MEGANTHIAS KINGYO (KON, YOSHINO AND SAKURAI, 2000) (PERCIFORMES: SERRANIDAE) FROM BITUNG, NORTH SULAWESI, INDONESIA: FIRST RECORD FROM THE SOUTHWESTERN PACIFIC OCEAN

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ABSTRACT

Eight specimens of Meganthias kingyo were collected from Bitung, North Sulawesi, Indonesia between 2008 - 2010. The specimens were caught from about 70-150 m off Lembeh Island. M. kingyo differs from M. natalensis by having the following characteristics: pores lateral line scales (43 vs. 49); pectoral rays (16 vs. 14.1); body depth (47.1 vs. 51.9); head length (31.0 vs. 38.2), body depth (47.1 vs. 52.9), caudal peduncle depth (12.1 vs. 14.2), pectoral fin length (28.0 vs. 34.3), pelvic fin length (33.6 vs. 31.1), anal fin base length (19.4 vs. 22.2), caudal fin length (66.9 vs. 35.3) and longest dorsal fin ray (48.5 vs. 27.4). Previously, this species has been reported from Houzan-sone, off Miyako and Yaeyama Islands in Okinawa, Japan; and herein is recorded from off Lembeh Island, North Sulawesi, Indonesia.

Keywords: Anthiine, Meganthias kingyo, Indonesia, New record, Serranidae

INTRODUCTION

Anthiniid fishes are usually colourful, small in size and live in hard-bottom habitat at depths of about 100-400 m (Randall and Heemstra, 2006). Because of their small size, the difficulty of catching them and their low commercial value, anthiniid fishes are insufficiently represented in museum collections. Some species were described as new species based on a single specimen, or a few specimens from one or two localities (Randall, 1996; Chen and Shao, 2002). Among 30 species of his genus revision, Randall (1980) remarked 18 species of these were identified from one or two specimens, and eight species based on a single specimen. The subfamily Anthiinae comprises about 200 species which are mostly distributed in the Indo-West Pacific (Anderson, 2006; Schneider and Janke, 2013). The genus Meganthias was revised by Randall and Heemstra (2006) based on a type specimen of Sacuranatalensis (Fowler, 1925). Worldwide, there are four species of this genus: (i) Meganthias kingyo (Kon, Yoshino and Sakurai, 2000), which was previously known as Holanthiaskingyo from off Miyako and Yaeyama Islands, Okinawa, Japan (Randall and Heemstra, 2006); (ii) M. natalensis, previously known as Odontanthias natalensis (Fowler, 1925) from South Africa; (iii) M. carpenteri Anderson, 2006 collected off the coast of Nigeria, Atlantic Ocean (Anderson, 2006); and (iv)
Meganthias filiferus Randall and Heemstra, 2008 collected from the Andaman Sea, off the southwestern coast of Thailand that was previously identified as Holanthias chrysosticus (Günther, 1872) (Sirimontraporn and Bussarawit, 1993).

Among the four species in the genus, Meganthias kingyo has only been known from Okinawa (Japan) and now is reported here as a new record from Indonesia in the western Pacific Ocean.

**MATERIALS AND METHODS**

Methods for species count and measurement follow Randall and Heemstra (2006). Additional measurements were made for lengths of all dorsal-fin and anal-fin spines, soft rays (from tip to its base) and suborbital width (minimum distance between orbit and upper jaw). All measurements were made with a digital caliper to the nearest 0.01 mm. Cyanine blue was used to examine and count scales. All lengths are reported as standard length (SL) and head length (HL). Institutional code follows Eschmeyer and Fricke (2014) with an additional abbreviation LBRC-F for LIPI Bitung Reference Collection – Fish, Technical Implementation Unit for Marine Biota Conservation, Indonesian Institute of Sciences.

**RESULTS**

*Meganthias kingyo* (Kon, Yoshino and Sakurai, 2000) (Table 1; Figs. 1-2)


Synonym: Holanthias kingyo Kon, Yoshino and Sakurai, 2000: p. 75, Table 1, fig. 1; type locality: Houzan-sone, off Miyako I., Okinawa, Japan.

