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Wrasses of the Galápagos Islands, with the description of a new deepwater species of *Halichoeres* (Perciformes: Labridae)

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Abstract: *Halichoeres raisneri*, new species, is described from three specimens captured by the *Johnson Sea Link* submersible at 114-125 m off Wolf Island, Galápagos. Distinctive features of the new species include a dorsally projecting fleshy flap along the posterior three-quarters of the upper lip and the absence of a canine tooth at the corner of the upper jaw. The body color of freshly caught females is pale pink with two yellow stripes and five prominent pink spots above the uppermost stripe. Similarities between the new species and other labrids are discussed, and a key to the 16 nominal species of Labridae known from the Galápagos Islands is provided. *Decodon melasma* is recorded from the Archipelago for the first time.

Key words: Labridae, Galápagos Islands, Submersible, New Species, New Records

The nearshore fish fauna of the Galápagos Islands has intrigued ichthyologists and zoogeographers since Darwin returned to England with the first specimens for study. His collection of 15 specimens included a large wrasse that was later named *Cossyphus darwini* (now *Semicossyphus darwini* [Jenyns]) in his honor. The 16 labrids known from the Archipelago represent the fourth largest family of shorefishes, after 25 serranids, 23 carangids, and 19 muraenids. Most of the Galápagos labrid species are variously distributed from Baja, California, to central Chile, and occur at one or more of the other tropical eastern Pacific Islands (Clipperton, Cocos, Malpelo, Revillagigedos); several also are known from Indo-Pacific localities. Only the new species described herein and an undescribed species of *Xyrichtys* (Victor and Wellington 2000) are currently known only from the Galápagos, and one species, *Xyrichtys victori*, is an insular endemic (Cocos and Galápagos). Based on three months of scuba and submersible diving using the Harbor Branch Oceanographic Institute's *Johnson Sea-Link* (*JSL*) at Galápagos (during November, 1995, a "normal" period in the eastern Pacific, and June and July, 1998, a severe El Niño Southern Oscillation period), we are able to add additional records and observations about Galápagos labrids.

Grove and Lavenberg (1997) published the first comprehensive listing and analysis of Galápagos labrids, along with black and white drawings and color photographs of many species. McCosker (1998) corrected several errors in their work and analysis,

based primarily on Randall's (1995) analysis of eastern Pacific *Thalassoma.* Useful keys to the species of eastern Pacific labrids and supplementary information may be found in Bussing (1985, for Costa Rican species) and Gomon (1995, for eastern Pacific species, excluding Galápagos). Excellent color photographs of growth stages of most Galápagos species are available in Humann (1993) and Allen and Robertson (1994).

During 1995, the junior author and R. Grant Gilmore observed and captured from the *JSL* the first known Galápagos specimens of the blackspot wrasse, *Decodon melasma* Gomon. They were first observed (7 Nov. 1995, JSL Dive 3941) over sand, rock, and rock ridge bottoms at 104 m at Española (=Hood Island) and subsequently collected (15 Nov. 1995, JSL Dive 3954) from similar habitats off Cabo Hammond, Isla Fernandina (=Narborough Island), at 82-105 m. The two specimens (CAS 210090, 64-95 mm SL) are typical of the species, which is also known from the Gulf of California to Peru and Cocos Island (Allen and Robertson 1994, Gomon, 1995). Another wrasse, resembling *Halicho - eres chierchiae* Di Caporiacco, was observed on 25 July 1998 at North Seymour Island in Galápagos, but it was not collected or photographed. The individual, with a prominent red and blue spot above the posterior tip of the pectoral fin typical of an adult male (and from which the common name "wounded wrasse" is derived), was spotted over a sand and rock field. We include *H. chierchiae,* which is otherwise known from Baja California to Panama (Gomon 1995, pers. obs.), in the key to Galápagos labrids herein, but further investigation is needed to confirm its presence in Galápagos. Finally, as noted above, Victor and Wellington (2000) report on an undescribed species of *Xyrichtys* from Galápagos.

MATERIALS AND METHODS

Institutional abbreviations follow Leviton et al. (1985). "SL" refers to standard length, "HL," to head length. Measurements and most counts follow those of Randall and Smith (1982). Counts of scale rows between lateral line and fin origins do not include small scales at base of fins or the lateral-line scale. Pored lateral-line scale counts include the terminal scale on the caudal-fin base posterior to the hypural plate. Counts of vertebrae, caudal-, dorsal- and anal-fin rays, and lengths of first anal- and first dorsal-fin spines were taken from or verified with radiographs. Other measurements were made with dial calipers to the nearest 0.1 mm. The branchial skeleton of one paratype was removed and cleared and stained to facilitate examination of pharyngeal dentition.

