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FIRST RECORD OF *Cantherhines multilineatus* (TANAKA, 1918) (TETRAODONTIFORMES: MONACANTHIDAE) IN INDONESIA

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Abstract

Two specimens of *Cantherhines multilineatus* were collected from Girian Fish Market, Bitung, North Sulawesi on January 7 and August 18, 2009. It was caught from depths of about 20–30 m in association with other coral reef fishes. In the world, this species is found in many scattered locations in the Western Indian Ocean, Eastern Indian Ocean, Northwest Pacific and Western Central Pacific and its distribution was reported from Taiwan and Japan. Its morphological features and diagnostic characters are discussed and illustrated.

Keywords: Cantherhines multilineatus, first record, fish specimen, Indonesia, Monacanthidae

1. Introduction

The order Tetraodontiformes is a diverse marine fish group. It belongs to the class of Actinopterygii. Nelson [1] divided this order into 8 families and it is represented by 64 genera and 320 species. After about 20 years, this order was changed and divided into 10 families as follows: Triacanthodidae, Triacanthidae, Balistidae, Monacanthidae, Ostraciidae, Aracanidae, Triodontidae, Diodontidae and Molidae Matsuura [2].

The filefishes of the family Monacanthidae is classified into 31 genera (e.g., *Alutera*, *Amanses*, *Cantherhines*, *Chaetodermis*, *Monacanthus*, *Navodon*, *Oxymonacanthus*, *Paraluterus*, *Paramonacanthus*, *Pervagor*, *Pseudoluterius* and *Stephanolepis*) with 95 species [1]. In the Central West Pacific region, the Mona-canthidae is represented by 23 genera (*Acreichthys*, *Aluterus*, *Amanses*, *Anacanthus*, *Arotrolepis*, *Brachaluteres*, *Cantherhines*, *Cantheschenia*, *Chaetodermis*, *Colurodontis*, *Eubalichthys*, *Monacanthus*, *Nelusetta*, *Oxymonacanthus*, *Paraluteres*, *Paramonacanthus*, *Pervagor*, *Pseudaluteres*, *Pseudo-monacanthus*, *Rudarius*, *Scobinichthys*, *Stephanolepis* and *Thamnaconus*) including 45 species [3].

Studies and information on fish taxonomic and information on the fishes in Indonesia is scarce. There are numerous technical or research reports, published earlier, which contain information on fishes of the Indonesian waters. However, most of these reports concentrate on community structure of some coastal ecosystems. Valid record for taxonomic purposes of the fish specimen of Indonesia and surrounding waters were reported, such as Allen and Adrim [4], Gloerfelt-Tarp and Kailola [5], Randall and Lim [6], and Randall and Heemstra [7,8].

New and additional records of others species in this area were reported by Kimura *et al.* [9-11], Motomura and Peristiwady [12-15], Peristiwady *et al.* [16,17] Peristiwady and Achmad [18] and Wu *et al.* [19]. Numerous information on guide book or guide identification are also available such as Allen and Swainston [20], Kuiter and Debelius [21], Kimura and Matsuura [22], Matsuura *et al.* [23] and Peristiwady [24].

The purpose of the present study is to inventory a new finding on fish species from the Indonesian waters. Thus, it is hoped that this new finding will be used as a new baseline of the fishery science which can stimulate future research in Indonesia.

2. Methods

Two specimens of *C. multilineatus* (Tanaka, 1918) (LBRC-F 415, 191.5 mm SL; LBRC-F 858, 221.5 mm

SL) were collected from Girian Fish Market, Bitung, North Sulawesi on January 7 and August 18 2009 (Fig. 1). Valid record of the fish specimen used data from Fishbase [25,26].

