

**ABUDEFDUF CONFORMIS AND PLECTROGLYPHIDODON
SAGMARIUS, TWO NEW DAMSELFISHES (POMACENTRIDAE)
FROM THE MARQUESAS ISLANDS**

by

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ABSTRACT. - Two new species of damselfishes (Pomacentridae) are described from the Marquesas Islands, *Abudefduf conformis*, previously identified as *A. saxatilis* (Linnaeus) or *A. vaigiensis* (Quoy & Gaimard), and *Plectroglyphidodon sagmarius*, formerly cited as *P. imparipennis* (Vaillant & Sauvage). *A. conformis* is distinct from the Indo-Pacific *A. vaigiensis* in having modally 13 instead of 12 anal soft rays, usually 22 instead of 21 tubed lateral-line scales, 27-30 instead of 24-28 gill rakers, and in color (edges of scales darker, dark bars narrower, and no yellow dorsally on body). *P. sagmarius* is distinct from the Indo-Pacific *P. imparipennis* in having modally 19 instead of 20 pectoral-fin rays, deeper body (2.1-2.35 in SL, compared to 2.3-2.45 in SL) and in color (a black saddle on caudal peduncle and three brownish yellow bars on body, not present in *P. imparipennis*).

RÉSUMÉ. - *Abudefduf conformis* et *Plectroglyphidodon sagmarius*, deux espèces nouvelles de demoiselles (Pomacentridae) des Îles Marquises.

Deux espèces nouvelles de demoiselles (Pomacentridae) sont décrites des Îles Marquises, *Abudefduf conformis*, identifiée précédemment comme *A. saxatilis* (Linnaeus) ou *A. vaigiensis* (Quoy & Gaimard), et *Plectroglyphidodon sagmarius*, citée jusqu'à présent comme *P. imparipennis* (Vaillant & Sauvage). *A. conformis* se distingue de l'espèce indo-pacifique *A. vaigiensis* par 13 rayons mous à l'anale au lieu de 12, en général 22 écailles tubulaires à la ligne latérale au lieu de 21, 27-30 branchiospines au lieu de 24-28, et par sa coloration (bord des écailles plus sombre, bandes noires plus étroites, pas de coloration jaune sur le dos du corps). *P. sagmarius* se distingue de l'espèce indo-pacifique *P. imparipennis* par 19 rayons à la pectorale au lieu de 20, un corps plus élevé (2,1-2,35 fois dans la LS versus 2,3-2,45) et par sa coloration (présence d'une tache noire en forme de selle sur le pédoncule caudal et de trois bandes jaune brunâtre sur le corps, absentes chez *P. imparipennis*).

Key-words. - Pomacentridae, *Abudefduf*, *Plectroglyphidodon*, ISE, Marquesas Islands, Taxonomy, New species.

The Marquesas Islands, the northernmost archipelago of French Polynesia, lie between latitudes 7°50'S and 10°35'S and longitude 138°25'W and 140°50'W. With such a tropical location, one would expect a relatively rich fish fauna. However, it is distinctly impoverished compared to the number of fishes of the Tuamotu Archipelago and Society Islands at higher latitudes.

The senior author first visited the Marquesas in his 10-m ketch in 1957 and made a few small fish collections. He returned in 1971 on the 30-m schooner "Westward" for a month of extensive fish collecting (Randall, 1978, 1980); the specimens were deposited in the Bishop Museum in Honolulu. A checklist of the fishes of French Polynesia (Ran-

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dall, 1985) included 345 species of shore fishes from the Marquesas and 593 species from the Society Islands.

As a result of an 8-day dive cruise to the Marquesas by the authors in October, 1998 and further study of previous collections, the number of shore fishes has been increased to 401 (Randall and Earle, in press). Forty-five of these fishes are presently known only from the Marquesas, thus a high percentage of endemism of 11.2%. Only the Hawaiian Islands and Easter Island in the Pacific have more endemic shore fishes, 23.1% and 22.2%, respectively (Randall, 1998). The relative impoverishment and high rate of endemism of the Marquesan fish fauna may be attributed to sea temperature volatility and isolation from the rest of the Indo-Pacific region by the prevailing South Equatorial Current which flows from east to west.

In the 1985 checklist, two common damselfishes were identified as *Abudefduf saxatilis* (Linnaeus, 1758) [this name is now restricted to the species in the Atlantic, and *A. vaigiensis* (Quoy & Gaimard, 1825) is applied to the close relative in the Indo-Pacific] and *Plectroglyphidodon imparipennis* (Vaillant & Sauvage, 1875). During our recent Marquesas dive trip, we again noticed the significant color differences of these two species from elsewhere in the Indo-Pacific, leading to our examination of Marquesan specimens in greater detail. Our present study now links morphological differences with the color differences. We present the following descriptions of these two new pomacentrid fishes.

MATERIALS AND METHODS

Type specimens of the new species are deposited in the Australian Museum, Sydney (AMS); Bernice P. Bishop Museum, Honolulu (BPBM); California Academy of Sciences, San Francisco (CAS); Muséum national d'histoire naturelle, Paris (MNHN); National Science Museum, Tokyo (NSMT); and the U.S. National Museum of Natural History, Washington, D.C. (USNM).

