

Descriptions of Two New Species of Freshwater Catfishes (Plotosidae) from Papua New Guinea

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Abstract

Collections obtained by the author in Papua New Guinea during 1982-83 contain two new species of plotosid catfishes. *Oloplotosus torobo* is described from two specimens collected at Lake Kutubu, Kikori River system. It is closely related to *O. mariae* from the Lorentz and Fly River systems of southern New Guinea but differs in fin ray, vertebral, and gill raker counts. *Tandanus coatesi* is described from 60 specimens obtained in foothill tributaries of the Sepik River. It is allied to *T. gjellerupi* and *T. equinus* from northern and southern New Guinea respectively, but differs in shape and counts of fin rays, gill rakers, and vertebrae. Detailed descriptions and illustrations are provided for the two new species.

Introduction

A series of freshwater fish collections were obtained by the author in New Guinea between 1978-1983. The resulting specimens and ecological data will serve as the basis for a field guide currently in preparation. The collections contained many new species, particularly members of the rainbowfish family Melanotaeniidae. Most of these have been described (Allen 1980a, b and c; 1981a and b; Allen 1983a and b; Allen and Kailola 1979; Allen and Moore 1981). Approximately 15 additional species including two atherinids, four melanotaeniids, a hemirhamphid and teraponid, and several gobiids and eleotrids will soon be described by the author or colleagues. Allen and Boseman (1982) listed 158 species of freshwater fishes from New Guinea. Allowing for the additions already mentioned, and for future discoveries a conservative estimate of the total fauna of this large island is 200 species. Australia, approximately nine times larger than New Guinea, has about 170 species.

The present paper describes two new species of plotosid catfishes. This group is represented by about 20 freshwater species in the Australia-New Guinea region and approximately eight marine species in the Indo-Pacific. One of the new species, a member of the genus *Tandanus* Mitchell, was obtained in 1982 during

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faunal investigations of the Sepik River drainage of northern Papua New Guinea. The other new species, belonging to *Oloplotosus* Weber, was collected in 1983 at Lake Kutubu, which is the largest lake in the Central Highlands of Papua New Guinea and contains several endemic fishes.

Type specimens of the new species are deposited at the Kanudi Research Laboratory of the Department of Primary Industry, Port Moresby, Papua New Guinea and at the Western Australian Museum. The abbreviations PNG and WAM are used for these institutions in the subsequent text.

Oloplotosus torobo sp. nov.

Figure 1; Table 1

Holotype

WAM P28158-003, 172.9 mm SL, Lake Kutubu, Papua New Guinea (approximately 6° 23'S, 143° 15'E): Soro River at north end of lake, about 4 km east of Moro landing strip, rotenone in 0-3 m depth, G. Allen, J. Paska, and B. Crockford, 27 September 1983.

Paratype

PNG unregistered, 142.0 mm SL, Lake Kutubu: west shore opposite Wesame Island, rotenone in 0-2 m depth, G. Allen, J. Paska, and B. Crockford, 27 September 1983.

Diagnosis

A species of *Oloplotosus* Weber allied to *O. mariae* Weber, but differing on the basis of fewer total medial fin rays (195-197 v. 220-235), fewer free vertebrae posterior to Weberian apparatus (64-69 v. 73-75), fewer gill rakers on first arch (13 v. 17-18), and overall colour pattern.

Description

Dorsal rays 1,5-92 (1,5-94); caudal rays 8; anal rays 95; total dorsal + caudal + anal fin rays 195 (197); pectoral rays 12; pelvic rays 10; gill rakers on anterior face of first gill arch 3 + 10 = 13; branchiostegal rays 9; free precaudal vertebrae posterior to Weberian apparatus 12 (13); free caudal vertebrae 56 (51); total free vertebrae posterior to Weberian apparatus 69 (64).

Head relatively flattened and broad, its length 5.4 (5.3) in SL; body long and slender; the depth 7.8 (8.2) in SL. The following proportions are expressed in relation to head length: greatest width of head 1.4; height of head at eye level 3.7 (3.0); snout length 2.9 (2.7); eye diameter 10.4 (13.4); interorbital width 3.5 (3.1); height of first dorsal fin 2.2 (2.6); maximum height of second dorsal fin 5.4 (4.2); maximum height of anal fin 4.7 (4.0); pectoral fin length 1.7 (2.0); and pelvic fin length 2.9 (2.7).

