First Japanese Record of the Fivebar Grouper *Epinephelus kupangensis* (Perciformes: Serranidae)

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(Received 9 July 2019; Accepted 20 November 2019)

Epinephelus kupangensis Tucker, Kurniasih, and Craig, 2016, previously known from the Indo-West Pacific as far north as Taiwan, was recorded from Japan for the first time on the basis of two specimens (98.1–384.6 mm SL) collected from Tosa Bay, Kochi and Okinawa prefectures. The Kochi specimen had been previously reported as the first Japanese specimen of “Kokuten-aohata”, *Epinephelus amblycephalus* (Bleeker, 1857). *Epinephelus kupangensis* differs from the latter in having slightly lower numbers of lateral-line scales (46–49 vs. 48–51) and lateral scale series 91–99 (vs. 103–120), and lacking a U-shaped white marking dorsolaterally on the head and a white band below the orbit (vs. both present). The standard Japanese name “Kokuten-aohata” should be applied to *E. kupangensis*, the new standard Japanese name “Yahazu-aohata” being proposed for *E. amblycephalus*.

Key Words: Teleostei, Epinephelinae, *Epinephelus amblycephalus*, distribution, northernmost record.

Introduction

Epinephelus Bloch, 1793, the most speciose genus in the family Serranidae, includes 92 valid species worldwide (Randall and Heemstra 1991; Craig *et al.* 2011; Tucker *et al.* 2016; Frable *et al.* 2019; Johnson and Worthington Wilmer 2019), 44 of which have been recorded in Japanese waters (Senou 2013; Fujiwara *et al.* 2015; Nakamura *et al.* 2018).

A single small specimen [BSKU 7442 (98.1 mm standard length)] obtained at the Mimase Fish Market, Kochi, Japan was identified as *Epinephelus diacanthus amblycephalus* (Bleeker, 1857) by Kamohara (1957), who proposed the standard Japanese name “Kokuten-aohata” for the species. Motomura *et al.* (2007) later reviewed the Japanese records of *E. amblycephalus* and regarded Kamohara’s (1957) record as the first of the species for Japan. Recently, Tucker *et al.* (2016) described the new species *Epinephelus kupangensis*, considered closely related to and formerly treated as *E. amblycephalus*, on the basis of nine specimens from various localities in the eastern Indian and western Pacific oceans (north to Taiwan). The Kochi specimen, herein re-identified as *E. kupangensis*, represents the first Japanese and northernmost records of the species. In addition, a single specimen obtained from Okinawa Prefecture, Japan was also identified as the species. These specimens were described herein in detail.

Materials and Methods

Counts and measurements followed Heemstra and Ran-

dall (1993). Measurements were made to the nearest 0.1 mm with needle-point calipers. Standard, total, and head lengths are abbreviated as SL, TL, and HL, respectively. Morphometric and meristic data for *E. amblycephalus* presented in this study were taken from eight specimens (listed below). The examined specimens are deposited at the Laboratory of Marine Biology, Faculty of Science and Technology, Kochi University, Kochi (BSKU), Kagoshima University Museum, Kagoshima (KAUM) and Okinawa Churashima Research Center, Okinawa Churashima Foundation, Motobu (OCF). In the description of *E. kupangensis*, data for the smaller specimen (BSKU 7442, 98.1 mm SL) presented first, followed by that for the larger specimen (OCF-P 20130731–2, 384.6 mm SL) in parentheses (if different). A photograph examined here is registered in the Image Database of the Kanagawa Prefectural Museum of Natural History (KPM-NR). The registration numbers of KPM-NR are expressed in seven figures, including a preceding zero (e.g., KPM-NR 0157743) on the museum database, but the latter was omitted here.

Epinephelus kupangensis Tucker, Kurniasih, and Craig, 2016
[English name: Fivebar Grouper;
standard Japanese name: Kokuten-aohata]
(Figs 1, 2A, B, E, F, 3; Tables 1, 2)

Epinephelus diacanthus amblycephalus (not of Bleeker): Masuda 1942: 123, pl. 5, upper (Taiwan; specimen: ZUMT 39148); Kamohara 1957: 76 (Kochi, Japan; specimen: BSKU 7442).

