

Three New Species of Serranid Fishes of the Genus *Plectranthias* from New Caledonia

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Abstract.—*Plectranthias megalophthalmus*, *P. retrofasciatus*, and *P. rubrifasciatus*, small serranid fishes of the subfamily Anthiinae, are described from single specimens obtained off New Caledonia in the depth range of 100 to 360 m. *P. megalophthalmus* is distinctive in its elongate body (3.4 in SL), large eye (2.9 in head), smooth preopercular margin, scaled maxilla, lack of canine teeth, and yellow color. The other two species are more typical of the genus, having a body depth of about 2.7 in SL, eye diameter 3.5 to 3.8 in head, a coarsely serrate preopercle with two antrorse spines on lower margin, a naked maxilla, and canines at the front of the upper jaw and side of the lower jaw. *P. retrofasciatus* has two red bars posteriorly on the body in life. *P. rubrifasciatus* has three red bars on the body, one Y-shaped red bar on head, and red spots posteriorly on body.

Introduction

Collections in moderately deep water by trawling and with traps in the vicinity of New Caledonia have resulted in single specimens of three distinctive new species of anthiine fishes of the genus *Plectranthias* Bleeker which are described herein. The junior author has revised *Plectranthias* (in press, *Micronesica*), recognizing 27 species (not including the present three), of which 13 will be described as new. Yoshino (1972) was the most recent revisor of *Plectranthias*; he placed only two species in the genus (though overlooked *P. garrupellus* Robins and Starck, 1961, as well as the correct allocation by these two authors of *Pelontrus morgansi* Smith, 1961, to the genus *Plectranthias*). The numerous new species, all from the Indo-Pacific region, have broken down the basis for the separation of genera closely allied to *Plectranthias*. Such formerly effective characters as the presence or absence of antrorse spines on the lower margin of the preopercle, of scales on the maxilla, of canine teeth in the jaws, of a complete or incomplete lateral line, a smooth or serrate upper preopercular margin, and branched or unbranched pectoral rays are so variously shared by the different species that eight genera currently recognized by most recent authors now fall into the synonymy of *Plectranthias*.

Methods

The last two dorsal and anal rays were counted separately when there was space between their bases. Pectoral-ray counts include the short upper ray; scales above the

lateral line to the origin of the dorsal fin were counted in a straight, slightly diagonal line above the second lateral-line scale; gill-raker counts were made on the first gill arch and include all rudiments; the raker at the angle is incorporated into the lower-limb count.

Standard length (SL) is the straight-line distance between the most anterior point of the upper lip to the base of the caudal fin. The depth of the body is the greatest depth, discounting the fins. The width of the body was measured just behind the gill opening. The head length was taken from the front of the upper lip to the most posterior point of the opercular membrane. The orbit measurement is the greatest diameter. The length of the caudal peduncle was measured diagonally from the rear base of the anal fin to the mid-base of the caudal fin. Caudal concavity is the horizontal distance between verticals at the distal ends of the longest and shortest caudal rays.

The holotypes of the three new species are deposited in the Bernice P. Bishop Museum, Honolulu (BPBM).

In the descriptions of these species, more measurement data are given in the tables (as percentages of the standard length) than are summarized in the text (as step-in measurements, rounded off to the nearest .05).

Plectranthias megalophthalmus n. sp.

Fig. 1, Table 1

HOLOTYPE: BPBM 22486, mature female, 61.0 mm SL, New Caledonia, south of Isle of Pines, 360 m, trawl, M. Barro, M/V "Vauban", 13 April 1978.

DIAGNOSIS: Dorsal rays X, 15; anal rays III, 7; pectoral rays 15, all but upper and lower branched; lateral-line complete, the pored scales 31; villiform teeth in bands in jaws, on vomer, and on palatines; no canine teeth; preopercular margin smooth; maxilla scaled; body elongate, the depth 3.4 in SL; eye very large, the orbit diameter 2.9 in head; fourth dorsal spine longest, 2.85 in head, caudal fin apparently emarginate, many rays filamentous; color in alcohol pale (evidently yellow in life), with widely scattered very faint dark blotches.