**Materials examined**

LBRC-F 0383, male, 185.5 SL, Girian fish market, Bitung, North Sulawesi, Indonesia, hook and line, no detail data on depth, 15 October 2008, purchased by T. Peristiwady; LBRC-F 1363, male, 192.5 SL, Girian fish market, Bitung, North Sulawesi, Indonesia, hook and line, no detailed data on depth, 16 November 2009, purchased by T. Peristiwady; LBRC-F 1382, female, 180.5 SL, LBRC-F 1388, male, 209.5 SL, Girian fish market, Bitung, North Sulawesi, Indonesia, hook and line, no detailed data on depth, 2 December 2009, purchased by T. Peristiwady; LBRC-F 1427, female, 166.5 SL, Girian fish market, Bitung, North Sulawesi, Indonesia, hook and line, no detailed data on depth, 11 January 2010, purchased by T. Peristiwady; LBRC-F 1677, female, 133.8 SL; LBRC-F 1678, female, 162.5 SL and LBRC-F 1680, male, 199.0 SL, Girian fish market, Bitung, North Sulawesi, Indonesia, hook and line, no detailed data on depth, 26 August 2010, purchased by T. Peristiwady.

**Description**

Counts and measurements are shown in Table 1. Data in parentheses are the mean values. Dorsal-fin rays X, 17-18; anal rays III, 9; all dorsal and anal rays branched, the last joined to base; pectoral-fin ray ii, 13-14; pelvic rays I, 5, all rays branched; lateral-line scales 44-49; scales above lateral line to origin of dorsal fin 9-11; scales below lateral line to origin of anal fin 28-29; gill rakers 11-12 + 25-26 (total rakers 36-38).

Body ovoid, relatively deep, strongly compressed, the width 2.6-2.8 (2.7) in body depth; head length 2.5-2.7 (2.6) all in SL; eye large, the orbit diameter 3.0-3.5 (3.2) in HL; snout length 4.0-5.1 (4.4) in HL; interorbital space convex, the least bony width 2.8-3.3 (3.1) in HL, nostrils two, narrowly separated, just in front of eye; anterior nostril small, with a produced posterior flap; posterior nostril larger; least caudal peduncle depth 2.6-2.9 (2.7) in HL; caudal peduncle length 1.8-2.0 (1.9) in HL.

Dorsal profile of head from dorsal origin steeply convex, mouth rather large, highly oblique; lower jaw projecting slightly beyond...
upper jaw when mouth closed. Upper jaw 2.2 – 3.2 (2.6) in HL, with a band of villiform teeth, outermost teeth largest, canine-like; teeth on lower jaw villiform, outermost teeth largest, canine-like. Opercle with three flat spines, middle spine longest and slightly closer to lower spine than upper most; posterior border of preopercle serrated along margin, smooth at angle; sub-opercle and inter-opercle weakly serrated. Gill rakers elongated and pointed.

Dorsal fin originating above and slightly before upper end of gill opening; dorsal spines strong, 3rd to 10th spines similar in length, first spine shortest; anterior soft dorsal rays not forming filament, third or fourth longest; anal spines stout, 2nd spine more than three fourths length of 3rd spine; outer margin of soft anal fin vertical; pectoral fin sub-symmetrical, reaching to origin of anal fin; pelvic fin inserted slightly before lower base of pectoral fin; caudal fin U-shaped with tip of lobes rounded.

Scales moderately large; scales above lateral line to origin of dorsal fin 9-11, scales below lateral line to origin of anal fin 28-29; head densely scaled except lips, throat and frontals; bases of dorsal fin soft rays, anal fin soft rays, and caudal and pectoral fins scaled. Lateral line complete, arched above pectoral fin, highest under 5th dorsal spine.

*M. kingyo* differs from others species of the genus *Meganthias* in having lower dorsal fin rays (16-17 vs. 17-18 in others species except *M. natalensis*); higher anal fin rays (9 vs. 8 in others species except M. natalensis); lower pectoral fin rays (14 vs. 16); lower scales above L1 (9.5-10.5 vs. 3-9); higher scales below L1 (27.5 vs. 16-26); higher diameter of eye (9.8-13 vs. 7.4-9.1) and higher interorbital width (11.9-12.9 vs. 9.0-9.1).