Epinephelus amblycephalus (not of Bleeker): Randall and Heemstra 1991: 5, pl. 7C (in part; Negros, Philippines);

Heemstra and Randall 1993: 109, pl. 7f (in part; Negros, Philippines); Motomura *et al.* 2007: 50 (in part; Taiwan and Kochi, Japan; specimens: BSKU 7442 and ZUMT 39148).

Epinephelus kupangensis Tucker, Kurniasih, and Craig, 2016: 658, fig. 1 (type locality: Sahul Banks, Timor Sea).

Material examined. Two specimens: BSKU 7442, 98.1 mm SL (121.1 mm TL), Tosa Bay, Kochi, Japan (obtained at Mimase Fish Market, Kochi), K. Amaoka, 26 August 1957; OCF-P 20130731–2, 384.6 mm SL (470.3 mm TL), Okinawa-jima island, Okinawa Islands, Ryukyu Is-

lands, Okinawa, Japan, Y. Sakurai, 21 June 2013.

Description. Morphometrics and selected meristics are shown in Tables 1 and 2. Body oblong, somewhat compressed; dorsal profile of head and body elevated from snout to fourth dorsal-fin base, thereafter lowering to caudal peduncle; ventral profile of body lowering from lower-jaw tip to between pelvic-fin insertion and anus, thereafter elevated to caudal-fin base. Eye and pupil rounded. Anterior and posterior nostrils close together; anterior nostril [greatest diameter 9.0% (5.5%) of orbit diameter] with a short tube lacking dermal flap (present), uppermost margin level with dorsal margin (middle) of pupil, nostril slightly smaller than

Table 1. Morphometric values (expressed as percentages of standard length) of specimens of *Epinephelus kupangensis* and *E. amblycephalus* (means given in parentheses).

	<i>E. kupangensis</i>			<i>E. amblycephalus</i>
	Present study		Tucker <i>et al.</i> (2016)	Present study
	BSKU 7442	OCF-P 20130731–2	Type series (<i>n</i> =9)	(<i>n</i> =8)
Standard length (mm; SL)	98.1	384.6	165.0–391.0 (301.1)	23.4–319.7 (158.0)
% SL				
Body depth	36.8	34.9	36.1–38.6 (37.4)	36.1–40.1 (38.3)
Body width	16.9	18.2	18.7–20.9 (19.5)	13.2–21.8 (17.7)
Head length	42.5	44.1	43.3–47.2 (45.4)	41.3–45.7 (43.5)
Snout length	9.7	10.5	8.3–10.4 (9.8)	7.7–11.5 (10.0)
Orbit diameter	10.3	9.0	8.9–9.7 (9.3)	7.0–12.3 (9.2)
Preorbital depth	2.6	2.6	3.0–3.6 (3.3)	2.1–5.4 (4.0)
Interorbital width	5.6	5.9	5.2–7.2 (6.2)	5.7–8.5 (7.1)
Maxilla width	6.1	6.1	5.6–6.6 (6.0)	5.3–6.3 (5.8)
Upper jaw length	20.1	18.7	19.5–20.6 (19.9)	19.5–21.1 (20.5)
Lower jaw length	19.2	18.2	19.6–21.3 (20.6)	20.6–21.9 (21.4)
Caudal peduncle depth	10.7	10.5	10.3–12.1 (11.1)	10.3–11.3 (10.8)
Caudal peduncle length	17.2	17.3	15.0–16.0 (15.6)	12.8–17.0 (15.5)
Pre-dorsal-fin length	38.1	38.5	35.8–42.4 (39.4)	35.3–42.3 (37.8)
Pre-anal-fin length	74.3	74.4	46.2–77.7 (67.2)	62.4–78.2 (69.7)
Pre-pelvic-fin length	48.3	43.3	37.9–46.0 (41.3)	36.3–42.1 (39.1)
Dorsal-fin base length	54.0	55.2	50.4–65.3 (57.2)	54.5–61.0 (58.3)
1st dorsal-fin spine length	7.4	6.3	—	5.8–11.1 (8.4)
2nd dorsal-fin spine length	13.0	11.5	—	12.2–19.5 (14.1)
3rd dorsal-fin spine length	15.7	13.7	—	13.7–17.9 (15.2)
4th dorsal-fin spine length	14.8	12.5	—	13.6–17.7 (15.3)
5th dorsal-fin spine length	13.7	12.8	—	12.2–17.7 (15.0)
6th dorsal-fin spine length	14.3	12.1	—	13.1–15.5 (14.1)
7th dorsal-fin spine length	14.2	11.8	—	12.5–16.1 (13.8)
8th dorsal-fin spine length	12.7	10.4	—	11.9–15.7 (13.4)
9th dorsal-fin spine length	11.8	9.7	—	11.4–14.8 (13.1)
10th dorsal-fin spine length	13.0	9.4	—	10.4–15.1 (12.3)
11th dorsal-fin spine length	11.9	9.8	—	10.5–14.2 (12.5)
Longest dorsal-fin spine length	15.7 (3rd)	13.7 (3rd)	12.6–15.9 (14.3)	14.4–19.5 (16.4)
Longest dorsal soft ray length	17.7 (5th)	15.2 (5th)	13.2–18.9 (15.5)	16.0–20.3 (17.6)
Anal-fin base length	15.8	15.6	14.3–16.5 (15.5)	14.7–19.7 (17.0)
1st anal-fin spine length	9.8	5.5	—	4.4–10.9 (7.2)
2nd anal-fin spine length	14.5	10.3	—	10.8–16.5 (13.7)
3rd anal-fin spine length	15.1	10.9	10.0–16.6 (12.3)	10.8–16.5 (13.0)
Longest anal-fin soft ray length	19.2 (3rd)	16.8 (3rd)	14.7–19.6 (17.6)	17.4–22.0 (19.5)
Caudal-fin length	24.4	23.2	21.8–28.5 (23.9)	21.5–25.9 (23.4)
Pectoral-fin length	25.5	23.9	24.1–27.9 (25.7)	20.6–24.6 (23.5)
Pelvic-fin length	19.6	18.1	16.6–22.9 (18.7)	21.1–23.8 (22.1)
Pelvic-fin spine length	13.2	10.2	10.2–13.5 (11.4)	11.7–17.6 (13.7)

