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Lake Wanam Fasciata *Chilatherina fasciata wanamensis.* Length about 9 cm. N.A.

A DAY TIME VIEW OF A NIGHT TIME FISH.

By Colin Trneny

Introduction

A somewhat inconspicuous fish that grows to a length of about 125 mm, but is more commonly seen around the 75 mm size. Its dark brown body and unobtrusive shape help it to hide amongst driftwood and other submerged objects. Here it sits and waits until something small and edible swims past. This fish is primarily a nocturnal species that only rarely ventures out into the open during daylight hours.

It inhabits freshwater streams and rivers of the south west of Western Australia and is also found in temporary pools that appear along the side of the roads during winter. These pools dry up during summer and I assume birds eat any fish living there when the water levels drop, or the fish die after the water has dried up.

It is more commonly found in water with an acid pH but has been collected in water with a neutral pH. The water chemistry varies from site to site. I have found these fish living in crystal clear streams with a pH of 7.0, tea-stained creeks with a pH anywhere from 5.0 and 7.0. Some were in ponds that were so heavily stained with tannins that visibility was virtually zero, and with a pH so low it didn't even register on my pH chart. About the only thing they all had in common was a very low mineral content, less than 100 ppm of general hardness.

First described by Castelnau in 1873. It is the only member of their family to occur in WA. A couple of its better-known eastern-states cousins are the Murray cod and the Macquarie perch. Who is **it**, *Bostockia porosa*, more commonly called the Nightfish.

Nightfish *Bostockia porosa*. C.T.

Feeding

The juveniles diet includes small crustaceans, insects and their larvae, small fish and in fact fish that are the same length or even longer than the Nightfish. The adults diet includes the same but a preference is had for larger food items like fish, glass shrimp and small Marron, (*Cherax tenuimanus*) and Gilgies, (*Cherax quinquecarinatus*). I once had the opportunity to watch as several of my juvenile Nightfish (approx. 20 mm long) hunted down and systematically engulfed a couple of 30–35 mm *Galaxias occidentalis* that were living in their tank. The Nightfish swam around for several hours with nothing more than a tail protruding from their mouths and then even that went down. I had been curious as to where the young Galaxias had been going. Needless to say those Nightfish were quickly moved to another tank with slightly larger tank inhabitants.

In captivity I haven't yet seen a Nightfish turn on another. I have large Nightfish in with smaller ones and they all seem to get along together. They do get fed well once a day and that could be the reason I haven't witnessed any cannibalism.

Nightfish *Bostockia porosa.* Length about 75 mm. Gardner River, Northcliffe, W.A. R.K.

They quite happily eat other varieties of fish and in my tanks have eaten their fare share of species. Some of the more notable fish to be eaten include White Cloud Mountain minnows, Rainbowfish, Otocinclus catfish, Pygmy perch and *Galaxias occidentalis*. Gambusia are eaten too but nowhere near as readily as Rainbowfish or Galaxias. They also have a soft spot for glass shrimp, which I use to clean up excess food in the tank.

They have a pecking order that starts as soon as food is introduced into the aquarium. The smaller fish come out and start feeding. After a few minutes the larger fish come out from their caves and head for the food. The smaller fish move aside while the bigger ones tuck in. The big fish grab large portions of food and with a quick flick of the head tear a piece off and engulf it leaving the smaller fish to pick up the little bits left floating around.

During feeding the larger fish change from dark brown in colour and go cream with a dark speckled pattern. After feeding, the fish return to the normal dark brown colour. The smaller fish stay dark brown all the time.

My tanks are set up with many hiding places provided by clay flowerpots, driftwood, rocks and some thick growths of aquatic plants. The smaller fish tend to spend the day in the plants while the larger fish spend the day around the rocks, wood and in any caves they can find. Each of the big fish has their own cave that they return to after feeding. The majority of the time the fish hang motionless in their cave looking out the entrance.

In Nature

Nightfish inhabit the same waters as *Edelia vittata*, *Nannatherina balstoni*, *Galaxias occidentalis*, *G. maculatus*, *G. truttaceus*, *Galaxiella munda*, *G. nigrostriata* and *Lepidogalaxias salamandroides*. Very few waterways contain all of these fish together but there are several places where I found *E. vittata*, *N. balstoni*, *G. munda*, *L. salamandroides* and *B. porosa* co-existing together.