Comparative labrid material examined: *Halichoeres bicolor,* USNM 277167, 5 specimens; *H. bimaculatus,* USNM 358694, 1; *H. biocellatus,* USNM 336930, 1; *H. bivittatus,* USNM 318887, 2; *H. caudalis,* USNM 315469, 1; *H. dispilus,* USNM 321497, 2; USNM 321501, 5; *H. garnoti,* USNM 318877, 18; *H. hortulanus,* USNM 345935, 2; *H. kallochroma,* USNM 327861, 2; *H. margaritaceus,* USNM 112976, 9; *H. mar - ginatus,* USNM 348651, 1; USNM 332183, 10; *H. nicholsi,* USNM 321467, 4; *H. noto - spilus,* USNM 111466, 111471, 5; *H. ornatis - simus,* USNM 333212, 1; *H. papilionaceus,* USNM 309333, 2; *H. pelicieri,* USNM 222296, 1 paratype; *H. podostigma,* USNM 277149, 3; *H. prosopeion,* USNM 333213, 1; *H. scapularis,* USNM 332263, 3; *Pseudoju - loides cerasinus,* USNM 323918, 1.

Geographical distributions of species provided in the key to Galápagos labrids include information from Allen and Robertson (1994), Bearez (1996), Robertson and Allen (1996), Grove and Lavenberg (1997), and D. Ross Robertson (pers. comm.). References for original descriptions of all labrid species mentioned herein can be found in Eschmeyer (1998) or online at the following address:

http://www.calacademy.org/research/ichthyology/catalog/index.html.

Key to the Labridae of the Galápagos Islands
(Modified from Gomon 1995)

1a. Lateral line interrupted (Fig. 1a) 2

1b. Lateral line continuous (Fig. 1b, c), abruptly curved downward in some species 4

Fig. 1. Variation in the shape of the lateral line among eastern Pacific Labridae (from Gomon, 1995).

2a. Dorsal profile of snout not very steep, forming an angle of about 45° with the longitudinal axis of the body (Fig. 2a); top of head and snout somewhat compressed, but not forming a knife-like edge; adults greenish brown with white spots on each body scale; juveniles green, red, or brown, with white spots on body and head, and 3-4 thin brown body bands . . . . . .*Novaculichthys taeniourus* (Lacepède)
(Indo-Pacific; eastern Pacific, from Gulf of California to Panama and the Galápagos and Clipperton Islands)

2b. Dorsal profile of snout steep, forming an angle with longitudinal axis of the body that is noticeably more than 45° and sometimes almost vertical (Fig. 2b); top of head and snout compressed into a knife-like edge (*Xyrichtys*[1]) .3

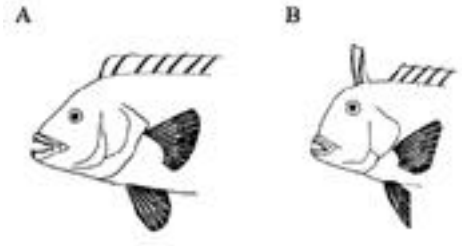

Fig. 2. Shape of the dorsal profile of the head in (a) *Novaculichthys* and (b) *Xyrichtys* (from Gomon, 1995).

3a. First 2 dorsal-fin spines elongate and well separated from remainder of dorsal fin; body with 4 indistinct broad brown bands . . . . . *Xyrichtys pavo* (Valenciennes)
(Indo-Pacific, including Hawaii and Red Sea; Gulf of California to Panama and Galápagos)

3b. First dorsal spines not elongate, not separated from remainder of dorsal fin; terminal phase iridescent blue-green with scattered black blotches on flanks; initial phase mainly pinkish orange, without blotches or spots; juveniles white to ye-llowish brown with dark stripe on upper flank . . . . . .*Xyrichtys victori* Wellington
(Cocos and Galápagos Islands)

4a. Lateral line smoothly curved (Fig. 1b); dorsal-fin spines XI or XII 5

4b. Lateral line curved abruptly downward beneath posterior end of dorsal fin (Fig. 1c);
dorsal-fin spines VIII or IX 8

5a. Dorsal-fin spines XI; anal fin with 10 segmented rays; predorsal scales reaching a vertical anterior to orbit; coloration reddish above, pale below, 3 bright yellow stripes on head and a black blotch above the pectoral fin . . . .
. . . . . *Decodon melasma* Gomon
(Gulf of California to Peru, Cocos and Galápagos Islands)

5b. Dorsal-fin spines XII; anal fin with 12 segmented rays; predorsal scales reaching or nearly reaching a vertical through posterior margin of orbit; coloration not as above 6

6a. Scaly basal sheath absent on dorsal and anal fins; 53-56 pored lateral-line scales; initial phase red with a pale chin and a yellow blotch above the pectoral-fin base, terminal phase dark gray with a pale chin and an obvious large yellow spot above the pectoral-fin base . . . . . *Semicossyphus darwini* (Jenyns)
(mainland Ecuador to central Peru, and Galápagos)

