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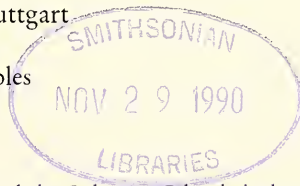
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## A New and a Rare Species of Dragonet (Teleostei: Callionymidae) from New Guinea and the Solomon Islands

By Ronald Fricke, Stuttgart

With 6 figures and 2 tables

### Summary



*Synchiropus claudiae* n. sp. from Papua New Guinea and the Solomon Islands is described. It is characterized within the *Synchiropus postulus* species group by its 17–19 pectoral fin rays, the preopercular spine formula of  $-\frac{3-5}{1}$ , no filaments in the male's first dorsal fin, sides of head in males with blue streaks, not reaching on the membrane between pectoral and pelvic fins; anal fin in the male caudally dusky, in the female colorless; lower half of caudal fin in males with vertical rows of dark blotches. The new species inhabits shallow sandy spots in rocky areas and coral reefs, not exceeding depths of 10 m.

The rare species *Callionymus brevianalis* Fricke, 1983 is redescribed, based on material from Papua New Guinea. Data on sexual dimorphism, distribution, and intraspecific variation are reported.

### Zusammenfassung

*Synchiropus claudiae*, eine neue Art der *Synchiropus postulus*-Artengruppe, wird aus dem Westpazifik beschrieben. Sie ist charakterisiert durch 17–19 Brustflossenstrahlen, einen Präoperculardorn der Formel  $-\frac{3-5}{1}$ , fehlende Filamente der ersten Rückenflosse des Männchens, Kopfseiten beim Männchen mit blauen Streifen, die aber nicht auf die Membran zwischen Brust- und Bauchflosse reichen; Afterflosse beim Männchen caudal dunkel, beim Weibchen farblos, und untere Hälfte der Schwanzflosse beim Männchen mit vertikalen Reihen dunkler Flecke. Die neue Art lebt auf Sandflecken in felsigen Gebieten und Korallenriffen Neuguineas und der Salomonen, in seichtem Wasser von 1–10 m Tiefe.

Die seltene Art *Callionymus brevianalis* Fricke, 1983, ursprünglich anhand eines männlichen Exemplars aus Irian Jaya beschrieben, wird aus Papua-Neuguinea wiederbeschrieben. Informationen über Sexualdimorphismus, Verbreitung und intraspezifische Variation werden gegeben.

### 1. Introduction

The dragonets of the family Callionymidae are a group of benthic marine fishes. The two largest genera, *Callionymus* and *Synchiropus*, occur nearly circumtropical, mostly in warm and temperate seas.

The Indo-Pacific species of the family Callionymidae were revised recently by FRICKE (1983). A total of 126 species was recognized as valid for the region; 84 of the species belong to the genus *Callionymus*, 27 to the genus *Synchiropus*. The highest diversity of the Callionymidae is found in the tropical West Pacific (FRICKE, 1983, 1988). One of the zones of high dragonet species diversity is the area around New Guinea. 29 species of dragonets live there according to FRICKE (1988: 493). This is only slightly less than the species number in the highest diversity area, the Philippines.

In the years 1986 and 1987, PATRICK L. COLIN of the Motupore Island Research Station (Papua New Guinea) collected interesting callionymid fish material and donated it to the author of the present paper. Within this material, a new species of *Synchiropus* was found, which is described here. Also, additional material of the rare species *Callionymus brevianalis* (which was before known only from a single specimen) was collected, including a female specimen (before, only the male was known). Therefore, this species is redescribed in the present paper, providing additional data on sexual dimorphism, distribution, and intraspecific variation.

Methods: Methods follow FRICKE (1983).

Material: The material of the new and the rare species is deposited in the following institutions: *BPBM* = Bernice P. Bishop Museum, Honolulu, Hawaii; *CAS* = California Academy of Sciences, San Francisco; *SMNS* = Staatliches Museum für Naturkunde, Stuttgart; *USNM* = National Museum of Natural History, Washington D.C.

Acknowledgments: I would like to thank Dr. PATRICK L. COLIN (Motupore Island Research Station, Papua New Guinea) for collecting and donating these and other dragonet specimens. Dr. W. N. ESCHMEYER and Dr. T. IWAMOTO (CAS), Dr. J. E. RANDALL (BPBM), and Dr. V. G. SPRINGER (USNM) sent material for comparison or permitted the use of their collections.

## 2. *Synchiropus claudiae* new species (Figs. 1–2)

### Material

6 specimens.

Holotype: SMNS 9048, male, 16.85 mm SL<sup>1)</sup>, Papua New Guinea, Madang Barrier Reef, 5°15'S 145°50'E, depth 5 m, P. L. COLIN, 19 Oct. 1986.

Paratypes: SMNS 9049, 1 male (16.05 mm SL) and 1 female (13.03 mm SL), with the same data as the holotype. – SMNS 8466, 1 male (17.35 mm SL), Papua New Guinea, Port Moresby, Baracao Barrier Reef, 9°30'S 147°10'E, 10 m depth, P. L. COLIN, 22 March 1987. – SMNS 8479, 1 female (16.30 mm SL), Papua New Guinea, Port Moresby, Baracao Barrier Reef, 9°30'S 147°10'E, 8 m depth, P. L. COLIN, 7 March 1987. – BPBM 16113, 1 female (14.68 mm SL), Solomon Islands, Savo, SW side, 9°08'S 159°48'E, rocky shore in 0–1 m depth, J. E. RANDALL, B. GOLDMAN & L. GOLDMAN, 18 July 1973.

