

## A REVIEW OF THE LABRID FISHES OF THE GENUS *CIRRHILABRUS* FROM TAIWAN, WITH DESCRIPTION OF A NEW SPECIES

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### ABSTRACT

John E. Randall and Shih-Chieh Shen. *A review of the labrid fishes of the genus Cirrhilabrus from Taiwan, with description of a new species.* Bull. Inst. Zool., Academia Sinica, 17(1): 13-24. Diagnoses, distributions and figures are presented for the four Formosan species of *Cirrhilabrus* which include *C. temminckii* Bleeker, *C. cyanopleura* (Bleeker), *C. exquisitus* Smith, and a new species, *C. melanomarginatus*.

The labrid fish genus *Cirrhilabrus* Schlegel is a group of small species of reef fishes of the tropical Indo-Pacific region which feed in aggregations upon zooplankton. Typically they range 1 to 2 m above the substratum for feeding, but they quickly retire to the bottom for shelter with the approach of danger. Each species has a large male color form which does not occur in small size; drawing upon our knowledge of other wrasses, we can assume that this male is a result of sex reversal. It is more complexly and brightly colored than the smaller juvenile-female phase, and during courtship it may flash iridescent hues. The male is greatly outnumbered by the smaller female fish of an aggregation, thus suggesting that each maintains a harem of considerable size.

*Cirrhilabrus* may be distinguished from other labrid genera in having collectively: a moderately elongate body (the depth about 3 to 3.5 in SL); small acute serrae on upper margin of preopercle; an interrupted lateral line, the upper anterior part with 15 to 18 pored scales and the posterior part mid-laterally on the caudal peduncle with 5 to 8 pored scales (plus one or two posterior to caudal base); two (rarely one) rows of scales on cheek; three pairs of prominent canine teeth at front of upper jaw, the two more posterior pairs larger and recurved; a single pair of canines anteriorly in lower jaw; small teeth in a single row in jaws; a curious double pupil (Springer and Randall, 1974);<sup>(16)</sup> XI,9 dorsal rays; III,9 anal rays; a fleshy cirrus arising from posterior side of each dorsal and anal spine near tip which serves to support interspinous membranes

distal to spine tips.

Yu (1968)<sup>(18)</sup> reviewed the labrid fishes of Taiwan, but he did not include any species of *Cirrhilabrus* from the island. Jones *et al.* (1972)<sup>(17)</sup> listed 210 species of fishes collected during a marine biological survey of southern Taiwan, among them the following three *Cirrhilabrus*: *C. temminckii* Bleeker (which they misspelled *temmeincki*), *C. solorensis* Bleeker [which we here regard as a junior synonym of *C. cyanopleura* (Bleeker)], and *C. sp.* No descriptive information was given with the specimens, however. Only one specimen of the last-mentioned species, 74 mm SL, was collected. It was sent to the senior author for an opinion on the identification; he reported it as probably representing an undescribed species.

Burgess and Axelrod (1974)<sup>(14)</sup> illustrated in color three of the species of Taiwan *Cirrhilabrus* from the junior author's photographs.

Shen and Choi (1976)<sup>(14)</sup> have recently reviewed the labrid fishes of Taiwan. They have delayed the publication of the second half of their review until the current study of *Cirrhilabrus* is completed.

The authors have independently collected four species of the genus *Cirrhilabrus* from Taiwan, one of which is the new species mentioned above. We have combined our material from the National Taiwan University Museum (NTUM), Institute of Oceanography, National Taiwan University (UTIO), and the Bernice P. Bishop Museum (BPBM) for this paper.

In addition to the Bishop Museum and National Taiwan University, paratypes of the new species have been deposited at the Australian Museum, Sydney (AMS), British Museum (Natural History), London [BM(NH)], California Academy of Sciences, San Francisco (CAS), and the United States National Museum of Natural History, Washington, D. C. (USNM).

In the description of the new species below, data in parentheses refer to paratypes when different from holotype. More measurements are given in Table 1 than are summarized in the text.

Unless otherwise indicated, lengths of specimens are given in standard length (SL).