DESCRIPTION: Dorsal rays X, 15; anal rays III, 7; pectoral rays 15 (branched except uppermost and lowermost); pelvic rays I, 5; branched caudal rays 15; lateral

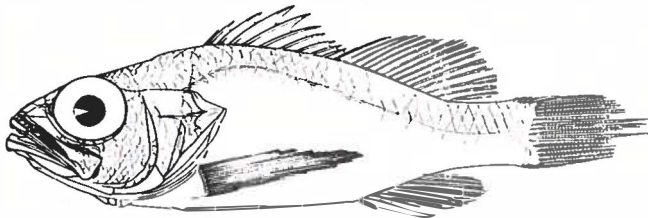


Fig. 1. Holotype of *Plectranthias megalophthalmus*, 61.0 mm SL, Isle of Pines, New Caledonia, BPBM 22486.

line complete, strongly arched over pectoral region, the tube-bearing scales 31; scales above lateral line to origin of dorsal fin 3; rows of scales between arched portion of lateral line and spinous portion of dorsal fin 2; scales below lateral line to origin of anal fin 12; circumpeduncular scales 12; diagonal rows of large scales between eye and corner of preopercle 7; gill rakers 5 + 12 (three upper-limb rakers and four lowers as rudiments) (raker count on other side 5 + 13); pseudobranch lamellae 15; branchiostegal rays 7; vertebrae 26.

Body elongate for the genus, the depth 3.4 in SL; width of body 1.85 in depth; head length 2.5 in SL; snout 4.6 in head; eye very large, the orbit diameter 2.9 in head; bony interorbital width very narrow, 12.9 in head; least depth of caudal peduncle 3.65 in head.

Dorsal profile of head moderately convex, forming an average angle of about 18° to the horizontal.

Mouth terminal, oblique (forming an angle of about 30° to the horizontal), and moderately large, the maxilla reaching a vertical at hind edge of pupil; maxilla expanded posteriorly, its greatest depth 2.3 in orbit diameter. Teeth in villiform bands in jaws (about 9 irregular rows at front of upper jaw diminishing to 4 or 5 rows at posterior end of jaw; about 7 irregular rows at front of lower jaw diminishing posteriorly to 3 or 4); a few slightly enlarged depressible teeth in the inner medial rows at front of jaws; no canine teeth, but one fixed tooth in outer row on each side at front of upper jaw about twice as long as other teeth in outer row; vomer with a V-shaped band of villiform teeth in about 3 to 4 rows; palatines with a narrow band of villiform teeth in 2 to 4 irregular rows. Tongue without teeth, tapering to a narrow rounded tip.

Longest gill filaments about 4 in orbit diameter; longest gill raker longer than longest gill filament, about 3.3 in orbit diameter.

Anterior nostril a thin membranous tube (higher posteriorly) in front of center of eye; posterior nostril an elliptical opening with little or no rim, diagonally upward and behind anterior nostril, separated from the bony edge of orbit by a distance about equal to its least diameter; a prominent pore between anterior and posterior nostrils.

Scales ctenoid; dorsal part of head scaled anteriorly to level of posterior nostrils (where the interorbital is narrowest 1 to $1\frac{1}{2}$ scales cross this space); maxilla scaled; snout and ventral part of head naked; small scales evidently extended some distance out on at least the soft portions of the dorsal and anal fins and on paired fins, but most now lost; small scales on approximately the basal one-third to one-half of caudal fin.

Three spines on opercle, the central one the largest and most posterior, much nearer the lower than upper spine; upper spine poorly developed (barely acute); opercular membrane produced to a pointed flap which projects diagonally upward. Preopercular margin broadly rounded and smooth (no serrae or antrorse spines); no serrae on subopercle or interopercle.