Table 2. Frequency distribution of selected meristic values of *Epinephelus kupangensis* and *E. amblycephalus*.

	Pectoral-fin rays (both sides)**			Lateral-line scales								Lateral scale series									
	18/18	18/19	19/19	46	47	48	49	50	51	52	91	92	97	98	99	103	105	112	114	116	118
<i>E. kupangensis</i> *	2 ^{K, O}			1	3	6 ^{K, O}	1				2 ^K	1	3 ^O	2	3						
<i>E. amblycephalus</i>		2	6			1		3	2	1						2	1	1	1	1	1

* Including data from Tucker *et al.* (2016). ** In *E. kupangensis*, 18 and 16 on left side in 6 and 3 specimens, respectively (Tucker *et al.* 2016).

^K Including Kochi specimen (BSKU 7442), ^O including Okinawa specimen (OCF-P 20130731–2).

posterior nostril [greatest diameter 12.4% (9.8%) of orbit diameter]; posterior nostril oval, uppermost margin slightly above dorsal margin of pupil. Mouth large, terminal; posterior edge of maxilla with rounded corner, slightly extended posteriorly beyond vertical through posterior margin of pupil; anterior tip of lower jaw slightly anterior to upper jaw. Single outer row of conical teeth and inner villiform teeth band on upper jaw; vomer with chevron-shaped patch of villiform teeth; palatine with narrow villiform teeth bands; a particularly large canine tooth anteriorly on each upper jaw; 2 or 3 rows of conical teeth in bands on lower jaw. Gill rakers on upper limb short, with slightly rounded tips; rakers on lower limb long and slender. Posterior margin of preopercle with 34 (52) fine serrae and 4 prominent spines at angle; lower margin smooth, without serrae. Opercle with three flat spines; uppermost spine small (not obvious), middle and lower spines large, blunt; posterior and lower margins of opercle smooth, without serrae. Scales covering most of head and body weakly ctenoid, particularly large on opercle, absent on jaws, smallish and weakly ctenoid on anterior of orbit, interorbit, and bases of dorsal fin spines, dorsal fin soft rays, and pectoral, pelvic, and caudal fins. Lateral line slightly arched from upper opercle to pectoral region; lateral-line scales and other lateral body scales similarly sized.