Lengths of specimens are given as standard length (SL) which is measured from the most anterior end of the upper lip in the median line to the base of the caudal fin (posterior end of hypural plate); head length is taken 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; upper-jaw length is taken from the front of the upper lip to the posterior end of the maxilla; 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; lengths of fin spines and rays of the median fins are measured from their extreme bases; caudal concavity is the horizontal distance between verticals at the tips of the longest and shortest caudal-fin 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. Lateral-line scale counts are made of the tubed scales in the anterior series and the midlateral pored scales posteriorly on the body; the count of scales in longitudinal series is taken from the upper end of the gill opening (the first lateral-line scale) to the base of the caudal fin; pectoral-ray counts include the upper rudimentary ray; gill-raker counts include all rudiments.

Data in parentheses in the descriptions refer to paratypes. The tables present 23 measurements as percentages of the standard length. Ratios of proportional measurements in the text are rounded to the nearest 0.05.

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(Figs 1-4, Tables I-III)

Pomacentrus coelestinus (non Cuvier) Seale, 1906: 52 (Nuku Hiva).

Abudefduf saxatilis (non Linnaeus) Fowler, 1928: 315-316 (Nuku Hiva); Fowler, 1932: 11 (Ua Huka); Herre, 1936: 291-292 (Nuku Hiva); Randall, 1985: 474.

Material examined

Holotype. - BPBM 12476, male, 131 mm, Marquesas Islands, Nuku Hiva, entrance to Taiohai Bay, Sentinelle de l'Ouest, west side, 12 m, spear, J.E. Randall, 10 May 1971.

Paratypes. - AMS I.39228-001, 2 specimens: 53-70.5 mm, CAS 204162, 2 spms: 58-67 mm, NSMT P 55946, 2 spms: 62.5-63 mm, and USNM 352406, 2 spms: 48-71.5 mm, Marquesas Islands, Nuku Hiva, Anaho Bay, tidepool, rotenone, "Hugh M. Smith" Cruise 31, J.E. King, 27 Nov. 1955; BPBM 25718, 25 spms: 17-56 mm, Fatu Hiva, Oomo, National Marine Fisheries Service, 12 Sep. 1956; BPBM 25756, 2 spms: 54.5-58 mm, Nuku Hiva, Taiohae Bay, 0.5-2 m, National Marine Fisheries Service, 15 Jun. 1958; MNHN 1998-1480, 4 spms: 47-65 mm, Hiva Oa, head of Tahauku Bay, 0-1 m, rotenone, J.E. and H.A. Randall, G. and A. Hayward, and D. Bryant, 25 Apr. 1971; BPBM 12482, 2 spms: 62-79 mm, Nuku Hiva, Taiohae Bay, west side near head of bay, shore reef, rotenone, J.E. Randall and D. Bryant, 10 May 1971.

Diagnosis

A species of *Abudefduf* with dorsal rays XIII,13-14 (usually 13); anal rays II,12-13 (usually 13); pectoral rays 19-20 (usually 19); tubed lateral-line scales 21-23 (usually 22); gill rakers 27-30; body deep, the depth 1.75-2.0 in SL, and compressed, the width 2.7-3.2 in body depth; body pale green in life, the scale edges blackish, with five narrow black bars; head and thorax pale gray-green; caudal fin dark purplish gray without a black band in each lobe; a small black spot at upper base of pectoral fin.

Description

Dorsal rays XIII (one of 30 specimens with XII),14 (13-14, usually 13); anal rays II,13 (12-13, usually 13); dorsal and anal soft rays branched (first ray of dorsal fin may be unbranched in juveniles), the last branched to base; pectoral rays 19 (19-20, usually 19), the rays branched except upper two and lower one or two; pelvic rays I,5; principal caudal rays 15, the upper and lower unbranched; upper procurrent caudal rays 5, the lower 6, the two most posterior segmented; tubed lateral-line scales 22 (21-23, usually 22); midlateral pored scales posteriorly on body 12 (10-13); longitudinal scale series 29; scales above lateral line to origin of dorsal fin 4.5; scales below lateral line to origin of anal fin 10; circumpeduncular scales 17; gill rakers 10 + 20 (8-10 + 18-21; total 27-30); pseudo-branchial filaments varying from 19 in holotype to 11 in a 30 mm paratype; branchiostegal rays 6; vertebrae 26.

Body deep, the depth 1.85 (1.75-2.0) in SL, and compressed, the width 3.15 (2.7-3.2) in body depth; head length 3.45 (2.9-3.2) in SL; snout length 3.45 (3.65-4.1) in head length; orbit diameter 3.8 (2.3-3.2) in head length; interorbital convex, the least width 3.15 (3.05-3.4) in head length; caudal-peduncle deeper than long, the least depth 1.75 (1.75-2.05) in head length, the length 1.95 (2.05-2.4) in head length.