Origin of dorsal fin over third lateral-line scale; dorsal fin spines not very strong, the fourth the longest, its length 2.85 in head; fifth spine nearly as long as fourth; remaining spines gradually diminishing in length, the tenth contained 2.8 times in

fourth; first dorsal soft ray broken, but clearly more than twice length of tenth dorsal spine; sixth and seventh dorsal soft rays the longest, 2.3 in head. Origin of anal fin below base of fourth dorsal soft ray; second anal spine 2.4 in head; third anal soft ray longest, 2.05 in head. Caudal fin seems to have been emarginate, but most rays broken; at least some caudal rays filamentous, the longest intact ray 1.35 in head. Ninth pectoral ray the longest, 1.25 in head, reaching a vertical just posterior to spinous portion of anal fin. Pelvic fins not long, 1.95 in head.

Color in alcohol pale with traces of dark pigment forming a faint median blotch on head behind interorbital space and another on nape, a series of four faint blotches along base of dorsal fin, a second series of four on upper side below lateral line, and a single blotch just above pectoral fin about one-third distance from base (blotches difficult to see without a dissection microscope).

The color after two days in formalin was yellow; probably the fish was yellow when fresh.

REMARKS: This species is named *P. megalophthalmus* in reference to the large size of the eye. It is perhaps the most distinctive member of the genus. In its large eye it is rivalled only by *P. intermedius* (Kotthaus). In its elongate body it is equalled only by some specimens of an unnamed diminutive species from oceanic islands of the Indo-Pacific. It is unique in lacking canine teeth in both jaws (it does have a slightly enlarged tooth on each side at the front of the upper jaw, but these are not large enough to be regarded as canines). It is very nearly unique in lacking any serrae on its preopercular margin.

P. megalophthalmus was trawled, along with specimens of *P. kelloggi* Jordan and Evermann, from 360 m. This depth appears to be the greatest from which specimens of any species of *Plectranthias* have been collected. The large eye of *P. megalophthalmus* is probably correlated with the occurrence of this species in deep water. The bottom at the collection site appeared to be dominated by sponges (*Phakelia*, *Pachastrella*, and two species of Hexactinellidae). Also taken in the same trawl were shrimps of the genera *Alpheus* (two species) and *Plesionika* (three species).

***Plectranthias retrofasciatus* n. sp.**

Fig. 2, Table 1

HOLOTYPE: BPBM 22487, male?, 61.8 mm SL, New Caledonia, Gazelle Pass (near northwest tip of island), 200 m, trap, P. Laboute and G. Bargibant, from M/V "Vauban", 31 August 1978.

DIAGNOSIS: Dorsal rays X, 16; anal rays III, 7; pectoral rays 13 (upper 2 and lowermost unbranched); lateral line complete, the pored scales 29; scales above lateral line to origin of dorsal fin 4; canine teeth at front of upper jaw and on side of lower jaw, in addition to bands of villiform teeth in jaws, on vomer and palatines; two antrorse spines on lower margin of preopercle; upper margin of preopercle coarsely serrate; maxilla naked; depth of body 2.7 in SL; third dorsal spine longest, 2.2 in head;

Table 1. Proportional measurements of the holotypes of *Plectranthias megalophthalmus*, *P. retrofasciatus*, and *P. rubrifasciatus* expressed as percentages of their standard lengths.