#### KEY TO SPECIES OF *CIRRHILABRUS* FROM TAIWAN

- 1a. Median predorsal scales 6; rays of median and pelvic fins light blue or blue green (in life or in preservative); adults usually with deep blue rims on at least some scales of body (also persisting in preservative); a distinctive diagonal dark brown (deep blue to purple in life) bar at pectoral base and extending below ..... *C. cyanopleura*
- 1b. Median predorsal scales 5; rays of median and pelvic fins not blue; no deep blue rims on scales of body; a dark brown bar, if present at pectoral base, diffuse.....2
- 2a. Gill rakers 16 to 19; caudal fin of adults rounded; pelvic fins of adult males very long; the longest ray contained as little as 1.7 times in SL; a stripe on body from mouth through eye to upper pectoral base ..... *C. temminckii*
- 2b. Gill rakers 19 to 22; caudal fin of adults pointed to double emarginate; pelvic fins of adult males not very long, the longest ray contained 3.1 or more times in SL; no stripe on head and body .....3
- 3a. Caudal fin of adults double emarginate; head 2.9 to 3.2 in SL; depth of body 3.2 to 3.5 in SL; a large oval blackish spot posteriorly on caudal peduncle just above lateral line; dorsal fin without a broad black margin..... *C. exquisitus*
- 3b. Caudal fin of adults with median rays prolonged; head 3.2 to 3.4 in SL; depth of body 2.9 to 3.2 in SL; no large oval blackish spot on caudal peduncle; dorsal fin of adults with a broad black margin ..... *C. melanomarginatus*, n. sp.

#### *Cirrhilabrus cyanopleura* (Bleeker)

Plate I, A

*Cheilinodes cyanopleura* Bleeker, 1851: 72<sup>(1)</sup>, (type locality, Batavia, Java).

*Cirrhilabrus solorensis* Bleeker, 1853: 88<sup>(2)</sup>, (type locality, Lawajong, Solor, Indonesia).

**Diagnosis:** Dorsal rays XI, 9; anal rays III, 9 (rarely 10); pectoral rays 15 (rarely 14 or 16); lateral-line scales 16 to 18+5 to 9 (plus one or two beyond hypural plate); median predorsal scales 6; gill rakers 16 to 19.

Depth of body 2.9 to 3.4 in SL; width of body 2.2 to 2.4 in depth; head length 3.1 to 3.4 in SL; orbit 1 to 1.2 in snout length; snout 3.8 to 4.4 in head; length of longest dorsal spine 2.2 to 2.8 in head; longest dorsal ray 1.5 to 1.8 in head; third anal spine 2.9 to 3.2 in head; longest anal ray 1.6 to 2 in head; pectoral fin 1.4 to 1.6 in head; pelvic fin 2.3 to 5.5 in SL (longest in males); caudal fin rounded (in small individuals) to rhomboidal, 3.2 to 3.7 in SL.

Color in alcohol: Head and anterior body above level of pectoral base dark brown shading to bluish posteriorly; ventral part of head and body whitish; males may have a large pale area beneath pectoral fin; usually some scales on mid-side of body rimmed with deep blue (large males have many scales with blue rims); a dark brown bar at pectoral base which extends a short distance below as a diagonal narrow deep blue band; spines and rays of median and pelvic fins light blue; primary phase fish with a brown spot slightly larger than pupil above lateral-line scale at caudal base.

In life the males are colored as in Plate I, A, although there is considerable variation. Some, for example, lack the orange area in the pectoral region.

Color in life of a 68-mm female specimen collected by the senior author at Ishigaki, Ryukyu Islands: olive on back, a few scales posterior to pectoral fin with deep purple edges; some dark-edged blue dots posteriorly on upper part of head, nape and body below anterior part of dorsal fin; a small black spot on caudal peduncle above lateral line near base of caudal fin; snout and interorbital region yellowish green; ventral part of head pale salmon; ven-

tral part of body bluish white; unscaled portion of dorsal fin with bands of orange-yellow and rose of unequal width; scaled basal portion of fin similar to body in color; anal fin with a pale blue margin, a broad submarginal zone of yellow containing faint orangish markings, a row of blue spots (one per membrane), and reddish basally; anal rays purplish; caudal fin with bluish rays and orange and yellow membranes; pectoral fins light orangish with a prominent irregular dark bar at base and extending below it; pelvic fins with bluish rays and pinkish membranes.

**Remarks:** The holotype of *C. cyanopleura*, BM(NH) 1864. 5. 15. 12, 103 mm SL, was examined at the British Museum (Natural History). The total length of this fish, 130 mm, is exactly the same as that given by Bleeker. There are still some faint blue-green areas on the scales in the middle of the body. The pelvic fins appear to be broken. The gill-raker count is difficult to make due to damage of the gill arch, but it appears to be 16.