### Etymology

This species is named after my sister, CLAUDIA FRICKE, for her continued interest in and support of my studies on callionymid fishes.

### Diagnosis

A *Synchiropus* (*Synchiropus*) of the *Synchiropus postulus* group with 4 spines in the first dorsal fin, 9 rays in the second dorsal fin, 8 anal fin rays, 17–19 pectoral fin rays, a preopercular spine formula of  $-\overset{3-5}{-}1$ , no filaments in the first dorsal fin of the male, 2nd spine longest in that fin, sides of head in male with blue streaks, not

1) SL = standard length.

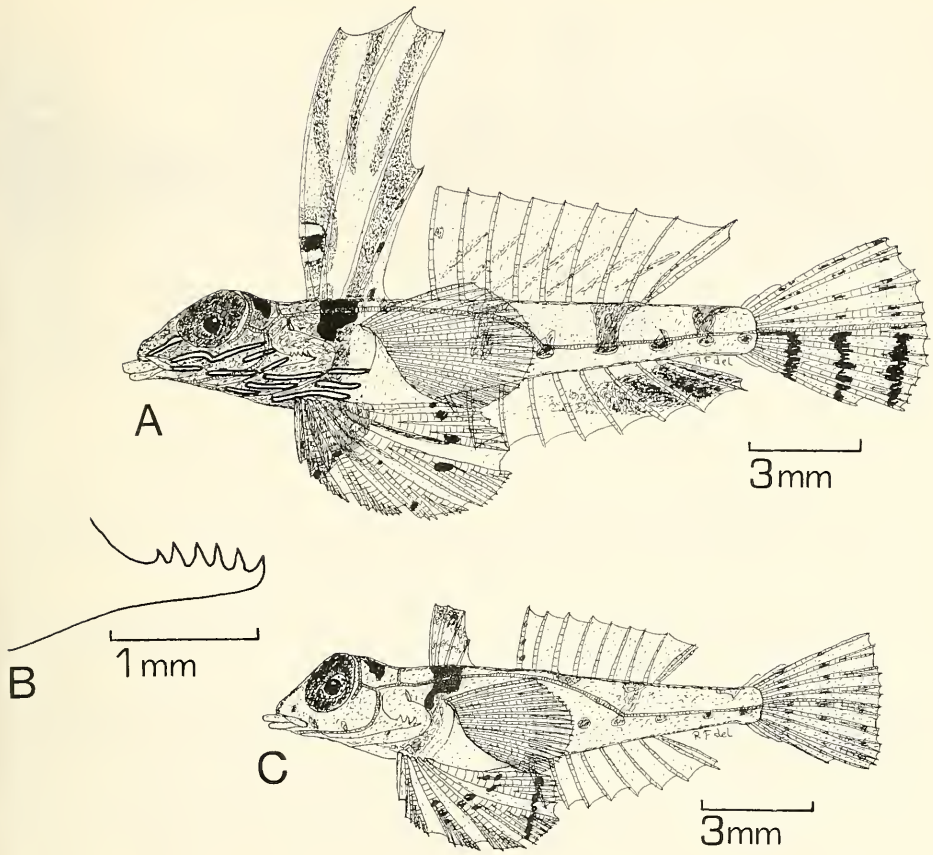


Fig. 1. *Synchiropus claudiae* n. sp.; Madang, Papua New Guinea, 5 m depth. — A.—B. SMNS 9048, holotype, male, 16.8 mm SL. — A. Lateral view, — B. Left preopercular spine. — C. SMNS 9049, paratype, specimen 2, female, 13.0 mm SL; lateral view.

reaching on membrane between pelvic and pectoral fins, anal fin in male caudally dusky, in female colorless, lower half of caudal fin in males with vertical rows of dark blotches, and a pink occipital region.

### Description

$D_1$  IV;  $D_2$  viii,1; A vii,1;  $P_1$  i-iii, 13–16, i-ii (totally 17–19);  $P_2$  I,5; C (i-ii), i, 7, ii, (i-ii). Proportions of the material as percentage of SL see Tab. 1.

Body elongate and slightly depressed. Head slightly depressed, 4.1 (3.4–4.2) in  $SL^2$ ). Body depth 6.0 (4.6–7.2) in SL. Body width 4.6 (3.9–6.5) in SL. Eye large; eye diameter 2.1 (2.3–2.9) in head length. Preorbital length 3.0 (3.0–4.6) in head. Interorbital distance 8.8 (8.4–12.7) in head. Occipital region with a smooth bony plate. Branchial opening sublateral in position. Preopercular spine length 3.4 (2.6–4.9) in

<sup>2</sup>) Proportion "head 4.1 in  $SL^2$ " means "head 4.1 times in  $SL^2$ "; the value is calculated by dividing the standard length (SL) by the head length. Data of paratypes in parentheses.