Lips relatively thin and smooth; barbels of moderate thickness and length, nasal barbel reaching to posterior margin of eye, maxillary barbel to below posterior margin of eye, outer mental barbel to gill opening, inner mental barbel

about half to three-quarters as long as outer mental barbel. Branchiostegal membranes broadly united to each other and to isthmus. Oral dentition composed of conical, elongate teeth arranged in two to three irregular rows on palate and lower jaw, maxilla toothless.

Dendritic organ relatively small (compared to marine plotosids) and foliaceous, largely hidden in deep pocket between anus and anal fin organ.

Dorsal spine blunt tipped and entirely smooth, without serrations anteriorly or posteriorly, its length 3.4 in head length; pectoral spine blunt tipped, without serrations posteriorly but minute serrae on base anteriorly, its length 7.2 in head length.

Colour in life: overall grey-brown without mottling, lighter on ventral half. The preserved coloration is mainly dull grey.

Table 1 Proportional measurements (expressed in percentage of standard length) for selected type specimens of *Oloplotosus torobo* and *Tandanus coatesi*

	<i>O. torobo</i>		<i>T. coatesi</i>				
	holotype	paratype	holotype	paratypes	(all WAM P27839-005)		
Standard length	172.9	142.0	139.5	114.0	108.2	105.2	98.6
Head length	18.7	18.8	19.7	22.0	21.5	20.9	21.3
Depth of body	12.8	12.3	15.1	15.4	15.2	15.7	14.9
Dorsal-caudal fin base	68.4	64.2	47.3	47.1	49.4	45.6	43.2
Anal-caudal fin base	63.0	59.2	53.0	59.1	60.1	59.4	56.8
Head width	13.0	13.7	13.0	14.0	14.2	13.7	14.0
Head height	5.0	6.3	8.7	10.1	9.7	9.8	10.3
Snout length	6.5	7.0	9.1	10.7	9.7	9.8	10.3
Eye diameter	1.8	1.4	2.9	3.3	3.3	2.9	3.0
Interorbital width	5.3	6.1	6.5	7.8	8.2	7.5	7.2
1st dorsal fin height	8.4	7.3	14.3	15.1	14.8	14.0	15.5
2nd dorsal fin height	3.5	4.4	4.5	5.2	6.3	4.6	4.6
Anal fin height	3.9	4.7	6.3	7.2	6.8	6.6	5.2
Pectoral fin length	10.8	9.2	15.2	16.5	17.5	15.7	16.2
Pelvic fin length	6.4	7.0	9.8	9.6	10.2	10.0	10.1
Dorsal spine length			7.5	7.1	7.4	4.8	7.4
Pectoral spine length			7.5	8.2	8.3	7.0	8.6
Nasal barbel length	7.8	9.0	10.0	8.4	8.4	6.7	9.9
Maxilla barbel length	6.4	8.9	12.4	10.6	9.9	10.7	11.7
Outer mental barbel length	7.6	10.5	12.7	11.9	13.2	12.8	14.2
Inner mental barbel length	7.4	8.5	9.3	8.1	8.5	7.4	9.5
Predorsal length	20.8	21.5	23.9	26.6	25.7	25.9	25.4
Interdorsal length	9.5	7.2	19.7	23.1	19.9	24.0	30.4

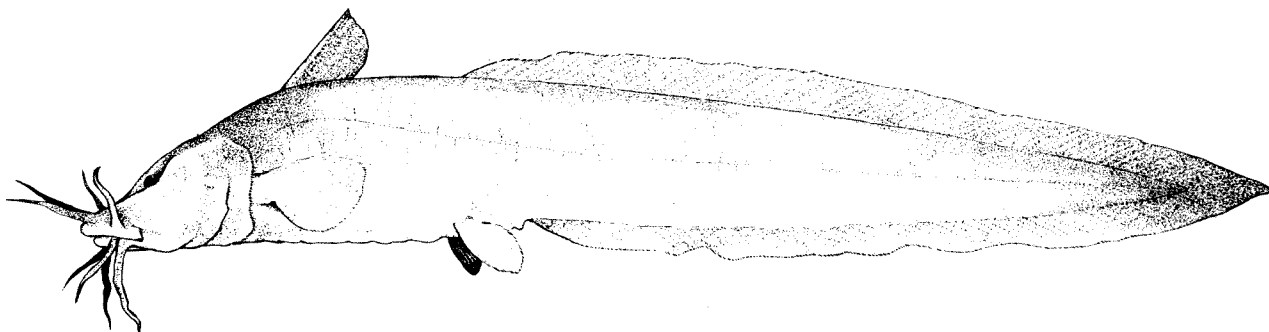


Figure 1 *Oloplotosus torobo*, holotype, 172.9 mm SL, Lake Kutubu, Papua New Guinea (drawing by R. Swainston).