Schmidt (1930)<sup>(12)</sup> and de Beaufort (1940)<sup>(6)</sup> suspected that *C. solorensis* Bleeker and *C. cyanopleura* may be sexual phases of the same species. The senior author examined a series of four specimens of *C. solorensis*, RMNH 6547, 61 to 76 mm SL, at the Rijksmuseum van Natuurlijke Historie in Leiden which were collected by Bleeker, as well as one Bleeker specimen, BM(NH) 1862. 2. 28. 132, 62 mm SL, at the British Museum (Natural History). It is difficult to be certain which is the holotype (Bleeker's description of *solorensis* was based on a single specimen 78 mm in total length). M. Boeseman (personal communication) believes it is the smallest specimen of the four at Leiden, which is about 76.5 mm SL. None of the characteristic deep blue markings on the scales are present on this specimen, however. They may be seen on a specimen 65 mm in SL in the same jar.

De Beaufort (1940)<sup>(6)</sup> also regarded *C. heterodon* Bleeker as a junior synonym of *C. cyanopleura*. The holotype of this species (RMNH

6548) measures 55 mm SL. There are no blue markings on the scales, but the rays of the median fins are faintly blue-green (*cyanopleura* is not the only species with blue-green rays, however). The gill-raker count is 16. More study of this specimen is needed before it may be regarded as the same as *cyanopleura*.

Fowler and Bean (1928)<sup>(9)</sup> regarded *Cirrhilabrus ryukyuensis* Ishikawa as a synonym of *C. cyanopleura*, and de Beaufort (1940)<sup>(5)</sup> placed it in *soloensis* (= *cyanopleura*).

*C. cyanopleura* has been recorded from Indonesia through the Philippines to the Ryukyu Islands. The senior author has also collected it in the Palau Islands.

**Material Examined:** TAIWAN: NTUM 04699-701, 3: 58-109 mm; UTIO-F 0238, 2: 66-70 mm; BPBM 18674, 68 mm; PHILIPPINES: BPBM 18465, 4: 47-77 mm. RYUKYU ISLANDS: BPBM 7250, 2: 68-96 mm; BPBM 19108, 2: 51-75 mm.

### *Cirrhilabrus exquisitus* Smith

#### Pl. I, B

*Cirrhilabrus exquisitus* Smith, 1957: 109<sup>(15)</sup>, (type locality, Pinda, Mozambique).

*Cirrhilabrus* sp. Kamohara and Yamakawa, 1968: 79<sup>(10)</sup>, (Koniya, Amami Ō Shima, Ryukyu Islands).

**Diagnosis:** Dorsal rays XI,9; anal rays III,9; pectoral rays 15 (rarely 14); lateral-line scales 16 to 18+6 or 7; median predorsal scales 5; gill rakers 19 to 21.

Depth of body 3.2 to 3.5 in SL; width of body 1.9 to 2.3 in depth; head length 2.9 to 3.2 in SL; orbit 1 to 1.2 in snout length; snout 3.8 to 4.4 in head; length of longest dorsal spine 2.3 to 2.7 in head; longest dorsal ray 2.2 to 2.3 in head; third anal spine 2.9 to 3.6 in head; longest anal ray 2.3 to 2.7 in head; pectoral fin 1.3 to 1.6 in head; pelvic fin 4.6 to 5.9 in head; caudal fin rounded (in small individuals) to double emarginate with the lobes produced, 3.5 to 4.3 in SL.

Color in alcohol of large males: Brown

dorsally to level of lower edge of eye on head and mid-pectoral base on body, paler below, the two regions separated by a narrow dark streak posteriorly on body; an elliptical dark brown spot, larger than eye, at caudal base, its lower edge resting on lateral line; dorsal fin brown, becoming paler anteriorly in soft portion, except for a median blackish zone which broadens as it passes posteriorly in soft portion of fin, this zone containing black-rimmed round pale spots slightly smaller than pupil; anal fin similar to soft dorsal but with a black submarginal line and pale spots not well developed; caudal fin with brown rays except upper and lower edges which are spotted linearly with black and white and ray tips which are black, the membranes brown with pale spots; pectoral fins pale with narrow dark upper and posterior margins and a broad dark band at base; pelvic fins brown laterally and pale medially.

Small primary-phase fish light brown with the characteristic large elliptical dark brown spot on upper caudal base; there may be faint longitudinal lines running along scale rows and diffuse spotting in soft portions of median fins.

In life males are colored basically as illustrated on Pl. I, B but there appears to be considerable individual and geographical variation. For example, the soft portion of the dorsal fin distal to the median blackish blue-spotted zone is usually bright red, but it was distinctly yellow on the 82-mm Okinawa specimen. Though always with pale blue spots, the principal color of the caudal fin may vary from olive to yellowish to red.

