

CIRRHILABRUS BATHYPHILUS, A NEW DEEP-DWELLING LABRID FISH FROM THE CORAL SEA

by

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ABSTRACT. - The labrid fish *Cirrhilabrus bathyphilus* is described as new from seven specimens collected in the Coral Sea, the holotype from Holmes Reef in the western part of the sea, a paratype from the aquarium trade, and 5 paratypes from 60-217 m from the Chesterfield Bank. This species is distinct in having 15 pectoral rays, 16-17 + 5 lateral-line scales, 5 median predorsal scales, 2 rows of scales on cheek, 14-15 gill rakers, a large eye (8.2-12.1% SL over the range in SL of 35-76 mm), emarginate caudal fin and short pelvic fins in the male, and a color pattern of the male of a very broad longitudinal black band in the outer part of the dorsal fin (absent in middle of fin of largest males), and a submarginal black band in the caudal fin.

RÉSUMÉ. - *Cirrhilabrus bathyphilus*, une espèce nouvelle de labre de profondeur de la mer de Corail.

La nouvelle espèce de labre *Cirrhilabrus bathyphilus* est décrite à partir de sept spécimens récoltés en mer de Corail : l'holotype provient du récif Holmes dans la partie occidentale de cette mer, un paratype provient du marché des poissons d'aquarium et cinq autres paratypes ont été récoltés entre 60 et 217 m de profondeur sur le banc des Chesterfield. La nouvelle espèce se distingue par les caractères suivants : 15 rayons aux nageoires pectorales, 16-17 + 5 écailles en ligne latérale, 5 écailles prédorsales médianes, 2 rangées d'écailles sur les joues, 14-15 branchiospines, des grands yeux (8,2-12,1% LS pour une gamme de tailles de 35-76 mm LS), nageoire caudale émarginée, nageoires pelviennes courtes chez le mâle, une très large bande longitudinale noire sur la partie distale de la nageoire dorsale chez le mâle (absente au milieu de la nageoire chez les plus grands mâles), et une bande submarginale noire sur la nageoire caudale.

Key words. - Labridae - *Cirrhilabrus* - ISEW - Coral Sea - New species.

During the Indo-Pacific Fish Conference in Noumea, New Caledonia in November, 1997, the senior author was asked by Michel Kulbicki of the Institut de Recherche pour le Développement, Noumea to examine five unidentified specimens of *Cirrhilabrus* in their fish collection taken by trawl and dredge in the Chesterfield Bank region of the Coral Sea. They proved to be an undescribed species, which is not surprising in view of the depth at which the specimens were collected, 60-217 m. No color photographs were taken of the specimens, and no color notes were made. Because of the importance of life color for the identification of species of *Cirrhilabrus*, it was decided not to describe the species at that time.

On 20 February 1998 the junior author purchased a live individual of this species from an aquarium fish store in Honolulu. The fish was obtained from Quality Marine, a wholesale aquarium fish dealer in Los Angeles. From an inquiry there, we learned that the specimen had come from Cairns, Queensland, and the only information on the locality was Coral Sea. No other fish of this species were available, and we were informed that it is rarely encountered.

The fish had a piece removed from the caudal fin (apparently from a bite by another fish), so it was decided to keep it in the junior author's aquarium until the damaged fin could

be regenerated. Unfortunately, it died on 9 March and was not discovered before the brilliance of its color had faded.

On 4 September 2001 the aquarium fish collector Rene Jensen collected two individuals of this wrasse at Holmes Reef, Coral Sea. Fenton Walsh of Cairns, Queensland recognized it as the species we planned to describe, and knowing we lacked knowledge of live colour, he photographed both fish in his aquarium, preserved them in formalin, and mailed the specimens and the colour slides to us.

We have made the larger of these two specimens the holotype and have deposited it in the Australian Museum, Sydney (AMS), along with one paratype. Other paratypes have been placed in the Bernice P. Bishop Museum, Honolulu (BPBM); Muséum national d'Histoire naturelle, Paris (MNHN); and the U.S. National Museum of Natural History, Washington, D.C. (USNM).

Lengths given for specimens are standard length (SL). Methods of counting and measuring of specimens follow Randall and Kunzmann (1998). Data in parentheses in the description refer to paratypes. Table I presents the measurements of all the type specimens as percentages of the standard length. Proportional measurements in the text relative to standard length, body depth, and head length are rounded to the nearest 0.05.

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CIRRHILABRUS BATHYPHILUS

(Fig. 1; Tab. I)

Materiel examined

Holotype. - AMS I.41103-001, male, 48.7 mm, Coral Sea, Holmes Reef (16°24.76'S, 148°0.50'E), rubble bottom in 6-8 m, fence net, Rene Jensen, 14 Sep. 2001.

