



***Scarus maculipinna*, a new species of parrotfish (Perciformes, Scaridae) from the eastern Indian Ocean**

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Abstract

The parrotfish *Scarus maculipinna* is described from 14 specimens from the eastern Indian Ocean, including the Andaman Sea and Mentawai Islands, Sumatra. This species is distinct in having the following combination of characters: 14 pectoral rays, 4 median predorsal scales, and 3 rows of scales on the cheek, the lower row with 1 or 2 scales. In addition, the following features of color pattern are diagnostic: initial phase with body dark dorsally, pale ventrally with 3 narrow white stripes; snout and iris of eye and pectoral fin base yellowish; three distinctive black spots, one on the anterior dorsal fin, one on the anterior anal fin from the third anal spine to the second anal ray, and a small one at the base of the anterior pectoral fin ray; terminal-male phase complexly colored in blue-green, pink, and yellow with dark saddle extending from postorbital region to 4th dorsal spine and slanting anteroventrally to just behind pectoral fin base; head with a broad blue-green stripe on snout that divides to form a branch through upper eye, continuing a short distance beyond, and a branch through lower eye, extending onto opercle; chin and suborbital region pinkish yellow with a short transverse blue-green chin strap; an irregular blue-green zone ventrally on head that continues broadly onto side of chest and anterior abdomen; body blue dorsally posterior to dark saddle, a midlateral blue-green stripe on caudal peduncle that joins a large blue-green crescent in caudal fin. This species is similar to *Scarus flavipectoralis* and *Scarus hypselopterus* in features of color pattern, meristics and distribution.

Key words: Taxonomy, *Scarus*, parrotfish, Perciformes, Scaridae

Introduction

The parrotfishes are a large and colorful group of coral reef fishes that are known to form a subgroup of the clade traditionally treated as the family Labridae, a phylogenetic position based on strong evidence from both morphological and molecular data (Gomon, 1997; Westneat & Alfaro, 2005). Despite increasing resolution of the position of parrotfishes within labrids, a formal revision of the classification of the Labridae and its component groups has not been recently proposed, in part because of the high level of research activity on phylogenetics of the group and the desire to have stability to the classification once it is revised. Thus, for the purposes of stability of nomenclature, we retain the family status of the Scaridae here and defer the discussion of classification reflecting phylogeny to larger taxonomic and phylogenetic studies.

Most parrotfishes are easily recognized by the fusion of their teeth to form beak-like dental plates and by the bright coloration of the males of most species, although basal parrotfish taxa such as *Cryptotomus* and *Nicholsina* possess jaws with unfused teeth. Ten genera of parrotfishes are recognized (Bellwood, 1994), of which *Scarus* is the largest, with over 50 species, and the only one present in all tropical and subtropical

oceans. The general morphology is similar for most species of *Scarus*, and identification of the Indo-Pacific species of *Scarus* can be difficult for preserved specimens that have lost their distinctive life color. Meristic data are of limited value in species identification. Parrotfishes normally have IX, 10 dorsal rays and III, 9 anal rays. The number of pectoral rays of the species of *Scarus* vary from 13 to 16, and the count is strongly modal for each species, so it is often helpful. The usual lateral-line scale count of 17–18 + 4–6 is of no diagnostic value, but the number of predorsal scales and the number of rows of scales on the cheek are often useful characters. The gill rakers are small and variable in number within a species. Life colors remain the most important distinctive features in the classification of *Scarus*, but sexual dichromatism and the different color of the juvenile stages (Bellwood 1989, Bellwood & Choat 1989) can complicate species identification.

Parrotfishes have extreme variation in color with growth and with sex change (Choat & Randall 1986; Bellwood & Choat 1989), and the juvenile and initial phase color patterns are often difficult to distinguish among species. This has led to a strong focus on the more colorful males as the basis for species descriptions. In the present paper, however, the initial phase coloration is distinctive, with three prominent dark spots on the dorsal, pectoral base, and anal fins, forming the etymological basis for the naming of this new parrotfish species. The authors collected this species independently on the coral reefs of Surin and the Similan Islands of Thailand and the Mentawai Islands, Sumatra.