Females vary from olive to reddish brown, often with a dark and light striped pattern along scale rows; there is frequently some red on the upper part of the head which may carry into the pectoral region, usually the dorsal and anal fins have some red color; a blue streak often present posteriorly on body, ending along lower edge of the large oval black spot on caudal peduncle and fin base; a pale blue streak under eye and one preceding dark bar at (and extending below) pectoral base. Juveniles have

a cream-colored spot mid-dorsally at front of snout (a color character shared by many other species of *Cirrhilabrus*).

**Remarks:** Smith's type specimens of *C. exquisitus* came from Mozambique, Madagascar, and Zanzibar. In addition to Taiwan, the senior author has collected this species in the Maldive Islands, New Guinea, Solomon Islands, Palau Islands, Tuamotu Archipelago, and Okinawa. Also he has examined seven lots of specimens from Aldabra, western Indian Ocean at the U.S. National Museum of Natural History. The depth range for these collections was 6 to 32 m. Most individuals were taken in less than 15 m, however.

**Material Examined:** TAIWAN: NTUM 04636, 86 mm; NTUM 04728, 93 mm; BPBM 18673, 2: 45-83 mm. RYUKYU ISLANDS: BPBM 19198, 2: 63-82 mm.

*Cirrhilabrus temminckii* Bleeker

Pl. I, C

*Cirrhilabrus* sp. Temminck and Schlegel, 1864: 167<sup>(17)</sup>, (Nagasaki, Japan).

*Cirrhilabrus Temminckii* Bleeker, 1853: 17 (after Temminck and Schlegel).<sup>(17)</sup>

**Diagnosis:** Dorsal rays XI,9 (one of 16 with XII,8); anal rays III,9; pectoral rays 14 or 15 (two of 16 specimens with 14 rays); lateral-line scales 16 to 18+5 to 8 (plus one or two beyond hypural plate); median predorsal scales 5; gill rakers 16 to 19.

Depth of body 3.0 to 3.3 in SL; width of body 2.1 to 2.3 in depth; head length 2.9 to 3.3 in SL; orbit 0.9 to 1.3 in snout; snout 3.5 to 4.2 in head; length of longest (last) dorsal spine 2.2 to 2.7 in head; longest dorsal ray 1.6 to 1.9 in head; third anal spine 2.5 to 3.4 in head; longest anal ray 1.7 to 2.2 in head; pectoral fin 1.5 to 1.7 in head; pelvic fin short in small individuals to extremely long in adult males, 1.7 to 5.7 in SL; caudal fin rounded, 3.5 to 4 in SL.

Color of large males from Taiwan in alcohol: Brown with a dark-edged, light brown stripe passing from mouth through eye and

broadening as it passes across postorbital head onto body where it continues between level of upper pectoral base and anterior lateral line to upper base of caudal fin; upper dark edge of stripe becoming a series of small dark brown spots along anterior lateral line and continue to caudal fin, many of these spots vertically elongate; lower dark edge of stripe on about posterior half body also breaking into small spots (though none vertically elongate); ventral part of body pale except for a mid-ventral dusky streak passing anteriorly from origin of anal fin; dorsal and anal fins pale with a median blackish zone partially edged with a broken pale line, the distal margin of these fins narrowly pale with a black submarginal line; caudal fin dusky; paired fins pale, the long filamentous second pelvic ray dark-edged.

Our one small specimen from Taiwan believed to be this species (BPBM 19566, 45 mm SL) is brown dorsally, shading to pale ventrally; it has a blackish spot a little larger than pupil centered on caudal base above and adjacent to lateral line; the dorsal fin is dusky with an outer blackish zone containing a narrow pale band near its lower edge; remaining fins pale.

Taiwan males are colored in life as in Pl. I, C. A 74-mm male from Miyake-jima, Izu Islands differed in having the red of the head and body confined to two streaks, one from snout through upper edge of eye along ascending anterior part of lateral line and continuing along back adjacent to dorsal fin base, and the other from just below corner of mouth adjacent to lower edge of eye and continuing nearly to pectoral base. Also there is a mid-lateral row of blue dots on caudal peduncle.

We have no record of life color of our small Taiwanese specimen. A 55-mm female from the Izu Islands was colored similarly to the male mentioned above but the red stripes were not as apparent, the row of blue dots on the caudal peduncle not present, and the median blackish band in the dorsal fin poorly developed.

