

TWO NEW LABRID FISHES OF THE GENUS *HALICHOERES* FROM THE EAST INDIES

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ABSTRACT. – *Halichoeres javanicus* Bleeker and *H. exornatus* (Richardson) are confirmed as synonyms of *H. nigrescens* Bloch & Schneider. *Halichoeres erdmanni*, new species, described from 10 specimens collected from fringing reef in Berau Bay, West Papua, Indonesia, is characterized by: 6 or 7 suborbital pores; anterior lateral-line scales with two surface tubules; a pattern of irregular longitudinal rows of green and orange-pink spots on body; the female with groups of dark brown spots, one per scale, in longitudinal series; and a triangular black spot dorsally on base of pectoral fin, continuing above fin base and enclosing a small pale spot. *Halichoeres hilomeni*, described from 10 specimens from shallow reefs of the Palawan Province of the Philippines and a photographic record from Sabah, Malaysia, is distinct in having: 10–13 suborbital pores; most scales of straight anterior part of lateral with a middle surface tubule forming three short branches; green with longitudinal rows of orange-red spots, a black spot covering most of first two dorsal fin membranes, and a black spot dorsally on pectoral-fin base that narrows to a line ventrally; large males with five narrow pale green bars dorsally on body.

KEY WORDS. – Taxonomy, Labridae, *Halichoeres*, new species, western Pacific.

INTRODUCTION

The genus *Halichoeres* Rüppell is the largest genus of the family Labridae, popularly known as wrasses. Although the genus is polyphyletic (Barber & Bellwood, 2005), it has resisted the division into two or more genera because of the lack of differentiating morphological characters. In an annotated checklist of the family Labridae, Parenti & Randall (2000) included 66 species of the genus, of which four were listed as *Halichoeres* species. In addition to these four species (now named), six more species have been described to date, and two have been resurrected from synonymy. With the description of two more species in the present paper, the total number for the genus is raised to 80.

Many of the species of *Halichoeres* have one or more junior synonyms due in part to sexual dichromatism, as well as differences in colour with growth. Also, some of the earliest named fishes were inadequately described, resulting in better-differentiated species later placed in synonymy. *Halichoeres nigrescens* (Bloch & Schneider, 1801) is such a species. Parenti & Randall (2000: 22) listed 15 synonyms for this species, the highest number for the genus. They explained

that its brief original description was based on Pl. 31, Fig. 2 of Seba (1761), and no locality was given. The anal-ray count was listed as III,15, when it was actually III,12. The count of 15 was intended by Bloch & Schneider as the count of the anal spines plus the soft rays. The name *H. nigrescens* then replaced the widely used *H. dussumieri* Valenciennes in Cuvier & Valenciennes, 1839.

In a book on wrasses, Kuitert (2002: 114) erred in recognizing *Halichoeres dussumieri* as a valid species, illustrating it with five colour photographs, along with three of *H. nigrescens* on the same page. A comparison of his figures, in particular Fig. A of a male of *H. nigrescens* with Fig. B, a male identified as *H. dussumieri*, reveals that they are conspecific.

On the next page of his book, Kuitert resurrected two more species names of *Halichoeres* that Parenti & Randall (2002) listed as synonyms of *H. nigrescens*: *H. javanicus* Bleeker, type locality Java, and *H. exornatus* Richardson, type locality Hong Kong. We conclude here that *H. javanicus* and *H. exornatus* should remain as synonyms of *H. nigrescens*. However, photographs of living fish on page 115 of Kuitert's book are not *H. nigrescens*. His figures A, C, and D identified

as *H. javanicus* represent a new species of the genus, and his two figures identified as *H. exornatus* are another undescribed species. We provide here the descriptions of these two species.

We are uncertain of the identification of the species of fish illustrated in Figs. B, E, and F on page 115 of Kuitert's book on wrasses. The locality is given as Pulau Putri, one of the Seribu Islands in the Java Sea. Specimens of this species of *Halichoeres* are needed.

MATERIALS AND METHODS

Type specimens of the new species are deposited in the Bernice P. Bishop Museum, Honolulu (BPBM); Pusat Penelitian dan Pengembangan Oseanologi, Jakarta (NCIP); Museum of Natural History, University of the Philippines, Los Baños (UPLB); U.S. National Museum of Natural History, Washington DC (USNM); Western Australian Museum, Perth (WAM); and the Zoological Reference Collection, National University of Singapore (ZRC).