	<i>P. megalophthalmus</i>	<i>P. retrofasciatus</i>	<i>P. rubrifasciatus</i>
Standard length (mm)	61.0	61.8	49.0
Depth of body	29.4	36.7	37.8
Width of body	15.9	19.1	17.7
Head length	40.1	45.2	44.5
Snout length	8.7	10.3	11.6
Diameter of orbit	13.8	11.8	12.7
Bony interorbital width	3.1	4.7	4.3
Length of upper jaw	19.9	21.4	21.2
Least depth of caudal peduncle	11.1	13.4	12.7
Length of caudal peduncle	21.0	19.7	14.1
Snout to origin of dorsal fin	38.0	42.3	42.7
Snout to origin of anal fin	64.1	67.8	71.4
Snout to origin of pelvic fins	33.5	37.2	36.9
Length of dorsal fin base	47.9	51.5	53.5
Length of first dorsal spine	7.7	9.5	5.7
Length of longest dorsal spine	14.1	20.5	19.2
Length of longest dorsal ray	17.6	18.5	19.4
Length of anal fin base	14.3	16.1	16.7
Length of first anal spine	8.4	10.7	10.4
Length of second anal spine	16.7	21.6	22.4
Length of third anal spine	13.0	17.6	15.7
Length of longest anal ray	19.8	25.5	25.7
Length of caudal fin	30.0	32.3	28.2
Caudal concavity	—	—	4.4
Length of pectoral fin	32.1	38.3	37.1
Length of pelvic spine	13.1	17.9	17.1
Length of pelvic fin	20.5	24.8	25.5

caudal fin emarginate; two prominent red bars on body, one across posterior caudal peduncle and the other from origin of anal fin to juncture of spinous and soft portions of dorsal fin, the bar extending into these fins.

DESCRIPTION: Dorsal rays X, 16; anal rays III, 7; pectoral rays 13 (upper 2 and lowermost unbranched); pelvic rays I, 5; branched caudal rays 15; lateral line complete, highly arched over pectoral region, the tube-bearing scales 29; scales above lateral line to origin of dorsal fin 4; rows of large scales between highly arched portion of lateral line and spinous portion of dorsal fin 2; scales below lateral line to origin of anal fin 11; circumpeduncular scales 14; diagonal rows of scales between eye and corner of preopercle 7; gill rakers 5+11 (all the uppers and three of the lowers as rudiments); pseudobranch lamellae 17; branchiostegal rays 7; vertebrae 26.

Depth of body 2.7 in SL; width of body 1.9 in depth; head length 2.2 in SL; snout 4.4 in head; orbit diameter 3.8 in head; bony interorbital width 9.6 in head; least depth of caudal peduncle 3.4 in head.

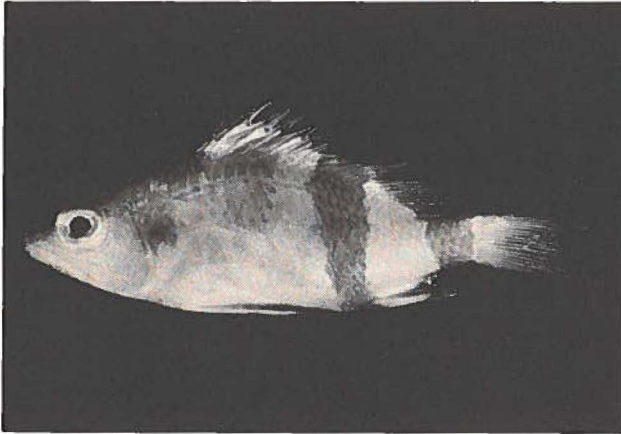


Fig. 2. Holotype of *Plectranthias retrofasciatus*, 61.8 mm SL, New Caledonia, BPBM 22487.

Dorsal profile of head nearly straight, forming an angle of about 28° to the horizontal.

Mouth terminal, oblique (forming an angle of about 20° to the horizontal), and moderately large, the maxilla nearly reaching a vertical at hind edge of orbit; maxilla expanded posteriorly, its greatest depth 1.7 in orbit diameter. Villiform teeth in bands in jaws (in about 9 irregular rows at front of upper jaw and about 6 or 7 at front of lower), in a V-shaped band of about 4 rows on vomer, and in a band of about 4 rows on palatines; inner medial teeth on each side of symphysis of upper jaw (and to a lesser extent, the lower jaw) elongate, oblique to nearly flat, and depressible; an inner row of inwardly depressible teeth along side of lower jaw about twice as long as largest teeth in outer rows; a stout canine tooth on each side at front of upper jaw and a close-set pair of canines nearly half way back on each side of lower jaw. Tongue without teeth, narrow, with rounded tip.