Measurements were made on the left side of the specimen by using a dial-point caliper to the nearest of 0.01 mm. The length was recorded to 0.01 mm only for measurements under 150 mm. Measurements bigger than 150 mm was recorded to tenths of mm. The total length is measured from the tip of the snout to the tip of the caudal fin. The standard length (SL) was taken from the front of the upper lip to the base of the caudal fin (the end of the hypural plate). The head length (HL) was measured from the front of the upper lip in the median plane to the end of the opercular membrane. Snout length was taken from the same anterior point to the fleshy edge of the orbit. The body depth was the greatest depth from the base of the dorsal fin, adjusting to any obvious malformations of preservation. The body width was the maximum width just behind the gill opening (anterior to the base of the pectoral fins). The orbit diameter was the greatest diameter to the fleshy edges of the orbit. The interorbital width was measured between the eyes on top of the head area. The length of the upper jaw was measured from the front of the upper lip to the posterior fleshy edge of the jaw. The depth of the caudal peduncle was the least depth, and the length of the caudal peduncle was taken horizontally from the rear base of the anal fin to the base of the caudal fin. Lengths of the dorsal and anal spines and rays were measured from the point they depart from the contour of the body. The dorsal fin base was taken from the anterior base of the first dorsal rays to the end of the dorsal fin rays. Pectoral-and pelvic-fin lengths were the lengths of the longest ray. Anal fin base was taken from the base of anterior anal fin rays to the base of the end of the anal fin rays.

3. Results and Discussion

The family Monacanthidae belongs to the group of trigger-fishes where the names of the fishes derive from the first spine of the first dorsal fin which may be locked in an erect position by small second spine placed behind the first dorsal spine. They are small to medium-sized marine fishes with high and deep, laterally compressed bodies. Scales are rough, rhomboid-shaped, often having small spines. Mouth has a long snout with close set chisel-like teeth. The eyes are small and placed high on the head. The second dorsal and anal fins contain no spines, consist of simple soft rays. The pelvic fins are absent; instead they are replaced by the pelvic bone. The caudal peduncle is well defined with the form of the caudal fin varying greatly between species.

Specimen Examined. Observations and measurements of specimens *C. multilineatus* (Tanaka, 1918) based on

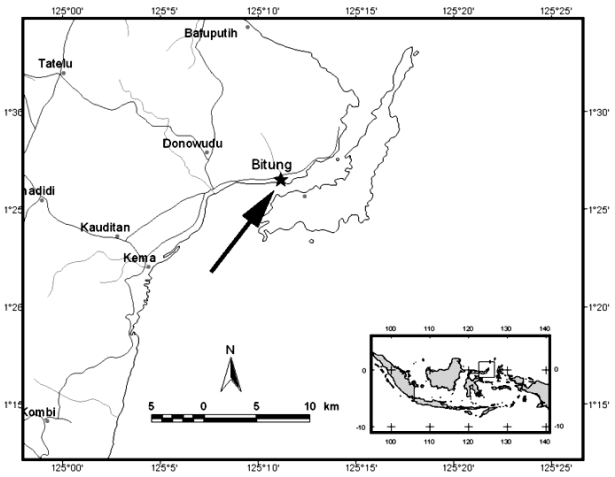

Figure 1. Location of Girian and Winenet Local Market, Bitung, North Sulawesi, Indonesia where the Specimens were Collected (Arrow)

two specimens: LBRCF-415, 219.5 mm SL, January 7 2009, Girian, Bitung, North Sulawesi, collected by Peristiwady; LBRCF-858, 192.0 mm SL, August 18, 2009, Winenet, Bitung, North Sulawesi, collected by Peristiwady.