6b. Scaly basal sheath present on dorsal and anal fins; 31-33 pored lateral-line scales; coloration not as above (*Bodianus*) 7

7a. Terminal phase with a pronounced bump on forehead and elongate rays in median fins; body coloration of juveniles and initial phase yellow, the anterior 2/3 becoming pinkish in adult females, with two black stripes on upper half of flank, beginning behind eye and extending to caudal base; body coloration of terminal male gray to green with a faint yellow bar at mid-body, head pinkish, chin white . . . . . .*Bodianus diplotaenia* (Gill)
(Baja California to northern Chile, Clipperton, Cocos, Revillagigedos, and Gálapagos Islands)

7b. Terminal phase without an exaggerated forehead bump, median fins not greatly elongated; body coloration of juveniles pale yellow to white, with three black stripes on head and body, the middle stripe beginning on the snout and extending to the caudal fin; body coloration of adults extremely variable, from brown to dark gray to bright orange and white, overlain with black blotches . . . . *Bodianus eclancheri* (Valenciennes)
(mainland Ecuador to central Chile, and Galápagos)

8a. Dorsal-fin spines VIII (*Thalassoma)* 9

8b. Dorsal-fin spines IX 11

9a. Branched pectoral-fin rays 13; caudal fin truncate; juveniles, females, and primary males with lengthwise bands of yellowish brown and red on head and body; secondary males with a greenish purple head, a broad yellow vertical band in the thoracic region, and the remainder of the body greenish blue; maximum size 15 cm SL . . . . . *Thalassoma lucasanum* (Gill)
(Gulf of California to mainland Ecuador, Cocos, Galápagos, and Malpelo)

9b. Branched pectoral-fin rays 14; caudal fin of terminal phase with elongate lobes; coloration green or blue-green with 2-3 radiating lines from eye; adults larger, may attain 43 cm SL 10

10a. Coloration green or blue-green with a slender red streak on each scale; head pink with green lines behind and beneath eye; may attain 24 cm SL . . . . . *Thalassoma grammaticum* Gilbert
(Gulf of California to Panama, Clipperton, Cocos, Galápagos, and Revillagigedos Islands)

10b. Coloration green, with red stripes and vertical lines along body, and red lines behind eye and on snout and forehead; may attain 43 cm SL . . . . . *Thalassoma purpureum* (Forsskål)
(Indo-Pacific eastward to Clipperton, Cocos, Galápagos, and Panama)

11a. Anterior jaw teeth not enlarged, most teeth incisor-like (Fig. 3a); initial phase gray, with fine white speckling on upper half and 2 black spots over caudal-fin base; terminal phase greenish dorsally, pale ventrally, with thin blue stripes before and behind eye, and a red-orange patch above pectoral base . . . . *Stethojulis bandanensis* (Bleeker)
(western Pacific to Costa Rica, Panama, Clipperton, Cocos, and Galápagos Islands)

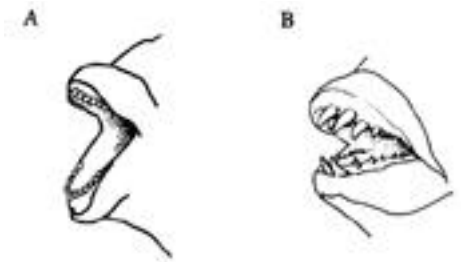

Fig. 3. Dentition in (a) *Stethojulis* and (b) *Halichoeres* (from Gomon, 1995).

11b. Anterior jaw teeth enlarged and canine-like (Fig. 3b); color not as above (*Halichoeres*) 12

12a. Upper jaw with one or more prominent canines at corner of mouth; dorsal fin with 11 segmented rays 13

12b. Upper jaw without prominent canines at corner of mouth; dorsal fin with 11 or 12 segmented rays 15

13a. Each lateral-line scale usually with only a single pore; body coloration pink to orange (live individuals capable of turning blue) with distinct black spot above middle of pectoral fin. . . . . .*Halichoeres dispilus* (Günther)
(Gulf of California to Peru, Galápagos, and Cocos)

13b. Each anterior lateral-line scale usually with 2-3 pores; coloration not as above 14

14a. Terminal phase greenish blue with green bars above midbody, yellow to greenish yellow below, purple midlaterally with a prominent red and blue spot above pectoral fin tip; initial phase greenish with purple bars above, yellow below, an orange reticulated pattern midlaterally and a black spot on segmented portion of dorsal fin . . . . . *Halichoeres chierchiae* Caporiacco
(Baja California to Panama and Galápagos)

14b. Terminal phase greenish blue with a diffuse black bar on upper body near distal tip of pectoral fin, a prominent yellow blotch preceding it; initial phase pale yellow with irregular dark blotches on sides and a large dark green ocellus on dorsal fin . . . . . .*Halichoeres nicholsi* (Jordan & Gilbert)
(Gulf of California to mainland Ecuador, Revillagigedos, and Galápagos)