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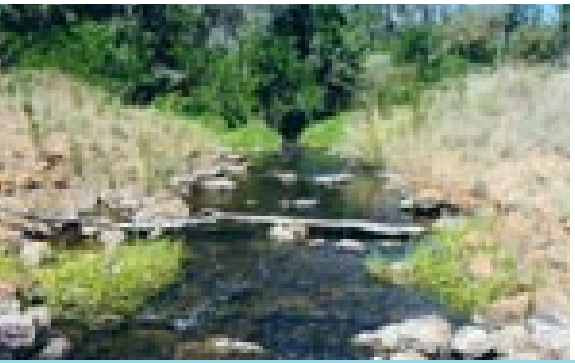
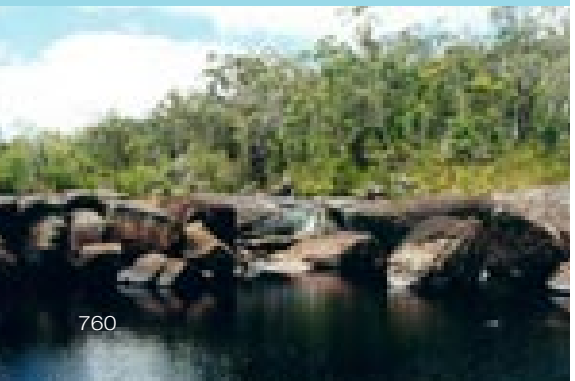
Canning River. Upper on the left and lower on the right. C.T.




Napier, downstream on the left and Deep River falls on the right. C.T.

More commonly the waterways have only two or three species of freshwater fish in them. Around Perth and throughout the south west of Western Australia, *Galaxias occidentalis* and *Edelia vittata* are the most common fish followed by the *Galaxiella* spp. *G. munda* is sometimes found in huge numbers while *G. nigrostriata* is moderately common, but is limited to only a small area of the south west. *Nannatherina balstoni* is fairly common throughout its limited distribution as is *Lepidogalaxias salamandroides*. The Nightfish are relatively uncommon by comparison to these species. *Galaxias truttaceus* is found in limited numbers in several isolated streams while *G. maculatus* are found only rarely in a few sites. The majority of Nightfish found are small adults approximately 75 mm in length. Baby/ juvenile Nightfish less than 25 mm in length, are very uncommon while large adults measuring over 100 mm in length are occasionally found. Listed below are some results from various field surveys I have done during the last 12 months and give an example of which fish can be found together.

Gladstone Falls. C.T.



Upper Canning River

Galaxias occidentalis
Edelia vittata
Bostockia porosa

East Brook

Edelia vittata
Galaxiella munda
Bostockia porosa

West Gardner River

Galaxias occidentalis
Edelia vittata
Bostockia porosa

East Gardner River

Galaxiella munda
Edelia vittata

Unnamed waterway near Northcliffe

Galaxiella nigrostriata
Bostockia porosa

Walpole River

Edelia vittata
Galaxias spp.
Pseudogobius olorum

Goodga River

Galaxias truttaceus
Edelia vittata
Pseudogobius olorum

Other organisms, i.e. shrimp, crustaceans, insect larvae were also found at numerous sites, but have not been included in the above listing. Also Gambusia have been found at several of these sites. The possibility of finding freshwater catfish (*Tandanus bostocki*) would have been improved if I had collected after dark but that was not possible during these surveys.

Galaxias occidentalis. R.K.

Galaxiella munda. R.K.

Galaxiella nigrostriata. R.K.

Lepidogalaxias salamandroides. R.K.

Edelia vittata. R.K.

Nannatherina balstoni. R.K.

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First Contact

My first contact with Nightfish was back in the late 1980s. I obtained a couple of adult fish about 100 mm long. Within a few days of being in the aquarium, they both came down with whitespot. A bit of treatment later and they were cured of that ailment. Now I was stuck trying to feed them. I have kept marine fish for a number of years and I would have to say that the vast majority of marine angels and butterflyfish are easier to get feeding than an adult Nightfish. They refused pretty much everything that was offered. The only thing that kept them alive for the month or so I had them, were the small Rainbowfish in the tank. It was then I realised how much of a predator they were. If something moved like a fish it was fair game.

