

A New Species of Rainbowfish (*Glossolepis*: Melanotaeniidae) from Irian Jaya, Indonesia

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Abstract

A new species of rainbowfish, *Glossolepis dorytyi*, is described from Irian Jaya. It is distinguished from its nearest members in the genus, *G. leggetti* Allen, in certain body proportions and *G. multisquamatus* (Weber & de Beaufort), in modal counts of soft dorsal-fin rays, pectoral-fin rays, and predorsal scales. A list of the known species of the genus *Glossolepis* Weber, and their general distribution is presented.

Introduction

This article describes a new species of rainbowfish (Melanotaeniidae) belonging to the genus *Glossolepis*. It was collected by Dan Dority and David Price during a weekend outing to a small lake, about 68 km due west of Jayapura, Irian Jaya's capital city. Dan and David have been working in the Jayapura-Sentani area for several years, but only recently became aware of this location, which is part of a cluster of at least 15 floodplain lakes. I had flown over the lakes and photographed several of them during my first visit to Irian Jaya in 1982. But at that time access was poor and I did not consider trying to visit them. Now they can be reached in less than two hours by car from Lake Sentani.

Dan and David collected the first specimens in April 2000. About four months later I had an opportunity to visit the Sentani area for a Conservation International training course and joined them for a day trip to the same lake, which is within one km of a well-travelled road. We used a small-meshed gill net to catch live aquarium specimens. These were photographed in Dan's home aquarium and the resulting photos were used to illustrate this article. Heiko Bleher, a well-known journalist and aquarium-fish collector, also visited the same lake or a nearby one earlier this year and obtained breeding stock for the aquarium trade, but the fish has yet to be released for public sale.

Methods

The methods of counting and measuring are as follows:

dorsal and anal rays – the last ray of the anal and second dorsal fins is divided at the base and counted as a single ray.

lateral scales – number of scales in horizontal row from upper corner of gill cover to caudal-fin base, excluding the small scales posterior to the hypural junction.

transverse scales – number of scales in vertical row between anal fin origin and base of first dorsal fin.

predorsal scales – number of scales along midline of nape in front of first dorsal fin.

cheek scales – total number of scales covering the suborbital and preoperculum.

standard length (SL) – measured from the tip of the upper lip to the caudal-fin base.

head length – measured from the tip of the upper lip to the upper rear edge of the gill opening.

caudal peduncle depth. – is the least depth.

caudal peduncle length. – is measured between two vertical lines, one passing through the base of the last anal ray and the other through the caudal-fin base.

Type specimens are deposited at the Museum Zoologicum Bogoriense, Bogor, Indonesia (MZB) and the Western Australian Museum, Perth (WAM).

Comparative material examined:

Glossolepis multisquamatus

WAM P.30694, 27 specimens, 48.0–67.0 mm SL, tributary of Mamberamo River, Irian Jaya.

WAM P.31751-001, 14 specimens, 69.0–106.0 mm SL.

Glossolepis leggetti

MZB 9365 (holotype), 73.0 mm SL, Tiawiwa River, Irian Jaya.

MZB 9366, 10 specimens, 35.4–65.5, Tiawiwa River, Irian Jaya.

WAM P.31455-002, 24 specimens, 43.7–78.5 mm SL, Tiawiwa River, Irian Jaya.

WAM P.31459-004, 92.9 mm SL, tributary of Wapoga River, Irian Jaya.

Systematics

***Glossolepis dorityi*, new species**

Grime Rainbowfish (Figs. 1 & 2)

Holotype: MZB unregistered, 88.0 mm SL, Lake Nenggwambu or Kali Biru Lake (2°30.153'S, 140°09.009'E), Grime River system, Irian Jaya Province, Indonesia, gill-net in 0–1 m depth, D. Dority, D. Price and T. Erap, 15 April 2000.

Paratypes (collected with holotype): WAM P.31761-001, 14 specimens, 78.3–115.0 mm SL.



Fig. 1. *Glossolepis dorityi*, adult male about 90 mm SL, from Lake Nenggwambu, Irian Jaya.

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Fig. 2. *Glossolepis dorityi*, adult male about 80 mm SL, from Lake Nenggwambu, Irian Jaya.

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Fig. 3. Areal view of Lake Nenggwambu, Irian Jaya, the type locality of *Glossolepis doryti*.

G.A.

Description

Counts and proportions that appear in parentheses refer to the range for paratypes (based on 14 specimens, 78.3–115.0 mm SL) if different from the holotype.