Dorsal-fin origin slightly anterior to vertical through pectoral-fin base; end of dorsal-fin base posterior to vertical through posterior end of anal-fin base; membranes of spinous portion moderately incised; 1st dorsal-fin spine 1.8 times in 2nd spine; 2nd spine 1.2 times in 3rd spine; 3rd spine longest, 2.7 (3.2) times in head length; 5th dorsal-fin soft ray longest, 2.4 (2.9) times in head length. Anal-fin origin below 2nd (3rd) dorsal-fin soft ray base; end of anal-fin base below 12th (13th) dorsal-fin soft ray base; 1st anal-fin spine 1.5 (1.9) times in 2nd spine; 2nd spine 1.0 (1.1) times in 3rd spine; 3rd spine longest, 2.8 (4.1) times in head length; 3rd anal-fin soft ray longest, 2.2 (2.6) times in head length. Origin of pectoral fin below 2nd (3rd) dorsal-fin spine base; posterior margin of pectoral fin rounded, reaching to vertical through 10th dorsal-fin spine base (not reaching to anus); all pectoral-fin soft rays branched, except short uppermost and lowermost rays. Pelvic-fin origin slightly posterior to vertical through dorsal-fin origin; tip of depressed fin reaching to anus, but not reaching to vertical through posterior tip of pectoral fin; lower half of last soft ray connected to abdomen by membrane. Caudal fin rounded.

Fresh coloration Based on photograph of OCF-P 20130731–2 when fresh (KPM-NR 157743; Fig. 1B). Head and body brown, reddish ventrally. Four broad (width sub-

equal to orbit diameter) blackish-brown bands on trunk, 5th band on caudal peduncle; 1st band below 3rd to 6th dorsal-fin spine bases; 2nd below 7th to 10th dorsal-fin spine bases; 3rd below 3rd to 8th dorsal-fin soft ray bases, ventrally reaching anterior portion of anal-fin base; 4th below 10th to 14th dorsal-fin soft ray bases; 5th broadly saddling caudal-fin base. Body bands extending dorsally onto dorsal fin, ventrally onto anal fin. Pale interspace between 3rd and 4th bands much narrower than other interspaces. Short, faint, unobvious brown band saddling nape above opercle. No band below orbit. Small, indistinct orange brown to blackish-brown spots along inner edges of bands on nape and body; 3 spots scattered on pale interspace between 1st and 2nd bands. Four spots along posterior margin of orbit; 2 spots along upper portion of preopercle; *ca.* 7 spots scattered on opercle. Dorsal-fin membranes pale brown. Edges of soft-rayed portions of dorsal and anal fins moderately brown-tinged but without distinct spots. Anal- and pelvic-fin membranes reddish brown, without spots. Pectoral fin moderately reddish-tinged, without spots. Caudal fin blackish-brown, slightly reddish-tinged ventrally; posteriorly black-tinged, without spots. Fresh coloration of smaller specimen (98.1 mm SL, BSKU 7442) is unknown.

Coloration of preserved specimen (Fig. 1A). Head and body creamy-white (blackish-brown), paler ventrally. Four broad (width subequal to orbit diameter) brown bands on trunk, 5th band on caudal peduncle; 1st band below 3rd to 5th (3rd to 6th) dorsal-fin spine bases; 2nd below 7th to 10th (7th to 10th) dorsal-fin spine bases; 3rd below 3rd to 8th dorsal-fin soft ray bases, ventrally reaching anterior portion of anal-fin base; 4th below 10th to 14th dorsal-fin soft ray bases; 5th broadly saddling caudal-fin base. Body bands extending dorsally onto dorsal fin, ventrally onto anal fin. Pale interspace between 3rd and 4th bands much narrower than other interspaces. Faint brown band on interorbital space, slightly posterior to eyes (Fig. 2E, F). Short, faint brown band saddling nape above opercle (Fig. 2A, B, E, F). No band below orbit. Small, indistinct brown to blackish-brown spots along inner edges of bands on interorbital space, nape and body (spots present on pale interspace between 1st and 2nd bands); spots on dorsal and anal fins paler than on body. A pair of small, indistinct brown spots on anterior portion of interorbital space (Fig. 2E, F); 4 spots along posterior margin of orbit; 2 spots (3 on right side in smaller specimen) along upper portion of preopercle; *ca.* 6 (7) spots scattered on opercle (Fig. 2A, B). Dorsal- and anal-fin membranes creamy-white; edges of soft-rayed portions of dorsal and anal fins moderately brown-tinged but without distinct spots. Pectoral fin semi-translucent (blackish-

Fig. 1. Preserved (A) and fresh (B) specimens of *Epinephelus kupangensis* from Japan. (A) BSKU 7442, 98.1 mm SL, Kochi; (B) OCF-P 20130731-2, 384.6 mm SL, Okinawa.

brown); many indistinct, small brown spots scattered on upper half of fin (spots absent on pectoral fin). Pelvic fin blackish-brown, without spots. Caudal fin semi-translucent, with many indistinct brown spots dorsally and posteriorly (spots absent on caudal fin); posterior margin brown-(black-) tinged.