Materials and methods

Type specimens of the new species have been deposited in the Phuket Marine Biological Center (PMBC), Field Museum of Natural History (FMNH), Bernice P. Bishop Museum, Honolulu (BPBM); Australian Museum, Sydney (AMS) and the U.S. National Museum of Natural History, Washington, D.C. (USNM). Specimens were collected by small spear using snorkel and SCUBA in relatively shallow water (to 15 m). Lengths of specimens are given as standard length (SL) which is measured from the most anterior median point of the upper lip or upper dental plate (whichever is more anterior) to the base of the caudal fin (posterior end of hypural plate); head length is measured from the same anterior point to the posterior end of the opercular flap; body depth is the greatest depth from the base of the dorsal spines to the ventral margin of the abdomen (correcting for any obvious malformation of preservation); body width is 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, and caudal-peduncle length the horizontal distance between verticals at the rear base of the anal fin and the caudal-fin base; caudal-fin length is taken from the base of the fin horizontally to the end of the longest ray; caudal concavity is the horizontal distance between verticals at the tips of the shortest and longest rays; lengths of fin spines and rays of the dorsal and anal fins are measured from their extreme bases without straightening the rays; pectoral fin length is the length of the longest ray; pelvic fin length is measured from the base of the pelvic spine to the tip of the longest soft ray. Pectoral ray counts include the first, upper, spine which is short and stout. Lateral-line scale counts do not include the two pored scales posterior to the hypural plate (i.e. lying on the base of the caudal fin); counts of the scales of the cheek are made as indicated in Schultz (1958). Data in parentheses in the description refer to paratypes.

Scarus maculipinna, new species

Spot fin Parrotfish

(Figures 1–3; Table 1)

Holotype: PMBC 20408, female, 155.2 mm total length, Indian Ocean, Similan Islands, Thailand, northeastern coast of Similan Island, 8° 39' 25" N; 97° 39' 30" E, reef slope, 12–15 m depth, spear, 27 January 1997, Ukkrit Satapoomin. Figs. 1A, 2A.

Paratypes: AMS I.43250, male, 177.6 mm, female, 144.3 mm, Surin Island, Thailand, eastern side near mouth of inlet, 9° 24.3' N; 97° 52.3' E, reef crest and slope, 3–15 m depth, spear, 24 February 1994, field number MW 94-9, Mark Westneat & Michael Beck. BPBM 37666, 91.5 mm, 153.3 mm, Indonesia, Mentawai Islands, Siberut Island off Sarabua Bay, 1°30' S, 99° 10'E, outer reef slope, 12–13 m, spear, 24 April 1997, John E. Randall, Fig. 1C. FMNH 117284, 124.0–186.9 mm (3 males, 1 female), Surin Island, Thailand, eastern side near mouth of inlet, 9° 24.3' N; 97° 52.3' E, reef crest and slope, 3–15 m depth, spear, 24 February 1994, field number MW 94-9, Mark Westneat & Michael Beck. FMNH 117285, male, 186.8 mm, female, 128.4 mm, Surin Island, Thailand, eastern side near mouth of inlet, 9° 24.3' N; 97° 52.3' E, reef crest and slope, 1–3 m depth, spear, 25 February 1994, field number MW 94-12, Mark Westneat, Figs. 1B, 2B. PMBC 20409, male, 191 mm, male, 242 mm, same data as holotype. USNM 37624, male, 212.8 mm, same data as holotype.

Diagnosis. A species of *Scarus* with 14 pectoral rays; 1X, 10 dorsal rays; III, 9 anal rays; 4 median predorsal scales; 3 rows of scales on cheek, the upper row with 6–7 scales, the middle row with 5 scales, and the lower row with 1 or 2 scales; a single laterally projecting canine on side of upper dental plates of adults; lips covering more than three-fourths of dental plates; dorsal fin moderately high, the longest dorsal spine 2.5 (2.1–3.0) in head length; caudal fin truncate in young, slightly emarginate in initial phase fish, and emarginate to lunate in terminal males. Color of initial phase brown dorsally and on sides with abdomen pale to white below, two white stripes extending from behind eye to caudal peduncle, often a third white line below dorsal fin; snout and iris of eye yellowish, with a yellow patch covering base of pectoral fin; distinctive black spot on anal fin, from the third anal spine to the second anal ray; a prominent black spot on second dorsal spine, and a small black spot dorsally on base of pectoral fin; terminal-male phase complexly colored in blue-green, pink, and yellow with dark saddle extending from postorbital region to 4th dorsal spine and slanting anteroventrally to just behind pectoral fin base; head with a broad blue-green stripe on snout that divides to form a branch through upper eye, continuing a short distance beyond, and a branch through lower eye, extending on to opercle; chin and suborbital region pinkish yellow with a short transverse blue-green chin strap; an irregular blue-green zone ventrally on head that continues broadly onto side of chest and anterior abdomen; body blue dorsally posterior to dark saddle, a midlateral blue-green stripe on caudal peduncle that joins a large blue-green crescent in caudal fin.; dorsal fin with 4 color bands, red proximally, yellow, red, then blue marginally; anal fin red proximally and blue distally.