**Remarks:** As indicated by Boeseman (1947)<sup>(3)</sup>, there are two type specimens of *C.*

*temminckii* in the Von Siebold collection at the Rijksmuseum van Natuurlijke Historie in Leiden. These specimens, RMNH 2137, 83–88 mm SL, were examined by the senior author, and the data from them are incorporated into our diagnosis herein. We select the larger of the two specimens as the lectotype. The specimens still exhibit two whitish bands on the head and body, one running from the snout across the upper third of the eye and just below the dorsal fin base to the end of the caudal peduncle, and the second from the corner of the mouth below the eye and across the operculum; it commences again at upper pectoral base and axil and passes as a group of co-joined spots beneath pectoral fin, nearly disappearing on mid-side of body, reappearing more posteriorly as a partial double row of whitish spots, and continuing just below peduncular portion of lateral line; the caudal has a row of dark-edged pale spots forming a curve in outer third of fin; there are small dark and pale spots along the upper and lower edges of the fin.

Jordan and Snyder (1902: 651, fig. 10)<sup>(6)</sup> reported on six specimens of *C. temminckii* from Wakanoura, Japan. They presented a detailed description, including notes on the color in life. Kamohara (1958; 16, pl. 7, fig. 2)<sup>(6)</sup> included *C. temminckii* among the labrid fishes from Kochi Prefecture, Japan; he noted the Japanese name as "Itohikibera." He gave the range as Sagami Bay to the Philippines.

The Philippine record is that of Fowler and Bean (1928)<sup>(6)</sup>, who identified three specimens from the Sulu Archipelago as *temminckii*. The senior author recently collected five specimens from 20 to 23 m off southern Luzon.

The small specimens from the Marshall Islands reported as *C. temminckii* by Schultz in Schultz and collaborators (1960)<sup>(13)</sup> may not be this species. A problem exists with respect to the identification of *Cirrhilabrus* from the Marshall Islands, Mariana Islands, and Fiji Islands which have the configuration of *C. temminckii*, including the somewhat pointed snout and the very long pelvic fins of the male, but differ

significantly in color. A detailed study of these specimens and available material of *C. temminckii* is needed to determine if they are distinct species or geographical color variants. More specimens, particularly large males, are needed from intervening areas where this complex of fishes may be expected to occur.

*C. temminckii* occurs in Australian waters. Through the kindness of Gerald R. Allen of the Western Australian Museum, the Bishop Museum has received two lots from NW Cape, Western Australia (BPM 19056, 3: 67–91 mm; BPBM 20693, 79 mm). These are colored, in alcohol at least, like our Taiwan specimens.

Moyer and Shepard (1975)<sup>(11)</sup> described the courtship and pair spawning of *C. temminckii* at Miyake-jima, Izu Islands, Japan.

**Material Examined:** TAIWAN: BPBM 18672, 90 mm; BPBM 19566, 2: 45–90 mm, JAPAN: RMNH 2137, 2: 83–88 mm; BPBM 18975, 11: 40–72 mm; PHILIPPINES: BPBM 21001, 5: 59–79 mm.

*Cirrhilabrus melanomarginatus*, new species

Pl. I, D

*Cirrhilabrus* sp. Burgess and Axelrod, 1974: 871<sup>(4)</sup>, (Taiwan).

*Cirrhilabrus* sp. Shen and Choi, 1976: 79<sup>(14)</sup>, (Taiwan).

**Holotype:** BPBM 18675, 99.3 mm, female, Taiwan, south end at Mao Pi Tou, boulder bottom with some coral, 6–10 m, spear, J.E. Randall, 11 June 1975.

**Paratypes:** UTIO-F 0234, 73.5 mm, Taiwan, south end, Nan Wan Bay, between offshore rock and rocky point opposite Tan-tzu, 40 m, ichthyocide, R. S. Jones and H. T. Kami, 20 September 1971; NTUM 04729, 89 mm, Taiwan, Hung-tsai-kung, ichthyocide, W. H. Ting, 28 April 1972; NTUM 04717, 123 mm, Taiwan, Hung-tsai-kung, ichthyocide, 20 November 1972; NTUM 04718, 125 mm, Taiwan, Wan-li-tung, coral reef, about 30 m, ichthyocide, W. H. Ting, 4 January 1973; BM(NH) 1977. 12. 14.2 109.2 mm, BPBM 20967, 56.2 mm, CAS 40468, 108.8

mm, USNM 217960, 105.3 mm, all with same data as holotype; AMS I, 20073-001, 113.2 mm, Macclesfield Bank, 25 m, handline, C. H. Liu, 10 October 1975.