Mouth terminal, oblique (forming an angle of about 45° to horizontal axis of head and body), and small, the maxilla extending slightly posterior to a vertical through nostril, the upper-jaw length 3.2 (3.05-3.45) in head length; teeth uniserial, close-set, and incisiform, those anteriorly in jaws bilobed on tips; upper jaw of holotype with 46 teeth, the lower jaw with 44. Tongue subtriangular with a rounded tip. Gill rakers long and slender, the longest about three-fourths length of longest gill filaments on first gill arch, half orbit diameter of holotype. Nostril prominent, with a low fleshy rim, in line with upper edge of pupil, slightly closer to eye than groove at base of upper lip. Pores of lateralis system of head very small and difficult to detect (except for about five that can be seen on each side of mandible of small paratypes).

Opercle ending posteriorly in a small, flat, acute spine (largely covered by a scale); margin of preopercle smooth, the posterior edge ending at level of middle of eye, the ventral edge extending forward to below posterior end of maxilla in holotype, but only to a vertical at anterior edge of pupil in small paratypes; suborbital very narrow, its free edge nearly reaching to below posterior edge of orbit.

Scales finely ctenoid; tubed lateral-line scales ending below last two or three rays of dorsal fin; head scaled except for side of snout, lips, mandible, suborbital, and a narrow

Table 1. - Proportional measurements of type specimens of *Abudefduf conformis*, expressed as percentages of the standard length.

	Holotype		Paratypes							
	BPBM 12476	BPBM 25718	BPBM 25718	MNHN 98-1480	CAS 204162	MNHN 98-1480	CAS 204162	USNM 352406	BPBM 12482	
Standard length (mm)	131.0	36.5	46.0	50.0	58.0	64.5	67.0	71.5	79.0	
Greatest body depth	54.2	53.7	53.3	52.1	54.2	50.5	57.1	53.2	57.0	
Body width	17.2	16.6	17.3	17.0	17.1	18.6	18.2	17.2	17.7	
Head length	29.0	33.0	34.5	34.2	33.4	32.0	32.5	31.0	31.8	
Snout length	8.4	9.0	8.7	9.0	8.6	8.5	8.9	8.1	8.7	
Orbit diameter	7.6	14.5	13.9	12.4	12.1	10.9	10.9	10.8	9.9	
Interorbital width	9.2	10.7	10.7	10.0	10.2	9.6	10.3	10.1	9.8	
Caudal-peduncle depth	16.7	16.7	16.8	17.2	17.2	16.2	18.0	17.1	18.1	
Caudal-peduncle length	14.8	14.6	14.5	14.4	14.5	14.4	14.9	15.2	14.0	
Predorsal length	41.7	44.2	44.1	43.0	43.2	41.3	43.3	41.5	43.7	
Preanal length	68.0	67.1	67.3	66.7	67.5	67.1	68.8	67.5	67.3	
Prepelvic length	41.2	42.5	41.3	42.6	42.5	42.2	43.0	40.8	42.7	
Upper-jaw length	9.1	10.8	10.5	9.9	10.5	9.3	10.8	9.8	10.1	
First dorsal spine	9.0	11.5	10.8	10.4	11.2	10.8	11.3	9.9	9.7	
Longest dorsal spine	18.3	21.2	19.5	20.4	21.5	19.9	21.1	19.9	20.7	
Longest dorsal soft ray	28.1	24.6	23.8	27.6	28.8	24.7	28.5	28.0	28.2	
First anal spine	8.9	10.5	10.0	9.7	10.5	10.3	10.4	9.9	10.3	
Second anal spine	18.2	21.9	21.4	21.4	22.2	20.5	22.4	21.0	20.2	
Longest anal soft ray	25.8	26.8	25.0	25.7	27.6	25.6	26.6	26.7	27.1	
Caudal-fin length	34.6	41.6	40.5	39.6	41.4	37.1	40.7	39.3	38.7	
Caudal concavity	18.4	19.2	18.4	18.0	18.7	16.9	19.1	18.7	18.5	
Pectoral-fin length	29.6	32.4	30.4	30.0	31.9	29.0	32.1	31.5	31.4	
Pelvic-spine length	15.3	17.8	17.8	17.0	18.9	17.1	18.2	18.2	17.8	
Pelvic-fin length	29.0	34.7	31.5	31.2	33.4	30.2	32.5	31.8	31.9	