Lengths given for specimens are standard length (SL), the straight-line distance from the median anterior point of the upper lip to the base of the caudal fin (posterior end of hypural plate). Head length (HL) is measured from the same anterior point to the posterior end of the opercular membrane, and snout length from the same point to the fleshy edge of the orbit. Body depth is the greatest depth from the base of the dorsal spines; body width is the greatest width measured just posterior to the gill opening. Orbit diameter is the greatest fleshy diameter, and interorbital width the least bony width. Caudal-peduncle depth is the least depth; caudal-peduncle length is measured horizontally from the rear base of the anal fin to the caudal-fin base. Predorsal, preanal, and prepelvic lengths are taken from the front of the upper lip to the origin of the respective fins. Lengths of fin spines and soft rays are measured from where they emerge from the contour of the body to their tips. Pectoral-ray counts include the very short unbranched upper ray, which is easily overlooked. Lateral-line scale counts do not include the single pored scale on the base of the caudal fin. Suborbital sensory pores are counted from behind the orbit at the level of the upper edge of the pupil to below the bony anterior edge of the orbit. Gill-raker counts were made on the first gill arch and include rudiments. Only the total gill-raker count is given (it is difficult to determine which raker is at the angle in many species of labrid fishes).

Tables 1 and 2 give the measurements of the new species as percentages of the standard length. Proportional measurements in the text are rounded to the nearest 0.05. Data in parentheses in the descriptions refer to the paratypes.

STATUS OF *HALICHOERES JAVANICUS* (BLEEKER)

Bleeker (1857: 341) described *Julis (Halichoeres) javanicus* from one specimen 83 mm in total length from Karangbollong on the south coast of Java. Eschmeyer (2010) provided additional data on the type locality as follows: Karang-Bollong Bay, on northeastern tip of Nusa Kambangan Island, 4.5 km southeast to Cilacap, Jawa Tengah Province, Java, Indonesia, Eastern Indian Ocean, ~7°45'34"S 109°02'32"E. Bleeker (1862: 125, Pl. 40 Fig. 3) added Singapore as a locality and illustrated the species in colour in his *Atlas Ichthyologique*.

Kuitert (2002: 115) published six colour figures identified as *Halichoeres javanicus*, three from the Seribu Islands, Java and three from Singapore. Each of us has underwater photos like those of Kuitert's photographs from Singapore (Figs. A, C, and D of page 115) that we believed to be colour variants of *H. nigrescens*. However, we realised Kuitert's photographs might represent the true *H. javanicus*. Recent collection of specimens by the second author and Mark V. Erdmann from West Papua, Indonesia, with the same colour pattern as the three figures of *H. javanicus* in Kuitert's book provided the opportunity for comparison with Bishop Museum specimens of *H. nigrescens* from Java, Singapore, the Philippines, and Queensland. We could find no differences in fin-ray, scale, or gill-raker counts, and nothing is evident in body and fin proportions. However, a difference was found in the number of sensory pores behind and below the eye, beginning with one posterior to the upper edge of the pupil and ending below the anterior end of the orbit. The Bishop Museum specimens identified as *H. nigrescens* have 11–13 pores. The specimens from West Papua with a colour pattern like Kuitert's three figures labeled *H. javanicus* have 6 or 7 such pores. We then asked Martien van Oijen of the Nationaal Natuurhistorische Museum in Leiden to check the number of pores on the holotype of *H. javanicus* (RMNH 6581). He provided a photograph of the head (Fig. 1), which shows 11 pores. We therefore conclude that *H. javanicus* should remain a synonym of *H. nigrescens*, and that the specimens from West Papua represent an undescribed species.



Fig. 1. Head of holotype of *Halichoeres javanicus* Bleeker, RMNH 6581 (M. van Oijen).

**STATUS OF *HALICHOERES EXORNATUS*
(RICHARDSON)**

Richardson (1846: 258–259) described *Julis exornatus* from watercolour paintings by Chinese artists obtained by John Reeves, who resided in Canton, and from specimens from Hong Kong. Richardson described two colour varieties in detail from the paintings. Whitehead (1969) reproduced many of the paintings in black and white from the Reeves Collection of Chinese Fish Drawings in the Natural History Museum in London. We reproduce here, as Fig. 2, the first of two paintings used by Richardson for his *Julis exornatus*, as copied from the original by Whitehead (Pl. 24 C). Comparison is provided with the first author's photograph (Fig. 3) of a male specimen of *Halichoeres nigrescens* from Singapore (BPBM 22058, 83 mm SL). Sadovy & Cornish (2000: 207) reported *H. nigrescens* in Hong Kong as "the most abundant wrasse in shallow areas of corals and boulders in sheltered and exposed shores." We confirm the treatment by Parenti & Randall (2002) of *Julis exornatus* as a synonym of *Halichoeres nigrescens*.

***Halichoeres erdmanni*, new species**
(Figs. 4–7; Table 1)

Halichoeres javanicus (non Bleeker, 1857) Kuitert, 2002: 115, Figs. A, B, and D (Singapore).

Material examined. – Holotype – NCIP 6359, male, 68.0 mm, Indonesia, West Papua, Berau Bay, Fak Fak Peninsula, Ogar Island, east side, 2°39'S 132°30'E, 8 m, spear, M. V. Erdmann, 22 Mar.2009.