Description. Dorsal rays IX, 10, except holotype which has VIII, 10, with an apparent gap for the missing spine; anal rays III, 9; all dorsal and anal soft rays branched, the last to base; pectoral rays 14, the upper two rays unbranched, the uppermost rudimentary; pelvic rays I, 5; principal caudal rays 13, the upper and lower unbranched; upper and lower procurrent caudal rays 6; lateral line interrupted, the pored scales 17+6 (16–18 + 6–7) including 2 on caudal-fin base; scales above lateral line 1.5; scales below lateral line 6; circumpeduncular scales 12; median predorsal scales 4, the scales progressively smaller and progressively more ridged posteriorly, the last three progressively more notched posteriorly; median prepelvic scales 4; scale rows on cheek 3, the upper row with 6–7 scales, the middle row with 5 scales, and the lower row with 2 (1–2) scales; gill rakers on first arch 53 (49–54); branchiostegal rays 5; vertebrae 12 + 13.

Body moderately elongate, the depth 2.7 (2.4–3.1) in SL, and compressed, the width 2.2 (2.1–2.4) in body depth; head length 3.3 (3.1–3.5) in SL; snout length 2.8 (2.6–3.5) in head length; orbit diameter 4.9 (4.3–6.5) in head length; interorbital space convex, the least width 2.6 (2.5–3.2) in head length; caudal peduncle depth 2.3 (2.0–2.6) in head length; caudal peduncle length 2.1 (1.6–2.5) in head length.

Mouth oblique and slightly inferior, the upper dental plate overlapping the lower, the gape forming an angle of about 30° to horizontal axis of head and body; lips covering three-fourths or more of dental plates; large adults with 1–2 lateral canines posteriorly on side of upper dental plates that project slightly posteriorly, and a single canine on right lower dental plate that projects dorsoposteriorly.