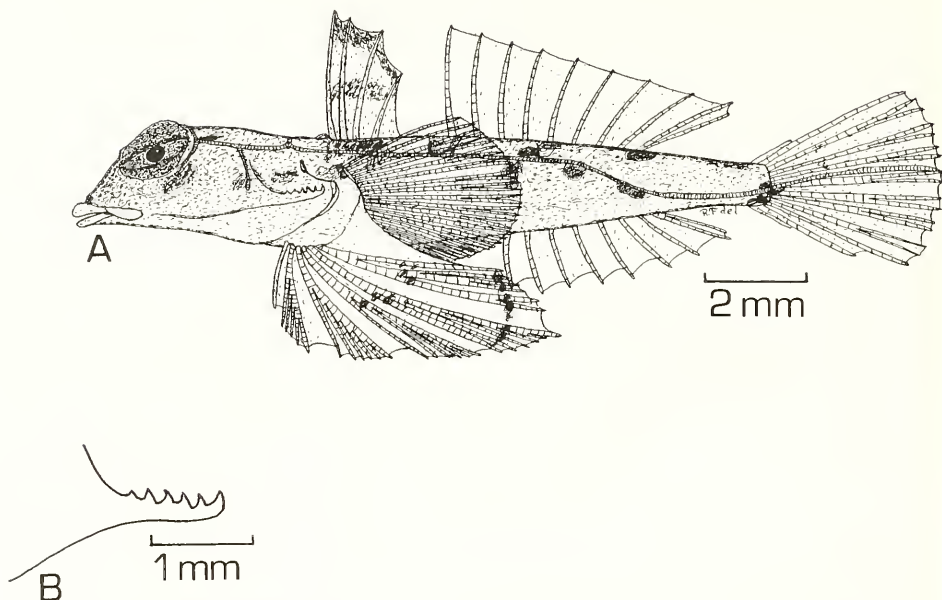


Fig. 2. *Synchiropus claudiae* n. sp.; Savo, Solomon Islands, 0–1 m depth; BPBM 16113, paratype, female, 14.7 mm SL. – A. Lateral view, – B. Left preopercular spine.

head. Preopercular spine with an upcurved main tip, a smooth slightly convex ventral margin, a smooth base, and three to five upcurved or slightly recurved points at its dorsal margin (formula:  $-\overset{3-5}{-}1$ ; see Fig. 1 B, 2 B). Urogenital papilla elongate in the male, 9.7 (12.7–13.3) in head; not visible in the female. Lateral line reaching from preorbital region to end of fourth branched caudal fin ray (counted from above), with a short suborbital and a long preoperculo-mandibular branch, no ventral branches before the pectoral fin base, and no branches along the sides of the body; the line curves downward below the 4th to 7th ray of the second dorsal fin. The lateral lines of the opposite sides are interconnected by a commissure across the occipital region, and between the eyes. Caudal peduncle length 5.1 (4.8–6.2) in SL. Caudal peduncle depth 13.3 (12.4–19.3) in SL. Maximum observed standard length (SL) 17.35 mm (male), 16.30 mm (female).

First dorsal fin very high in males, first to fourth spines elongate but not filamentous, first spine 2.2 (2.2–2.4) in SL, second spine 1.8 (2.0–2.2) in SL, third spine 2.2 (2.2–2.3) in SL, fourth spine 4.2 (4.0–4.2) in SL. First dorsal fin in the female lower than first ray of second dorsal fin, first to third spines longer than fourth; first spine 6.0–10.1 in SL, second spine 6.2–10.2 in SL, third spine 6.5–10.9 in SL, fourth spine 12.4–16.1 in SL. Predorsal(1) length in males 3.53 (3.38–3.62) in SL, in females 2.96–3.02 in SL. Second dorsal fin distally straight, first ray 5.4 (5.7–7.5) in SL, last ray elongate in the male, 5.1 (4.7–6.5) in SL, in the female 7.5–8.7 in SL. Predorsal(2) length 2.09 (2.00–2.28) in SL. Anal fin beginning on a vertical through second to third ray of second dorsal fin. First anal fin ray 10.7 (9.1–14.0) in SL, last ray 7.0 (6.7–9.6) in SL. Preanal fin length 1.84 (1.80–2.10) in SL. Pectoral fin distally convex, reaching to about second or third anal fin ray when laid back. Prepectoral fin length 2.6 (2.7–2.9) in SL. Pelvic fin large, distally convex, reaching to

Tab. 1. Meristic data of *Synchiropus claudiae* n. sp. expressed as hundredths of SL.

	Holotype	Paratype	Paratype	Paratype	Paratype
	SMNS 9048	SMNS 9049	SMNS 8466	SMNS 9049	SMNS 8479
	male	male	male	female	female
	16.85 mm SL	16.05 mm SL	17.35 mm SL	13.03 mm SL	16.30 mm SL
Head length	24.15	23.80	29.05	28.32	25.03
Body depth	16.62	16.51	18.21	21.49	16.63
Body width	21.48	20.31	21.44	25.48	22.33
Eye diameter	11.34	10.72	11.24	10.36	10.92
Preorbital length	8.19	6.85	7.67	7.06	8.47
Interorbital distance	2.73	1.99	3.00	2.23	2.45
Preopercular spine length	7.32	7.10	6.00	10.98	7.05
Urogenital papilla length	2.49	1.87	2.19	—	—
Caudal peduncle length	19.52	19.32	20.46	16.12	20.49
Caudal peduncle depth	7.53	6.04	6.69	8.06	6.99
1st D1 spine length	44.93	42.99	43.75	9.98	13.74
2nd D1 spine length	49.79	45.11	48.59	9.82	13.37
3rd D1 spine length	46.29	43.49	45.53	9.21	12.76
4th D1 spine length	23.74	24.61	24.09	6.22	6.63
Predorsal(1) length	28.31	27.60	29.62	33.77	33.44
1st D2 ray length	18.58	15.14	19.02	13.35	17.48
last D2 ray length	19.47	15.33	20.92	11.51	12.39
Predorsal(2) length	47.78	45.17	43.86	48.66	49.94
1st A ray length	9.38	8.10	11.01	9.82	10.00
last A ray length	14.24	12.46	13.37	14.81	12.82
Prealan fin length	54.36	47.66	54.41	54.87	55.03
Prepectoral fin length	38.99	34.27	35.91	36.45	36.14
Pelvic fin length	19.84	37.38	36.77	36.68	38.34
Prepelvic fin length	26.77	23.12	25.13	26.40	26.87
Caudal fin length	28.07	24.61	26.51	24.33	24.23
					BPBM 16113
					female
					14.70 mm SL
					28.61
					13.96
					15.46
					9.81
					6.27
					3.41
					8.86
					—
					20.30
					5.18
					16.69
					16.01
					15.33
					8.03
					33.11
					15.19
					13.28
					48.91
					7.15
					10.41
					55.65
					35.76
					37.88
					27.25
					22.48