Dorsal rays VI,12 (V or VI,9–12); anal rays I,22 (I,19–23); pectoral rays 13 (usually 14, except one with 13); ventral rays I,5; branched caudal rays 15; lateral scales 39 (38–41); transverse scales 12 (11–12); predorsal scales 22 (20–25); cheek scales 19 (20–23); gill rakers on first arch $5 + 22 = 27$ (4 or $5 + 20 - 23 = 24 - 28$).

Body depth 2.4 (2.4–2.9), head length 3.9 (3.8–4.0), both in SL. Greatest width of body 3.6 (2.9–3.5) in greatest body depth. Snout length 3.7 (3.3–3.6), eye diameter 3.1 (2.9–3.6), interorbital width 3.2 (3.1–3.4), depth of caudal peduncle 2.3 (2.4–2.6), length of caudal peduncle 1.7 (1.5–1.7), all in head length.

Jaws about equal, oblique, premaxilla with an abrupt bend between the anterior horizontal portion and lateral part; mouth relatively small, maxilla ends at level well in front of anterior border of eye; lips thin; teeth conical, extending onto outer surface of lips; teeth of upper and lower jaws in 4 or 5 irregular rows anteriorly, reduced to 1 or 2 rows posteriorly, where those of upper jaw are exposed when mouth is closed; about 45–50 teeth in outer row of upper jaw; several rows of small, conical teeth on vomer and palatines.

Scales relatively large, arranged in regular horizontal rows; most of body scales with



Fig. 4. Lake Nenggwambu, Irian Jaya.

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pronounced crenulate margins; predorsal scales extending to posterior half of interorbital; preopercle with 3 scale rows from posterior angle to edge of eye.

First dorsal fin originates slightly behind level of anal fin origin; longest spine (2nd to 4th) of first dorsal fin 1.4 (1.3–2.1) in head length, its depressed tip reaching base of 1st or 2nd soft ray of second dorsal fin in males and to base of spine of second dorsal fin or short of this point in females. Longest rays (anterior 4 or 5 rays in both male and female) of second dorsal fin 1.9 (1.7–2.0) in head length, the depressed posterior rays extending to base of caudal fin in males and about 1/3 to 1/2 length of caudal peduncle in female. Longest (usually anterior 4 or 5 rays in both male and female, but occasionally posteriormost rays in male) anal rays 1.5 (1.5–2.1) in head length. Ventral fin tips when depressed reaching first or second soft anal ray in male and often falling short of anal fin origin in female; length of ventral fins 1.4 (1.3–1.8), of pectoral fins 1.1 (1.1–1.3), of caudal fin 0.9 (1.0–1.2), all in head length. Caudal fin moderately forked.

Colour in life: male (Figs. 1 and 2) generally greenish with silvery reflections (depending on light angle) on back, nape, and side of head; dull orange or bronze stripe between each scale row of upper half of body; red-orange stripe between each scale row of lower half of body, especially prominent during courtship activities; fins greenish to translucent, but with pinkish or red-orange hue on ventrals and basal half of anal and second dorsal. Female generally greenish with silvery reflections (depending on light angle) and lacking orange or red-orange stripes between scale rows.

Colour in alcohol: brown on upper half, grading to light tan on ventral half; a diffuse, dark ...

... *New Glossolepis*

mid-lateral stripe sometimes present, usually on rear half of body; most body scales with dense covering of microscopic dark pigment spots; fins dusky brown to blackish (second dorsal and anal fins usually darkest), except pectoral fins translucent.

Sexual dimorphism: Males generally possess a deeper body and have elongated posterior rays on the dorsal and anal fins. A comparison of the maximum depth reveals an average depth (as percentage of SL) of 38.4 for males ($n = 12$) and 35.6 for females ($n = 3$).

Comparisons

The genus *Glossolepis* contains eight species that are restricted to northern New Guinea (Table 3). All species except the poorly known *G. pseudoincisus* are illustrated in Figs. 1, 2 & 5–11. The new species is related to *G. leggetti* (Fig. 6) and *G. multisquamatus* (Fig. 8 & 11), the trio forming a close-knit (presumably monophyletic) assemblage. *Glossolepis dorityi* differs from *G. multisquamatus* in modal counts of soft dorsal-fin rays, pectoral-fin rays, and predorsal scales (Table 2). Although fin-ray and scale counts between *G. dorityi* and *G. leggetti* are similar, there are marked differences in certain body proportions. Mature males (> 50 mm SL) and females of *G. dorityi* are deeper-bodied. The average body depth for *G. dorityi* males is 38.4 ($n = 12$) and 35.6 ($n = 2$) percent of the SL compared to 33.1 ($n = 25$) and 28.6 ($n = 23$) for males and females of *G. leggetti*. Moreover, the deepest male of *G. dorityi* is 42.0 percent of the SL, compared to 37.5 percent in *G. leggetti*. The caudal peduncle of *G. dorityi* is slightly longer, ranging in length from 14.7–16.9 percent of the SL, compared to 12.2–14.0 percent in *G. leggetti*. A further difference involves the red-orange to bronze stripe between each horizontal scale row, which is evident in males of *G. dorityi*, but absent in both sexes of *G. leggetti*. Additional information on the genus *Glossolepis* was provided by Allen (1980, 1981, 1995), Allen and Cross (1982), and Allen and Renyaan (1998).