Figure 1. *Meganthias kingyo*, (A). URM-P 28315, paratype, female, 236 mm (after Yoshino), (B). URM-P 18748, holotype, male, 278 mm (after Yoshino); (C). LBRCF 1382, female, 180.5 mm SL; (D). LBRCF 383, male, 185.5 mm SL.
Color when fresh

The colouration of male and female Meganthias kingyo identified in this study matches with the description given by Kon et al., 2000). The male species are described as: head and body pale red dorsally, becoming pale pink ventrally; spinous and distal half of middle soft-rayed portion of dorsal fin yellow, other soft rays pale red; anal fin pale red with a distal yellow band; caudal fin pale red, becoming reddish violet marginally; pectoral fin base yellowish, becoming reddish distally, upper margin white; pelvic fin reddish. Female: head and body pink dorsally, becoming white ventrally, with many scattered dark brown spots dorsolaterally; dorsal fin pinkish white, with scattered dark brown spots, caudal fin pink; anal fin pink with a yellow sub-marginal band; pectoral fin pinkish with white upper and lower margins, dark brown spots on base; pelvic fin yellow anteriorly, gradually becoming pinkish-white posteriorly (Kon et al., 2000).

Color in formalin

Male uniformly pale; female uniformly pale, with scattered dark brown spots.

Table 1. Counts and measurements of Meganthias kingyo (Kon, Yoshino and Sakurai, 2000).

<table>
<thead>
<tr>
<th></th>
<th>URM-P 18748 Holotype</th>
<th>URM-P 28315 Paratype</th>
<th>Indonesian Specimen</th>
</tr>
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<tbody>
<tr>
<td>% SL</td>
<td>Male</td>
<td>Female</td>
<td>Male (4 specimens)</td>
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<tr>
<td>Standard length</td>
<td>277.6</td>
<td>236.2</td>
<td>185.5 - 209.5</td>
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<tr>
<td>Dorsal fin rays</td>
<td>X, 17</td>
<td>X, 16</td>
<td>X, 17-18</td>
</tr>
<tr>
<td>Anal fin rays</td>
<td>III, 9</td>
<td>III, 9</td>
<td>III, 9</td>
</tr>
<tr>
<td>Pectoral fin rays</td>
<td>ii, 14</td>
<td>ii, 14</td>
<td>ii, 13-14</td>
</tr>
<tr>
<td>Pored lateral line scales</td>
<td>46</td>
<td>47</td>
<td>44 - 49</td>
</tr>
<tr>
<td>Scales above lateral line</td>
<td>10.5</td>
<td>9.5</td>
<td>9 - 11</td>
</tr>
<tr>
<td>Scales below lateral line</td>
<td>27.5</td>
<td>27.5</td>
<td>28 - 29</td>
</tr>
<tr>
<td>Total gill rakers</td>
<td>34</td>
<td>36</td>
<td>37 - 38</td>
</tr>
<tr>
<td>Head length</td>
<td>36.7</td>
<td>38.1</td>
<td>37.2 - 38.1 (37.7)</td>
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<td>Body width</td>
<td>-</td>
<td>-</td>
<td>18.8 - 20.8 (19.7)</td>
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<tr>
<td>Body depth</td>
<td>51.1</td>
<td>54.4</td>
<td>49.8 - 53.8 (51.5)</td>
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<td>-</td>
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<td>20.4</td>
<td>20.4</td>
<td>20.2 - 21.2 (20.6)</td>
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<tr>
<td>Pectoral fin length</td>
<td>33.9</td>
<td>29.9</td>
<td>33.6 - 35.3 (34.3)</td>
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<td>Pelvic fin spine length</td>
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<td>16.3</td>
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<tr>
<td>Pelvic fin length</td>
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<td>29.9</td>
<td>30.5 - 32.1 (31.1)</td>
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<td>Anal fin base</td>
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<td>21.9 - 22.6 (22.3)</td>
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<td>7.2</td>
<td>7.0 - 7.6 (7.3)</td>
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<td>Anal fin spine length II</td>
<td>11.2</td>
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<tr>
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<td>15.8</td>
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<td>Longest anal fin soft ray</td>
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<td>-</td>
<td>24.5 - 28.0 (26.2)</td>
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<td>40.9</td>
<td>34.1 - 40.12 (37.5)</td>
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<td>Caudal concavity</td>
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<td>40.5</td>
<td>17.0 - 19.8 (18.3)</td>
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<td>63.7 - 67.4 (66.1)</td>
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<tr>
<td>Longest dorsal fin soft ray</td>
<td>-</td>
<td>-</td>
<td>26.8 - 32.3 (28.8)</td>
</tr>
</tbody>
</table>
New record of Meganthias kingyo… (Peristiwady et al.,)  