base of second or third anal fin ray when laid back. Pelvic fin length 2.3 (2.6–2.8) in SL. Prepelvic fin length 3.74 (3.67–4.33) in SL. Caudal fin distally convex, slightly longer in males than in females; caudal fin length in males 3.6 (3.7–4.1) in SL, in females 4.1–4.5 in SL.

Color in alcohol: Sand yellow, head in males dark brown. Thorax without a dark blotch, even in the male. Suborbital region and lower sides of head in males with long wavy ocellate lines which are blue first but fade to brown after one or two years in preservative. Occipital plate rose. Sides of head in female sand yellow, with a few brownish spots. Body in both sexes with a blackish saddle below the first dorsal fin, and with about three brown saddles along the sides of the body. Lateral line in caudal half of body bordered with brown spots.

First dorsal fin in males with vertical brownish streaks, first membrane on its basal part with a horizontal black streak bordered with white; fourth spine with three black spots. First dorsal fin in females distally dusky, and with a median oblique dusky streak. Second dorsal fin in males with transverse dark streaks on the basal two-thirds, in females pale, colorless. Anal fin in males dusky on the median part of the last membranes, in the female pale, colorless. Caudal fin with two vertical rows of dark spots, lower half in the male with three broad vertical bars. Pectoral fin colorless. Pelvic fin in males basally dusky, in females basally pale, with a few median dark spots; in both sexes with a distal row of dark spots.

Sexual dimorphism: Males have a higher first dorsal fin than females, with different proportions of the fin rays (second and third spines longer than first), a longer last ray of the second dorsal fin, a longer caudal fin, a longer predorsal(1) length, a different coloration of the first and second dorsal fins, the anal fin, the sides of the head, and the caudal fin.

#### Distribution

This species is known from New Guinea and from the Solomon Islands, West Pacific (see Fig. 3). It occurs in rocky and coral reef areas (on sandy spots), at depths of 1–10 m.

#### Relationships

The new species is a member of the genus *Synchiropus* Gill, 1860, in the sense of FRICKE (1981, 1982, 1983). Within this genus, it belongs to the *Synchiropus postulus* species group. Other species of this species group are *S. laddi* Schultz, 1960 from the Central Pacific, *S. postulus* Smith, 1963 from the Western Indian Ocean, *S. minutulus* Fricke, 1981 from the Central Indian Ocean, *S. springeri* Fricke, 1983 from Fiji, *S. kiyoae* Fricke & Zaiser, 1983 from Japan, and *S. randalli* Clark & Fricke, 1985 from Easter Island.

The closest allied species, which also have lines on the sides of their head, are *S. kiyoae* (FRICKE & ZAISER, 1983: 122–128, figs. 1–2; FRICKE, 1983: 603–608, figs. 185–186) and *S. randalli* (CLARK & FRICKE, 1985: 539–543, fig. 1). *Synchiropus claudiae* n. sp. differs from *S. kiyoae* in the number of pectoral fin rays (19–23 in *S. kiyoae*), the caudal fin length (3.0–3.8 in *S. kiyoae*), the color pattern of the first dorsal fin (*S. kiyoae* males: no black streak on first membrane; females: mostly dark), the anal fin color pattern (*S. kiyoae* males: black; females: spotted), the caudal fin color pattern (*S. kiyoae* males: with vertical rows of black blotches in upper half),

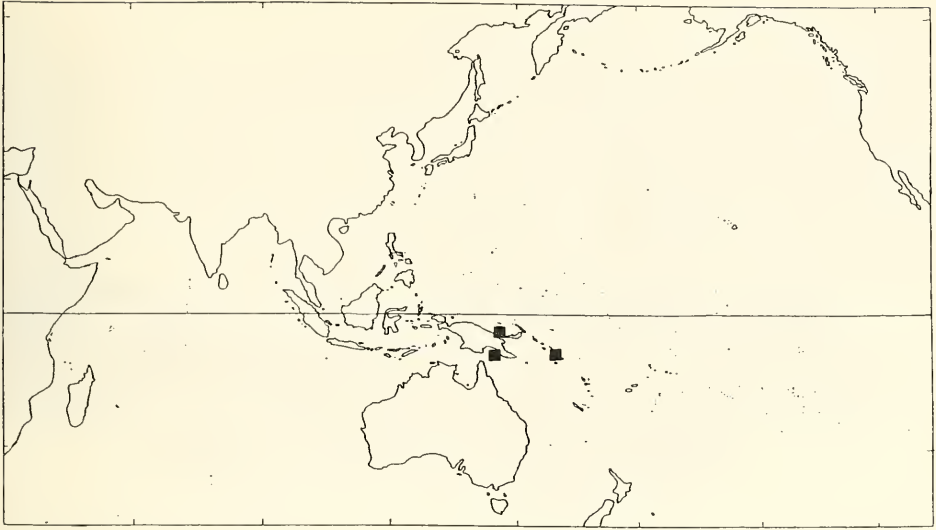


Fig. 3. *Synchiropus claudiae* n. sp.; geographical distribution.