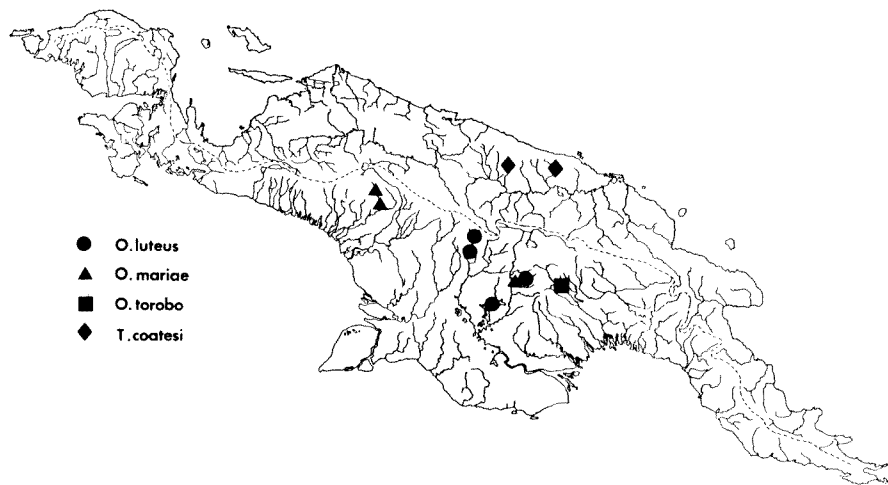


Figure 2 Map of New Guinea showing distribution of species of *Oloplotosus* and *Tandanus coatesi*.

Remarks

Weber (1913) described the monotypic genus *Oloplotosus*. The type species, *O. mariae* Weber (1913) was previously known only from the original series taken at Sabang and Alkmaar on the Lorentz River in what is now Irian Jaya (western New Guinea). A second species was added to the genus by Goman and Roberts (*in* Roberts 1978) who described *O. luteus* from three specimens collected in the upper Fly River system of Papua New Guinea. Recent collections by the present author have resulted in expanded ranges for these two species. A single specimen, 250 mm SL (WAM P27813-002) of *O. mariae* was collected in 1982 at Nomad, Papua New Guinea, part of the Strickland River drainage of the Fly River system. This same locality yielded a specimen, 110 mm SL (WAM P27809-005) of *O. luteus*. These records represent the first sympatric occurrence of these species. The known distributions of the species of *Oloplotosus* are summarised in Figure 2. The three species in the genus are differentiated by the characters in the following key.

Key to the Species of *Oloplotosus*

- 1a Oral teeth slender and conical, in 2-3 rows on palate and lower jaw; gill rakers on first arch 13-17; snout portion of head flattened; snout broadly rounded without bulbous projection, lips thick, plicate, and papillose 2
- 1b Oral teeth incisiform, in single rows on palate and lower jaw; gill rakers on first arch 8-10; snout portion of head strongly rounded; snout with bulbous anterior projection between anterior nostrils; lips relatively thin and smooth *O. luteus*
- 2a Total fin rays 220-235; gill rakers on first arch 17-18; colour dark brown with lighter mottling, lower part of head and abdominal region abruptly white *O. mariae*
- 2b Total fin rays 195-197; gill rakers on first arch 13; colour overall grey-brown without mottling; lower part of head and abdominal region not abruptly white *O. toboro*

The habitat of *O. toboro* is unlike that of other *Oloplotosus* which appear to be restricted to moderate or swift flowing streams with rocky substrata. The lacustrine environment of Lake Kutubu, by contrast, was typified by soft muddy substrata and abundant aquatic vegetation. The specimens were collected in clear, shallow (0-3 m) water with temperature and pH ranging between 23.8-26.0 and 7.8-8.3 respectively. Lake Kutubu (see Figure 2) is located in the Southern Highlands district of Papua New Guinea, approximately 40 km south-west of the town of Mendi, the nearest large population centre. The lake, about 19 km in length and 2-3 km in width, is situated in a basin surrounded by high mountains

on all sides. The elevation of the Lake is approximately 808 m. There are about 15 small villages in the area and all inhabitants speak the Foe language. The species is named *torobo* with reference to the local name for this fish. Eleven other fishes, mainly endemic to Lake Kutubu were collected at the type locality including a melanotaeniid, an atherinid, a teraponid, six eleotrids, a gobiid, and an introduced poeciliid (*Gambusia*).