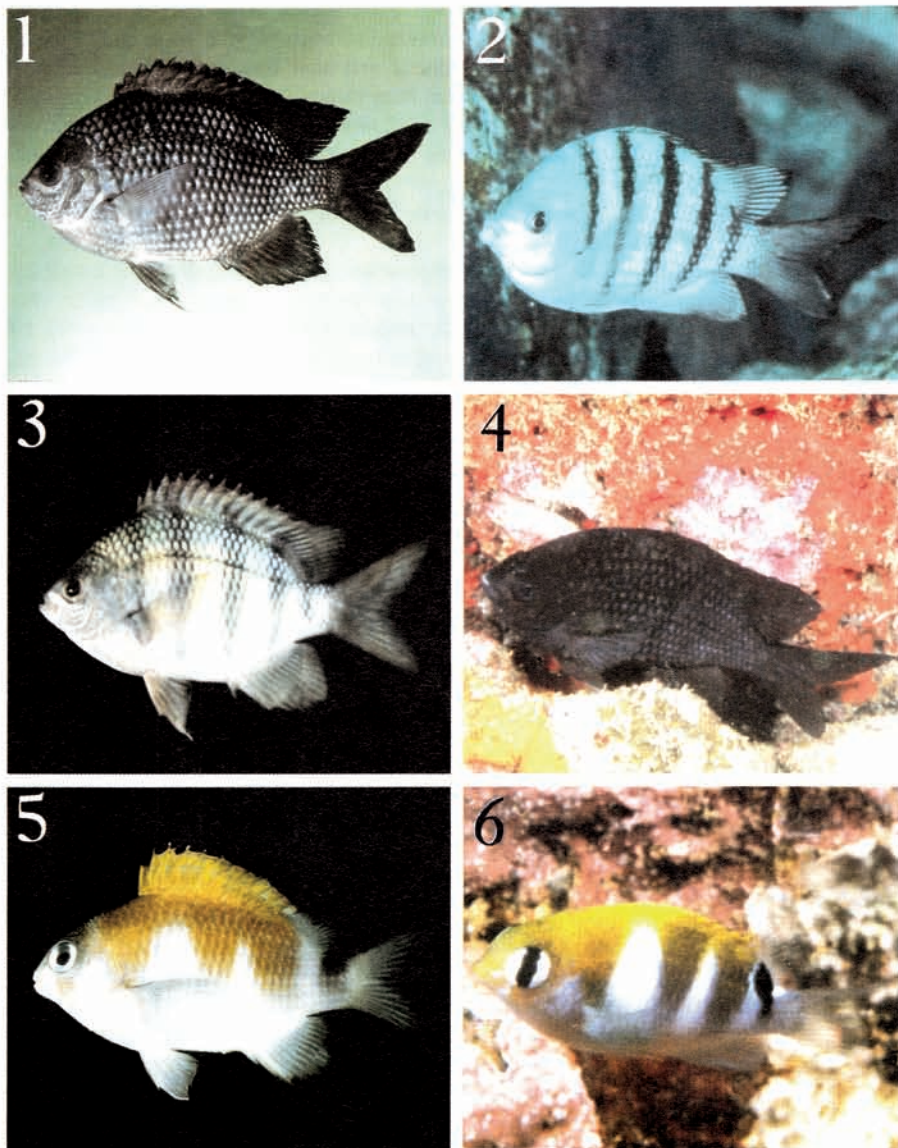


Fig. 1. - Holotype of *Abudefduf conformis*, BPBM 12476, 131 mm SL, Nuku Hiva. Fig. 2. - Underwater photograph of *Abudefduf conformis*, about 100 mm SL, Eiao. Fig. 3. - Paratype of *Abudefduf conformis*, BPBM 12482, 79 mm SL, Nuku Hiva. Fig. 4. - Underwater photograph of adult of *Abudefduf conformis* at night, Eiao. Fig. 5. - Holotype of *Plectroglyphidodon sagmarius*, BPBM 11679, 45.5 mm SL, Fatu Hiva. Fig. 6. - Underwater photograph of juvenile of *Plectroglyphidodon sagmarius*, Eiao.

flange at edge of preopercle (posterior part of preopercle with a single row of scales, the ventral part with two horizontal rows); dorsal part of head scaled anteriorly to level of nostrils (except on juveniles less than about 25 mm SL where naked anterior to mid-

interorbital space; small scales then develop forward to nostrils with increasing size); a sheath of moderately large scales at base of dorsal and anal fins, and columns of very small scales extending out on membranes more than three-fourths distance to margin of fins; caudal fin fully scaled basally, with narrow columns of very small scales extending outward on fin nearly to posterior margin; pectoral fins with small scales on about basal fourth; no scales on inner face of pectoral fins; pelvic fins with a slender pointed axillary process of four scales above the spine and another broader but pointed midventral scaly process, both more than half length of spine.

Origin of dorsal fin above third lateral-line scale, the predorsal distance 2.4 (2.25-2.4) in SL; first dorsal spine 3.2 (2.85-3.3) in head length; longest dorsal spine (last spine in specimens larger than about 75 mm SL, middle spines in smaller specimens) 1.6 (1.55-1.75) in head length; fourth or fifth dorsal soft ray longest, 3.55 (3.5-4.2) in SL; origin of anal fin below base of eleventh or twelfth dorsal spines, the preanal distance 1.45 (1.45-1.5) in SL; first anal spine 3.25 (3.1-3.5) in head length; second anal spine 1.6 (1.45-1.6) in head length; fifth or sixth anal soft rays longest, 3.9 (3.6-4.0) in SL; caudal fin strongly forked, the lobes pointed, the fin length 2.9 (2.4-2.6) in SL; caudal concavity 1.55 (1.65-1.9) in head length; third or fourth pectoral rays longest, 3.4 (3.1-3.45) in SL; first soft ray of pelvic fins longest, extending to or beyond anus (as far as base of second anal spine), its length 3.45 (2.9-3.3) in SL.