Monacanthidae (Hutchins, 2001 in Carpenter and Niem, 2001) [3]. Small to medium-sized (to 1 m) fishes, usually with deep, highly compressed bodies; body shape varies from oblong to almost circular. Mouth small, generally terminal, non-protractile; teeth pointed and not fused together, central pair usually the largest in each jaw; vomer and palatines without teeth. Gill opening a short vertical to oblique slit in front of, or above, pectoral-fin base. Two dorsal fins, first dorsal fin consisting of a prominent spine which can be locked upright by a second very small spine, second dorsal fin with 22 to 52 simple (unbranched) soft rays, well separated from first fin; anal fin with 20 to 62 simple (unbranched) soft rays; caudal fin with 12 branched rays; pectoral fins with 8 to 15 simple rays; pelvic fins a bony rudiment fused to posterior end of pelvis, posterior portion movable in some species, or rudiment absent. Pelvis usually capable of vertical movement giving rise to a ventral flap. Skin smooth to rough, shagreen-like, with minute to small scales armed with 1 to many fine spinules, spinules enlarged in some species forming bristles or spines on posterior portion of body; scales on head of some species with strong flattened spinules. Vertebrae 7 + 12 or 7 + 13.

Taxonomic account. *C. multilineatus* (Tanaka, 1918); English Name: Filefish as shown as Fig. 2 and Fig. 3 show the rudiment pelvic-fin.

Diagnostic characters. Counts and measurements of specimen were presented at Table 1. Dorsal fin separate

with II spine and 32-33 soft rays; anal fin with 30-32 soft rays: pectoral fin with 12-13 rays.

Body rather oblong, compressed. Body depth contained 1.4-1.5 times in SL. Snout straight to anterior of eye, after just convex to first dorsal fin base. First dorsal spine long and stout, originating over eye. HL less than body depth; ventral flap small to medium size; soft dorsal and anal fins noticeably higher anteriorly; caudal fin just double emarginated, caudal peduncle less than HL. Soft dorsal and anal fins approximately equal and opposite, caudal fin with 12-13 principal rays. Pectoral fins small and the pelvic fins reduced to small, non-movable spine, placed at distal end of long pelvic bone. Encasing scales composed of 3 segments (Fig. 3), immovably articulated with pelvis. Ventral fin rudiment at tip of pelvis, not movable. Pelvic fin rudiment non-mobile, projecting prominently rearward of ventral flap (Fig. 4). Caudal peduncle unarmed.

Distribution. *C. multilineatus* was described from the Boso Peninsula, Japan [27]. Eschmeyer [26] suggested that this specimen found at Tokyo fish market, and probably cached from Sagami Sea or off Boshu, Japan. From Indo-West Pacific distribution of this species were reported from Taiwan [25] and Japan [27].