Comparative material included four specimens of *O. luteus*, 81-140 mm SL, and one specimen of *O. mariae*, 250 mm SL, all deposited in the WAM collection. The data for these two species presented by Roberts (1978) were also utilised.

Tandanus coatesi sp. nov.

Figure 3; Table 1

Holotype

WAM P27839-007, 139.5 mm SL, Ninar River, approximately 6 km west of Maprik, Papua New Guinea (approximately 3°37'S, 143°00'E), rotenone, G. Allen, D. Coates, and J. McComb, 23 October 1982.

Paratypes

PNG unregistered, eight specimens, 86.1-98.4 mm SL, same data as holotype; WAM P27839-005, 50 specimens, 35.7-113.0 mm SL, same data as holotype; WAM P27840-005, 68.0 mm SL, Wongol stream, 8 km east of Lumi, Papua New Guinea, rotenone, G. Allen and D. Coates, 24 October 1982.

Diagnosis

A species of *Tandanus* Mitchell allied to *T. gjellerupi* (Weber) and *T. equinus* (Weber), but differing on the basis of a flatter head, more slender body, generally smaller and more rounded pectoral and first dorsal fins, fewer total fin rays (136-147 v. 150-165), fewer gill rakers on first arch (21-25 v. 26-33), and fewer free vertebrae posterior to the Weberian apparatus 48-50 v. 51-54).

Description

Dorsal rays 1,7-57 (1,7 or 8-57 to 67); caudal rays 12 (12 to 13); anal rays 67 (65 to 69); total dorsal + caudal + anal fin rays 136 (136 to 147); pectoral rays 11 (11 to 13); pelvic rays 13 (12 to 13); gill rakers on anterior face of first gill arch 5 + 20 (4-6 + 17-20 = 21 to 25); branchiostegal rays 10 (9 or 10); free precaudal vertebrae posterior to Weberian apparatus 9; free caudal vertebrae 39 (38 or 39); total free vertebrae posterior to Weberian apparatus 49 (48 to 50).

Head moderately flattened, snout pointed, head length 5.1 (4.5-5.8) in SL; body relatively long and slender, the depth 6.6 (6.3-6.7) in SL. The following proportions are expressed in relation to head length; greatest width of head 1.5 (1.5-1.6); height of head at eye level 2.3 (2.1-2.2); snout length 2.2 (2.1-2.2); eye diameter 6.9 (6.5-7.3); interorbital width 3.1 (2.6-3.0); height of first

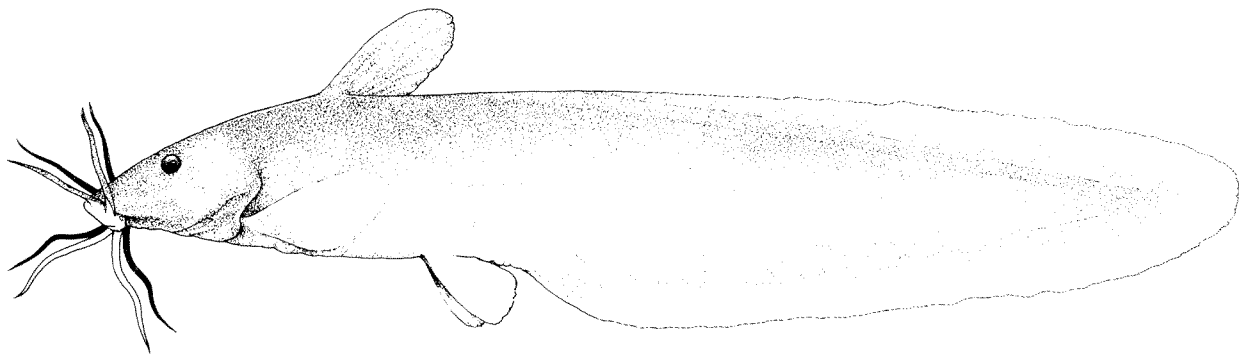


Figure 3 *Tandanus coatesi*, holotype, 139.5 mm SL, Ninar River, Papua New Guinea (drawing by R. Swainston).