My next encounter with them was a couple of years later when a young co-worker brought some Gambusia into the shop for feeding to some larger fish. In his bucket of introduced fish were six young Nightfish each approximately 50 mm in length. He knew he had something interesting and wouldn't let me have them for gratis. After some minor negotiations I got the young fish and set them up in a tank. True to form just like my first Nightfish experience these little guys came down with whitespot within a few days of being in captivity. Treatment wasn't a problem and feeding them was certainly easier than it had been with the adults. I started the young fish on live brine shrimp and within a few days they were eating them quite readily. It took several weeks before any of them would take any dead food. Small pieces of fish and prawn were offered, along with frozen bloodworms, grindle worms and live brine shrimp. Gradually over a period of time the young fish started to eat moderate amounts. They were in no hurry to gain weight, they just ate bits here and there.

A few months after I had gotten them I had what is technically known as a wipeout in my fish room. A wipeout is what we in the aquarium profession call the rapid mass extinction of all or nearly all the fish in an aquarium. It is almost always brought about by the careless activities of the person looking after the fish. Yes I was the one to blame. An occasional wipeout in one tank can almost be tolerated but to kill virtually everything in a fishroom is quite an achievement, even for me. It was during this time I worked out tap water was toxic to fish even though I was using a dechlorinating agent.

It happened because the water authority had recently done work on the mains water supply in the area. Yes I'm blaming them first. Because of this work they increased the chlorine levels to kill any of the bad bugs that may have appeared in the water. This combined with my lack of water holding facilities, and my half water changes done directly into the tanks, all justifiably needed due to the overcrowded conditions and heavy feeding regime to make the fish grow fast, and I managed to terminate virtually all the fish I had.

Anyway after burying the dead and freaking out (not necessarily in that order), I invested in a couple of large plastic storage buckets. From now on the tap water went into the buckets where the dechlorinator was added. An airstone was put into each bucket and the whole lot was left to aerate for several days before I would touch it. This significantly increased my workload but drastically reduced the number of unexplained deaths. Occasional problems still occurred and it wasn't until after many months of hassling various companies and authorities did I get some reprieve from the tumultuous body count.

I used to fill my water holding buckets with the garden hose. A pretty standard thing to do but not a very good one. Garden hoses, especially the higher quality types that are meant to be unkinkable and have an incredibly long life expectancy, have a chemical added to them to help do the above. Namely to prevent premature aging and kinking of the hose. This chemical (sorry

Nightfish *Bostockia porosa.* Length about 85 mm. Gardner River, Northcliffe, W.A. R.K.

I can't remember what it is called these days), is incredibly toxic to anything that ingests it, animals included. The better quality the hose is the more of this chemical they contain. The hotter the ambient temperature the more this chemical leaches into the water inside the hose. Therefore on hot summer days when I was filling my buckets from my flash new and exorbitantly overpriced garden hose, I was in fact filling my buckets with poison and getting them ready to take out my fish. This chemical is toxic to any and all animals that ingest it therefore I ceased using the hose to fill the dog's water bowl. I like my dog.

After the gaining of my new knowledge I proceeded to my nearest shopping center and invested in a roll of 13mm black Poly Pipe and some tap fittings. I was told by those in the know (garden hose manufacturers), that it was the best thing to use to fill my fish buckets. Anyone who has used it will know why. Horrible stuff kinks and bends and splits and snaps but it is better for the fish than a normal garden hose.

For the next few years I had nothing to do with Nightfish and it was the mid 1990s when I developed an interest in them again. Between 1995 and 1999 I kept the odd Nightfish here and there but never had a great deal of luck with them. The longest I ever managed to keep one alive was all of about 6 months. They seemed incredibly difficult to care for and reacted to any change in their aquarium with another case of whitespot. I tried keeping them in tanks on their own and tanks with other fish. They fared best in community tanks with fish that were big enough not to be eaten but not too big so as to look at the Nightfish as potential prey. Under these conditions the other fish helped the Nightfish overcome some of their shyness and they ate more readily and accepted a wider variety of foods.