15a. Segmented dorsal rays 12; a prominent fleshy skin flap at posterior end of upper lip; coloration of living females pale pink with 2 prominent yellow body stripes and 5 prominent pink spots above uppermost yellow stripe . . . .*Halichoeres raisneri* n. sp.
(Wolf Island, Galápagos)

15b. Segmented dorsal rays 11; upper lip may be creased, but prominent posterior skin flap absent; coloration of initial phase dark green above, light green below, with 5-6 alternating yellow and black patches at base of dorsal fin; terminal phase with 7-8 blackish bars on upper half of body separated by narrow yellow bars, a blackish patch behind pectoral fin . . . . . .*Halichoeres notospilus* (Günther)
(Gulf of California to Peru, Galápagos and Revillagigedos Islands)

[1]not included is an undescribed species of *Xyrichtys* from Galápagos (Victor and Wellington 2000)

Halichoeres raisneri, **new species**
Figs. 4-5, Table 1

Holotype: USNM 357795, 90.0 mm SL, female, SE Wolf Island, Galápagos, 01°23.2´N, 91°48.6´W, 115 m, JSL II Sta. 3087, C. Baldwin and J. Gomezjurado, 22 June 1998.

Paratypes: CAS 209810, 78.8 mm SL, female, and 39.8 mm SL, sex undetermined, SE Wolf Island, Galápagos, 01°23.2´N, 91°48.6´W, 114-125 m, JSL II Sta. 3086, C. Baldwin and J. McCosker, 22 June 1998.

Diagnosis: *Halichoeres raisneri* is distinguishable from other species of the genus on the basis of the following combination of characters: posterior three-quarters of upper lip with dorsally projecting fleshy flap similar to ventrally projecting flap on lower lip; no canine tooth at corner of upper jaw; body color (of freshly caught female) pale pink with two prominent yellow stripes, one from tip of snout to upper caudal-fin base, the other from pectoral-fin base to lower caudal-fin base; five prominent pink spots above upper yellow stripe, dispersed along lateral line; no dark blotch on caudal-fin base; lateral-line complete, abruptly deflected downward below posterior end of dorsal fin; 27 tubed scales in series, tubes simple and with single opening; ultimate pored scale located on caudal-fin base; dorsal-fin rays IX,12; anal-fin rays III,12, first spine visible without dissection; head naked; scales on chest region smaller than other body scales; upper and lower jaws each with a pair of canine teeth near symphysis and with a series of conical