the coloration of the membrane between pectoral and pelvic fins (*S. kiyoeae* males: membrane with blue lines), the proportions of first dorsal fin spines (*S. kiyoeae* males: first spine longer than second spine), and the color pattern of the sides of the body in females (*S. kiyoeae*: sides with a black band and white spots on the band); it is distinguished from *S. randalli* by the number of pectoral fin rays (19–20 in *S. randalli*), the predorsal(2) length (2.22–2.39 in *S. randalli*), the caudal fin length (4.5–4.6 in *S. randalli*), the interorbital distance (4.2–6.0 in head in *S. randalli*), the first dorsal fin color pattern (*S. randalli* males and females: dark), the anal fin coloration (*S. randalli* males: completely dark), the caudal fin coloration (*S. randalli* males: with vertical rows of blotches in upper half), the pelvic fin color pattern in both sexes, the proportions of the first dorsal fin spines (*S. randalli*: first spine longer than second), and the color pattern of the sides of the body (*S. randalli*: sides with an alternating black and white band).

From the remaining four species of the *Synchiropus postulus* species group, *S. claudiae* n. sp. differs as follows: from *S. springeri* (FRICKE, 1983: 673–677, fig. 208) in the preanal fin length (1.6–1.9 in SL in *S. springeri*), predorsal(1) length of males (2.9–3.4 in SL in *S. springeri*), pectoral fin ray number (19–21 in *S. springeri*), preopercular spine length (4.1–6.5 in head in *S. springeri*), interorbital distance (4.6–7.1 in head in *S. springeri*), color pattern of first dorsal fin (*S. springeri* males: dusky, no black streak on first membrane; females: dusky), anal fin coloration (*S. springeri* males: with a distal dark streak), and the stripes on the sides of the head in males; from *Synchiropus laddi* (SCHULTZ, 1960: 406–409, fig. 131; FRICKE, 1981: 124–126, fig. 39; FRICKE, 1983: 608–611, fig. 187; illustration of a pair of *S. laddi* with a fresh color pattern see Fig. 4) in the predorsal(1) length (3.2–4.8 in SL in *S. laddi*), the preanal fin length (1.70–1.85 in SL), the sides of the head with stripes in males, the color pattern of the first dorsal fin in males (without a black streak on the first membrane in *S. laddi*), of the caudal fin in males (upper part with oblique bands of dark spots in *S. laddi*), and the lower sides of the head (with black blotches in *S. laddi*); from *Synchiropus postulus* (SMITH, 1963: 560, fig. 7, pl. 86 E; FRICKE, 1981:

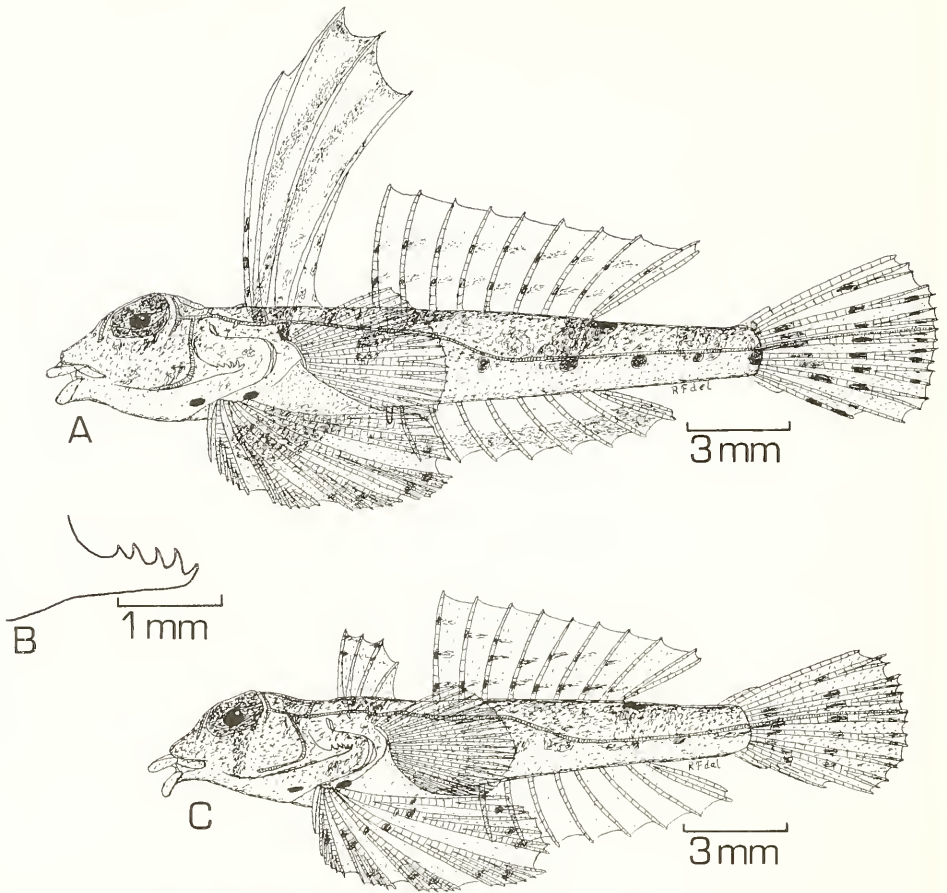


Fig. 4. *Synchiropus laddi*; Perry Island, Enewetak Atoll, Marshall Islands, 0.15–0.60 m depth, STRASBURG & HINKLEY, 15 June 1965; BPBM 17744. — A.—B. specimen 1, male, 20.5 mm SL. — A. Lateral view, — B. Left preopercular spine. — C. Specimen 2, female, 16.9 mm SL; lateral view.

116–118, fig. 37; FRICKE, 1983: 658–660, fig. 203) in the pectoral fin ray number (20–21 in *S. postulus*), the caudal peduncle length (4.3–5.0 in SL in *S. postulus*), the caudal peduncle depth (8.3–11.1 in SL in *S. postulus*), the preorbital length (2.3–3.0 in head in *S. postulus*), the preopercular spine length (2.2–2.5 in head in *S. postulus*), the first dorsal fin (in *S. postulus* males with filaments), the color pattern of the first dorsal fin in males, the lower sides of the head (with black spots in *S. postulus*), the coloration of the second dorsal fin in males (with oblique dark stripes in *S. postulus*), and the sides of the head without stripes in *S. postulus*; and from *Synchiropus minutulus* (FRICKE, 1981: 119–123, fig. 38; FRICKE, 1983: 624–627, fig. 192) in the preopercular spine formula ( $- \frac{3}{1}$  in *S. minutulus*), the predorsal(1) length (2.7–3.0 in SL in *S. minutulus*), the color pattern of the first dorsal fin, the caudal fin, the second dorsal fin, the pelvic fin, the sides of the head without stripes in *S. minutulus*, the lower sides of the head with black blotches in *S. minutulus*, and the back without saddles in *S. minutulus*.



### Remarks

The new species, *Synchiropus claudiae*, is distributed around New Guinea and the Solomon Islands. Zoogeographically, it fills the gap between the distribution ranges of *Synchiropus laddi* and *S. springeri*, of the Central and South Central Pacific. In spite of this geographically close distribution, it is not closely allied to any of these two species, but much closer related to *Synchiropus kiyooae* from Japan and *S. randidalli* from Easter Island, two far distantly distributed species. This pattern of closely related species living far distantly is common in callionymid fishes; it is found in several other subgroups of the genera *Callionymus* and *Synchiropus*.

### 3. *Callionymus brevianalis* Fricke, 1983 (Fig. 5)

*Callionymus brevianalis* FRICKE 1983: 323–328, fig. 98, tab. 13 (West Irian Jaya, 00°49'48" S 130°56'48" E, 0–6 m depth).

### Material

3 specimens.

Specimens additional to the holotype described by FRICKE (1983: 323): SMNS 8551, 1 female, 16.4 mm SL, Papua New Guinea, Port Moresby, Motupore Island, south end, 6 m depth, sand bottom, P. L. COLIN, 3. Nov. 1986. – SMNS 9047, 1 male, 11.8 mm SL, Papua New Guinea, Port Moresby, Motupore Island, 7 m depth, P. L. COLIN, 23 Feb. 1987.

### Diagnosis

A *Callionymus* (*Calliurichthys*) with four spines in the first dorsal fin, 7 rays in the second dorsal fin, 6 anal fin rays, 18–20 pectoral fin rays, a preopercular spine formula of  $1 \frac{2-4}{1}$ , both sexes with a filamentous first spine of the first dorsal fin, and the male with a slightly asymmetrical caudal fin.

### Description

D<sub>1</sub> IV; D<sub>2</sub> vi,1; A v,1; P<sub>1</sub> i, 16–19, 0–i (totally 18–20); P<sub>2</sub> I,5; C (i–ii), i, 7, ii, (i–ii). Proportions in hundredths of SL see Tab. 2.

Body elongate and depressed. Head depressed, 3.1–3.6 in SL. Body depth in males 6.4–6.6 in SL, in the female 9.3 in SL. Body width 5.2–6.2 in SL. Eye diameter 2.7–3.1 in head. Preorbital length in the male 2.8–3.0 in head, in the female 3.4 in head. Interorbital distance 13.6–14.2 in head. Occipital region with two low bony ridges. Branchial opening dorsal in position. Preopercular spine length 3.2–4.8 in head; preopercular spine with a straight main tip, a slightly concave smooth ventral margin, a strong antrorse spine at its base, and two to four small antrorse serrae at its dorsal margin (formula:  $1 \frac{2-4}{1}$ ; see Figs. 5 B–C). Urogenital papilla elongate in the male, 7.1–10.2 in head; shorter in the female, 13.1 in head. Lateral line reaching from eye to end of fourth branched caudal fin ray (counted from above), with a short suborbital and a preopercular branch; the lines of the opposite sides are interconnected by a transverse branch across the occipital region. Caudal peduncle length 3.3–4.1 in SL. Caudal peduncle depth 11.8–13.9 in SL. Maximum observed SL 20.4 mm.