Paratypes. - BPBM 38461, 2: 35.0-43.1 mm, Chesterfield Bank, 20°31.7'S, 158°50.9'E, 65 m, dredge, RV "Coriolis", Richer de Forges, 23 Jul. 1984; MNHN 1998-1350, 45.5 mm, Coral Sea, Chesterfield Bank, 21°24.9'S, 159°9.3'E, 60 m, trawl, RV "Coriolis", Richer de Forges, 25 Jul. 1984; USNM 350938, 60.4 mm, Chesterfield Bank, 19°25.49'S, 158°37.96'E, 217 m, trawl, RV "Alis", Corail II, Sta. 131, Richer de Forges, 29 Jul. 1988; BPBM 38462,

76.0 mm, Chesterfield Bank, 20°40.8'S, 158°51.5'E, 77 m, RV "Coriolis", Corail I, Sta. 7, trawl, Michel Kulbicki, 21 Aug. 1988; AMS I.38969-001, male, 55.0 mm, Coral Sea, off Queensland, from the aquarium fish trade, 20 Feb. 1998; BPBM 38944, 43.2 mm, same data as holotype.

Diagnosis

Dorsal rays XI,9; anal rays III,9; pectoral rays 15; lateral-line scales 16-17 + 5; median predorsal scales 5; horizontal scale rows on cheek below eye 2; gillrakers 14-15; body depth 3.00-3.55 in SL; head length 2.7-3.3 in SL; snout length 3.6-4.0 in head length; eye large, the orbit diameter 3.05-4.00 in head length; caudal fin rounded in females to emarginate in adult males; pelvic fins short, not reaching origin of anal fin, 4.4-5.9 in SL. Color in alcohol pale, the males with a broad black submarginal band in dorsal and



Figure 1. - Holotype of *Cirrhilabrus bathyphilus*, AMS I.41103-001, male, 48.7 mm SL, Holmes Reef, Coral Sea (Photo F. Walsh).



Figure 2. - *Cirrhilabrus* sp., Namena-lala (S. of Vanua Levu), Fiji (Photo A. Witte and C. Mahaney).

Table I. - Proportional measurements of type specimens of *Cirrhilabrus bathyphilus*. Expressed as percentages of the standard length.

	Holotype		Paratypes				
	AMS I.41103	BPBM 38461	BPBM 38461	MNHN 1998-1350	AMS I.38969	USNM 350938	BPBM 38462
Sex	male	female	male	female	male	male	male
Standard length (mm)	48.7	35.0	43.1	45.5	55.0	60.4	76.0
Body depth	29.1	29.4	29.7	29.1	28.9	29.9	30.0
Body width	13.2	14.3	12.3	15.1	15.0	15.0	14.5
Head length	34.8	37.1	35.0	35.2	34.0	34.0	33.0
Snout length	9.9	10.3	8.7	9.1	9.1	8.7	8.8
Orbit diameter	9.9	12.1	10.0	10.3	9.5	9.3	8.2
Interorbital width	8.5	8.6	8.8	8.6	8.7	8.8	8.6
Caudal peduncle depth	14.5	14.7	14.3	14.4	14.5	14.4	14.3
Caudal peduncle length	16.2	16.0	16.9	15.6	16.5	16.1	15.9
Predorsal length	34.7	37.1	32.4	34.4	32.7	32.3	30.4
Preanal length	60.6	63.2	63.0	63.8	59.5	61.3	61.7
Prepelvic length	35.8	34.0	35.0	35.6	36.2	37.8	37.0
Upper jaw length	8.3	8.8	9.1	8.8	8.2	8.5	8.2
Dorsal fin base	55.3	55.8	57.8	56.2	58.5	58.3	58.0
First dorsal spine	10.6	10.8	10.4	10.2	10.0	9.8	9.9
Longest dorsal spine	15.1	15.7	15.5	15.4	15.2	14.9	14.5
Longest dorsal ray	19.5	16.3	18.5	16.9	19.8	19.1	20.3
Anal fin base	26.3	22.0	23.7	26.3	26.8	26.0	26.7
First anal spine	8.9	10.1	8.7	8.8	9.1	aberrant	8.8
Second anal spine	10.8	12.9	11.8	12.2	10.9	11.6	10.5
Third anal spine	13.4	13.3	13.4	13.3	12.7	12.2	11.8
Longest anal ray	18.5	16.5	17.8	15.5	19.8	18.2	20.1
Caudal fin length	28.4	28.1	28.2	26.8	damaged	29.3	30.5
Caudal concavity	-	-	-	-	-	6.6	5.9
Pectoral fin length	23.4	22.8	23.0	22.0	22.7	23.2	24.0
Pelvic spine length	11.7	13.0	13.8	12.1	12.3	11.8	11.9
Pelvic fin length	20.6	18.0	21.3	17.7	22.0	22.5	22.9

caudal fins (absent from middle of dorsal fin in large males). Largest specimen, 76 mm SL.