**Description:** Dorsal rays XI,9; anal rays III,9; pectoral rays 15 (first rudimentary, second unbranched); pelvic rays I,5; principal caudal rays 12 (outermost unbranched); lateral line interrupted, the pored scales 17+7 (17 or 18+7 or 8) (plus one beyond caudal base); scales above lateral line to origin of dorsal fin 3; scales below lateral line to origin of anal fin 7; median predorsal scales 5; circumpeduncular scales 16; rows of scales on cheek 2 (each of 6 scales); gill rakers 20 (19 to 22); branchiostegal rays 5; vertebrae 25.

Depth of body 3.1 (2.9-3.2), width of body 6.9 (5.9-8.3), head length 3.3 (3.2-3.4), snout 12.2 (10.5-12.5), orbit diameter 16.4 (12.8-18.5),

bony interorbital width 11.8 (11.2-11.9), least depth of caudal peduncle 5.9 (6.0-6.9)—all in standard length.

Mouth terminal, or with lower jaw slightly protruding; mouth oblique, forming an angle of about 45°; maxilla reaching to a vertical between eye and posterior nostril; three pairs of canine teeth anteriorly in upper jaw, progressively larger and more recurved posteriorly; a single pair of slightly divergent canine teeth anteriorly in lower jaw; small teeth in a single row medial to canines along sides of jaws; tongue short, rounded; gill rakers short, the longest less than half length of longest gill filament of first gill arch.

Upper margin of preopercle finely serrate (33 serrae on holotype), the corner broadly rounded, its edge and that of lower margin membraneous.

TABLE 1  
Proportional measurements of type specimens of *Cirrhilabrus melanomarginatus*  
expressed as percentage of standard length

	HOLOTYPE BPBM	PARATYPE BPBM	PARATYPES NTUM
Standard length (mm)	99.3	56.2	73.5-125.0
Greatest depth of body	32.0	31.5	30.8- 34.6
Width of body	14.6	12.1	13.9- 16.8
Head length	30.5	30.8	29.8- 31.2
Snout length	8.2	8.0	8.2- 9.5
Orbit diameter	6.1	7.8	5.4- 6.9
Postocular length	16.8	16.2	16.3- 17.2
Interorbital width	8.5	8.4	8.5- 8.9
Predorsal length	29.7	32.8	29.7- 31.4
Preanal length	60.0	62.2	57.6- 60.8
Least depth of caudal peduncle	16.9	15.5	14.4- 16.6
Length of dorsal-fin base	57.3	57.1	53.6- 59.5
Length of anal-fin base	26.0	26.7	24.3- 27.8
Length of first dorsal spine	5.3	7.3	5.0- 7.2
Length of second dorsal spine	7.9	9.4	8.3- 10.6
Length of sixth dorsal spine	11.0	13.2	11.1- 14.3
Length of eleventh dorsal spine	12.6	14.2	13.5- 14.5
Length of longest dorsal ray	18.8	16.8	17.5- 28.9
Length of first anal spine	6.3	7.5	6.5- 7.8
Length of second anal spine	8.7	11.2	8.5- 10.3
Length of third anal spine	9.7	12.9	9.4- 10.8
Length of longest anal ray	21.7	17.6	18.7- 30.4
Length of longest pectoral ray	22.0	21.7	22.2- 25.0
Length of pelvic spine	10.2	12.5	9.3- 12.4
Length of longest pelvic ray	24.5	19.4	20.6- 32.0
Length of longest caudal	30.2	26.5	28.1- 40.4

Snout and interorbital space naked. Nostrils small, particularly the anterior which is a membranous tube. Many of suborbital pores paired.

Origin of dorsal fin above upper end of gill opening; dorsal spines progressively longer, the last two subequal, 7.9 (6.9-7.4) in SL; longest dorsal soft ray (seventh) 5.3 (3.5-5.7) in SL; origin of anal fin below base of tenth dorsal spine; third anal spine 10.3 (7.8-10.6) in SL; longest anal soft ray (sixth to eighth) 4.6 (3.3-5.7) in SL, reaching posterior to caudal base; pectoral fins short, reaching a vertical at base of eighth dorsal spine, the longest ray 4.5 (4.0-4.6) in SL; origin of pelvic fins below lower pectoral base; pelvic fins not very long, 4.1 (3.1-5.2) in SL (second pelvic ray of adults filamentous but not reaching anus in the female holotype; may reach beyond origin of anal fin on large males); caudal fin rounded in small individuals, becoming pointed in males due to prolongation of seventh (and to a lesser extent sixth and eighth) rays, the length 3.3 (2.5-3.8) in SL.