First dorsal fin with a filamentous first spine (in both sexes); first spine in the male 1.8–2.5 in SL, in the female 1.4 in SL; second spine in the male 9.2–10.0 in SL, in the female 12.6 in SL; third spine in the male 11.3–11.4 in SL, in the female 14.3 in SL;

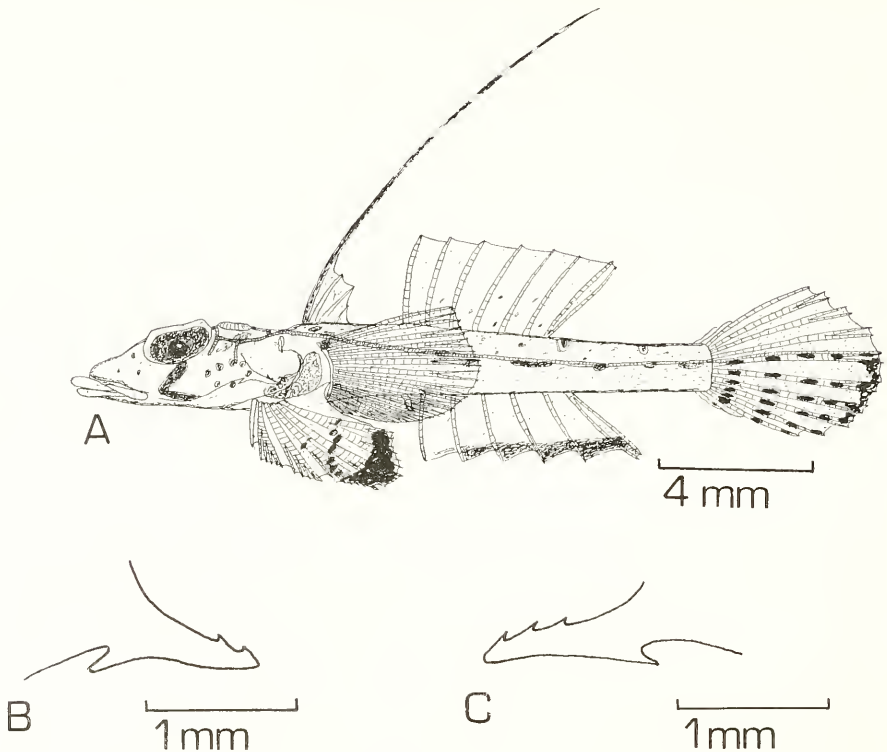


Fig. 5. *Callionymus brevipinnalis*; Papua New Guinea, Port Moresby; SMNS 8551, female, 16.4 mm SL. — A. Lateral view, — B. Left preopercular spine, — C. Right preopercular spine.

fourth spine in the male 15.7–22.6 in SL, in the female 41 in SL. Predorsal(1) length 2.68–3.24 in SL. Second dorsal fin mostly straight distally. Rays unbranched except for the last which is divided at its base. First ray 5.1–10.2 in SL, last ray 4.8–9.5 in SL. Predorsal(2) length 1.73–2.10 in SL. Anal fin beginning on a vertical through second ray of second dorsal fin. Rays unbranched except for the last which is divided at its base. First ray 9.4–11.9 in SL, last ray 5.1–7.2 in SL. Preanal fin length 1.62–1.94 in SL. Pectoral fin reaching back to base of third or fourth anal fin ray. Prepectoral fin length 2.4–2.7 in SL. Pelvic fin distally convex, reaching to mid-base of first or second anal fin membrane when laid back. Pelvic fin length 3.3–3.8 in SL. Prepelvic fin length 2.95–3.71 in SL. Caudal fin in males slightly asymmetrical, lower rays slightly longer than upper rays, without any filaments; caudal fin length 2.7–3.8 in SL.

Color in alcohol: Sand brown, back and sides of body with a few dark pigment spots, sides of body below the lateral line in fresh specimens with a row of dark blotches. Eye dark gray. Pectoral fin base with a dusky blotch. First dorsal fin light, second and third spines in the male distally darkish; first spine in the female dark, distal one third with a few white spots. Second dorsal fin hyaline. Anal fin in the male hyaline, the last two rays distally dusky; in the female light, membranes distally dark. Pelvic fin irregularly spotted with brown, in some specimens distally dark.

Tab. 2. Meristic data of *Callionymus brevianalis* expressed in hundredths of SL.

	Holotype		
	USNM 243038	SMNS 8551	SMNS 9047
	male	female	male
	20.40 mm SL	16.40 mm SL	11.80 mm SL
Head length	27.94	31.83	30.20
Body depth	15.69	10.79	15.18
Body width	19.12	17.07	16.28
Eye diameter	9.80	10.54	10.86
Preorbital length	9.31	9.33	10.69
Interorbital distance	2.70	2.32	2.12
Preopercular spine length	5.88	6.82	9.58
Urogenital papilla length	3.92	2.44	2.97
Caudal peduncle length	25.49	24.81	30.45
Caudal peduncle depth	7.35	7.20	8.48
1st D1 spine length	55.39	69.82	40.03
2nd D1 spine length	10.78	7.93	10.09
3rd D1 spine length	8.82	7.01	8.82
4th D1 spine length	4.41	2.44	6.36
Predorsal(1) length	30.88	35.61	37.32
1st D2 ray length	19.61	14.70	9.84
Last D2 ray length	20.59	16.40	10.60
Predorsal(2) length	47.55	50.73	57.85
1st A ray length	10.29	10.55	8.40
Last A ray length	19.61	14.51	13.91
Precanal fin length	51.47	53.66	61.75
Prepectoral fin length	24.51	39.02	40.88
Pelvic fin length	30.39	26.15	29.69
Prepelvic fin length	26.96	26.56	33.93
Caudal fin length	36.76	28.05	26.29

Pectoral fin translucent. Lower half of caudal fin with vertical rows of dark brown blotches.