Color of holotype in alcohol. - Brown with an indistinct pale blotch basally on each scale; five dark bars only faintly visible on body; median fins brown, the membranes darker than rays; pectoral fins with translucent membranes and light yellowish brown rays, with a small dark brown blotch at upper base of fin and extending onto dorsal part of axil of fin; pelvic fins with translucent light brown membranes and yellowish brown rays.

Color of holotype when fresh (Fig. 1). - Centers of scales of body blue, the edges black; head and thorax purplish gray, the scale edges darker than centers; median fins dark brown; pectoral fins with translucent lavender membranes and light brown rays; pelvic fins dark purplish gray.

Color in life of an adult (estimated at 100 mm SL) (Fig. 2). - Body pale green, the scale edges blackish, with five distinct narrow black bars; head and thorax grayish green; dorsal and anal fins pale green with blackish rays; caudal fin purplish gray, the lobe tips blackish; paired fins pale greenish gray.

The color of the 79 mm paratype when fresh is shown in figure 3.

Table II. - Dorsal and anal soft rays of species of *Abudefduf*.

	Dorsal soft rays			Anal soft rays	
	12	13	14	12	13
<i>A. conformis</i>		24	6	3	27
<i>A. vaigiensis</i>	3	17	1	18	3

Table III. - Counts of tubed lateral-line scales and gill rakers of species of *Abudefduf*.

	Lateral-line scales				Gill rakers							
	20	21	22	23	24	25	26	27	28	29	30	
<i>A. conformis</i>		8	20	2				9	14	5	2	
<i>A. vaigiensis</i>	1	16	4		1	4	6	7	3			

The color of an adult at night (Fig. 4) is similar to that of the color of the holotype when fresh, but even darker.

Etymology

This species is named *Abudefduf conformis* from the Latin for like or similar, in reference to its similarity to *A. vaigiensis*.

Remarks

As mentioned above, it was the color pattern of this Marquesan damselfish that first aroused suspicion of its being different from *A. vaigiensis*. *A. conformis* has much darker edges on the scales of the body, thus giving an effect of a pale green spot to each scale; the dark bars on the body are narrower; and there is no suffusion of yellow dorsally on the pale interspaces of the body as usually seen on *A. vaigiensis*.

Meristic data were taken from all available Bishop Museum specimens of *A. vaigiensis* from other central and western Pacific localities (Society Islands, Lord Howe Island, Vanuatu, Solomon Islands, Indonesia, and Taiwan) to compare with the type specimens of *A. conformis* (Tables II, III). Both species have a strong modal count of 13 for the dorsal soft rays in table II, but with a slight shift to 14 for *conformis* and to 12 for *vaigiensis*. There is a clear modal difference in the number of anal soft rays, 13 for *conformis* and 12 for *vaigiensis*. Table III shows a similar modal difference in the number of tubed lateral-line scales and a better separation of the gill-raker counts.

Abudefduf conformis is one of a complex of five tropical-subtropical species of the genus worldwide; the others are *A. saxatilis* (Linnaeus) of the Atlantic, *A. troscheli* Gill of the eastern Pacific, *A. vaigiensis* (Quoy & Gaimard) of most of the Indo-Pacific, and *A. abdominalis* (Quoy & Gaimard) of the Hawaiian Islands. Allen (1991) has differentiated the last four species and illustrated them in color.

PLECTROGLYPHIDODON SAGMARIUS N. SP.

(Figs 5, 6; Tables IV, V)

Plectrogllyphidodon imparipennis (in part) Allen, 1975: 195 (unusual color variant, Marquesas Islands).

Plectrogllyphidodon imparipennis (non Vaillant & Sauvage) Randall, 1985: 474 (in checklist).

Material examined

Holotype. - BPBM 11679, male, 45.5 mm, Marquesas Islands, Fatu Hiva, northeast of Matahumu Point, 6 m, rotenone, J.E. Randall, D.B. Cannoy, and R. McNair, 19 April 1971.

Paratypes. - BPBM 10367, 2 specimens: 30-37 mm, Marquesas Islands, Nuku Hiva, Anaho Bay, tidepool, "Hugh M. Smith" Cruise 31, rotenone, J.E. King, 27 Nov. 1955; BPBM 10349, 9 spms: 18-49.4 mm, AMS I.39229-001, 2 spms: 34-42 mm, MNHN 1998-1481, 2 spms: 34-44 mm, NSMT-P 55947, 2 spms: 24-42 mm, USNM 352407, 2 spms: 31-41.5 mm, Nuku Hiva, Taiohae Bay, reef, 0.3-3 m, rotenone, "Charles H. Gilbert" Cruise 54, 11 Oct. 1961; CAS 204163, 43.5 mm, same data as holotype; BPBM 12403, 2 spms: 42-44 mm, Nuku Hiva, Anaho Bay, east side at entrance to bay, steep drop off, 0-18 m, rotenone, J.E. Randall, D.B. Cannoy, and A. Sinoto, 2 May

1971; BPBM 12557, 6 spms: 36.5-45 mm, Nukū Hiva, Taiohae Bay, west side near head of bay, inshore reef, 1-2 m, rotenone, J.E. Randall and D. Bryant, 10 May 1971.