A row of large elongate scales along base of dorsal fin, one per membrane, the longest reaching about two-thirds length of spines, the scales progressively shorter posteriorly on soft portion of fin; anal fin with a similar row of scales, but not as large and not notably shorter posteriorly; last pored scale of lateral line (posterior to hypural plate) slightly enlarged and pointed; two scales above and below this scale also slightly enlarged; posterior to these scales a vertical series of three greatly enlarged scales which reach about half way to posterior border of fin; no scales on pectoral fin except small ones at extreme base; an axillary scale associated with pelvic fins, three-fourths as long as pelvic spine; a series of three scales, the last pointed, forming a median projection from base of pelvic fins.

Color of holotype in alcohol: Upper three-fifths of head and body grayish brown, a little paler posteriorly, the scales of the anterior two-thirds of body speckled with small dark dots; lower two-fifths of head and body pale brown

with a faint dark streak passing posteriorly across abdomen from lower pectoral base and nearly joining darker upper part of body above posterior base of anal fin; isthmus dusky; eye rimmed with blackish, this broadest dorsally; dorsal fin gray-brown with a broad black margin (except tips of dorsal cirri which are pale) which broadens on soft portion of fin until it includes the full height of fin (basal scales, however, still gray-brown); a prominent clear zone, edged in light brown, in middle of soft portion of dorsal fin on last five interradial membranes; close inspection of unscaled gray-brown and black portions of dorsal fin reveals irregular fine pale lines; anal fin pale, except for brown basal row of scales, with a thin black submarginal line, the elongate posterior part of fin tipped with blackish; caudal fin with light brown rays and light dusky membranes containing short vertical irregular dark lines (more evident on dorsal part of fin); caudal fin with a row of small dark spots basally along upper and lower margins; pectoral fins pale except second ray which is brown and ray tips which are barely blackish; base of fin with a brown bar; pelvic fins light brown laterally, shading to clear medially. Color in life as illustrated in Pl. I, D.

Color in alcohol of a 56.2-mm juvenile: approximately upper three-fourths of head and body brown, the scales of the body with a faint pale vertical line (not evident posteriorly), the lower fourth pale; isthmus blackish; dorsal fin brown on basal scaled portion, black distally, with irregular pale longitudinal lines, the margin very narrowly pale; anal fin pale; caudal rays pale, the membranes dusky with pale spots; pectoral fins pale, the second ray a little dusky; pelvic fins brown laterally, pale medially. Juveniles lack the red color on the anal fin.

**Remarks:** This species is named for the broad black margin of the dorsal fin, a feature common to both juveniles and adults.

All of our specimens have come from southern Taiwan in the depth range of 6 to 40 m except for one from Macclesfield Bank



(15°45'N; 114°30'E) in the South China Sea. It certainly can be expected to occur at some other western Pacific localities such as the Philippines.

*C. melanomarginatus* may be separated from the known species of the genus by the following characters collectively: Moderate body depth (31 to 35% SL), high gill-raker count (19 to 22), 5 median predorsal scales, 2 rows of scales on cheek, pointed caudal fin of adults, distinctive color pattern, and its large size. Previously, *C. blatteus* Springer and Randall from the Red Sea was regarded as the largest species; the largest specimen measured 114 mm SL. The largest of our specimens of *C. melanomarginatus* is 125 mm SL.

The closest relative of *C. melanomarginatus* is an unnamed form collected by the senior author at various islands of Oceania including Tahiti. It seems to differ only in color pattern (though sharing a number of color features such as the broad black outer region of the dorsal fin) and in smaller maximum size. Further study is needed to determine if the form in Oceania is a distinct species or only a geographic variant of *melanomarginatus*.

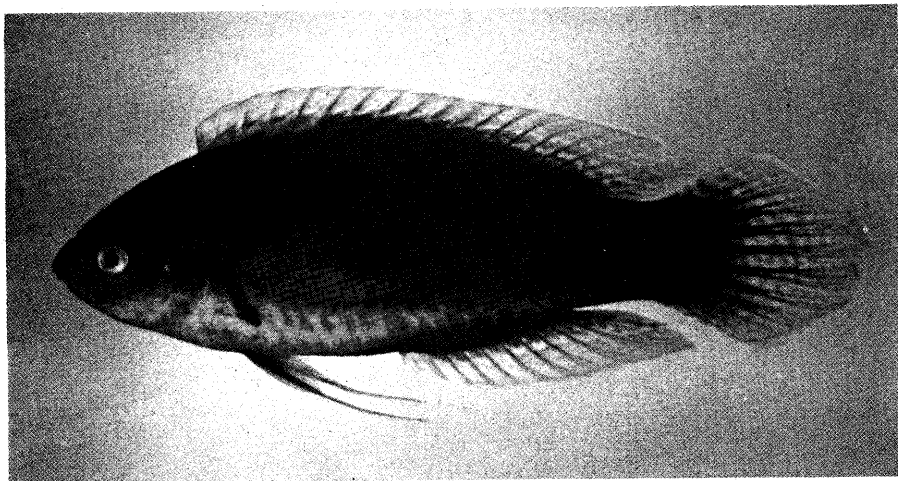
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## 臺灣產絲鰭鸚鯛屬魚類的研究及一新種之記載