Fig. 2. Painting of *Halichoeres exornatus* Richardson (after Whitehead, 1969).



Fig. 3. *Halichoeres nigrescens*, BPBM 22058, male, 83 mm, Singapore (J. E. Randall).

Paratypes. – BPBM 41023, 2: 47.4–64.1 mm, Indonesia, West Papua, West Eil Island, Ogar Island, NW side, 2°36.668'S 132°23.649'E, 8–10 m, spear, G.R. Allen, 15 Jan.2008; WAM P.32949.002, 3: 47.3–72.2 mm, same data as preceding; NCIP 6360, 58.8 mm, WAM P.33092.001, 52.2 mm, ZRC 52034, 65.5 mm, and USNM 398522, 64.7 mm, all with same data as holotype.

Diagnosis. – Dorsal rays IX,11; anal rays III,10–12 (usually 11); pectoral rays 14 (including very small uppermost ray); lateral-line scales 27 (one of ten with 28); head naked; nape fully scaled; most scales of straight anterior part of lateral line with two diverging surface tubules ending in a pore; suborbital pores 6 or 7; gill rakers 18–20; body depth 3.2–3.45 in SL; head length 2.9–3.0 in SL; snout length 2.85–3.25 in head length; dorsal spines progressively longer, the ninth 2.7–3.3 in head length; caudal fin slightly rounded, 1.35–1.45 in head length. Colour of small adults in alcohol: dorsal half of body with alternating dusky and pale stripes following longitudinal scale rows anteriorly, the pale stripes centred along scales, changing posterior to pectoral fins to a pale spot on each scale; six groups of three to eight small dark spots (one per scale) along side of body, the first beginning above outer part of pectoral fin; nape with small dark spots; a vertically elongate dark spot posteriorly on opercular flap; a dark band on side of snout from eye to base of upper lip; triangular black spot dorsally on base of pectoral fin, continuing above fin base and enclosing a small pale spot; an irregular black spot in dorsal fin between fifth and seventh spines; fins otherwise pale except for scaled basal part of caudal fin coloured like body. Large males lose the groups of small dark brown spots on the body. Largest specimen, 72.2 mm SL.

Description. – Dorsal rays IX,11; anal rays III,10 (11, except one with 12); all dorsal and anal rays branched, the last to base; pectoral rays 14, uppermost rudimentary, second unbranched; pelvic rays I,5; principal caudal rays 14, upper and lower unbranched; upper procurrent caudal rays 6; lower procurrent caudal rays 5; lateral-line scales 27 (one with 28), plus 1 pored scale on caudal-fin base; scales above first lateral-line scale to base of second dorsal spine 3.5; scales above lateral line to base of ninth dorsal spine 2.5; scales below lateral line to base of first anal spine 8.5; circumpeduncular scales 20; gill rakers 20 (18–20); branchiostegal rays 5; vertebrae 25.

Body depth 3.25 (3.2–3.55) in SL; body moderately compressed, width 1.95 (1.95–2.25) in body depth; head



Fig. 4. Holotype of *Halichoeres erdmanni*, male, NCIP 6359, 68 mm, West Papua, Indonesia (H. A. Randall).

Table 1. Proportional measurements of type specimens of *Halichoeres erdmanni* as percentages of the standard length.

	Holotype			Paratypes				
	NCIP 6359	BPBM 41023	WAM P.33092	WAM P.32949	NCIP 6360	BPBM 41023	ZRC 52034	WAM P.32949
Sex	male	female	female	male	female	male	male	male
Standard length (mm)	68.0	47.4	52.2	53.5	58.8	64.1	65.5	72.2
Body depth	30.7	29.6	29.1	29.7	29.5	29.1	30.5	31.3
Body width	15.6	14.6	13.4	14.5	13.0	13.2	15.5	15.2
Head length	33.5	34.7	34.6	33.8	33.7	34.4	33.7	33.5
Snout length	11.2	11.4	10.7	10.8	10.4	11.2	11.1	12.0
Orbit diameter	7.3	9.1	9.0	8.7	8.4	7.8	7.3	6.9
Interorbital width	6.3	6.7	6.7	6.5	6.6	6.4	6.3	6.9
Upper-jaw length	10.1	10.3	9.9	9.8	9.5	9.4	10.0	10.4
Caudal-peduncle depth	16.1	15.0	16.3	16.7	15.1	16.4	15.9	16.5
Caudal-peduncle length	10.5	10.6	10.5	10.5	10.9	10.3	damaged	9.8
Predorsal length	32.5	32.5	33.7	32.9	33.3	33.5	32.3	32.0
Preanal length	54.3	56.3	53.9	56.1	54.5	55.0	56.3	54.2
Prepelvic length	33.7	32.6	32.3	32.8	33.0	33.2	34.2	34.9
Base of dorsal fin	60.3	58.0	59.5	58.8	58.5	60.6	58.7	61.3
First dorsal spine	6.2	6.4	6.0	6.2	6.1	6.3	6.1	broken
Ninth dorsal spine	11.9	10.6	11.1	11.6	11.4	11.8	12.4	12.5
Longest dorsal ray	14.7	13.2	13.2	15.0	14.1	14.8	14.2	14.8
Base of anal fin	34.2	33.8	32.7	34.4	33.6	34.6	damaged	36.1
First anal spine	4.0	3.9	3.4	3.8	5.0	4.7	4.5	4.9
Third anal spine	8.6	8.5	8.7	9.0	8.8	8.6	9.0	8.5
Longest anal ray	12.8	12.6	12.6	13.9	12.9	13.8	12.8	13.8
Caudal-fin length	23.7	24.6	24.7	24.6	23.8	24.0	23.5	23.7
Pectoral-fin length	20.6	20.9	21.2	21.5	22.0	21.2	20.2	22.3
Pelvic-spine length	11.9	11.8	11.5	12.7	broken	12.4	broken	12.5
Pelvic-fin length	18.1	18.4	17.8	18.0	damaged	19.1	damaged	20.3