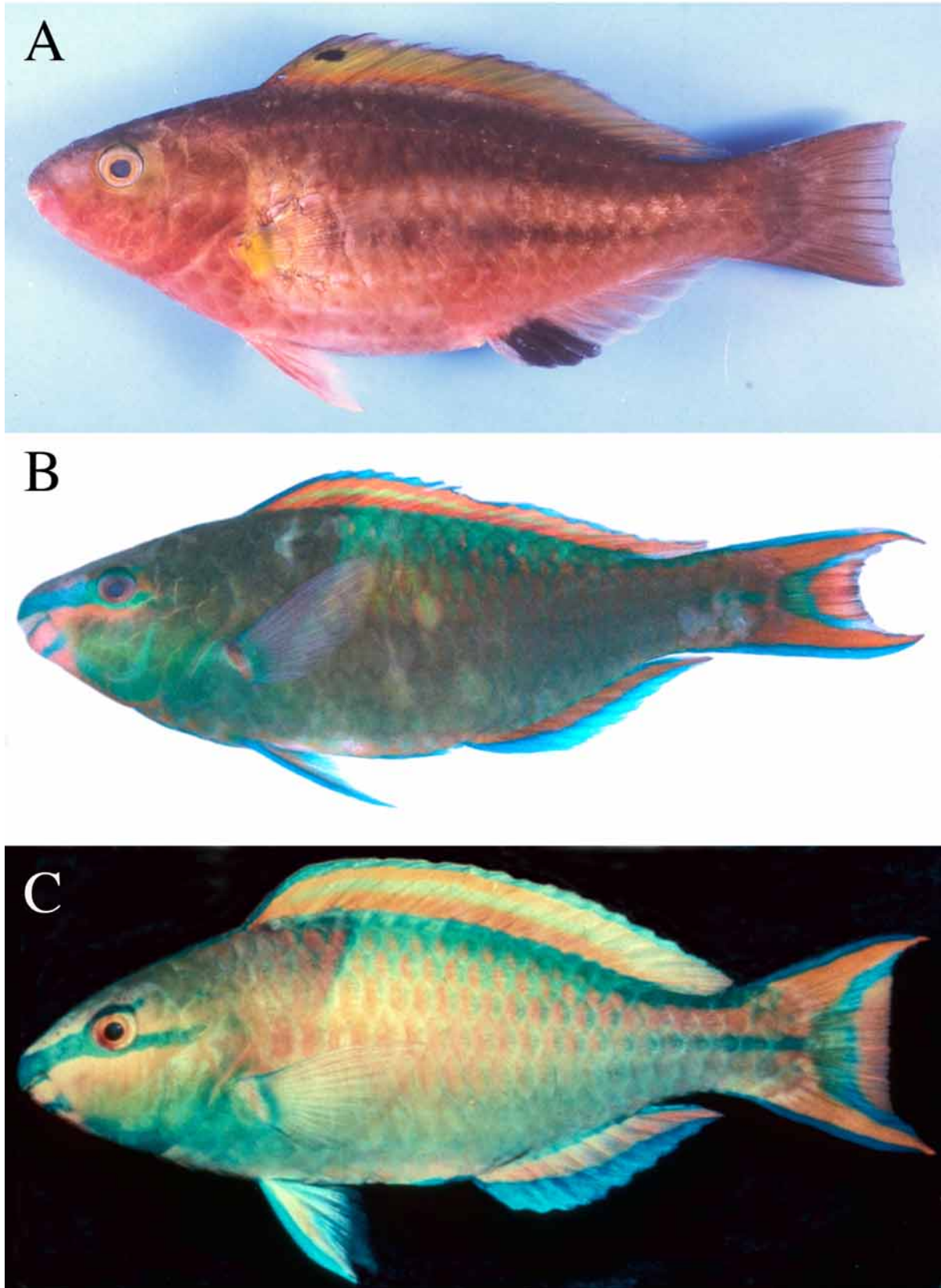


FIGURE 1. Specimens of *Scarus maculipinna*. A. Holotype of *Scarus maculipinna*, PMBC 20408, 155.2 mm TL, Similan Island, Thailand, photograph by U. Satapoomin. B. Paratype of *Scarus maculipinna*, FMNH 117285, 186.8 mm TL, photograph by M. W. Westneat. C. Paratype of *Scarus maculipinna*, BPBM 37666, 153.3 mm TL, Mentawai Islands, Indonesia, photograph by J. E. Randall.



FIGURE 2. Specimens of *Scarus maculipinna* in alcohol. A. Holotype of *Scarus maculipinna*, PMBC 20408, initial phase coloration, 155.2 mm TL, Similan Island, Thailand. B. Paratype of *Scarus maculipinna*, FMNH 117285, 186.8 mm TL, terminal phase coloration (same specimen as Fig. 1B). photographs by M. W. Westneat.

Nostrils small, the anterior in a short membranous tube, higher dorsoposteriorly, posterior nostril about 3 times larger than largest sensory pore of head, dorsoposterior to anterior nostril, the internarial distance about one-fourth orbit diameter. Scales large and cycloid; median predorsal scales extending to mid-interorbital space; dorsal fin with a low basal scaly sheath of a single row of small scales, one per membrane, diminishing in size posteriorly, and absent from about last 6 fin rays; no comparable scaly sheath on anal fin; caudal fin with 2 vertical rows of large scales on base, the middle pored scale of each row a little anterior to scales above and below, paired fins without basal scales.

Origin of dorsal fin slightly posterior to upper end of gill opening, the predorsal length 3.1 (2.8–3.5) in SL; dorsal and anal spines flexible, the tips curving posteriorly; first dorsal spine 2.1 (2.1–3.0) in head length; first dorsal soft ray longest, 2.4 (2.1–2.7) in head length; origin of anal fin below base of second dorsal soft ray, the preanal length 1.6 (1.6–1.7) in SL; first anal spine about one-third length of second spine; third anal spine 3.5 (3.0–4.5) in head length; first anal soft ray longest, 2.9 (2.5–3.5) in head length; caudal fin of holotype slightly emarginate with produced lobes, caudal fin length 1.6 (1.0–1.8) in head length, pectoral fins pointed, the third ray longest, 1.3 (1.3–1.5) in head length; pelvic fins 1.6 (1.2–1.8) in head length.