More Recently

October 2000 saw me out hunting Gambusia. I headed north of Perth towards Guilderton. I spent many hours looking for fish and didn't find any. On the way home I headed towards Gin Gin. I stopped and surveyed a section of the Gin Gin Brook and found myself some baby Nightfish. Further details of that trip can be found in the ANGFA WA newsletter, Melanotaenia, from November 2000 under the heading "Observations of Baby Nightfish (*Bostockia porosa*)". These Nightfish were smaller than any I had ever seen. The largest ones being all of 12 mm long. Previously all my Nightfish keeping attempts had been with bigger fish, the minimum size would have been 50 mm. …

I got the little guys home and set them up in an ex Rainbowfish tank. The only tank mates they had were some baby *Edelia vittata* that were caught at the same time. A few months after they were obtained some juvenile *Galaxias occidentalis* were also added as tank mates.

These baby Nightfish ate within a few days and didn't show any of the shy tendencies of their larger brethren. Within a few weeks several had grown significantly larger than the others had. These fish were moved to another tank after they started eating their pygmy perch tank mates. Whitespot appeared again shortly after these larger fish were removed. Easily treated normally but this strain was being stubborn. I ended up using a lowered dose rate of a medication containing a copper sulfate/ malachite green mix. It killed a few of the little Nightfish but most survived and continued on. Previous treatments for whitespot on Nightfish have found them to be susceptible to many medications, in particular methylene blue and malachite green based solutions. Normally I use Triple Sulpha to treat whitespot but the strain they had did not respond so I had to go to something I didn't normally use or like with the resulting demise of several fish.

Over the last 8 months these Nightfish plus some other small ones that I managed to get have grown. If a group of similar sized fish are put together in a tank and maintained for a length of time a small number of these fish will rapidly outgrow all the others. The majority of the fish will stay small say an inch or an inch and a half, while the growers hit the 75 mm mark within a few weeks to a month. If these larger fish are removed then another group will rapidly grow to about 75 mm in length.

It would appear that when a mature size has been reached, i.e. the 75 mm mark, growth is remarkably slower than it was leading up to that point. Once a Nightfish is 75 mm long there is nothing in its natural habitat that can eat it with the exception of *Tandanus bostocki*, (freshwater catfish). These catfish even though classed as common throughout their range are not often seen. Both the Nightfish and the catfish are nocturnal so they are even in that respects, no chance of a catfish sneaking up on a sleeping nighty. The catfish most commonly observed are only 6 to 8 inches in length, but they do grow to over a foot in length and when full grown are certainly big enough to take a Nightfish, however their mouth is small and not suited to engulfing large prey. This combined with their absence in just about every waterway I have ever found Nightfish leads me to believe Nightfish are pretty safe from predation once a mature size is hit. In late January 2001 I found some pools of water that had small numbers of 75 mm Nightfish in them. Other pools I found had juvenile fish in them being no longer than 25 mm. Generally it was the bigger pools of water that had the bigger fish while the smaller shallower pools, some were no more than puddles a couple of inches deep, had the small fish in.

Just Speculating.
I find it interesting that the majority of Nightfish found in the wild are about 75 mm in length. Perhaps a survival strategy whereby some fish grow to adult size quickly and if there is sufficient water for a long enough period of time then there is a chance of them breeding. If on the other hand the water levels dry up to mere puddles then the smaller fish will have a better chance of hiding from the birds and not require as much water to live in. Perhaps the bigger fish eat the smaller ones and live off their fat reserves over the leaner summer months.

Health Problems
The most common problem encountered is *whitespot*, which is generally stress induced. If you upset the fish in the tank and there are Nightfish in there, they will be the first ones to come down with it. Fortunately treatment is simple with many whitespot cures readily available from any aquarium store.

Fungal infections are fairly common. Nightfish as with many other Australian native fish have very soft bodies that get damaged easily. Salt can be used to treat minor infections but treatment must be started as soon as it is noticed. Alternatively there are many proprietary fungal remedies on the market. Please remember Nightfish are sensitive to Methylene blue and Malachite green based medications.