Longest gill filaments on first gill arch about 3.8 in orbit diameter; longest gill raker about equal to longest gill filaments.

Anterior nostril a thin membranous tube in front of center of eye; posterior nostril obliquely upward and behind anterior nostril, slightly more than a nostril diameter from bony edge of orbit, the nasal aperture covered on about ventral half by a thin membrane.

Scales ctenoid; dorsal part of head scaled anteriorly to posterior nostrils; maxilla, snout, and ventral part of head naked; moderate to small-sized scales basally on all fins, though very few on pelvics (scales variously lost from fins so exact extent of squamation difficult to determine).

Three well developed acute spines on opercle, the central one largest and most posterior and about equidistant to the other two; opercular membrane produced to a pointed flap which projects obliquely upward from region of middle opercular spine. Two antrorse spines on lower margin of preopercle; upper margin of preopercle

coarsely serrate (19 serrae on one side, 21 on the other); lower margin of subopercle with 7 or 8 serrae; interopercular margin with 4 or 5 serrae.

Origin of dorsal fin over second to third lateral-line scales; third dorsal spine the longest, 2.2 in head; fourth spine nearly as long as third; remaining dorsal spines progressively shorter, the tenth 2.3 in length of third spine; first dorsal soft ray nearly twice as long as last dorsal spine; third dorsal soft ray the longest, 2.45 in head, but fourth and fifth rays broken, and sixth and seventh nearly as long as third. Origin of anal fin beneath anterior soft portion of dorsal fin; second anal spine 2.1 in head; second anal soft ray longest, 1.75 in head. Caudal fin emarginate, the caudal concavity 5 in head, the rays filamentous, the longest ray 1.4 in head. Eighth pectoral ray the longest (but ninth subequal), 1.2 in head, reaching a vertical at base of fourth anal soft ray; pelvic fins nearly reaching anus, 1.8 in head.

Color in alcohol pale. Color from an Ektachrome transparency taken by Jacques Rivaton of the specimen when fresh: pale pink with a broad orange-red bar across posterior part of caudal peduncle; a second orange-red bar across body between juncture of spinous and soft portions of dorsal fin and front of anal fin, the bar extending to margins of these fins (partly yellow on interspinous membranes); dorsal part of head and body above lateral line anterior to base of seventh dorsal spine dusky orange-red admixed with yellow; opercular region of head and anterior part of body above pectoral fin with scattered small elongate yellow spots (mostly vertically aligned); spinous portion of dorsal fin pale pink and light transparent yellow; remaining median fins pinkish white basally, light yellowish distally; paired fins pale.

REMARKS: Named *retrofasciatus* in reference to the two red bars posteriorly on the body.

This fish is most closely related to *P. rubrifasciatus* described herein (see Remarks for this species). It is also related to two undescribed species (Randall, in press), both of which are syntypes of *Plectranthias megalepis* (Günther), (collected in 236 m in the Kai Islands, Indonesia). It differs from one of these species in having one fewer dorsal soft ray, one fewer pectoral ray, one less lateral-line scale, the depth of the body 2.7 in SL instead of about 3, the third instead of fourth dorsal spine the longest, more serrae on the subopercle and interopercle, and the teeth on the vomer in 4 instead of 2 or 3 rows. It has the same meristic data as the other species but differs in having the inner row of teeth on the side of the lower jaw about twice as long as outer rows (about the same size on the other species) and a longer caudal fin (about 1.4 in head, compared to 1.9). It differs from both in color—notably in its possession of the two prominent red bars posteriorly on the body.

Plectranthias rubrifasciatus n. sp.

Fig. 3, Table 1

HOLOTYPE: BPBM 22513, mature female, 49.0 mm SL, New Caledonia, off Bulari Pass (South of Noumea), 100 m, crab pot, M. Barro, 20 November 1978.