Distribution and Habitat

The species is currently known only from the Grime (pronounced gree-may) River system of northern Irian Jaya. The area, known by former Dutch administrators as the Nimboran Plain, was described and illustrated by Boeseman (1963), although no reference was made to the floodplain lakes. The type locality consists of a small (estimated area of 4–5 hectares), round lake (Figs. 3 and 4). There is a vigorously flowing outlet stream, but no apparent inlet, indicative of a subterranean connection with neighbouring lakes via the limestone substratum. Water was relatively clear and maximum depth was estimated to be at least 10–15 m. The lake is surrounded by secondary forest and aquatic plants were abundant, but relatively few species were evident. Fishes were most strongly congregated around the outlet, where vegetation was very dense. *Glossolepis dorityi* was the most abundant fish species and a second rainbowfish, *Chilatherina fasciata* was also common.

Etymology

The species is named *dorityi* in honour of Dan Dority for his efforts in collecting the type specimens.

Acknowledgements

Studies of Irian Jaya fishes were funded by a grant from the National Geographic Society. I am also grateful to Conservation International for providing an opportunity to visit the Sentani area in August 2000, at which time I was able to photograph live specimens and visit the type locality of *Glossolepis dorityi*. Dan Dority and Dave Price shared their knowledge of this fish with me and provided transport and collecting assistance during a visit to Lake Nenggwambu.

Table 1. Proportional measurements of selected type specimens of *Glossolepis dorityi* expressed as percentage of the standard length.

	Holotype	Paratype	Paratype	Paratype	Paratype	Paratype	Paratype
	MZB	WAM	WAM	WAM	WAM	WAM	WAM
	Unreg.	P.31761	P.31761	P.31761	P.31761	P.31761	P.31761
		-001	-001	-001	-001	-001	-001
	male	female	male	male	male	male	male
Standard length (mm)	73.0	92.9	78.4	78.2	55.3	54.6	47.5
Body depth	42.0	35.7	39.0	39.1	41.7	34.6	38.2
Body width	11.7	12.1	11.7	12.9	11.8	11.7	12.4
Head length	25.3	25.3	26.1	25.3	25.1	25.9	26.1
Snout length	6.1	7.1	8.0	7.4	7.1	7.8	7.3
Eye diameter	8.2	7.1	8.1	7.1	7.9	8.7	9.1
Bony interorbital width	8.0	7.9	8.5	7.7	7.4	8.2	8.5
Depth of caudal peduncle	11.3	9.7	10.7	10.3	20.6	9.8	10.3
Length of caudal peduncle	14.7	16.9	16.6	16.6	16.4	16.5	15.6
Predorsal distance	51.8	51.5	51.2	50.9	49.6	50.4	50.8
Preanal distance	48.2	51.0	44.9	49.4	48.3	47.2	50.7
Preventral distance	34.2	32.9	34.9	34.5	35.4	35.3	36.7
2nd dorsal fin base	24.4	19.2	23.8	22.3	20.6	20.8	20.8
Anal fin base	45.7	38.8	42.3	43.3	43.8	40.6	40.8
Pectoral fin length	23.9	23.2	24.0	22.2	22.4	22.8	19.9
ventral fin length	18.2	14.1	19.7	15.4	16.8	14.0	16.4
Longest ray 1st dorsal fin	17.0	11.9	20.0	11.8	17.6	15.3	15.3
Longest ray 2nd dorsal fin	13.6	12.6	15.1	13.1	15.1	15.7	14.8
Longest anal ray	16.5	12.8	16.3	23.1	15.0	12.5	15.6
Caudal fin length	26.8	24.2	22.1	23.1	25.9	24.6	23.7

Table 2. Summary of fin-ray and predorsal scale counts for *Glossolepis dorityi*, *G. leggetti*, and *G. multisquamatus*.