length 3.0 (2.9–3.0) in SL; snout length 3.0 (2.85–3.25) in head length; orbit diameter 4.6 (3.8–4.85) in head length; interorbital space convex, the least width 5.3 (4.85–5.4) in head length; caudal-peduncle depth 2.1 (2.05–2.3) in head length; caudal-peduncle length 3.2 (3.1–3.4) in head length.

Mouth terminal, a little oblique, upper-jaw length 3.3 (3.2–3.65) in head length; 10 strong, close-set, conical teeth in outer row on side of upper jaw, and 11 in lower jaw, progressively longer and more jutting anteriorly, the anterior three slightly recurved; anteriormost tooth in jaws a canine about three-fourths pupil diameter in length; lower pair of canines fitting inside upper pair when mouth closed; a canine posteriorly on upper jaw, its length about half pupil diameter;



Fig. 5. *Halichoeres erdmanni*, juvenile, Singapore (J. E. Randall).



Fig. 6. *Halichoeres erdmanni*, female, Gulf of Thailand (J. E. Randall).

inner row of small nodular teeth in both jaws. Tip of tongue narrowly rounded, reaching only corner of jaws. Lips large, fleshy, and deeply furrowed medially; median dorsal length of upper lip equal to pupil diameter; curving labial flap on side of lower jaw about half pupil diameter at its greatest depth. Gill rakers short, the longest about one-third length of longest filaments on first gill arch.

Anterior nostril a very small tubule, a little above level of middle of eye, about two-thirds pupil diameter anterior to edge of orbit; posterior nostril a short oblique slit, one-half pupil diameter dorsoposterior to anterior nostril. Suborbital pores 7 (6 or 7); pores of preopercular-mandibular series 14.

Scales cycloid; lateral line continuous, deflected downward below last two dorsal soft rays to straight peduncular part; scales of straight portion of lateral line mostly with two surface tubules that diverge to a V-shape (the angle progressively less posteriorly), each ending in a pore; down-curved and peduncular part of lateral line with a single straight tubule ending in a pore; nape fully scaled, the scales progressively smaller and more embedded anteriorly, in about nine oblique rows, nearly reaching a vertical at posterior edge of orbit; scales of prepelvic area progressively smaller anteriorly, nearly reaching gill opening, about 10 in midventral series; no scales on base of dorsal, anal, and paired fins, except for a scaly process of a terminal tapering scale and two small basal scales at midbase of pelvic fins; basal third of caudal fin with four vertical rows of scales, progressively smaller posteriorly.

Origin of dorsal fin above first lateral-line scale, predorsal length 3.2 (2.95–3.2) in SL; dorsal spines progressively longer, the first 5.4 (5.4–5.75) in head length, and ninth 2.8 (2.7–3.3) in head length; first to third dorsal soft rays longest, 2.3 (2.25–2.6) in head length; origin of anal fin below base of ninth dorsal spine, preanal length 1.85 (1.8–1.85) in SL; first anal spine very slender and short, 8.4 (6.75–10.0) in head length; third anal spine 3.95 (3.7–4.1) in head length; first to fifth anal soft rays longest, 2.6 (2.4–2.75) in head length; caudal fin slightly rounded, 1.4 (1.35–1.45) in head length; third pectoral ray longest, 1.6 (1.5–1.65) in head length; origin of pelvic fins below upper edge of pectoral-fin base, prepelvic length 2.95 (2.9–3.1) in SL; pelvic fins short, not

reaching anus, 1.85 (1.65–1.95) in head length (longest in largest male).