Sexual dimorphism: Males have a slightly shorter first spine of the first dorsal fin than females; other spines of first dorsal fin longer; a longer preorbital length; a longer urogenital papilla; and a lighter first dorsal fin.

#### Distribution

Known from two localities along the coast of New Guinea: from the type locality at the northwestern tip of Irian Jaya (00°49'48" S 130°56'48" E, and from Motupore Island off Port Moresby, Papua New Guinea (Fig. 6); the species was collected at depths of 0–7 m, on sand bottom.

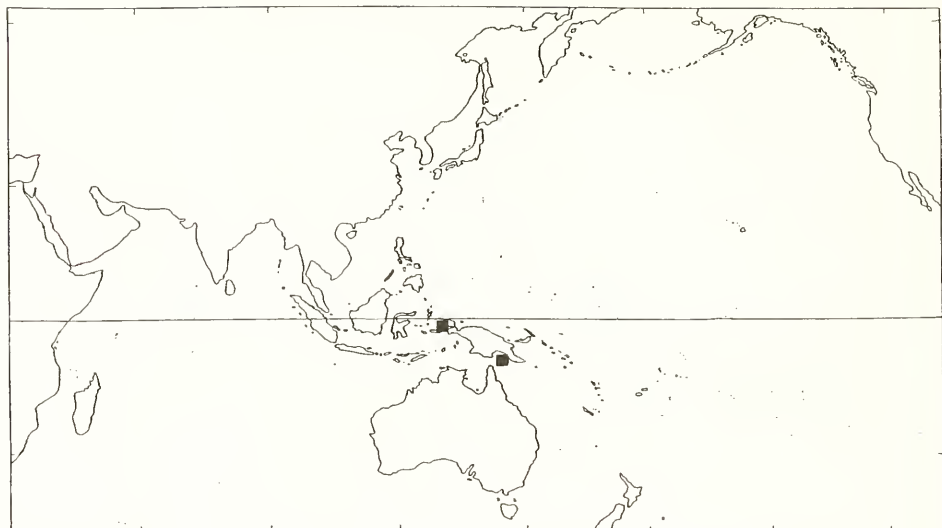


Fig. 6. *Callionymus brevianalis*; geographical distribution.

#### Remarks

This species belongs to the *Callionymus variegatus* group of the subgenus *Callionymus* (*Calliurichthys*), which is characterized by an asymmetrical caudal fin (at least in males), a low number of second dorsal and anal fin rays, and the preopercular spine shape. Other species of this group are: *Callionymus delicatulus* Smith, 1963 (1963: 557, fig. 6, Seychelles; FRICKE, 1982b: 141–143, figs. 9–10, Red Sea to Palau Islands; FRICKE, 1983: 335–338, fig. 103, Red Sea to Madagascar and Solomon Islands); *Callionymus flavus* Fricke, 1983 (1983: 360–365, fig. 110, Red Sea); *Callionymus grossi* Ogilby, 1910 (1910: 43–45, Moreton Bay, Australia; FRICKE, 1982b: 133–134, fig. 2, Australia; FRICKE, 1983: 376–380, fig. 113); *Callionymus goodladi* (Whitley, 1944) (1944: 270–272, Western Australia; FRICKE, 1982b: 131–132; FRICKE, 1983: 371–375); *Callionymus pleurostictus* Fricke, 1982 (1982b: 138–141, figs. 7–8, Vietnam and Gulf of Thailand; FRICKE, 1983: 428–433, figs. 126–127, West Pacific); *Callionymus simplicicornis* Valenciennes, 1837 (1837: 303, Guam; FRICKE, 1982b: 136–138, fig. 6, Central Pacific; FRICKE, 1983: 437–441, fig. 130, Central and Eastern Central Pacific); *Callionymus variegatus* Temminck & Schlegel, 1850 (1850: 153, Nagasaki, Japan; FRICKE, 1982b: 134–136, fig. 5; FRICKE, 1983: 451–455, fig. 133, South Japan).

From the other species of the *Callionymus variegatus* group, *Callionymus brevianalis* is distinguished by the low number of rays in the second dorsal and anal fins ( $D_2$  vi,1, A v,1; other species:  $D_2$  vii,1–viii,1, A vi,1–vii,1), by the low number of antrorse serrae on the dorsal margin of the preopercular spine (formula:  $1 \overset{2-4}{-} 1$ ; other species:  $1 \overset{5-18}{-} 1$ ), and by a number of other characters (e. g. first dorsal fin spine filamentous; caudal fin only slightly asymmetrical in males; color pattern).

This unique fish was found to occur on sand bottoms, together with *Callionymus enneactis* Bleeker, 1879 and *Callionymus pleurostictus* Fricke, 1982. It appears to be restricted to New Guinea, thus representing an endemic element of the island. *Callionymus brevianalis* is very interesting in regard of its reduced fins and preopercular

spine serration, and has led to interesting clues when the evolution of the group was examined (FRICKE, 1988).

The finding of this species at Port Moresby validates the data given in the original description (which was based on a single specimen only), and present informations on the sexual dimorphism, intraspecific variation and distribution of the species.

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