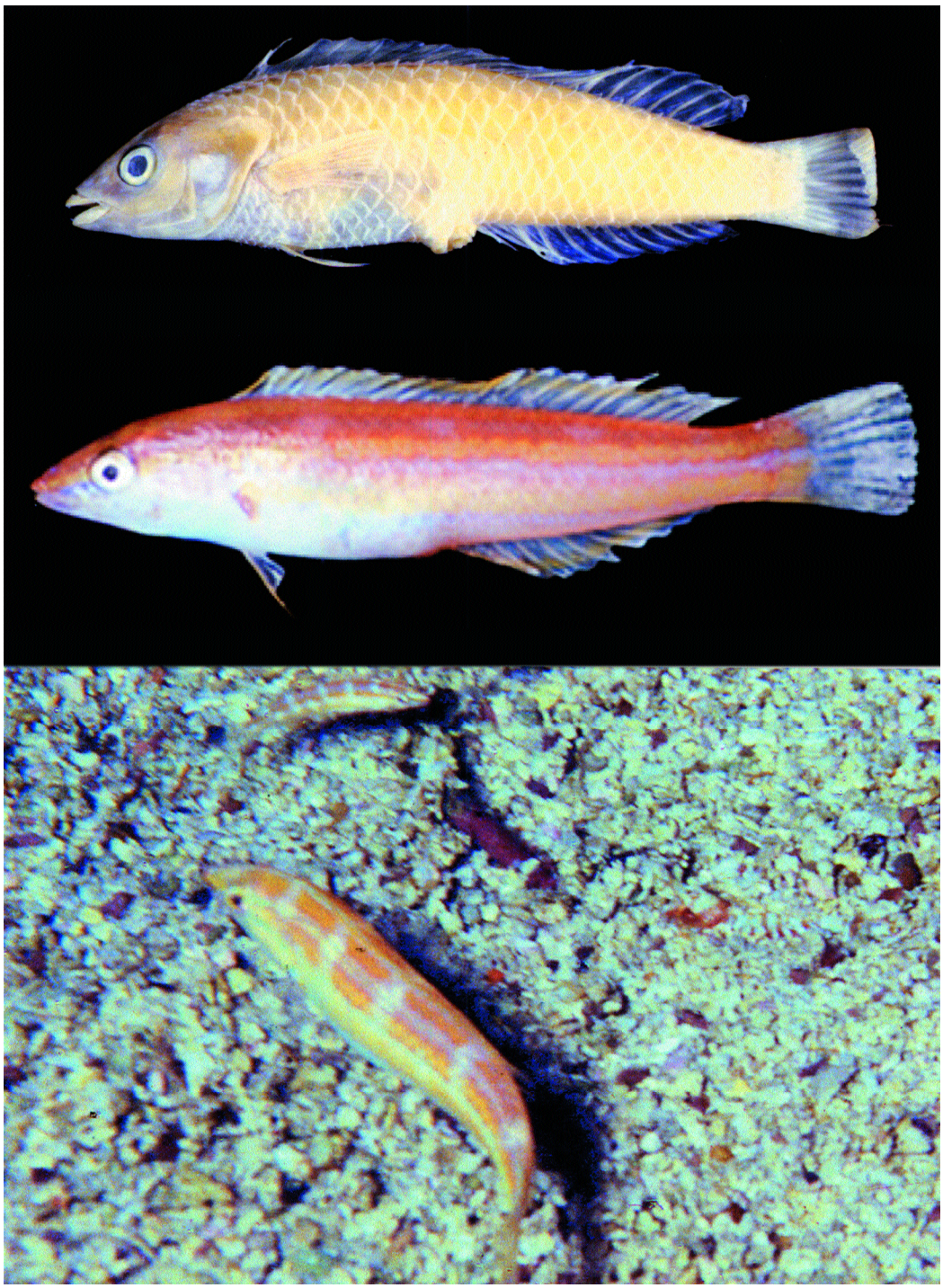

Fig. 4. Top: Holotype of *Halichoeres raisneri*, new species, USNM 357795, 90.0 mm SL, Wolf Island, Galápagos Islands. Middle: Paratype of *H. raisneri* (prior to conservation), CAS 209810, 78.8 mm SL. Bottom: *In situ* photograph of *H raisneri*, JSLII Sta. 3086.

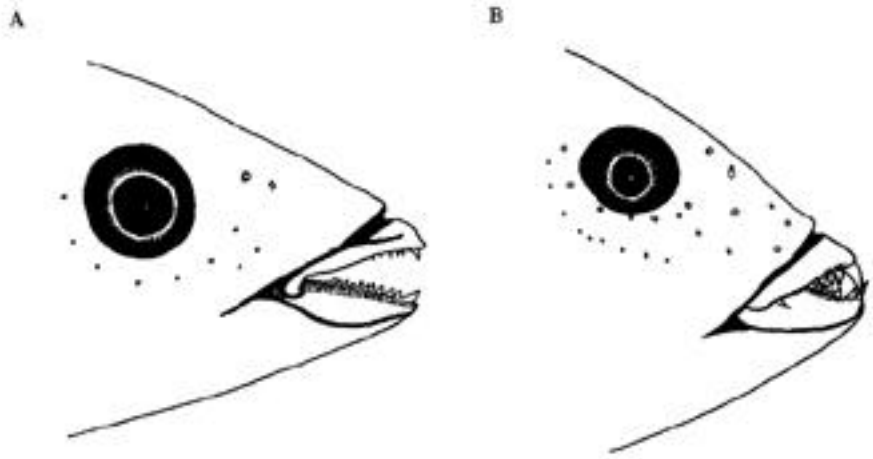

Fig. 5. Right lateral view of head. (a) *Halichoeres raisneri*, holotype, USNM 357795, 90.0 mm SL; (b) *Halichoeres dispilus*, USNM 321501, 106 mm SL.

teeth posterior to canines; free margin of vertical preopercular limb smooth, reaching dorsally to horizontal through ventral edge of eye, free margin of horizontal preopercular limb smooth, reaching anteriorly to vertical through front of eye; snout long, length 26-29% HL; body slender, depth 20-22% SL; and caudal peduncle narrow, depth less than or approximately equal to length.

Description: Data for morphometric features are given in Table 1. Dorsal-fin rays IX,12; anal-fin rays III,12; pectoral-fin rays 12; principal caudal-fin rays 8+7 (8+8 segmented rays), procurrent caudal-fin rays 5+4 (5+5 unsegmented rays); vertebrae 10+15; lateral-line scales 27; scale rows between lateral line and dorsal-fin origin 2; scale rows between lateral line and anal-fin origin 7; suborbital pores (from posterior point of orbit to and including lacrimal) 9; gill rakers 16-18 (18 in holotype, 16 in 78.8-mm SL paratype, too small to accurately count in 39.8-mm paratype).

Mouth terminal and of moderate size, upper jaw reaching vertical through anterior nostril. Lips fleshy, lower lip with a broad flap projecting ventrally, posterior three-quarters of upper lip with more slender flap projecting dorsally (Fig. 5A). Inner surface of lips near base of teeth strongly papillose.