DIAGNOSIS: Dorsal rays X, 15; anal rays III, 7; pectoral rays 14 (upper 4 and lowermost simple, the rest branched at tips); lateral line complete, the pored scales 29; scales above lateral line to origin of dorsal fin 3; canine teeth at front of upper jaw and on side of lower jaw, in addition to bands of villiform teeth in jaws, on vomer, and palatines; two antrorse spines on lower margin of preopercle; upper margin of preopercle coarsely serrate; maxilla naked; scales dorsally on head extend to anterior third of interorbital space; depth of body 2.65 in SL; fourth dorsal spine longest, 2.3 in head; caudal fin emarginate; body with three red bars, in addition to red spots posteriorly; a bifurcating red bar posteriorly on head.

DESCRIPTION: Dorsal rays X, 15; anal rays III, 7; pectoral rays 14 (upper 4 and lowermost unbranched); pelvic rays I, 5; branched caudal rays 15; lateral line complete, highly arched over pectoral region, the tube-bearing scales 29; scales above lateral line to origin of dorsal fin 3; rows of large scales between highly arched position of lateral line and spinous portion of dorsal fin 2; scales below lateral line to origin of anal fin $11\frac{1}{2}$; circumpeduncular scales 14; diagonal rows of scales between eye and corner of preopercle 5; gill rakers 5+11 (four upper and three lower as rudiments); pseudobranch lamellae 15; branchiostegal rays 7; vertebrae 26.

Depth of body 2.65 in SL; width of body 2.1 in depth; head length 2.25 in SL; snout 3.8 in head; orbit diameter 3.5 in head; bony interorbital width 10.3 in head; least depth of caudal peduncle 3.5 in head.

Dorsal profile of head nearly straight, forming an angle of about 28° to the horizontal.

Mouth nearly terminal (lower jaw very slightly projecting), oblique (forming an angle of about 25° to the horizontal), and moderately large, the maxilla reaching posterior to a vertical at hind edge of pupil; maxilla expanded posteriorly, its greatest

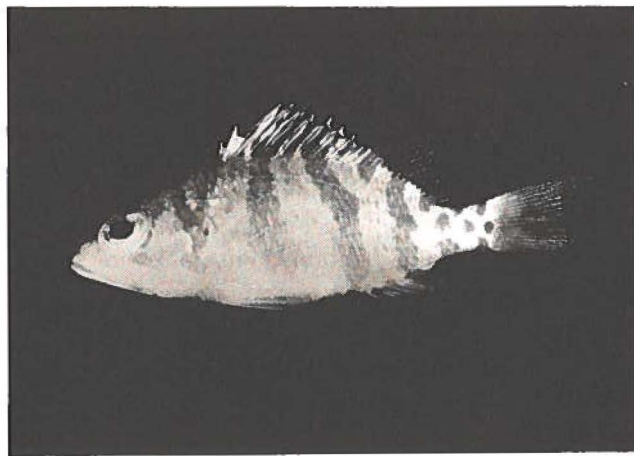


Fig. 3. Holotype of *Plectranthias rubrifasciatus*, 41.0 mm SL, New Caledonia, BPBM 22513.

depth 2.0 in orbit diameter. Villiform teeth in bands in jaws (in 8 or 9 irregular rows at front of upper jaw and about 6 rows at front of lower jaw), in a V-shaped band of 3 rows on vomer and in a band of 2 or 3 rows on palatines; inner medial teeth on each side of symphysis of jaws elongate and recumbent; an inner row of inwardly compressible slender teeth along side of lower jaw about twice as long as teeth in outer rows; a stout canine tooth on each side at front of upper jaw and a close-set pair of stout canines on each side about halfway back on each side of lower jaw. Tongue without teeth, narrow, with rounded tip.

Longest gill filaments on first gill arch about 4 in orbit diameter; longest gill raker (at angle) longer than longest gill filament, about 3.4 in orbit diameter.