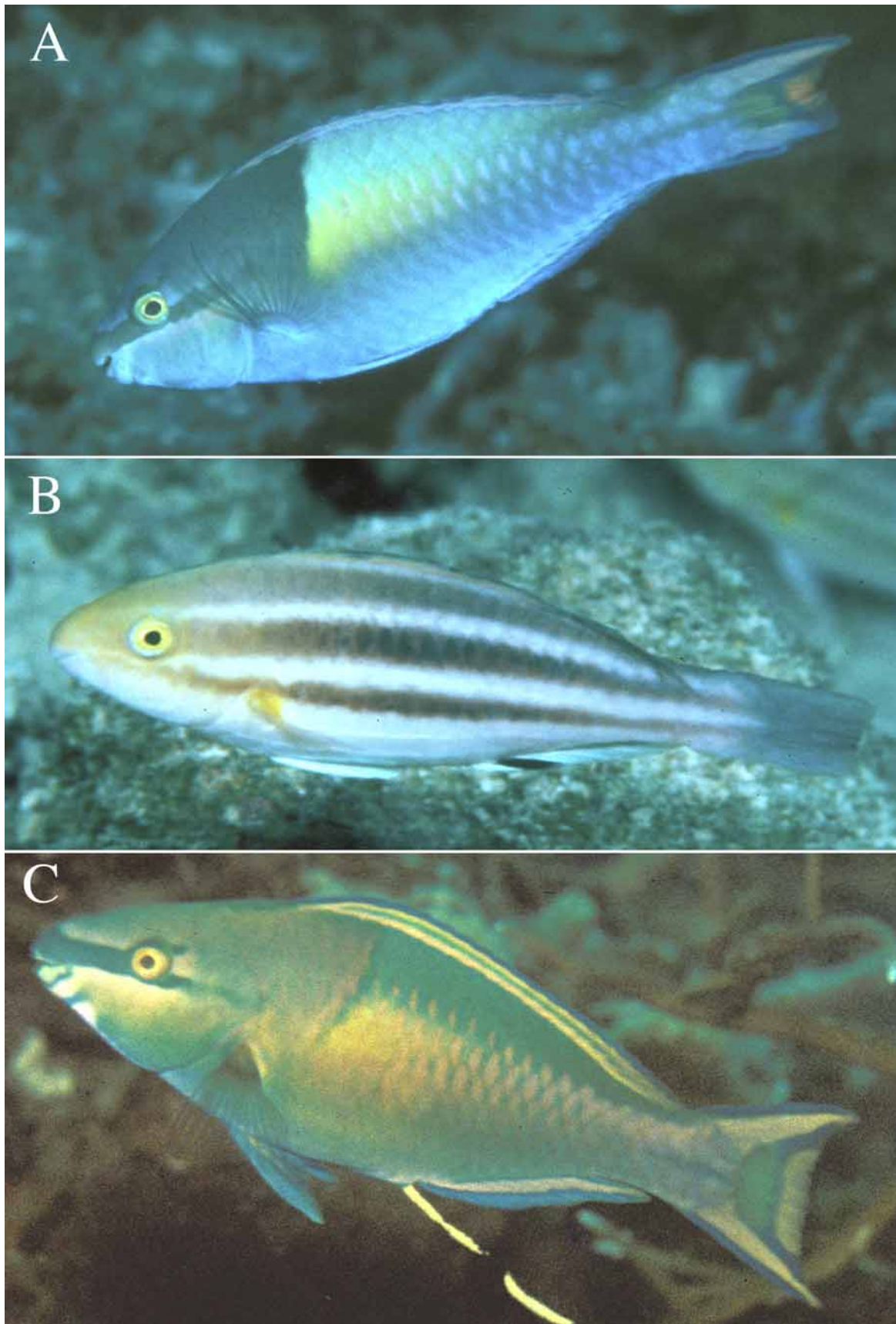


FIGURE 3. Underwater photographs of *Scarus maculipinna*. A. Terminal phase male, approximately 16.5 cm TL, Mentawai Islands, Indonesia. Photograph by J. E. Randall. B. Initial phase, approximately 9 cm TL, Mentawai Islands, Indonesia. Photograph by J. E. Randall. C. Terminal phase male, approximately 18 cm TL, Surin Island, Thailand. Photograph by U. Satapoomin.

TABLE 1. Morphometrics and diagnostic ratios for *Scarus maculipinna*.

