior-most point of pelvic-fin insertion slightly posterior to upper-most point of pectoral-fin insertion. Posterior-most point of pelvic-fin insertion slightly posterior to lower-most point of pectoral-fin insertion. Posterior tip of depressed pelvic fin reaching to a vertical line through origin of fifth dorsal-fin spine (not reaching the anus). Dorsal-fin origin posterior to posterior-most point of pelvic-fin insertion. Dorsal profile of dorsal fin deeply concave between first and second dorsal fins. Last (12th) dorsal-fin spine clearly shorter than first dorsal-fin ray. Origin of second dorsal fin just above origin of anal fin. Anal-fin origin anterior to second dorsal-fin origin.

Anal-fin base ending just below 14th dorsal-fin ray origin. Caudal fin forked and caudal peduncle lacking keels.

Scales cycloid, highly deciduous, and irregularly sized and shaped. Gill membrane, isthmus muscle, and ventral side of lower jaw scaled. Anterior-most point of pre-dorsal scaled region reaching to vertical line through anterior nostrils. Maxilla, lateral surface of mandible, and area surrounding nostrils scaleless. Anus oval, anterior to anal-fin origin. Pseudobranch with 33 filaments. All upper gill rakers and two anterior-most lower gill rakers rudimentary. Single lateral line discontinuous, running close to dorsal contour, and ending just below 12th dorsal-fin ray origin.

Color when fresh. Body uniformly pale brownish, though lower part of abdomen and opercle blackish-brown. Dorsal-, anal-, and pelvic-fin rays dusky. Pectoral-fin rays translucent. Irises yellowish-silver. Pupils black.

Distribution.

As mentioned above, *S. heterolepis* is widely distributed in circumtropical waters, except in the eastern Pacific and southeastern Atlantic Oceans (Doiuchi and Nakabo, 2013); this is the first record of this species in Taiwan.

Remarks.

The specimen collected from Taiwan was identified from the following combination of characters, which closely matched the diagnostic features of *S. heterolepis* given by Nakamura and Parin (2001), Doiuchi and Nakabo (2013), and Hidaka (2016): dorsal contour of dorsal fin concave; lateral line running close to dorsal contour, ending just below 12th dorsal-fin ray origin; orbit diameter greater than half-snout length; pectoral fin very long, nearly reaching anal-fin origin; size and shape of scales variable. The suborder Scombrobracoidei comprises only this species (Bond and Uyeno, 1981; Nakamura and Parin, 2001).

Scombrobrax heterolepis, the only member of the suborder Scombrobracoidei, was originally described by Roule (1921) from a single specimen collected from South Madeira (eastern Atlantic Ocean) in a depth of 800–900 m. Subsequently, *S. heterolepis* has been mistakenly classified in the family Gempylidae, suborder Scombroidei (e.g., Grey, 1960). However, *S. heterolepis* can be easily distinguished from gempylid fishes by its relatively greater orbit diameter, longer pectoral fin which almost reaches the anal-fin origin, and possessing only a single lateral line running close to the dorsal contour (Nakamura and Parin, 2001; Hidaka, 2016). Although Potthoff et al. (1980) also

included this species in the suborder Scombroidei due to similarities in pterygiophore structure, they further assigned it to the family Scombrabrachidae due to the presence of a reduced procurrent spur with an adjacent reduced secondary ray (such spurs are absent in other scombroids). Thereafter, Bond and Uyeno (1981) returned Scombrabrachidae to the suborder Scombrabracoidei due to *S. heterolepis* having a unique vertebral structure and bullae opening anteroventrally on the abdominal vertebrae. Currently, the species remains in the monotypic suborder Scombrabracoidei (e.g., Nakamura and Parin 2001; Nakabo and Doiuchi, 2013).

Although *S. heterolepis* is widely distributed in circumtropical waters, it has previously been reported in the northwestern Pacific Ocean only from Japanese waters: off Ibaraki Prefecture (Shinohara et al., 1996: NSMT-P 47433, 21.0 cm SL), the Kyushu-Palau Ridge (Nakamura, 1982: four specimens, 166.4–217.1 mm SL), and the Okinawa Trough (Machida, 1985: BSKU 26509, 179 mm SL). The species has not been recorded in ichthyofaunal studies in Taiwan (e.g., Shao et al., 2008; Shen and Wu, 2011; Chiang et al., 2014; Shao, 2019), although Randall and Lim (2000) included the species in the ichthyofauna

of the South China Sea. However, they did not provide detailed localities or references, nor did they note voucher specimens. Iwamoto (2015) included Taiwan in the distributional range of *S. heterolepis*, probably based on Shao et al. (2010) who reported *S. heterolepis* from Taiwan on the basis of a specimen (FRIP 22197) collected from Taitung, southeastern Taiwan. However, this specimen was subsequently re-identified by Chiang et al. (2014) as *Cubiceps baxteri* McCulloch, 1923 (Perciformes: Nomeidae). Therefore, the specimen collected off Dong-gang represents the first confirmed record of *S. heterolepis* from Taiwan.

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