Nontype material. - BPBM 12449, 39 spms: 30-49 mm, Nuku Hiva, Taiohae Bay, 6 December 1958.

Diagnosis

A species of *Plectroglyphidodon* with dorsal rays XII,14-15 (usually 15); anal rays II, 11-12 (rarely 12); pectoral rays 19-21 (usually 19); tubed lateral-line scales 19-21 (usually 20); gill rakers 1-3 + 9-10 (usually 2 + 10); body moderately deep, the depth 2.1-2.35 in SL. Adults white in life with a broad brown bar on head, three broad brownish yellow bars on body (wider dorsally where they join across back), a large black saddle on caudal peduncle, and orange-yellow spinous portion of dorsal fin. Juveniles lack the black saddle, having instead a large elliptical black spot basally and below posterior half of soft portion of dorsal fin and extending onto front of caudal peduncle, followed dorsally on peduncle with a bright white spot.

Description

Dorsal rays XII,15 (14-15, usually 15); anal rays II,11 (11-12, rarely 12); dorsal and anal soft rays branched (except first ray of dorsal fin and occasionally the first ray of anal fin), the last branched to base; pectoral rays 19 (19-21, usually 19, rarely 21), the rays branched except upper two and lower two or three rays; pelvic rays I,5; principal caudal rays 15, the upper and lower unbranched; upper and lower procurrent caudal rays 5 (rarely 6), the two most posterior segmented; tubed lateral-line scales 20 (19-21, usually 20, rarely 21); midlateral pored scales posteriorly on body usually 7; longitudinal scale series 28; scales above lateral line to origin of dorsal fin 3; scales below lateral line to origin of anal fin 8.5; circumpeduncular scales 15; gill rakers 2 + 9 (1-3 + 9-10, usually 2 + 10; total 10-13); pseudobranchial filaments varying from 10 in holotype to 9 in a 30 mm paratype; branchiostegal rays 6; vertebrae 26.

Body moderately deep, the depth 2.15 (2.1-2.35) in SL, and compressed, the width 2.6 (2.2-2.55) in body depth; head length 3.05 (2.85-3.1) in SL; snout length 3.5 (3.0-3.7) in head length; orbit diameter 3.1 (2.55-3.15) in head length; interorbital convex, the least width 3.45 (3.3-3.7) in head length; caudal-peduncle about equal to its length, the least depth 2.1 (2.05-2.2) in head length, the length 2.15 (2.05-2.3) in head length.

Mouth terminal or slightly inferior, horizontal to slightly oblique, and small, the maxilla extending slightly posterior to a vertical at anterior edge of orbit, the upper-jaw length 3.45 (3.2-3.55) in head length; teeth uniserial, close-set, long, slender and slightly recurved, with pointed to rounded tips; upper jaw of holotype with 50 teeth (a thick sheath had to be removed to count the teeth), the lower jaw with 44. Tongue subtriangular with a slightly rounded tip. Gill rakers short and slender, the longest about one-fifth length of longest gill filaments on first gill arch. Nostril prominent, in front of center of eye, the distance from eye about half that from nostril to edge of snout above upper lip. Pores of lateralis system of head small and difficult to detect (the most visible on suborbital, rim of orbit, and side of mandible).

Opercle ending posteriorly in a small, flat, acute spine (largely covered by a scale) at level of mouth; margin of preopercle smooth, the posterior edge ending at level of middle of eye, the ventral edge extending forward to below anterior edge of orbit; suborbital about equal to pupil diameter in greatest depth, its free edge reaching to below posterior edge of orbit.

Scales finely ctenoid; tubed lateral-line scales ending below base of eighth soft ray of dorsal fin; head scaled except for side of snout, dorsally on snout before nostrils, lips, mandible, and a narrow flange at edge of preopercle; suborbital scaled; preopercle with three horizontal rows of scales on ventral part, one vertical row on posterior part behind suborbital series of scales which continue behind orbit; a sheath of moderately large scales at base of dorsal and anal fins, the outer scales pointed and reaching about half distance to margin of fins; caudal fin with progressively smaller scales extending out at least three-fourths distance to posterior margin (distal scales usually missing on preserved specimens); pectoral fins with small scales on about basal third, the outer scales slender and pointed; no scales in axil of pectoral fins; pelvic fins with a slender pointed axillary process of three scales about half length of pelvic spine; a similar but less pointed process of three scales midventrally at base of pelvic fins.