Upper and lower jaws each with a pair of large, forward-projecting canine teeth near symphysis, lower pair sliding between upper pair when mouth closed. A single row of conical teeth in both jaws posterior to canine teeth, about 9 in upper jaw, 10 in lower jaw – teeth of 78.8-mm SL paratype damaged and counts not included; single row of very small nodular teeth in single row posterior to conical teeth, about 6 in upper jaw in holotype, 8 in lower jaw – nodular teeth in paratypes, if present, small and difficult to discern. A few tiny teeth present in both jaws behind canine teeth and medial to anteriormost conical teeth.

Pharyngeal dentition of 78.8-mm SL paratype comprising paired upper third-pharyngeal tooth plates and median lower toothplate formed by fused fifth ceratobranchials. Upper tooth plates roughly triangular, with 17 teeth in five transverse rows; first (anteriormost) row with a single tooth, second with three, third with four, fourth with five, fifth (posteriormost) with four; size of teeth decreasing posteriorly; all teeth roughly conical but with broad bases and slender, curved tips. Lower pharyngeal plate a shallow "Y" shape in dorsal view with teeth covering all but the distal upper arms of the "Y." Posterior end of stem with a single row of three teeth, broadening to two rows of ca. four teeth anteriorly on stem; curved part of plate with

TABLE 1

Data on morphometric features of type specimens of Halichoeres raisneri. *Standard length is in mm; other measure - ments, in percentage of standard length.*

	Holotype USNM 357795	Paratypes CAS 209810	
Standard length (mm)	90.0	78.8	39.8
Depth of body	22	21	20
Width of body	11	10	8.8
Head length	32	31	32
Snout length	9.4	8.8	8.3
Orbit diameter	6.1	6.0	7.0
Body interorbital width	4.7	4.4	4.5
Length of upper jaw	7.4	6.6	7.0
Least depth of caudal peduncle	10	10	11
Length of caudal peduncle	12	10	12
Predorsal length	29	28	31
Length of dorsal-fin base	65	62	60
Length of depressed dorsal fin	75	71	72
Length of first dorsal-fin spine	5.6	6.6	7.6
Length of ninth dorsal-fin spine	10	11	10
Length of anal-fin base	34	37	36
Length of depressed anal fin	41	43	43
Length of first anal-fin spine	2.8	3.8	3.3
Length of third anal-fin spine	7.0	7.9	8.3
Length of upper segmented caudal-fin rays	21	20	23
Length of central segmented caudal-fin rays	20	19	23
Length of pectoral fin	18	16	19
Length of pelvic fin	15	13	13

about four rows of teeth, those in posteriormost row largest; all teeth roughly conical, similar in shape to those of upper plates (i.e., somewhat broad at base, more slender distally).

Nostrils anterior to upper quarter of orbit. Anterior nostril in short tube; posterior nostril partially covered by small membranous flap from anterior edge. Distance between anterior and posterior nostrils about half the distance between posterior nostril and orbit. Distance between anterior nostril and tip of snout approximately equal to diameter of orbit.

Margins of all bones of opercular series smooth; opercle terminating posteriorly in bluntly pointed flap, the posterior tip reaching a vertical through base of third dorsal-fin spine; outer edge of opercular flap membranous.

Lateral line complete, running closely along dorsal-fin base anteriorly, abruptly dipping ventrally beneath posterior end of soft dorsal fin and then leveling out to a straight line mid-laterally on caudal peduncle. Scales 20-23 in the series containing the abrupt curvature of the lateral line. Lateral-line scales each with a single pore.

Head naked, body scales terminating on predorsal region just posterior to a vertical through upper limb of preopercle. Ventrally, scales extending anteriorly to posterior end of isthmus. Scales cycloid, posterior margin bluntly pointed. Scales on most of body large, greatest height (in dorsoventral plane) ca. 15-17% HL; scales on abdomen smaller and decreasing in size anteriorly, the most anterior ones ca. 4-5% HL in height. Dorsal, anal, and pectoral fins naked. A single large

scale extending posteriorly between bases of right and left pelvic fins. Several rows of scales on caudal-fin base, scales becoming progressively smaller posteriorly.

Caudal fin slightly rounded, length 1.6 in HLin holotype (1.4-1.6 in paratypes). Origin of dorsal fin slightly anterior to vertical through base of pectoral fin (over second lateral-line scale). Dorsal fin long, 1.5 (1.6-1.7) in SL. Pelvic fin short, falling well short of anus, 2.2 (2.3-2.5) in HL. Pectoral fin 1.8 (1.7-1.9) in HL, anal-fin base 3.0 (2.7-2.8) in SL.