Colour of holotype in alcohol: dorsal half of body with alternating dusky and pale stripes following scale rows, the pale stripes centred along scales, changing posterior to pectoral fins to a pale spot on each scale; six groups of three to eight small dark spots (one per scale) along side of body, the first above outer part of pectoral fin; nape with small dark spots; a vertically elongate dark spot posteriorly on opercular flap; dark band on side of snout from eye to base of upper lip; triangular black spot dorsally on base of pectoral fin, continuing above fin base and enclosing a small pale spot; irregular black spot in dorsal fin between fifth and seventh spines of male specimens; fins otherwise pale except for scaled basal part of caudal fin coloured like body; peritoneum white.

The life colour of the holotype was not recorded, but Figs. 5–7 provide the colour of individuals estimated to be about 50, 65, and 70 mm SL.

Etymology. – This species is named in honour of our esteemed colleague Mark V. Erdmann, who collected the holotype and three of the paratypes.

Remarks. – The localities for this species include the northern Gulf of Thailand, Singapore, and Berau Bay, West Papua, Indonesia, all areas of protected seas. The sea was murky where underwater photographs were taken in Singapore and the Gulf of Thailand. Ogar Island, the type locality, is one of the Sariga Islands, which lie 3–8 km off the dense mangrove shore of Berau Bay, West Papua. The coast of the islands is a combination of mangrove, rocky shore, and an occasional sand beach. The inshore habitat of the islands consists of low-diversity, fringing coral reef exposed to turbidity and siltation. The underwater visibility was often less than 3 m, and the tidal current can be very strong. The species was observed at depths of 8–25 m.

Halichoeres erdmanni is distinguished from *H. nigrescens* by having one fewer dorsal and anal soft rays (11 for *H. erdmanni* and 12 for *H. nigrescens*) and in the number of suborbital sensory pores. Our ten specimens of *H. erdmanni* have 6 or 7 pores, compared to 11 to 13 for 20 specimens of *H. nigrescens* from the Philippines, Singapore, Java, and Queensland. Also, most of the anterior scales of the straight portion of the lateral line of *H. erdmanni* have two surface tubules that diverge to a V-shape, ending in a pore, whereas most of the anterior scales of *H. nigrescens* have three long surface tubules that diverge from a common base. In addition, there are obvious differences in colouration. *H. nigrescens* lacks the groups of small dark spots along the body as seen in the female of *H. erdmanni*, and *H. erdmanni* lacks the row of four or five white spots along the midside of the body that may be seen on adults of *H. nigrescens*.

Halichoeres erdmanni appears to be most closely related to the Indo-Malayan *H. binotopsis* (Bleeker), sharing the same meristic data and similarity in colour pattern, such as the series



Fig. 7. *Halichoeres erdmanni*, male, Ogar Island, West Papua, Indonesia (G. R. Allen).

of small dark spots on the body of juveniles and females. The dark spots in *H. binotopsis* are evenly spaced to form continuous broad bars that extend nearly across the body. The spots in *H. erdmanni* form clumps instead of continuous bars. The males of *H. binotopsis* differ mainly in having six narrow green bars on the upper half of the body.

Material of *Halichoeres nigrescens* examined. – Philippines: Mindanao, BPBM 20688, 2: 65–78 mm. Singapore: BPBM 22058, 12: 46–107 mm. Indonesia: Java, BPBM 29301, 65 mm. Australia: Queensland, Cooktown, BPBM 31726, 5: 33–82 mm.

Material of *Halichoeres binotopsis* examined. – Philippines: Cebu, Mactan Island, BPBM 22086, 6: 47–65 mm. Singapore: BPBM 22039, 84 mm. Indonesia: Flores, BPBM 36692, 2: 84–86 mm.

***Halichoeres hilomeni*, new species**

(Figs. 8–12; Table 2)

Halichoeres exornatus (non Richardson, 1846) Kuitert, 2002: 115, Figs. A, B. Philippines and Borneo, Malaysia.

Material examined. – Holotype – UPLB 498, male, 95.6 mm, Philippines, Palawan Province, Dibuluan Island, Bacuit Bay, southern end of bay, 12.8 km south of town of El Nido, 11°04.320'N 119°22.301'E, reef, 1–3 m, spear, M. V. Erdmann, 12 Jun.2008.

Paratypes. – BPBM 41024, 2: 55.0–91.5 mm; UPLB 495, 75.5 mm; UPLB 500, 45.6 mm; USNM 398628, 2: 73.5–81.3 mm; WAM P.33270.001, 2: 57.7–77.9 mm; ZRC 52402, 59.4 mm, all with same data as holotype.