	Soft Dorsal Rays						Soft Anal Rays				
	8	9	10	11	12	13	19	20	21	22	23
<i>G. dorityi</i>		2	4	7	2		1	2	8	3	1
<i>G. leggetti</i>		1	5	14	8	1	2	11	10	4	3
<i>G. multisquamatus</i>	1	18	17				4	12	15	5	

	Pectoral Rays				
	13	14	15	16	17
<i>G. dorityi</i>	2	13			
<i>G. leggetti</i>	1	10	4		
<i>G. multisquamatus</i>		7	24	4	2

	Predorsal Scales												
	18	19	20	21	22	23	24	25	26	27	28	29	30
<i>G. dorityi</i>			2	–	5	5	–	3					
<i>G. leggetti</i>	1	6	6	11	4	1							
<i>G. multisquamatus</i>							3	4	6	6	4	8	6

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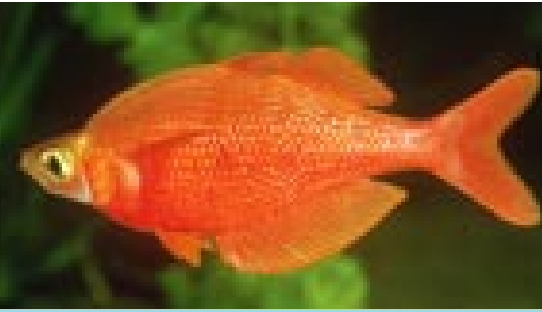


Fig. 5. *G. incisus*, adult male about 80 mm SL, from Lake Sentani, Irian Jaya. N.A.



Fig. 6. *G. leggetti*, adult male 73 mm SL, from the Tiawiwa River, Irian Jaya. G.A.

Table 3. List of the known species of the genus *Glossolepis* Weber, and their general distribution.

SPECIES

- G. dorytyi* Allen, new species
- G. incisus* Weber, 1908
- G. leggetti* Allen, 1998
- G. maculosus* Allen, 1981
- G. multisquamatus* (Weber & de Beaufort, 1922)
- G. pseudoincisus* Allen & Cross, 1980
- G. ramuensis* Allen, 1985
- G. wanamensis* Allen & Kailola, 1979

DISTRIBUTION

- Grime River Lakes, Irian Jaya
- Lake Sentani, Irian Jaya
- Wapoga River system, Irian Jaya
- Markham – Ramu systems, PNG
- Ramu, Sepik, & Mamberamo systems
- Tami River, Irian Jaya
- Ramu-Gogol systems, PNG
- Lake Wanam, PNG



Fig. 7. *G. maculosus*, adult male about 50 mm SL, from the Omsis River, Papua New Guinea. G.A.



Fig. 8. *G. multisquamatus*, adult male about 80 mm SL, from the Mamberamo River, Irian Jaya. G.A.



Fig. 9. *G. ramuensis*, adult male about 50 mm SL, from the Gogol River, Papua New Guinea. G.A.

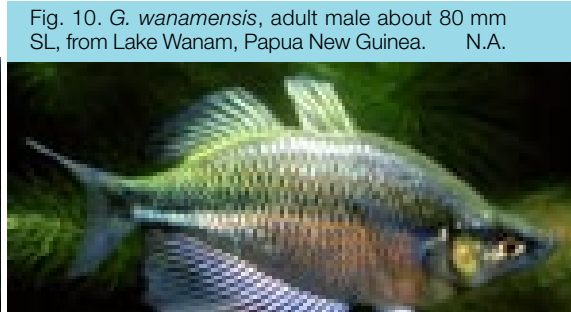


Fig. 10. *G. wanamensis*, adult male about 80 mm SL, from Lake Wanam, Papua New Guinea. N.A.



Fig. 11. *Glossolepis multisquamatus*, adult pair about 65 mm SL, from the Sepik River, Irian Jaya. An excited male displaying to the female with glorious colours in Neil Armstrong's aquarium. R.K.

References

- Allen, G.R. 1980.** A generic classification of the rainbowfishes (family Melanotaeniidae). *Rec. West. Aust. Mus.*, **8** (3): 449-490.
- Allen, G.R. 1981.** A new species of *Glossolepis* (Pisces: Melanotaeniidae) from freshwaters of Papua New Guinea. *Rec. Aust. Mus.*, **9** (3): 301-306.
- Allen, G.R. 1995.** *Rainbowfishes in Nature and in the Aquarium*. Tetra Verlag, Melle, Germany.
- Allen, G. R. and Cross, N.J. 1982.** *Rainbowfishes of Australia and Papua New Guinea*. T.F.H. Publications, New Jersey.
- Allen, G.R. and Renyaan, S.J. 1998.** Three new species of rainbowfishes (Melanotaeniidae) from Irian Jaya, Indonesia. *Aqua, J. Ichthyol. Aquatic Biol.* **3**(2): 69-80.
- Boeseman, M. 1963.** Notes on the fishes of western New Guinea I. *Zool. Mededelingen*, **38**(14):221-242.

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