JOHN E. RANDALL      沈世傑

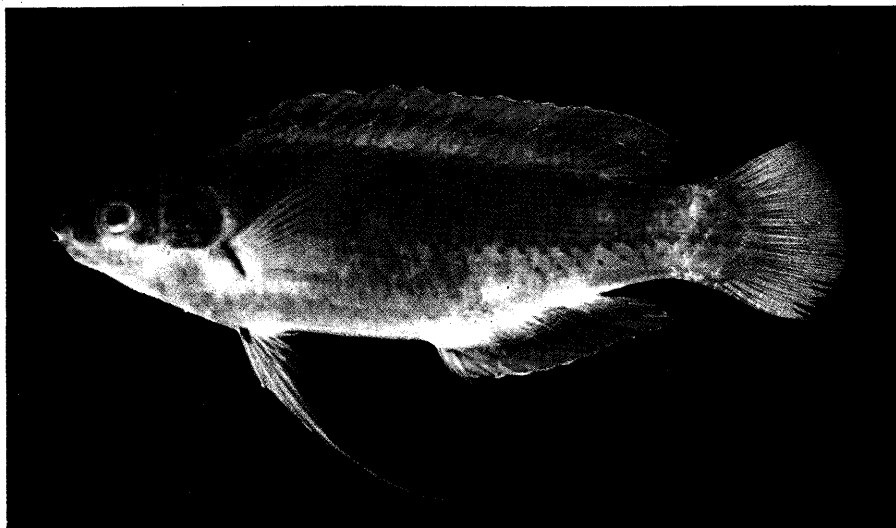
臺灣近海產的絲鰭鸚鯛屬 (*Cirrhilabrus*) 中包括以下四種：即藍身絲鰭鸚鯛 *C. cyanopleura* (Bleeker)，艷麗絲鰭鸚鯛 *C. exquisitus* Smith，丁氏絲鰭鸚鯛 *C. temminckii* Bleeker 及黑緣絲鰭鸚鯛 *C. melanomarginatus* n. sp. 除每種特徵加以描述外，並分別就其分佈予以討論。



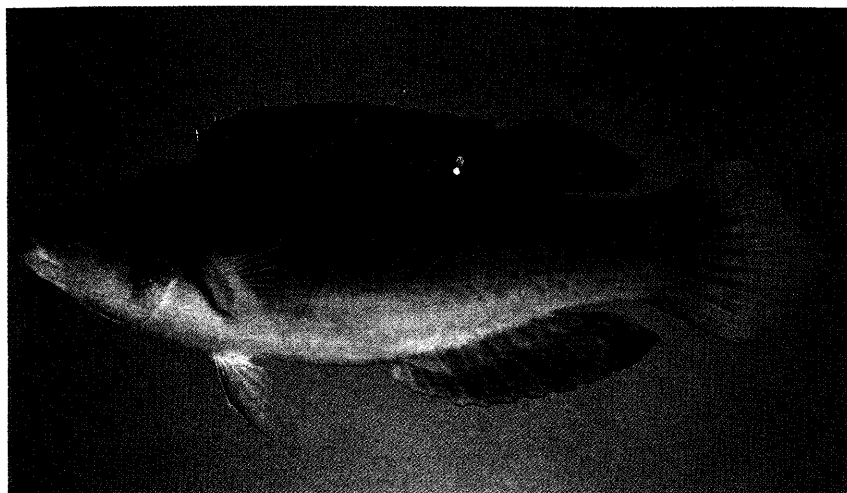
A. *Cirrhilabrus cyanopleura* (Bleeker), 89 mm SL.



B. *Cirrhilabrus exquisitus* Smith, 82 mm SL.



C. *Cirrhilabrus temminckii* Bleeker, 92 mm SL.



D. *Cirrhilabrus melanomarginatus* n. sp., 102 mm SL.