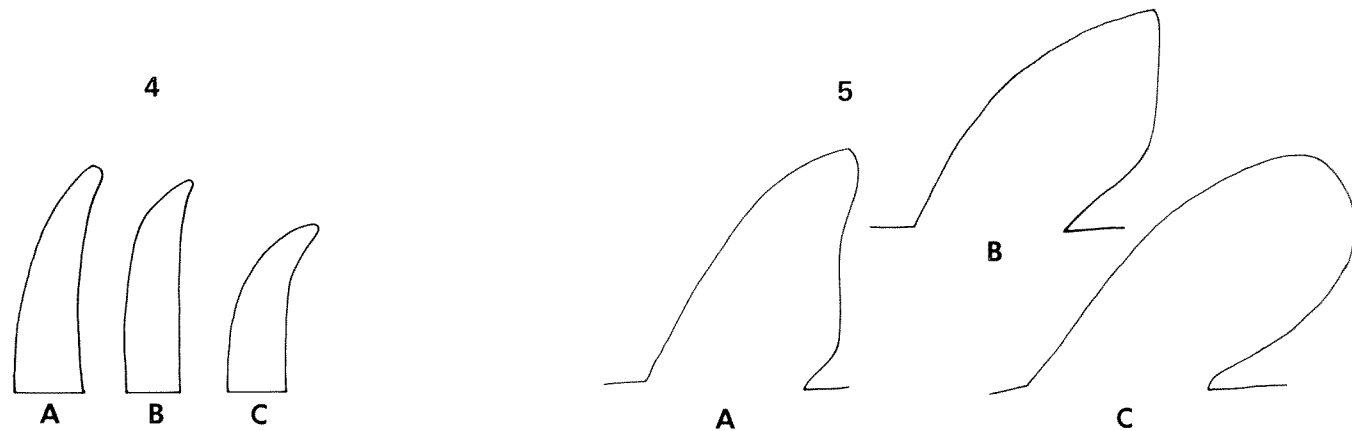


Figure 4 Maxilla teeth of species of *Tandanus* (at same magnification): (A) *T. gjellerupi*, 132 mm SL; (B) *T. coatesi*, 140 mm SL; (C) *T. equinus*, 131 mm SL.

Figure 5 Camera lucida drawings (at same magnification) showing comparative size and shape of dorsal fins (lateral view) of (A) *Tandanus equinus*, 131 mm SL; (B) *T. gjellerupi*, 132 mm SL; (C) *T. coatesi*, 140 mm SL.

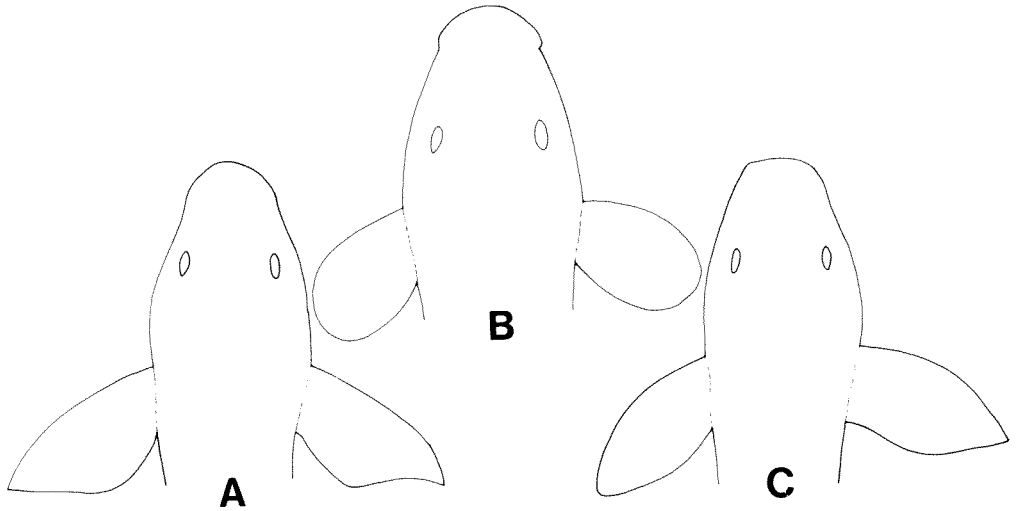


Figure 6 Camera lucida drawings (at same magnification) showing comparative size and shape of pectoral fins (dorsal view) of (A) *Tandanus equinus*, 131 mm SL; (B) *T. coatesi*, 140 mm SL; (C) *T. gjellerupi*, 132 mm SL.