Anterior nostril a thin membranous tube in front of upper third of eye; posterior nostril obliquely upward and behind anterior nostril, with a slight rim, the internarial distance about equal to $1\frac{1}{2}$ nostril aperture diameters; posterior nostril about a nostril diameter from bony edge of orbit; a very large pore between and slightly dorsal to anterior and posterior nostrils.

Scales ctenoid; dorsal part of head scaled forward to anterior third of interorbital space; maxilla, snout, and ventral part of head naked; small scales on caudal lobes extending more than half way to distal end of rays; small scales only basally on remaining fins (only a few scales of moderate size medially at base of pelvic fins).

Three acute spines on opercle, the upper least developed, the central one largest and most posterior, slightly closer to lower than upper spine; opercular membrane produced to a pointed flap which projects obliquely upward from region of central opercular spine. Two antrorse spines on lower margin of preopercle; upper margin of preopercle with 24 (22 on other side) serrae; margin of subopercle with 3 (2) small serrae; interopercular margin entire.

Origin of dorsal fin over second lateral-line scale; fourth dorsal spine the longest, 2.3 in head, but third and fifth spines nearly as long; remaining dorsal spines progressively shorter, the tenth 2.1 in length of fourth spine; first dorsal soft ray nearly twice as long as tenth dorsal spine; third dorsal soft ray longest, 2.3 in head. Origin of anal fin below base of second anal soft ray; second anal spine 2.0 in head; second anal soft ray longest, 1.75 in head. Caudal fin emarginate, the caudal concavity 10.1 in head, the rays slightly filamentous, the longest ray 1.6 in head. Ninth pectoral ray longest, 1.2 in head, reaching a vertical at base of second anal soft ray; pelvic fins not reaching anus, the longest ray 1.75 in head length.

Color in alcohol pale. Color from a 35-mm Kodachrome transparency taken by the senior author of the freshly caught holotype: pink, shading to white ventrally and posteriorly, with four orange-red bars as follows: first posteriorly on head, bifurcating on opercle, one branch passing diagonally upward and forward and the other diagonally upward and backward to origin of dorsal fin; second from basal part of dorsal fin at fifth dorsal spine vertically downward beneath pectoral fin to level of lower pectoral base; third from basal part of dorsal fin at eighth spine to origin of anal fin; and fourth from mid-base of soft portion of dorsal fin to mid-base of soft portion of anal fin; a diagonal orange-red streak behind and adjacent to eye; an orange-red

spot about size of pupil basally at front of soft portion of dorsal fin; another slightly smaller spot at rear base of dorsal fin, and seven comparable spots on caudal peduncle; small orange-red blotches on body between four orange-red bars; front of snout and edge of lower lip red; fins whitish to clear, the caudal and soft portion of dorsal fin tinged with pale orange; spinous portion of dorsal fin with a few scattered small orange-red spots in addition to upper part of second and third orange-red bars which enter basal part of fin.

REMARKS: Named *rubrifasciatus* in reference to the prominent red bars on the head and body.

Of the known species of the genus (including 13 new species in press), *P. rubrifasciatus* is most closely related to *P. retrofasciatus* (see foregoing species account). It differs in having the fourth dorsal spine the longest (the third is longest on *P. retrofasciatus*), the scales dorsally on head ending in anterior part of interorbital space instead of extending to nostrils, three instead of two scales between lateral line and origin of dorsal fin, one fewer dorsal soft rays, one more pectoral ray, a longer snout, and more red bars on the head and body.

References Cited

- Robins, C. R., and W. A. Starck II. 1961. Materials for a revision of *Serranus* and related fish genera. Proc. Acad. Nat. Sci. Philad. 113: 259-314.
- Smith, J. L. B. 1961. Fishes of the family Anthiidae. Ichth. Bull. Rhodes Univ. 21: 359-369.
- Yoshino, T. 1972. *Plectranthias yamakawai*, a new anthiine fish from the Ryukyu Islands, with a revision of the genus *Plectranthias*. Japan. Jour. Ichth. 19(2): 49-56.