Description

Dorsal rays XI,9; anal rays III,9; first dorsal and anal soft rays unbranched, the rest branched, the last to base; pectoral rays 15, the upper two unbranched; pelvic rays I,5; principal caudal rays 13, the upper and lower unbranched; upper and lower procurrent caudal rays 6, the most posterior segmented; lateral line interrupted, the pored scales 17 + 5 (16-17 + 5), plus one pored scale posterior to caudal-fin base; scales above lateral line to origin of dorsal fin 2; scales below lateral line to origin of anal fin 6; median predorsal scales 5; median prepelvic scales 6 (these scales with a median ridge); circumpeduncular scales 16; horizontal rows of scales on cheek below eye 2; gill rakers 14 (13-15); branchiostegal rays 5; vertebrae 9 + 16.

Body depth 3.45 (3.00-3.45) in SL; body compressed, the width 2.2. (1.9-2.4) in body depth; head length 2.9 (2.7-3.0) in SL; dorsal profile of head evenly convex; snout moderately pointed, its length 3.5 (3.6-4.0) in head length; eye large for the genus, the fleshy orbit diameter 3.5 (3.05-4.00) in head length; scleral cornea of eye divided into two adjacent circular parts, as is typical of the genus and allied genera (Springer and Randall, 1974); interorbital space convex, the least bony width 4.1 (3.4-4.3) in head length; caudal-peduncle depth 2.4 (2.3-2.5) in head length; caudal-peduncle length (measured horizontally from rear base of anal fin) greater than its depth, 2.15 (2.05-2.3) in head length.

Mouth terminal and small, the maxilla extending slightly posterior to a vertical through anterior nostril, the upper-jaw length 4.15 (3.85-4.20) in head length; mouth oblique, the gape forming an angle of about 25° to horizontal axis of head and body; dentition typical of the genus,

with three pairs of canines at front of upper jaw (anterior pair strongly forward-projecting, the next two progressively longer, more recurved, and more laterally projecting); side of upper jaw with a close-set series of small, slender, conical teeth (16 on holotype); lower jaw with a single pair of forward - and laterally - projecting stout canines anteriorly, and a close-set series of small, slender, conical teeth (18 in holotype); no tooth at corner of mouth, and no teeth on roof of mouth. Tongue short and rounded, the upper surface with small papillae. Gill rakers short, the longest on first gill arch about one-third length of longest gill filaments.

Edge of preopercle free from behind middle of eye to below anterior edge of pupil; posterior margin of preopercle finely serrate, the serrae on holotype 30 (27-44 on paratypes, the number increasing, in general, with growth); rounded corner and lower margin of preopercle thin and membranous. Posterior nostril subtriangular with a short rim, located slightly below level of upper edge of eye and slightly anterior to front edge of eye; anterior nostril as small as sensory pores of head, in a short membranous tube that is slightly higher posteriorly, and located anteroventral to posterior nostril, the internarial distance about 3.5 in orbit diameter. Suborbital pores from behind middle of eye to below anterior margin of eye 10 (9-13) (counting occasional double pores as one); a series of 8 pores along ventral edge of preopercle counting forward from level of lower edge of eye, continuing anteriorly as a series of 4 pores on mandible (the most anterior in midline).

Scales cycloid; head scaled except interorbital, snout, and chin; opercle covered by 7 large scales; two horizontal series of scales on cheek below eye; naked lower flange of preopercle not broad, its greatest width at angle about 2.5 in orbit diameter of holotype; a single row of scales on subopercle and interopercle; a single row of elongate scales, one per membrane, along base of dorsal and anal fins; last pored scale of lateral line on base of caudal fin, larger and more pointed than preceding scale; scale posterior to last pored scale greatly enlarged and pointed; no scales basally on paired fins; pelvic fins with a slender axillary scale about three-fourths length of pelvic spine; a scaly process of two scales extending posteriorly from between base of pelvic fins, its length about three-fourths length of pelvic spine.