dorsal fin 1.4 (1.4-1.5); maximum height of second dorsal fin 4.4 (3.4-4.6); maximum height of anal fin 3.1 (3.1-4.1); pectoral fin length 1.3 (1.2-1.3); and pelvic fin length 2.0 (2.0-2.6).

Lips fleshy, plicate, and papillose; nasal barbel reaching to eye level, maxillary barbel reaching to below posterior margin of eye, outer mental barbel to gill opening, inner mental barbel about three-quarters as long as outer mental barbel. Branchiostegal membranes broadly united to each other and to isthmus. Oral dentition composed of slender, conical teeth arranged in three to four irregular rows on upper and lower jaws with semicircular patch of relatively large conical teeth on palate.

Dorsal spine blunt with flexible cartilagenous tip, surface smooth without serrae or barbs, length of ossified portion 2.6 (2.9-4.3) in head length; pectoral spine blunt with flexible cartilagenous tip; inner face with series of 12 (8-12) antrose barbs on basal portion, length of ossified portion 2.5 (2.5-3.0) in head length.

Colour in life: overall grey, darker on top of head and along back; ventral surface of head and abdomen whitish; nasal and maxillary barbels dark grey, outer mental barbels whitish; first dorsal fin dusky grey-brown, whitish distally; dorsal-caudal-anal fin whitish to slightly dusky grey; pectoral fins grey-brown; pelvic fins whitish to dusky grey. The preserved coloration is very similar.

Remarks

Tandanus coatesi is related to *T. gjellerupi* (Weber) of northern New Guinea and *T. equinus* (Weber) of central-southern New Guinea. The three species are

characterised by a relatively long second dorsal fin, which originates well forward on the back, its length being approximately forty to fifty per cent of the standard length. They also exhibit similar dentition, although there are differences in tooth size for the maxilla which is shown in Figure 4. *T. coatesi* and *T. gjellerupi* generally have smaller pectoral and first dorsal fins than similar sized specimens of *T. equinus* and these fins are more rounded in *T. coatesi* than in the other two species (Figures 5 and 6). These species also show differences in total gill rakers (21-25 for *coatesi*, 26-28 for *gjellerupi*, and 29-33 for *equinus*), free vertebrae posterior to Weberian apparatus (48-50 for *coatesi*, 51-54 for *gjellerupi* and *equinus*) and total dorsal + caudal + anal fin rays (136-147 for *coatesi*, 154-168 for *gjellerupi* and *equinus*).

The type locality consisted of a moderate to swift flowing stream situated in hilly, heavily forested terrain at an elevation of approximately 250 m. It is part of the northern Sepik River watershed. A single paratype was collected from a similar stream located in the foothills (elevation 460 m) of the Torricelli Mountains, 120 km west of the type locality.

The species is named *coatesi* in honour of Mr David Coates, a biologist employed by the Fisheries Research Laboratory of the Papua New Guinea Department of Primary Industry, and one of the collectors of the type series.

Acknowledgements

I thank Mr David Coates and his wife Theresa for their assistance during the 1982 visit to the Sepik River of Papua New Guinea. Thanks are also due to Mr John McComb who provided accommodation and assisted with the collection of *T. coatesi*. I am also grateful to Mr John Paska of Port Moresby and Mr Barry Crockford of Melbourne, Australia for their assistance during the expedition to Lake Kutubu. The Kanudi Fisheries Research Laboratory of the Department of Primary Industry (Government of Papua New Guinea) under the direction of Dr John Lock provided valuable assistance. The excellent drawings (Figures 1 and 3) which illustrate the new species were prepared by Perth artist, Mr Roger Swainston. Finally, I thank Mrs C. Allen for her careful preparation of the type-script.

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