Distribution. *Epinephelus kupangensis* is distributed in the eastern Indian and western Pacific oceans, including Indonesia (Sulawesi), the Timor Sea (Sahul Banks), Fiji, the Philippines (Negros), Taiwan, and Japan (Kochi and Okinawa) (Tucker *et al.* 2016; this study). Nothing is known of the biology of the species. The collection depth of the holotype was estimated as 50–300 m depth (Tucker *et al.* 2016). The present smaller specimen (BSKU 7442) was captured by bottom trawl and landed at Mimase Fish Market, Kochi City, Japan. The present larger specimen (OCF-P 20130731-2) was obtained at a fish market in Okinawa-jima island, Japan; therefore precise collection locality and method are unknown.

Morphological changes with growth. Analysis of 25 morphometric measurements of *E. kupangensis* showed growth-related changes in the proportions of some body parts, *viz.*, pre-pelvic-fin, 3rd anal-fin spine, longest anal-fin soft ray, and pelvic-fin spine lengths all tending to decrease relative to SL with growth (Fig. 3E–G, I). A similar tendency exists in *E. amblycephalus*, *viz.*, orbit diameter and longest dorsal-fin spine, longest dorsal-fin soft ray, anal-fin base, and pelvic-fin spine lengths all becoming proportionally shorter with growth (Fig. 3B, I), whereas body depth, pre-orbital depth, and upper-jaw and pre-anal-fin lengths all tend to increase relative to SL with growth (Fig. 3A, C).

Remarks. The two specimens conformed to the following features of genus *Epinephelus*, given by Randall and Heemstra (1991) and Heemstra and Randall (1993, 1999): 11 dorsal-fin spines and 15–16 soft rays, eight anal-fin soft rays, body depth 2.7–2.9 times in SL, body depth at dorsal-fin origin greater than depth at anus, base of dorsal-fin soft-rayed portion shorter than spinous portion, and a rounded caudal

Fig. 2. Lateral (A–D) and dorsal (E–H) views of heads of preserved specimens of *Epinephelus kupangensis* (A, B, E, F) and *E. amblycephalus* (C, D, G, H), showing interspecific coloration differences. (A, E) BSKU 7442, 98.1 mm SL, Japan; (B, F) OCF-P 20130731–2, 384.6 mm SL, Japan; (C, G) BSKU 8475, 91.8 mm SL, Japan; (D, H), KAUM–I. 17230, 319.7 mm SL, Malaysia.

Fig. 3. Relationships of body depth (A), orbit diameter (B), preorbital depth (C), interorbital width (D), pre-pelvic-fin length (E), third anal-fin spine length (F), longest anal-fin soft ray length (G), pelvic-fin length (H), pelvic-fin spine length (I) (all as % SL) to standard length (mm) in *Epinephelus kupangensis* (red triangles) and *E. amblycephalus* (blue circles), showing growth-related changes and intraspecific differences. Open triangle indicates the two specimens from Kochi and Okinawa, Japan.

fin. The following features of the specimen closely matched the diagnostic features of *E. kupangensis* given by Tucker *et al.* (2016): lateral-line scales 48; lateral scale series 91–97; rounded caudal-fin; five brown bands with dark spots along the inner edges on the body; and a distinct dorsolateral U-shaped white marking absent on the head (Fig. 1).