Origin of dorsal fin above third lateral-line scale, the predorsal distance 2.35 (2.35-2.5) in SL; first dorsal spine 2.4 (2.1-2.6) in head length; fourth dorsal spine usually longest, 1.55 (1.5-1.65) in head length; fourth dorsal soft ray usually longest, 1.55 (1.45-1.65) in head length; origin of anal fin below base of eleventh or twelfth dorsal spines, the preanal distance 1.45 (1.5-1.55) in SL; first anal spine 3.1 (2.95-3.6) in head length; second anal spine 1.5 (1.35-1.55) in head length; second or third anal soft rays longest, 1.4 (1.3-1.5) in head length; caudal fin forked, the lobes rounded, the fin length 3.35 (3.0-3.4) in SL; caudal concavity 2.65 (2.55-3.0) in head length; fourth pectoral ray usually longest, 1.35 (1.2-1.4) in head length; first soft ray of pelvic fins longest, reaching to or beyond to anus, its length 3.4 (3.0-3.6) in SL.

Table IV. - Proportional measurements of type specimens of *Plectroglyphidodon sagmarius*, expressed as percentages of the standard length.

	Holotype		Paratypes						
	BPBM 11679	BPBM 10349	USNM 352407	MNHN 98-1481	BPBM 10367	BPBM 10349	CAS 204163	BPBM 10349	BPBM 10349
Standard length (mm)	45.5	30.3	31.0	34.0	37.0	42.0	43.5	47.0	49.4
Greatest body depth	46.2	43.0	46.8	44.7	46.6	44.8	46.1	43.2	46.3
Body width	17.9	18.1	18.4	17.7	18.9	18.7	20.0	19.8	20.2
Head length	32.8	33.4	34.9	34.2	32.4	33.2	33.4	33.2	32.5
Snout length	9.4	9.9	9.7	9.3	9.5	10.1	9.9	10.0	9.7
Orbit diameter	10.6	13.0	12.8	11.7	11.3	11.4	11.4	10.5	10.5
Interorbital width	9.5	9.9	9.4	9.4	9.5	9.5	9.7	9.2	9.8
Caudal-peduncle depth	15.8	16.0	16.1	16.0	15.9	15.5	15.9	14.9	14.6
Caudal-peduncle length	15.3	16.4	16.6	16.2	15.5	14.4	16.0	16.5	15.6
Predorsal length	42.4	41.6	42.2	40.3	41.2	42.6	39.8	40.0	40.5
Preanal length	67.8	66.6	64.6	64.9	67.2	66.0	67.2	65.3	66.8
Prepelvic length	40.8	40.5	41.0	41.6	40.3	42.2	41.2	40.4	40.3
Upper-jaw length	9.5	9.9	9.8	10.0	9.9	9.5	10.4	9.6	10.0
First dorsal spine	13.6	15.9	14.5	15.5	14.9	14.3	12.7	14.3	14.1
Longest dorsal spine	21.2	21.5	21.9	21.4	21.5	21.4	20.0	broken	21.3
Longest dorsal soft ray	21.2	22.4	22.6	22.1	22.2	21.6	22.1	20.3	20.7
First anal spine	10.5	10.2	9.7	9.7	11.0	10.0	9.8	10.6	10.1
Second anal spine	21.5	23.0	22.8	24.1	24.1	21.9	23.0	23.5	22.2
Longest anal soft ray	23.7	26.1	26.0	25.5	24.3	22.3	23.2	23.1	22.3
Caudal-fin length	29.9	33.0	32.4	31.8	33.3	31.4	29.3	30.0	29.7
Caudal concavity	12.3	11.9	12.2	11.8	12.8	12.4	11.2	11.3	11.2
Pectoral-fin length	24.2	24.9	25.8	26.1	27.0	25.8	24.1	23.6	25.3
Pelvic-spine length	17.6	19.3	18.7	19.1	18.8	17.8	17.7	17.9	18.0
Pelvic-fin length	29.2	32.3	33.2	32.3	31.7	29.1	29.9	29.2	27.8

Color of holotype in alcohol. - Light brown with a black saddle over most of caudal peduncle, becoming less distinct as it passes ventrally; faint dark bars on body (as described below in fresh specimen); fins pale.

Color of holotype when fresh (Fig. 5). - Body bluish white, the edges of the scales dusky, with three broad brownish yellow bars (scale edges within bars brown) which narrow as they descend to lower side of body; bars merge above lateral line; a black saddle-like bar on caudal peduncle, becoming blackish below lateral line; head brown dorsally, bluish white ventrally, with a broad dark brown bar, its anterior edge in line with front of pupil, its posterior along hind border of preopercle; iris white with a blackish bar above and below pupil; edge of orbit narrowly black; spinous portion of dorsal fin orange-yellow, the basal scaled part a little brownish, the outer part with two longitudinal rows of pale blue spots which become dashes posteriorly; remaining fins translucent, the basal scaled part whitish, the rays dark-edged.

Color of a juvenile, 24 mm SL. - Body light brown with an elliptical black spot basally in soft portion of dorsal fin posterior to eighth ray, this spot extending onto back and dorsoanterior part of caudal peduncle (greatest diameter of spot nearly equal to orbit diameter); fins pale.