Specimen	PMBC 20408 Holotype	PMBC 20409	PMBC 20409	FMNH 117284	FMNH 117284	FMNH 117284	FMNH 117284	FMNH 117285	FMNH 117285
Morphometrics									
total length	155.2	190.5	242.0	175.6	173.8	186.9	124.0	186.8	128.4
standard length (SL)	129.4	150.9	193.3	141.5	142.0	149.9	101.2	149.2	106.7
body depth	48.2	62.1	77.9	50.7	46.0	53.3	35.1	51.0	35.1
body width	21.9	25.4	34.0	23.7	19.7	23.0	15.3	23.7	17.0
head length (HL)	39.7	43.3	59.3	41.4	40.5	47.4	32.3	45.9	33.0
snout length	14.1	16.9	21.6	15.0	14.1	15.8	11.1	16.5	9.5
orbit diameter	8.1	8.5	9.1	8.3	7.9	8.9	7.6	8.6	6.7
inter orbit width	15.3	16.4	23.1	16.6	14.2	16.8	11.1	15.1	11.4
caudal ped depth	17.1	21.1	30.3	19.3	18.7	20.1	14.5	21.0	15.2
caudal ped length	19.0	21.3	26.6	21.3	20.3	22.9	15.2	18.3	20.7
predorsal length	42.0	43.8	58.0	41.0	42.2	42.6	32.4	43.8	31.2
preanal length	80.8	92.4	118.4	82.1	86.0	85.9	64.2	90.2	64.0
prepelvic length	42.1	43.1	53.2	44.5	40.4	43.9	34.5	46.8	36.5
dorsal fin base	70.6	83.0	110.7	81.6	75.9	83.0	59.1	83.5	59.9
1st dorsal spine	18.5	19.1	24.0	17.0	16.2	20.4	13.3	20.3	15.2
last dorsal spine	15.7	17.3	20.8	14.2	15.8	17.0	12.7	14.8	14.4
longest dorsal ray	16.6	21.0	25.6	16.0	16.8	19.2	14.5	19.1	14.2
anal fin base	32.0	39.8	51.4	39.5	37.8	39.6	26.4	39.7	28.3
3rd anal spine	11.4	11.3	16.3	11.8	13.3	14.1	8.2	13.0	9.5
longest anal ray	13.5	15.0	20.9	15.3	13.8	15.5	11.1	18.4	13.1
caudal fin length	24.6	41.7	51.8	37.8	32.7	36.7	20.9	38.8	20.6
pectoral fin length	30.1	33.3	44.4	32.4	30.6	36.2	23.8	36.4	24.1
pelvic spine length	21.9	23.3	29.9	31.6	24.2	26.4	18.2	23.9	18.7
pelvic fin length	25.5	30.4	44.2	29.0	29.2	33.2	22.1	37.0	24.2
Ratios									
SL/body depth	2.7	2.4	2.5	2.8	3.1	2.8	2.9	2.9	3.0
body depth/ width	2.2	2.4	2.3	2.1	2.3	2.3	2.3	2.2	2.1
SL/HL	3.3	3.5	3.3	3.4	3.5	3.2	3.1	3.3	3.2
HL /snout length	2.8	2.6	2.7	2.8	2.9	3.0	2.9	2.8	3.5
HL /orbit diameter	4.9	5.1	6.5	5.0	5.1	5.3	4.3	5.4	4.9
HL /caud ped depth	2.3	2.1	2.0	2.1	2.2	2.4	2.2	2.2	2.2
HL /caud ped length	2.1	2.0	2.2	1.9	2.0	2.1	2.1	2.5	1.6
HL /1st D sp length	2.1	2.3	2.5	2.4	2.5	2.3	2.4	2.3	2.2
HL /last D sp length	2.5	2.5	2.9	2.9	2.6	2.8	2.5	3.1	2.3
HL /longest D ray	2.4	2.1	2.3	2.6	2.4	2.5	2.2	2.4	2.3
HL /longest A ray	2.9	2.9	2.8	2.7	2.9	3.1	2.9	2.5	2.5
HL /caudal fin length	1.6	1.0	1.1	1.1	1.2	1.3	1.5	1.2	1.6
SL/predorsal length	3.1	3.4	3.3	3.4	3.4	3.5	3.1	3.4	3.4
SL/preanal length	1.6	1.6	1.6	1.7	1.7	1.7	1.6	1.7	1.7
SL/3rd anal spine	3.5	3.8	3.6	3.5	3.0	3.4	3.9	3.5	3.5
HL/pect fin length	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.3	1.4
HL/pelvic fin length	1.6	1.4	1.3	1.4	1.4	1.4	1.5	1.2	1.4

to be continued.

TABLE 1. (continued)