Although most morphometric values for the two specimens agreed well with the ranges for the type series of *E. kupangensis* given by Tucker *et al.* (2016), the former differed slightly in some morphometric measurements, as follows: body depth 34.9–36.8% SL (vs. 36.1–38.6% in the latter); body width 16.9–18.2% SL (vs. 18.7–20.9%); head length 42.5–44.1% SL (vs. 43.3–47.2%); snout length 9.7–10.5% SL (vs. 8.3–10.4%); orbit diameter 9.0–10.3% SL (vs. 8.9–9.7%); preorbital depth 2.6% SL (vs. 3.0–3.6%); upper-jaw length

18.7–20.1% SL (vs. 19.5–20.6%); lower-jaw length 18.2–19.2% SL (vs. 19.6–21.3%); caudal-peduncle length 17.2–17.3% SL (vs. 15.0–16.0%); pre-pelvic-fin length 43.3–48.3% SL (vs. 37.9–46.0%); and pectoral-fin length 23.9–25.5% SL (vs. 24.1–27.9%) (Table 1). Since the present smaller specimen (98.1 mm SL) was smaller than the type series (>165.0 mm SL), as reported in the original description, such differences in morphometric values between the former and Tucker *et al.* (2016) are apparently due to growth-related changes (see Morphological changes with growth) and/or limited materials (nine type specimens) in the latter.

Moreover, the present smaller specimen of *E. kupangensis* differed slightly from the larger type specimens described by Tucker *et al.* (2016) in having dark spots on the upper portion of the pectoral and caudal fins, such markings ap-

Fig. 4. Preserved specimens of *Epinephelus amblycephalus* at different growth stages. (A) KAUM-I. 113347, 43.1 mm SL, Taiwan; (B) BSKU 8475, 91.8 mm SL, Japan; (C) KAUM-I. 17230, 319.7 mm SL, Malaysia.

parently disappearing with growth. A similar tendency was found in *E. amblycephalus*, dark spots on the soft-rayed portion of the dorsal, anal, pectoral and caudal fins in smaller specimens also disappearing with growth (Fig. 4). Moreover, among the examined specimens, small individuals (<43.1 mm SL) of *E. amblycephalus* possessed an interrupted bifurcation of the lateral white interspace on the head (Fig. 4A), a feature also apparent in juvenile Taiwanese *E. amblycephalus* figured by Lee (1990), Shen (1993) and Shen and Wu (2011).

Epinephelus kupangensis most closely resembles *E. amblycephalus* (Fig. 4), sharing similar meristics and morphometrics, and five brown bands with brown to black spots along the inner edges on the body (Randall and Heemstra 1991; Tucker *et al.* 2016). However, *E. kupangensis* differs from *E. amblycephalus*, in having slightly fewer lateral-line scales [46–49 in *E. kupangensis* vs. 48–51 (50 or 51 in Tucker *et al.* 2016) in *E. amblycephalus*] and lateral scale series [91–99 in *E. kupangensis* vs. 103–120 (110–120)] (Tucker *et al.* 2016; this study). Additionally, *E. kupangensis* tends to have a fewer number of pectoral-fin rays [16–18 (mode 18)], compared with *E. amblycephalus* [18 or 19 (19)] (Table 2).

Epinephelus kupangensis also differs from *E. amblycephalus* in having a slightly larger orbit diameter 8.9–10.3 (mean 9.4) % SL [vs. 7.0–12.3 (9.2) % SL in the latter]; lesser preor-

bital depth 2.6–3.6 (3.2) % SL [vs. 2.1–5.4 (4.0) % SL]; narrower interorbital width 5.2–7.2 (6.1) % SL [vs. 5.7–8.5 (7.1) % SL]; and shorter pelvic-fin length 16.6–22.9 (18.7) % SL [vs. 21.1–23.8 (22.1) % SL] (Tucker *et al.* 2016; this study), although such differences were not obvious in small specimens, including the present smaller specimen (Fig. 3B–D, H).

The two species can be distinguished most readily by coloration (Tucker *et al.* 2016: figs 1, 2; this study), *E. amblycephalus* possessing a dark band saddling the nape and a bifurcation of the white interspace around the nape saddle forming a distinct U-shaped marking dorsolaterally on the head (Fig. 2C, D). Such a white marking was absent (but several dark spots present) on the opercle in *E. kupangensis* (Fig. 2A, B). *Epinephelus amblycephalus* also differs from *E. kupangensis* in having a short white bar with small dark spots along its edges below the eye (Fig. 2C, D), such being absent in the latter (Fig. 2A, B). The latter also tends to have larger spots on the head and body, compared with *E. amblycephalus* (Figs 1, 2, 4).