Color in life of a juvenile estimated as 30 mm in total length (Fig. 6). - Body bluish white with three broad brownish yellow bars, the first on nape, merging with slightly lighter color of head, the second narrowing as it passes ventrally onto abdomen, the third from the juncture of spinous and soft portions of dorsal fin and extending to base of soft portion of anal fin; a large oblong black spot at base of soft portion of anal fin, extending onto back and anterior part of caudal peduncle, and continuing as a blackish bar across base of caudal fin; a bright bluish white spot dorsally on caudal peduncle behind black spot; a diffuse pale blue area on lower part of operculum, and a small pale blue spot behind corner of mouth; dorsal fin orange-yellow except where brownish yellow bars extend into fin; remaining fins pale gray; a black bar on eye through pupil, the rest of iris bright yellowish white.

Etymology

The specific name of this damselfish is from the Greek *sagma* for pack saddle, altered to *sagmarius*, meaning "of a saddle", in reference to the most conspicuous color marking in preservative, the broad black saddle-like bar dorsally on the caudal peduncle.

Remarks

This endemic Marquesan species was initially believed to be a color variety of *Plectroglyphidodon imparipennis*. The latter lacks the black saddle on the caudal peduncle and the three broad brownish yellow bars on the body. Because there were no obvious morphological differences, Allen (1975) regarded it as an unusual color variant, and Randall (1985) also listed it as *P. imparipennis*.

The recent visit to the Marquesas by the authors raised a suspicion that the Marquesan form might warrant recognition as a species. We now have two significant distinguishing characters to link with the color. The pectoral-ray count is strongly modal as 19 for *P. sagmarius* and as 20 for *imparipennis* (Table V). *P. sagmarius* has a deeper body, the depth 42.3-48.0% SL (mean 45.3%), compared to 37.9-43.1% SL (mean 40.8%) for *imparipennis*. Depth measurements were made from 26 type specimens of *sagmarius* 30.3-49.4 mm SL and 26 specimens of *imparipennis* from 30.0 to 47.5 mm SL. The specimens of *imparipennis* were taken from Bishop Museum lots collected in the Pitcairn

Group, Ilots de Bass (near Rapa), Phoenix Islands, Line Islands, Marshall Islands, and Minami-tori-shima (formerly Marcus Island).

Plectroglyphidodon sagmarius lives in the same surge inshore environment on rocky substratum as *P. imparipennis*. Like *imparipennis*, it is a wary fish and quickly retreats to shelter in the reef when approached.

	Pectoral rays		
	19	20	21
<i>P. imparipennis</i>	19	52	2
<i>P. sagmarius</i>	47	21	

Table V. - Counts of pectoral-fin rays of species of *Plectroglyphidodon*.

REFERENCES

- ALLEN G.R., 1975. - Damselfishes of the South Seas. 240 p. Neptune City (New Jersey): T.F.H. Publications.
- ALLEN G.R., 1991. - Damselfishes of the World. 271 p. Mentor (Ohio): Aquarium Systems.
- FOWLER H.W., 1928. - The fishes of Oceania. *Mem. B.P. Bishop Mus.*, 10: 540 p.
- FOWLER H.W., 1932. - The fishes obtained by the Pinchot South Seas Expedition of 1929, with description of one new genus and three new species. *Proc. U.S. Natl. Mus.*, 80(6): 1-16.
- HERRE A.W., 1936. - Fishes of the Crane Pacific Expedition. *Zool. Ser. Field Mus. Nat. Hist.*, 21: 1-472.
- LINNAEUS C., 1758. - Systema Naturae per Regna Naturae Secundum Classes, Ordines, Genera, Species, ..., vol. I: 824 p. Stockholm: Laurentii Salvii.
- QUOY J.R.C. & J.P. GAIMARD, 1824-1826. - Poissons, chapt. IX, pp. 192-401. In: Voyage autour du Monde ... Exécuté sur les Corvettes de L.M. "L'Uranie" et "La Physicienne", pendant les Années 1817, 1818, 1819, et 1820 (Freycinet, L. de.). Paris: Pillet Aîné.
- RANDALL J.E., 1978. - Marine biological and archaeological expedition to southeast Oceania. *Natl. Geogr. Soc. Res. Rep.*, 1969: 473-495.
- RANDALL J.E., 1980. - Westward to the Marquesas. *Freshw. Mar. Aquar.*, 3(3): 7-10, 84-92.
- RANDALL J.E., 1985. - Fishes. In: Fifth int. Coral Reef Congr., Tahiti, 1985. Vol. 1 (Delesalle B., Galzin R. & B. Salvat, eds), pp. 462-481. French Polynesian Coral Reefs.
- RANDALL J.E., 1998. - Zoogeography of the shore fishes of the Indo-Pacific region. *Zool. Stud.*, 37(4): 227-268.
- RANDALL J.E. & J.L. EARLE, in press. - Annotated checklist of the shore fishes of the Marquesas Islands, with 46 new records. *Occ. Pap. B.P. Bishop Mus.*
- SEALE A., 1906. - Fishes of the South Pacific. *Occ. Pap. B.P. Bishop Mus.*, 4(1): 1-89.
- VAILLANT L.L. & H.E. SAUVAGE, 1875. - Note sur quelques espèces nouvelles de poissons des îles Sandwich. *Rev. Mag. Zool.*, sér. 3, 3: 278-287.

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