Diagnosis. – Dorsal rays IX,12; anal rays III,12; pectoral rays 14; lateral-line scales 27; head naked; nape fully scaled; most scales of straight anterior part of lateral with a middle surface tubule forming three short branches ending in a pore, the middle branch usually longest; suborbital pores 10–13; gill rakers 18–20; body depth 3.15–3.6 in SL; head length 2.9–3.0 in SL; snout length 2.85–3.25 in head length; dorsal spines progressively longer posteriorly, the last three subequal, 2.85–3.4 in head length; caudal fin moderately rounded, 1.35–1.5 in head length; upper half of body dark

brown, males with five narrow pale bars extending from base of dorsal fin; lower half of body pale brown, the centres of scales darker; a dark brown band from upper lip to lower half of orbit, extending posterior to eye, half as broad, to base of opercular flap; three narrow dark bars extending dorsally from postorbital band, the first black and vertical, just behind eye, the posterior two bands irregular; a boomerang-shaped dark brown band extending posteriorly from behind corner of mouth across cheek; fins translucent pale yellowish, the dorsal with a broad black band across middle of first two membranes; rest of fin with longitudinal rows of faint, dark-edged, pale spots (three per membrane); anal fin with a row of faint, dark-edged, pale spots along base; caudal fin with faint transverse bands; paired fins pale, the pectorals with a triangular black spot dorsally on base, narrowing to a line across remainder of base; peritoneum dark brown. Largest specimen, 95.6 mm SL.

Description. – Dorsal rays IX,12; anal rays III,12 (one with 10, the fin deformed); all dorsal and anal rays branched, the last to base; pectoral rays 14, uppermost rudimentary, second unbranched; pelvic rays I,5; principal caudal rays 14, upper and lower unbranched; upper procurrent caudal rays 7; lower procurrent caudal rays 6; lateral-line scales 27, plus 1 pored scale on caudal-fin base; scales above first lateral-line scale to base of second dorsal spine 3.5; scales above lateral line to base of ninth dorsal spine 2.5; scales below lateral line to base of first anal spine 8.5; circumpeduncular scales 20; gill rakers 19 (18–20); branchiostegal rays 5; vertebrae 25.

Body depth 3.15 (3.15–3.6) in SL; body moderately compressed, width 2.3 (2.0–2.3) in body depth; head length 2.9 (2.9–3.0) in SL; snout length 3.05 (2.85–3.15) in head length; orbit diameter 5.4 (4.55–5.3) in head length; interorbital space convex, least width 5.4 (5.0–5.4) in head length; caudal-peduncle depth 2.0 (1.95–2.1) in head length; caudal-peduncle length 4.05 (3.5–4.05) in head length.

Mouth terminal and a little oblique, upper-jaw length 3.3 (3.25–3.65) in head length; 10 strong, close-set, conical teeth in outer row on side of upper jaw, and 12 in lower jaw, progressively longer and more jutting anteriorly, the anterior three slightly recurved; anteriormost tooth in jaws a canine



Fig. 8. Holotype of *Halichoeres hilomeni*, male, UPLB 498, 95.6 mm, Dibuluan Island, Palawan Province, Philippines (H. A. Randall).



Fig. 9. *Halichoeres hilomeni*, female, Dibuluan Island, Palawan Province, Philippines (G. R. Allen).

Table 2. Proportional measurements of type specimens of *Halichoeres hilomeni* as percentages of the standard length.

	Holotype			Paratypes				
	UPLB 498	BPBM 41024	WAM P.33270	USNM 398628	UPLB 495	WAM P.33270	USNM 398628	BPBM 41024
Sex	male	female	?	male	male	male	male	male
Standard length (mm)	95.6	55.0	57.7	73.5	75.4	77.9	81.3	91.5
Body depth	31.8	29.2	29.6	28.7	29.4	28.5	28.0	31.7
Body width	13.7	14.0	13.9	13.7	14.2	14.3	14.0	13.9
Head length	34.5	34.6	33.4	33.8	34.5	33.4	33.3	34.4
Snout length	11.3	11.0	11.4	11.1	11.9	11.6	11.7	12.0
Orbit diameter	6.4	7.6	7.3	7.0	6.6	6.5	6.4	6.5
Interorbital width	6.4	6.4	6.7	6.7	6.7	6.4	6.3	6.7
Upper-jaw length	10.4	10.0	9.4	9.3	10.5	9.4	10.5	10.6
Caudal-peduncle depth	17.3	16.4	17.0	16.6	16.8	16.4	16.0	17.1
Caudal-peduncle length	8.5	9.3	9.5	9.4	9.9	deformed	8.2	8.6
Predorsal length	32.4	32.5	32.7	31.9	32.3	33.5	32.6	31.7
Preanal length	55.3	55.6	55.2	56.1	56.0	55.0	54.8	55.9
Prepelvic length	33.3	32.6	32.3	33.2	33.1	33.2	32.9	32.4
Base of dorsal fin	67.0	66.2	63.4	63.2	65.6	64.9	65.7	66.0
First dorsal spine	6.2	6.5	5.8	6.5	6.4	6.3	5.9	5.8
Ninth dorsal spine	10.8	10.0	11.2	10.8	11.9	11.8	9.8	11.6
Longest dorsal ray	13.8	13.0	13.4	13.2	14.0	12.9	13.7	13.9
Base of anal fin	38.7	37.5	36.4	37.8	38.4	34.6	38.0	37.2
First anal spine	3.6	3.6	3.5	3.5	3.9	3.7	3.8	3.7
Third anal spine	7.6	8.0	8.7	8.2	8.8	8.6	7.5	7.8
Longest anal ray	12.6	12.0	11.9	13.9	13.0	13.8	11.9	12.6
Caudal-fin length	24.1	24.6	23.4	24.6	23.1	24.0	22.9	24.2
Pectoral-fin length	19.8	20.6	20.3	21.5	21.4	21.2	19.9	21.0
Pelvic-spine length	10.5	10.6	10.9	12.7	11.9	12.4	11.0	12.1
Pelvic-fin length	24.1	17.8	19.6	18.0	20.5	19.1	20.5	24.3