Specimen	AMS I.43250- 001	AMS I.43250- 001	BPBM 37666	BPBM 37666	USNM 376249	Mean	Min	Max
Morphometrics								
total length	177.6	144.3	153.3	91.5	212.8	163.8	91.5	242.0
standard length (SL)	145.2	122.1	126.4	80.0	169.4	133.7	80.0	193.3
body depth	51.8	42.5	47.1	26.5	66.7	48.3	26.5	77.9
body width	21.9	17.8	20.7	11.4	30.5	21.2	11.4	34.0
head length (HL)	43.8	39.7	41.4	25.6	52.9	41.0	25.6	59.3
snout length	14.6	14.9	12.3	7.9	18.1	14.2	7.9	21.6
orbit diameter	8.1	7.6	8.3	5.5	9.0	7.9	5.5	9.1
inter orbit width	15.2	12.4	15.8	8.1	20.6	14.7	8.1	23.1
caudal ped depth	19.7	15.2	17.6	10.0	25.7	18.4	10.0	30.3
caudal ped length	24.2	19.4	17.0	12.1	25.0	19.9	12.1	26.6
predorsal length	44.0	43.7	37.6	23.3	53.2	40.4	23.3	58.0
preanal length	84.4	75.9	75.4	47.5	101.2	80.6	47.5	118.4
prepelvic length	42.6	42.5	40.4	23.5	52.1	41.1	23.5	53.2
dorsal fin base	77.5	66.3	69.4	42.5	93.4	74.1	42.5	110.7
1st dorsal spine	14.4	13.4	18.4	9.0	19.9	16.9	9.0	24.0
last dorsal spine	14.4	12.3	14.3	9.0	18.3	14.8	9.0	20.8
longest dorsal ray	16.1	15.3	15.8	9.9	21.1	16.9	9.9	25.6
anal fin base	37.7	30.2	32.7	19.0	48.5	34.9	19.0	51.4
3rd anal spine	10.9	9.2	9.2	7.9	15.9	11.2	7.9	16.3
longest anal ray	13.6	13.0	12.0	8.3	16.5	14.1	8.3	20.9
caudal fin length	31.5	24.4	31.3	13.9	43.6	31.3	13.9	51.8
pectoral fin length	31.4	27.9	32.1	17.4	35.5	30.8	17.4	44.4
pelvic spine length	20.5	17.4	17.0	13.3	28.1	22.0	13.3	31.6
pelvic fin length	28.7	26.1	24.9	14.0	39.9	28.3	14.0	44.2
Ratios								
SL/body depth	2.8	2.9	2.7	3.0	2.5	2.8	2.4	3.1
body depth/ width	2.4	2.4	2.3	2.3	2.2	2.3	2.1	2.4
SL/HL	3.3	3.1	3.1	3.1	3.2	3.3	3.1	3.5
HL /snout length	3.0	2.7	3.4	3.2	2.9	2.9	2.6	3.5
HL /orbit diameter	5.4	5.2	5.0	4.6	5.9	5.1	4.3	6.5
HL /caud ped depth	2.2	2.6	2.3	2.6	2.1	2.3	2.0	2.6
HL /caud ped length	1.8	2.0	2.4	2.1	2.1	2.1	1.6	2.5
HL /1st D sp length	3.0	3.0	2.2	2.8	2.7	2.5	2.1	3.0
HL /last D sp length	3.0	3.2	2.9	2.8	2.9	2.8	2.3	3.2
HL /longest D ray	2.7	2.6	2.6	2.6	2.5	2.4	2.1	2.7
HL /longest A ray	3.2	3.1	3.5	3.1	3.2	2.9	2.5	3.5
HL /caudal fin length	1.4	1.6	1.3	1.8	1.2	1.4	1.0	1.8
SL/predorsal length	3.3	2.8	3.4	3.4	3.2	3.3	2.8	3.5
SL/preanal length	1.7	1.6	1.7	1.7	1.7	1.7	1.6	1.7
SL/3rd anal spine	4.0	4.3	4.5	3.2	3.3	3.7	3.0	4.5
HL/pect fin length	1.4	1.4	1.3	1.5	1.5	1.3	1.3	1.5
HL/pelvic fin length	1.5	1.5	1.7	1.8	1.3	1.5	1.2	1.8

Color of holotype, an initial phase female, when fresh as shown in Fig. 1A, color in life similar to that shown in Fig. 3B. Body brown dorsally and on sides with abdomen pale to white below, two white stripes extending from behind eye to caudal peduncle, often a third white line below dorsal fin; head and eye yellowish, with a yellow patch covering base of pectoral fin; distinctive black spot on anal fin, extending from base to tip of anal spines 2 and 3 and the first anal fin ray; black spots also present at base of pectoral fin and on anterior dorsal fin on the second dorsal spine.

Terminal-phase fish (Figs. 1 B&C, Figs. 3 A&C) are blue-green, pink, and yellow with dorsal part of head and body dark purplish gray anterior to a slightly oblique demarcation below base of fourth dorsal spine to just behind pectoral fin base, forming a dark purplish gray saddle; rest of body blue-green, the scales with a pink bar or spot (pink absent ventrally); side of body behind dark anterior saddle with yellow largely replacing blue-green on two middle anterior rows of about six scales; a broad blue-green stripe from front of snout to eye, dividing to a short section dorsally on eye, but continuing behind lower part of eye to end of opercle; head below stripe pink, grading ventrally to blue-green, except for chin which is pink with a blue-green edge of lower lip and a transverse blue-green bar; a midlateral blue-green stripe that continues into caudal fin where it joins a crescentic blue-green area (centrally more green than blue-green); rest of fin pink except for broad dorsal and ventral blue-green margins and posterior central part of fin which is orange; dorsal fin pink with a middle green band and blue-green margin; anal fin blue-green with a broad pink band in lower part of fin; pectoral fins transparent with dark purplish rays, the base with a pink band bordered in blue-green; pelvic fins blue-green and pink.