Color of holotype in ethyl alcohol pale with no distinctive markings. Tiny dots of dark pigment scattered on head and mid- to upper body, heaviest on lacrimal, opercle, and occiput, and along base of dorsal fin where they form ca. 11 faint spots, the last one at base of last dorsal soft ray. No pigment on fins. The 78.8-mm SL paratype also with a poorly demarcated line of melanophores extending posteriorly from posterior tip of opercle to base of upper caudal-fin lobe and with a faint spot on base of fifth dorsal soft ray. In the 39.8-mm SL paratype, the spot on fifth dorsal soft ray and the lines of pigment along dorsal-fin base and between opercle and upper caudal-fin lobe more prominent, the latter terminating in a relatively large diffuse spot on caudal fin.

Color of female immediately after capture: body pink, with two prominent yellow stripes, upper one from tip of snout to upper caudal-fin base, lower one from pectoral-fin base to lower caudal-fin base; between yellow stripes, the pink body color forming another stripe that is edged dorsally and ventrally with orange scalloping. Above upper yellow stripe, five pale pink spots dispersed along and lying directly on lateral line. (From the elevated vantage point of observers in the submersible, darker areas between the pale spots appeared as a series of saddles on the back.) Head with a lilac stripe along dorsal midline of frontal region and between orbits, a lilac spot at tip of snout, and another just anterior to first dorsal-fin spine; a small yellow patch between lilac stripe and posterior lilac spot; a pale yellow stripe beneath and behind eye; upper jaw pink. Dorsal and anal fins mostly transparent — distal one-third of fins yellow, fin tips transparent; caudal fin yellow, outermost principal rays notably so; pectoral fin transparent; pelvic-fin spine yellow to orange, rest of fin transparent.

Other Material: After this paper was accepted for publication, the junior author learned that William Bussing of the Museo de Zoologia, Universidad de Costa Rica, had in his possession an unidentified adult male wrasse from Cocos Island that resembled our new species from Galápagos in having a long pointed snout. Bussing compared his specimen (UCR 2127.005, 143 mm SL, 5°34’30”N, 87°2’35”W) to our description and photographs of *H. raisneri* and suggested it is probably the male of the new species. Subsequent examination of the Cocos specimen by the senior author corroborates the similarity, but in the absence of female specimens from Cocos or male specimens from Galápagos, we are reluctant to designate the Cocos specimen as type material for *H. raisneri.* The Cocos specimen has most of the diagnostic features of *H. raisneri*, including the fleshy flap on the upper lip; no canine tooth at the corner of the upper jaw; a complete lateral line, abruptly deflected downward at ca. the twentieth scale of the series, the last scale on the caudal-fin base; IX,12 dorsal-fin rays, III,12 anal-fin rays, a long snout (33% HL), and slender body (depth 23% SL). The Cocos specimen differs from type specimens of *H. raisneri* in having fewer lateral-line scales (scales missing on both sides, but ca. 25 on left side of specimen vs. 27 in *H. raisneri*). In alcohol, the Cocos specimen is light brown with darker areas along the base of the dorsal fin and along the lateral midline. There are three postorbital lines of pigment on the head, a small patch of pigment in front of the dorsal portion of the eye, a line of pigment between the anteroventral portion of the eye and the posterior end of the upper jaw, and a line of pigment along the

dorsal midline of the head that extends to the base of the spinous dorsal fin. There are three wavy lines of pigment on the membrane of the dorsal fin, each extending from the first spine to approximately the sixth segmented ray. The posterior tips of the caudal-fin rays are pigmented, pigment extending several millimeters anteriorly on the uppermost and lowermost rays of the dorsal and ventral lobes, respectively. Bussing (in lit., 4 July 2000) indicated that the color of the fish was faded when he received it.

Etymology: Named *raisneri* for William R. Raisner, Jr., a veteran pilot who lost his life in a tragic ultralight plane accident on 26 June 1998 during the expedition on which the new species was collected. Bill was as enthusiastic about our underwater dives in the submersible as about his aerial endeavors, and it is in the spirit of a shared passion for venturing beyond the earth's surface that we name in his honor and memory a new species collected from submersible "flights." We give *H. raisneri* the common name "five-spot wrasse" in reference to the pale pink spots along the lateral line.

Locality: *Halichoeres raisneri* is known only from the type locality, off Wolf Island, Galápagos (but see comments under "Other Material" above).

Habitat: The three type specimens were collected at depths of 114-125 m on a sand bottom characterized by little rock rubble. Several other individuals were observed, often in pairs, but we did not observe significantly larger (and presumably male) individuals. One individual was seen taking refuge in a broken sea-urchin test, but most were observed over sand. When disturbed by motions of the mechanical collecting arm of the sub, the fishes would dive head first into the sand.