about three-fourths pupil diameter in length; lower pair of canines fitting inside upper pair when mouth closed; canine tooth at posterior end of upper jaw, its length about two-thirds length of anterior canines; inner row of small nodular teeth in both jaws. Tip of tongue narrowly rounded, reaching only corner of jaws. Lips large, fleshy, and deeply furrowed medially; median dorsal length of upper lip equal to pupil diameter; curving labial flap on side of lower jaw about half pupil diameter at its greatest depth. Gill rakers short, the longest about one-third length of longest filaments on first gill arch (gill arch on left side of holotype badly deformed, perhaps from parasite damage, though none was found).

Anterior nostril a very small, tapering tubule a pupil diameter before anterior edge of orbit at level of middle of eye; posterior nostril a small ovate aperture, three-fifths pupil diameter dorsoposterior to anterior nostril. Suborbital pores 13 (10–13); pores of preopercular-mandibular series 13 (13–15).

Scales cycloid; lateral line continuous, deflected downward below last two dorsal soft rays to straight peduncular part; scales of straight portion of lateral line mostly with a middle

surface tubule forming three short branches ending in a pore, the middle branch usually longest; peduncular part of lateral line with a straight surface tubule ending in a pore; nape fully scaled, with about nine oblique rows of scales, progressively smaller and more embedded anteriorly, reaching a vertical at posterior edge of eye; scales of prepelvic area progressively smaller anteriorly, just reaching gill opening, about 11 in midventral series; no scales on base of dorsal, anal, and paired fins, except for a triangular scale nearly a pupil diameter in length with a small basal scale at midbase of pelvic fins; basal third of caudal fin with four vertical rows of scales, progressively smaller posteriorly.

Origin of dorsal fin above second lateral-line scale, predorsal length 3.2 (2.95–3.2) in SL; dorsal spines progressively longer, last three subequal, first 5.55 (5.2–5.75) in head length, and ninth 3.2 (2.85–3.45) in head length; third to ninth dorsal soft rays longest and subequal, 2.5 (2.45–2.65) in head length; origin of anal fin below base of first dorsal soft ray, preanal length 1.8 in SL; first anal spine very slender and short, 8.4 (6.75–10.0) in head length; third anal spine 4.55 (3.85–4.55) in head length; second to tenth anal soft rays subequal, 2.75 (2.4–2.9) in head length; caudal fin

moderately rounded, 1.44 (1.35–1.5) in head length; second or third pectoral rays longest, 1.75 (1.55–1.7) in head length; origin of pelvic fins below lower edge of pectoral-fin base, prepelvic length 3.0 (3.0–3.1) in SL; pelvic fins reaching or extending slightly beyond origin of anal fin only in large males, fin length 1.45 (1.45–1.95) in head length.

Colour of holotype in alcohol: upper half of body dark brown, the pigment concentrated in a vertically elongate spot basally on each scale, with five narrow pale bars extending from base of dorsal fin; lower half of body pale brown, the centres of scales darker; a dark brown band from upper lip to lower half of orbit, extending posterior to eye, half as broad, to base of opercular flap; three narrow dark bands extending dorsally from postorbital band, the first black and vertical, just behind eye, the posterior two irregular; a boomerang-shaped dark brown band extending posteriorly from behind corner of mouth across cheek; fins translucent pale yellowish, the dorsal with a broad black band across middle of first two membranes; rest of fin with three longitudinal rows of faintly dark-edged pale spots (three per membrane); anal fin with a row of similar spots along base, a vertically elongate, dark-edged pale spot on each membrane, and a submarginal dark-edged pale band; caudal fin with faint, irregular, cross bands; paired fins pale, the pectorals with a triangular black spot dorsally on base, narrowing to a line that nearly crosses remainder of fin base.

Colour in life shown in Figs. 9–12. Based on the relative size of eye to head length, Fig. 9 is a probable female about 55 mm SL; Fig. 10 about 57 mm SL (perhaps undergoing sex reversal); Fig. 11 a male about 75 mm SL, and Fig. 12 a male about 90 mm SL.