Dorsal fin spine length I  6.3  5.8  5.9 - 6.7 (6.3)  5.5 - 7.6 (6.6)
Dorsal fin spine length II  8.6  10.2  9.2 - 10.1 (9.7)  10.3 – 11.0 (10.7)
Dorsal fin spine length III  12.1  12.8  11.7 - 14.1 (13.3)  14.3 - 16.3 (14.9)
Dorsal fin spine length IV  12.4  14.4  13.9 - 15.3 (14.6)  15.8 - 17.5 (16.4)
Dorsal fin spine length X  13.3  13.8  12.6 - 15.5 (14.3)  13.7 - 16.2 (15.0)
Snout length  10.4  9.5  8.7 - 9.3 (9.1)  7.7 – 9.0 (8.4)
Eye diameter  9.8  11.1  10.0 - 12.6 (11.2)  11.8 - 13.8 (13.0)
Interorbital width  12.9  11.9  11.6 - 13.1 (12.3)  11.9 - 12.3 (12.0)
Maxillary length  18.3  18.4  13.01 - 17.3 (16.0)  12.1 - 17.6 (14.8)

**Figure 2.** Ratio of body depth, head length, caudal peduncle depth, anal fin length, caudal fin length and longest dorsal fin length in *Meganthias kingyo* (male: ⊙, female: ○), *M. filiferus* (△), *M. natalensis* (□) and *M. carpenter* (●).

**Distribution**

*Meganthias kingyo* has been reported from Houzan-sone, off Miyako and Yaeyama Islands, Okinawa, Japan (Kon *et al.*, 2000) and is now recorded from off Lembeh Island, North Sulawesi, Indonesia.
Remarks

The measurements of the Indonesia specimens are identical to the original description of *Meganthias kingyo* (Kon et al., 2000) with regard to head length, body depth, caudal peduncle depth, caudal peduncle length and interorbital width. However, the percentage of the dorsal fin spine length, anal fin spine length and caudal fin length does not conform to the percentage measurements of the type specimens. These differences, however, may be due to the size of the specimens observed in the current study.

The colouration of fresh specimens is identical to that of type specimens. The current specimens reported from Indonesia are thus identified as *Meganthias kingyo* (Kon, Yoshino and Sakurai, 2000).

*Meganthias kingyo* is most similar to *M. natalensis*, in sharing the following characters: dorsal fin soft rays 17 or 18, anal fin soft rays 9, pored lateral line scales 46 or 47, 9 1/2 or 10 1/2 scale rows above lateral line to origin of dorsal fin and gill rakers 11-12 + 25-26. It differs from the later in having outer margin of the soft anal fin vertical (vs. gently convex *M. natalensis*) and scattered dark brown spots on the body in female (vs. spots absent in *M. natalensis*) (Kon et al., 2000). Compared to *M. filiferus* and *M. carpenteri*, it is also different in the following characteristics: body depth (Fig. 2A), head length (Fig. 2B), caudal peduncle depth (Fig. 2C), anal fin length (Fig. 2D), caudal fin length (Fig. 2E) and longest dorsal fin length (Fig. 2F).

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New record of Meganthias kingyo… (Peristaniady et al.,)

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