As pointed out by Tucker *et al.* (2016), color photographs in Randall and Heemstra (1991: pl. 7C) and Heemstra and Randall (1993: pl. 7f) purporting to be *E. amblycephalus* are identical with *E. kupangensis*. Earlier, Masuda (1942) had reported a single specimen (ZUMT 39148, 170 mm TL) as *E. diacanthus amblycephalus* from Taiwan, along with a description and figure (pl. 5, uppermost fig.). However, Masuda's (1942) figure showed that the specimen lacked a U-shaped white dorsolateral marking on the head, instead possessing eight small dark spots scattered on the opercle. On that basis, the specimen is herein identified as *E. kupangensis*.

On the basis of literature records or photographs, the distribution of *E. amblycephalus* is now considered to include the following localities: Kochi, Kagoshima, and Wakayama prefectures, Japan (Kamohara 1960; Misaki 2000; Motomura *et al.* 2007); Taiwan (Burgess and Axelrod 1974; Lee 1990; Shen 1993; Shen and Wu 2011); South China Sea (Katayama 1984); Terengganu, Malaysia (Motomura and Yusuf 2011); Panay Island, Philippines (Hata 2017); northwestern Australia (Gloerfelt-Tarp and Kailola 1984; Sainsbury *et al.* 1985); Western Australia (Rome and Newman 2010); and northern Australia (Myers and Russell 2011).

Assessment of Japanese names. Kamohara (1957) originally proposed the standard Japanese name “Kokuten-aohata” for *E. amblycephalus* (as *E. diacanthus amblycephalus*), based on the present specimen from Kochi (see Motomura *et al.* 2007). However, since that specimen has been re-identified here as *E. kupangensis*, the name “Kokuten-aohata” should be applied to *E. kupangensis*. Because no other Japanese name has been applied to *E. amblycephalus*, the new standard Japanese name “Yahazu-aohata” is proposed for *E. amblycephalus*, based on KAUM-I. 52538 [“yahazu” is derived from the bifurcation of the white interspace on the head, and “Aohata” is the standard Japanese name for *Epinephelus awoara* (Temminck and Schlegel, 1842), which resembles both *E. amblycephalus* and *E. kupangensis*].

Comparative material examined. *Epinephelus ambly-*

cephalus: eight specimens, 23.4–319.7 mm SL. **JAPAN**: BSKU 8475, 91.8 mm SL, Susaki, Kochi, 4 April 1959; BSKU 93891, 23.4 mm SL, Akaoka, Konan, Kochi, 30 September 2007; KAUM–I. 821, 276.3 mm SL, off north of Koeji Beach, Oura, Minamisatsuma, Kagoshima, Japan, 31°27'N, 130°13'–14'E, 25–27 m depth, 3 October 2006; KAUM–I. 52538, 248.6 mm SL, off east coast of Nishinoomote, Tanega-shima island, Osumi Islands, Kagoshima, 30°47'N, 131°05'E, 6 December 2012. **TAIWAN**: KAUM–I. 113347, 43.1 mm SL, off Ke-tzu-liao, Ziguan, Kaohsiung. **THAILAND**: KAUM–I. 33270, 87.6 mm SL, Pak Nam Ranong fishing port, Ranong, 09°56'N, 98°35'E. **MALAYSIA**: KAUM–I. 17230, 319.7 mm SL, off Kuala Terengganu, Terengganu, 05°22'N, 103°15'E; KAUM–I. 49228, 173.5 mm SL, off Kota Kinabalu, Sabah, 06°00'N, 116°07'E.

Acknowledgments

We are grateful to members of BSKU and KAUM for collecting specimens and providing curatorial assistance; K. Miyamoto (OCF) for providing an opportunity to examine the specimen and photographs of fresh specimen; G. Hardy (Ngunguru, New Zealand) for reading the manuscript and helping with English; and H. Senou (KPM) for critical reading of this manuscript and providing an opportunity to examine the photograph deposited in KPM–NR. Malaysian specimens were collected during the JSPS (Japan Society for the Promotion of Science, Tokyo, Japan) Asian Core Program, “Establishment of Research and Education Network on Coastal Marine Science in Southeast Asia”, and the JSPS Core-to-Core Program: B Asia-Africa Science Platforms, supported by the Ministry of Higher Education (Government of Malaysia), University Putra Malaysia, and University Malaysia Terengganu. Specimens from Taiwan and Thailand were donated from the National Museum of Marine Biology & Aquarium, Taiwan and Phuket Marine Biological Center, Thailand, respectively, to KAUM.

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