Etymology. – This species is named in honour of Dr. Vincent V. Hilomen of the University of the Philippines Los Baños in recognition of his efforts in obtaining collection and export permits and arranging the shipment of the type specimens to the authors.

Remarks. – The type specimens were all collected from Dibuluan, a small island at the northern end of Palawan, Philippines. The species was found in 1–3 m in a sheltered

habitat of mixed coral, algae, sand and gravel. It was also observed and photographed at Coron Island in the Calamian Group north of Palawan, and in Borneo, based on an underwater photograph taken by the second author near Kota Kinabalu, Sabah, Malaysia (Fig. 12).

The closest relative to *Halichoeres hilomeni* appears to be *H. solorensis* (Bleeker), known from Indonesia and the Philippines. The two species share the same fin-ray, scale, and suborbital pore counts, and the gill-raker count is nearly the same, 17–19 for *H. solorensis*, compared to 18–20 for *H. hilomeni*. Both have a black spot covering most of the first two dorsal-fin membranes, the same black spot at the pectoral-fin base, and dark brown peritoneum, but there the similarity in colour ends. The body of *H. solorensis* varies from a somber dark greenish grey to yellowish green, the head yellow with pink bands, and there is an ocellated small black spot at the upper base of the caudal fin. Judging from the juvenile colour pattern of *H. solorensis*, the juveniles of *H. hilomeni* should also have an ocellated black spot in the soft portion of the dorsal fin.

Material of *Halichoeres solorensis* examined. – Indonesia: Flores, BPBM 32151, 48.5 mm; Komodo, BPBM 32392, 48 mm; Ambon, BPBM 18529, 90 mm. Philippines: Luzon, Maricaban Island, BPBM 22216, 8: 36–82 mm.



Fig. 11. *Halichoeres hilomeni*, male, Dibuluan Island, Palawan Province, Philippines (G. R. Allen).



Fig. 10. *Halichoeres hilomeni*, Dibuluan Island, Palawan Province, Philippines (G. R. Allen).



Fig. 12. *Halichoeres hilomeni*, large male, Sabah, Malaysia (G. R. Allen).

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LITERATURE CITED

- Barber, P. H. & D. R. Bellwood, 2005. Biodiversity hotspots: evolutionary origins of biodiversity in wrasses (*Halichoeres*: Labridae) in the Indo-Pacific and new world tropics. *Molecular Phylogenetics and Evolution* **35**: 235–253.
- Bleeker, P., 1857. Descriptiones specierum piscium javanesium novarum vel minus cognitarum diagnosticae. *Natuurkundig Tijdschrift voor Nederlandsch Indië* **13**: 323–368.
- Bleeker, P., 1862. *Atlas Ichthyologique des Indes Orientales Néerlandaises, publié sous les auspices du Gouvernement colonial néerlandais*. Vol. 1. Scaroides et Labroides. Frédéric Muller, Amsterdam. xxi + 168 pp.
- Bloch, M.E. & J.G. Schneider, 1801. *Systema Ichthyologiae*. Sauderiano Commissum, Berlin. lx + 584 pp. (reprinted by von J. Cramer, Lehr, 1967)
- Cuvier, G. & A. Valenciennes, 1839. *Histoire Naturelle des Poissons*, vol. 13. Chez Pitois-Levrault, Paris. xix + 505 pp.
- Eschmeyer, W. N., 2010. *Catalog of Fishes* electronic version (19 February 2010). (<http://research.calacademy.org/ichthyology/catalog/fishcatmain.asp>)
- Kuiter, R. H., 2002. *Fairy & Rainbow Wrasses and their Relatives*. TMC Publishing, Chorleywood, Herts, U.K. 208 pp.
- Parenti, P. & J. E. Randall, 2000. An annotated checklist of the species of the labroid fish families Labridae and Scaridae. *Ichthyological Bulletin*, No. 68: 1–97.
- Richardson, J., 1846. Report on the ichthyology of the seas of China and Japan. *Report of the British Association for the Advancement of Science for 1845*: 187–320.
- Sadovy, Y. & A. S. Cornish, 2000. *Reef Fishes of Hong Kong*. Hong Kong University Press, Aberdeen, Hong Kong. xi + 321 pp.
- Seba, A., 1761. *Locupletissimi rerum naturalium thesauri accurata descriptio, et iconibus artificiosissimis expressio, per universarum physicem historiam opus, cui ex toto terrarum orbe colegit, digessit, descripsit et dipingendum curavit*. Janssonius van Waesberge, Wettstin & Smith, Amsterdam. Vol. 3: 212 pp.
- Whitehead, P. J. P., 1969. The Reeves collection of Chinese fish drawings. *Bulletin of the British Museum (Natural History)*, Historical Series **3**(7): 191–233.