Preserved color pattern in alcohol (Fig. 2). Holotype and initial phase individuals (Fig. 2A) with light brown body, darker dorsally, the edges of scales narrowly darker than centers; three light horizontal lines along body, a thin one running dorsally below lateral line, one at midbody and the other ventrally above anal fin; head brown with darker coloration above orbit, paler below; dorsal fin translucent brown with a prominent black spot halfway along dorsal spine 2; anal fin pale brown with light edge, with a prominent dark brown spot extending from base to tip of fin along anal spine 3 and anal rays 1–2; a small dark brown spot at upper base of pectoral fins; pectoral fins transparent, caudal fin pale brown. Terminal phase coloration in alcohol (Fig. 2B) also brown, with dorsal part of head and body dark brown to almost black from above eye to a slightly oblique demarcation below base of fourth dorsal spine to just behind pectoral fin base, forming a dark brown saddle; small but prominent black spot at base of pectoral fin; dorsal fin with remnants of color pattern, with a darker middle band and lighter band toward the tips of the fin rays; anal fin dark proximally with a light distal band; pectoral fins transparent, caudal fin pale brown.

Habitat and distribution. *Scarus maculipinna* has been found in shallow water (3–15m) on coral reefs with high coral cover. This species has been found primarily on reef crest and slope habitats. Known distribution is limited to reefs of Surin Island and the Similan Islands of Thailand, and Mentawai Islands off the southwest coast of Sumatra. In addition, this species was illustrated in Allen *et al.*, (2003, p. 182, top right) in a photo labeled *S. hypselopterus*, taken by Rudie Kuiter at Pulau Putri, off Jakarta, Indonesia in the Java Sea (Allen, personal communication).

Remarks. *Scarus maculipinna* appears to be similar to *S. flavivectoralis* Schultz 1958 and *S. hypselopterus* Bleeker 1853. *S. flavivectoralis* ranges in the Western Pacific from the Philippines south to the Great Barrier Reef and east to the Caroline and Marshall Islands. It is reported from Scott Reef off Northwestern Australia, but its eastern extent in Indonesia is not known. The third author has an underwater photograph from Rinca in the Komodo Group of the Lesser Sunda Islands. The two species have similar meristic data and share many color features such as the dark saddle on the dorsal body (though in *S. flavivectoralis* it extends farther posteriorly), the blue-green stripe on snout and below eye (stripe above eye variable in *S. flavivectoralis*), a similar pattern of stripes on the fins and tail, and crescentic red bars on each scale of the posterior body. The terminal phase of *S. flavivectoralis* exhibits a midlateral yellow zone posteriorly on the body that is absent in *S. maculipinna*. In addition, the initial phase of *S. flavivectoralis* shares the white abdominal

lines, a black spot at pectoral fin origin, and a yellow pectoral fin base, but distinctly lacks the black spots on dorsal and anal fins.

Scarus hypselopterus is distributed from Indonesia to the Philippines, the Ryukyus and Palau, so may have a non-overlapping distribution with *S. maculipinna*. There are shared color pattern features between *S. maculipinna* and *S. hypselopterus* in the initial phase coloration including the dark spot anteriorly on anal fin and the small black spot (in both IP and TP) at upper base of pectoral fins. The IP *S. hypselopterus* does not have yellow in the pectoral region and lacks white and dark alternating stripes on the body, instead possessing a uniformly pale brown ground color with distinct yellowish caudal fin and adjacent caudal peduncle and with thin white stripes on abdomen.

If the group *S. flavipectoralis*, *S. hypselopterus*, and *S. maculipinna* are indeed close relatives, they appear to form a species complex with a restricted distribution. There is overlap between *S. flavipectoralis* and *S. hypselopterus* in the Indo-Philippine region, with *S. maculipinna* occurring along the southwestern coast of the Indonesian archipelago and into the Andaman Sea. Currently none of the members of this complex appears to extend farther into the Indian Ocean basin as they have not been recorded from Cocos (Keeling) or Christmas Islands.

Etymology. Although the males are colorful and striking, this species of *Scarus* is named *maculipinna* for the distinctive pattern of spots on the fins of the initial phase of the species. Unlike most *Scarus* IP fish, which are often unremarkable and difficult to tell apart, the IP *S. maculipinna* is unique in possession of distinct black spots on the dorsal, anal, and bases of pectoral fins (pectoral spot shared by the terminal phase).

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