Origin of dorsal fin above base of third lateral-line scale, the predorsal distance 2.8 (2.7-3.3) in SL; first dorsal spine about three-fourths length of second spine, the first spine length 3.3 (3.3-3.5) in head length; remaining dorsal spines subequal, the longest 2.3 (2.25-2.35) in head length; membranes of spinous portion of dorsal fin of males extending well above spine tips, supported by a curved cirrus originating on posterior side of each spine below tip; anterior dorsal soft rays longest, 1.8 (1.6-2.3) in head length; origin of anal fin below base of last dorsal spine, the preanal length 1.65 (1.55-1.65) in SL; first anal spine 3.9 (3.7-4.0) in head

length; second anal spine 3.2 (2.9-3.15) in head length; third anal spine 2.6 (2.6-2.8) in head length; seventh or eighth anal soft rays longest, 1.9 (1.65-2.30) in head length; caudal fin 3.5 (3.30-3.75) in SL, rounded in females and small males, the upper corner slightly protruding in holotype; caudal fin of large males double emarginate to emarginate, caudal concavity 5.15-5.60 in head length; third pectoral ray longest, 1.5 (1.35-1.65) in head length; pelvic fins short, just reaching or extending slightly beyond anus, the second ray longest, 1.7 (1.45-2.05) in head length (4.40-5.65 in SL), the fins longer in males than females.

Color of male holotype in alcohol. - Pale yellowish, dusky on nape; fourth prepelvic scale mostly dark gray (pigment beneath scale), continuing as a narrowing midventral line to base of pelvic fins; dorsal fin translucent, the first two membranes largely black, with a very broad outer blackish band, a black submarginal line, and a narrow pale margin; caudal fin translucent with a submarginal black band that is broadest dorsally; remaining fins translucent.

The two larger male paratypes have largely lost the black band in the dorsal fin between the second spine and the soft portion of the fin, and the submarginal black band in the caudal fin is broad and irregular.

Color of female paratypes in alcohol. - Pale tan overall, the largest with a black submarginal band on first membrane of dorsal fin, and a little dusky pigment distally on the caudal fin.

Color of holotype in life (Fig. 1). - Bright red, shading to orange-red posteriorly, with an indistinct darker red line following centers of longitudinal scale series; chest and lower third of head below eye and posterior to chin abruptly white, shading to pale yellowish on abdomen; nape a little dusky; iris red; spinous portion of dorsal fin red, the first two membranes largely black, with a broad blackish outer band shading to dusky red distally to a violet-blue margin and black submarginal line; a triangular yellow spot at base of each spine; soft portion of fin similar to spinous but the broad black band now submarginal and the last five membranes yellow to a narrow red zone beneath black band; anal fin yellow with a violet margin and narrow red submarginal line; caudal fin yellow with some small blue blotches on membranes in upper half of fin, with a black submarginal band that is bordered inwardly by red, the margin violet-blue dorsally and translucent red ventrally; pectoral fins transparent with red-edged rays and a broad deep red bar at base; pelvic fins blue-green, the leading edge reddish brown followed by a yellow band.

Remarks

This species is named *bathyphilus* from the Greek, in reference to its occurrence in deep water for the genus (60-

217 m for the paratypes from the Chesterfield Bank, collected by trawling, or in one station by dredge). The eye is large for a species of *Cirrhilabrus*, which correlates with its predilection for deep water. The holotype and one paratype were collected at Holmes Reef in only 6-8 m, but we believe these were unusual in their occurrence in such shallow water. We expect that the main population of the species is deeper than the usual scuba-diving depths.

Allen and Kuitert (1999: table I) listed 35 named species of *Cirrhilabrus*. Randall and Pyle (2001) added three more. The genus is second only to *Halichoeres* as the largest of the Labridae. Of the known species of *Cirrhilabrus*, *C. bathyphilus* seems closest to *C. lunatus* Randall and Masuda, 1991, described from the Ogasawara Islands and Ryukyu Islands. The two species share essentially the same meristic data, the emarginate caudal fin of the male (though strongly lunate in large *lunatus*), and the relatively short pelvic fins of the male. *C. bathyphilus* has a larger eye and is notably different in color (the median and pelvic fins of the male of *lunatus* being almost entirely black).

What appears to be the closest relative of *C. bathyphilus* is a species of which we have only an underwater photograph (Fig. 2) provided by Astrid Witte and Casey Mahaney who took it near Namenalala, a small island south of Vanua Levu, Fiji.

The similarity in colour and morphology is obvious; the dark reddish stripes on the ventral half of the body of the Fiji fish represent the most conspicuous colour difference.

While in the junior author's aquarium, the 55-mm male paratype often displayed to fishes of other species of *Cirrhilabrus* (male *C. rubripinnis*, male *C. rubrisquamis*, and male and female *C. jordani*) by curving its body as it

swam in a circle around individual fish for about a minute, as if trying to keep the fish in a restricted area. It briefly chased individuals of *C. rubripinnis* and female *C. jordani*.

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