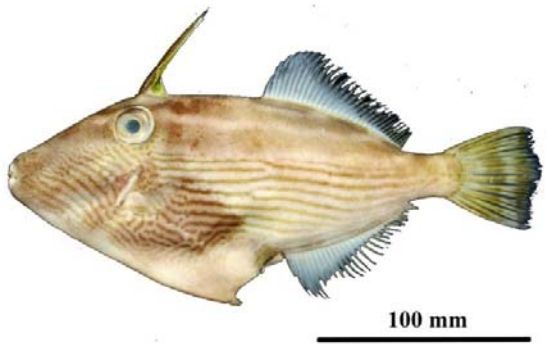

Figure 2. *C. multilineatus* (Tanaka, 1918); LBRC-F 858, 192.0 mm SL

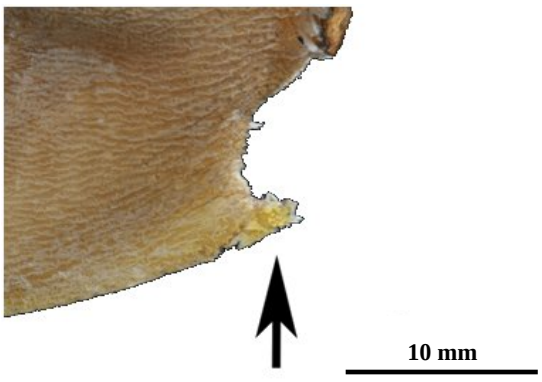

Figure 3. Pelvic-fin Rudiment Consisting of 3 Pairs of Encasing Scales

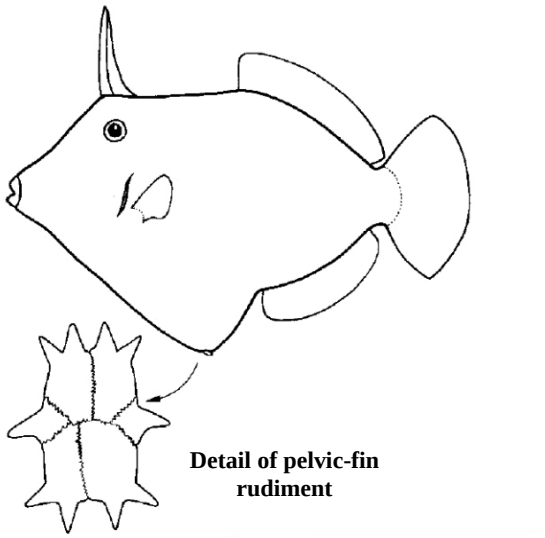

Figure 4. Pelvic-fin Rudiment Consisting of 3 Pairs of Encasing Scales (After Hutchins, 2001 *in* Carpenter and Niem, 2001) [3]

Table 1. Counts and Measurements of *C. multilineatus* (Tanaka, 1918)

Counts and Measurements		LBRC-F 415	LBRC-F 858
Counts	Dorsal fin rays	32	33
	Anal fin rays	30	32
	Pectoral fin rays	12	13
	Ventral fin rays	5	5
	Caudal fin rays	12	12
Body and Head	Total length	219.50	221.50
	Standard Length	191.50	192.00
	Body depth	84.82	84.66
	Body width	28.42	26.99
	Head length	61.63	58.28
	Snout length	53.11	51.45
	Orbit diameter	17.05	17.13
	Interorbital width	17.23	16.96
	Upper-jaw length	10.42	10.97
	Predorsal length	63.27	62.46
	Preanal length	121.59	118.63
	Prepelvic length	114.41	105.13
	Caudal-peduncle length	17.28	16.94
	Caudal-peduncle depth	15.27	15.47
Dorsal fin	Dorsal-fin base	57.70	60.50
	First dorsal spine	46.53	45.83
	Longest dorsal ray	25.44	25.28
Anal fin	Anal-fin base	50.93	55.35
	Longest anal ray	24.31	26.54
Caudal fin	Caudal-fin length	42.25	41.07
Pectoral fin	Pectoral-fin length	20.80	19.68

Color in life. Body brownish grey; dorsal and anal fins whitish; membrane of spinous dorsal yellowish; caudal fin greenish grey. Head and breast with brown line from snout to pelvic; upper body with horizontal brown broad

band; lower body brown line from behind head to anterior of caudal peduncle; caudal with irregular vertical greenish broad band.

Remarks. Although triggerfish have small mouths, the jaws and teeth are strong enough to break shells or carapaces of benthic invertebrates, such as crabs, molluscs and sea urchins. This fish often takes refuge in a hole in the reef and lock the first dorsal fin spine in an upright position, provides a defense against being swallowed or dragged from crevices by predators. Triggerfish are solitary fish which swim by undulating their second dorsal fin and anal fin. Strong sweeping caudal fin will be used to accelerate rapidly when disturbed or frightened. The fishes of the genus Cantherhines are poorly known instead of the size but also have no commercial value. It is also impossible for fishermen using trawls or gill-net to catch this species due to their occurrence over or inside hard substrat.

Similar family. Balistidae with 3 dorsal-fin spines; no large, obvious pelvic-fin spines; teeth usually incisor-like and more massive, 8 in an outer series in each jaw; scales larger, rectilinear and easily recognized as individual units, and tough but not shagreen-like.

4. Conclusion

The specimens of *C. multilineatus* collected from Girian local fish market, Bitung, North Sulawesi is the first record for Indonesian waters while the other valid record is reported from Taiwan and Japan.

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