Remarks: Although very similar in most aspects of its morphology to other species of *Halichoeres*, and keying out to that genus with the labrid keys of Randall (1986) and Gomon (1995), *H. raisneri* differs in having a dorsally projecting flap on the posterior three-quarters of the upper lip (Fig. 5A) similar to the ventrally projecting flap on the lower lip typical of all *Halichoeres* (as in *H. raisneri*, Fig. 5A, and *H. dispilus*, Fig. 5B). In some species of *Halichoeres* (we did not examine all species), the upper lip may be very fleshy and variously creased, but among those examined only *H. raisneri* has a discrete flap of skin that can be lifted at its distal edge and folded back towards the gape. *Halichoeres raisneri* also lacks a feature diagnostic of most species of the genus, a prominent canine tooth at the posterior end of the upper jaw at the level of the buccal commissure. Randall (in litt.) informed us that in some species of *Halichoeres*, including the type species *H. bimaculatus*, this tooth is not fully developed until the adult stage, but we doubt that its absence in *H. raisneri* is ontogenetic because the two largest specimens are ripe females. This canine tooth also is lacking in several other eastern Pacific species of *Halichoeres: H. adustus*, *H. notospilus*, *H. insularis*, *H. malpelo*, and *H. melanotis* (Allen and Robertson 1994, Gomon 1995). Possibly, the absence of the canine tooth in those species and *H. raisneri* warrants recognition of a separate genus. Randall and Condé (1989) erected *Frontilabrus* for a wrasse from the Maldives that they noted is very similar to *Halichoeres* except that it lacks a canine tooth at the rear of the upper jaw, has a steep dorsal profile of the head, and has two pairs of canine teeth (vs. one) at the front of the lower jaw. *Halichoeres raisneri* has a relatively shallow dorsal head profile and a single pair of canine teeth at the front of the lower jaw. We note, however, that *H. insularis*, known only from the Islas Revillagigedos, lacks the canine tooth at the rear of the upper jaw and has two pairs of canine teeth at the front of the lower jaw (Allen and Robertson 1994). Among other labrid genera, *H. raisneri* appears most similar to *Pseudojuloides* Fowler, especially in having an elongate body. *Pseudojuloides* differs from *Halichoeres* most notably in having small, chisel-like incisiform teeth along the sides of the jaws

vs. conical ones in *Halichoeres* (Randall 1986). Although the elongate body of *H. raisneri* is within the extremes for both genera (Randall 1986), it has conical teeth in the jaws. Further study of the limits of *Halichoeres* and related genera is needed, and pending a cladistic revision of labrid genera that includes all species of *Halichoeres*, we assign *raisneri* to *Halichoeres.*

Among *Halichoeres* known from Galápagos, *H. raisneri* shares with *H. notospilus* the absence of a canine tooth at the posterior end of the upper jaw, but *H. raisneri* has 12 segmented dorsal rays (vs. 11 in *H. notospilus*), and the two species have very different body coloration. Although somewhat similar in coloration to *H. dispilus*, *H. raisneri* differs in having 12 segmented dorsal rays (vs. 11 in *H. dispilus*), no dark spot on the lateral line below the anterior part of the dorsal fin, no canine tooth at the rear of the upper jaw, fewer infraorbital sensory pores, and a fleshy flap on the upper lip. *Halichoeres nicholsi* and *H. chierchiae* are distinct from *H. raisneri* in, among many other features, having two or three (vs. one) pores in each lateral-line scale.

The color pattern of the 90-mm SL female holotype of *H. raisneri* is similar to that of the 86.4-mm SL female holotype and 50-mm SL female paratype of *H. pelicieri* from Mauritius (Randall and Smith 1982: Plate 5C-D). *Halichoeres raisneri* differs most notably in lacking a large black spot at the posterior end of the yellow stripe extending from the snout to the caudal-fin base, and in having five prominent pink spots along the lateral line (Randall and Smith's photographs of *H. pelicieri* show several faint yellow spots along the lateral line in the paratype). The two species also have similar or identical numbers of fin rays, gill rakers, and lateral-line scales, but they are separable on the basis of numbers of dorsal- and anal-fin soft rays (12 in both fins in *H. raisneri,* 11 in *H. pelicieri),* and the absence of a canine tooth at the buccal commissure and presence of a fleshy flap on the upper lip in *H. raisneri*.

Halichoeres raisneri also is similar in color pattern to another deepwater labrid, *Polylepion russelli* from the Hawaiian and Ryukyu Islands (Gomon and Randall 1978). The latter differs from *H. raisneri* in having three (vs. two) yellow stripes, the dorsalmost running along the base of the dorsal fin. The two species are markedly different in other morphological aspects (e.g., counts of fin rays, scales, and vertebrae - Gomon and Randall 1978).

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RESUMEN

Se describe una nueva especie, *Halichoeres rais - neri*, capturada a 114-125 m de profundidad en el archipiélago de Galápagos. Se presenta una clave para las 16 especies nominales de Labridae de Galápagos y se registra por vez primera *Decodon melasma*.

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