Bacterial infections occur mainly around the caudal peduncle area. A fungal infection usually sets in shortly after. If caught early there is a good chance of successfully treating this sort of problem. If however you leave it for a few days you can pretty much say good bye to your sick fish. Broad-spectrum antibiotics available from any pet store should help cure the problem.

Small lumps or bubbles of skin. Sounding more like a chocolate bar advert, bubbles of nothing that make it something. Unusual as it sounds I have seen a Nightfish with it. It looked like the fish had small balloons on its body. The skin had swollen up and produced round nodules that protruded above the body. A number of these bubbles appeared over the fish's body. The fish continued to eat normally for a few months but after a while its appetite declined and the fish died. I didn't have the heart to send the fish off to Fish Health Labs and find out what it was but it hasn't appeared on any others and the fish died over 4 months ago.

Worms. I have not seen any signs of internal parasitic worms in my Nightfish but there is a possibility they are carrying a few. Particularly considering their diet revolves around smaller fish and crustaceans. Anything their dinner was carrying, they end up with. Probably the only drawback to being a topline predator. These days there is an effective cure that harms nothing but nematodes. Common name is Nilverm and further information on it including dosage rates can be found in the ANGFA WA newsletter, Melanotaenia, from May and June 2001 under the heading " Australian & New Guinea Rainbowfish", sub-heading Rainbowfish Diseases.

Deformities can occur naturally. In fact a small percentage of all fish fry tend to have some deformation. The mutation is such that in most cases the animal does not grow quickly or is not able to feed properly and therefore not live long enough to worry about it. If you have a fish that is badly deformed you might want to put it down. Alternatively if the fish is able to feed ok and has no trouble swimming or moving around the aquarium then there is no reason to kill it and as long as you don't use it for breeding purposes there is nothing wrong with keeping it. Health issues can bring about skeletal deformations. Fish Tuberculosis and worms can cause curvature of the spine. Nutritional deficiencies will also cause some problems. I even have an inkling that some fish develop skeletal deformities due to inadequate light. There is inconclusive evidence here and I would say that if the fish was not born deformed but develop it later in life then worms would be the most common cause.

Basic Do's for Keeping Nightfish

Do provide lots of hiding places in the form of caves, plants, driftwood, etc.

Do feed regularly so they can grow rapidly and be less inclined to eating co-habitants.

Do provide a varied diet.

Do regular tank maintenance including water changes and gravel cleaning.

Do try to keep the water conditions stable to prevent outbreaks of disease.

Definite No No's for keeping Nightfish.

Never keep them in alkaline water.

Never keep them in water with a general hardness over 200ppm.

Never use Methylene Blue or Malachite Green based chemicals on them.

Never keep them with any smaller fish you value.

Never have sharp or jagged rocks/ ornaments in the aquarium.

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

Gerald R. Allen*

Abstract

A new species of rainbowfish, *Glossolepis dorityi*, is described from Irian Jaya. It is distinguised 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. G.A. …

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

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

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 ⋯

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 MZB Unreg. male	Paratype WAM P.31761 -001 female	Paratype WAM P.31761 -001 male	Paratype WAM P.31761 -001 male	Paratype WAM P.31761 -001 male	Paratype WAM P.31761 -001 male	Paratype WAM P.31761 -001 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**
G. dorityi		2	4	7	2		1	2	8	3	1
G. leggetti		1	5	14	8	1	2	11	10	4	3
G. multisquamatus	1	18	17				4	12	15	5	

	Pectoral Rays				
	13	**14**	**15**	**16**	**17**
G. dorityi	2	13			
G. leggetti	1	10	4		
G. multisquamatus		7	24	4	2

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

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	DISTRIBUTION
G. dorityi Allen, new species	Grime River Lakes, Irian Jaya
G. incisus Weber, 1908	Lake Sentani, Irian Jaya
G. leggetti Allen, 1998	Wapoga River system, Irian Jaya
G. maculosus Allen, 1981	Markham – Ramu systems, PNG
G. multisquamatus (Weber & de Beaufort, 1922)	Ramu, Sepik, & Mamberamo systems
G. pseudoincisus Allen & Cross, 1980	Tami River, Irian Jaya
G. ramuensis Allen, 1985	Ramu-Gogol systems, PNG
G. wanamensis Allen & Kailola, 1979	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.

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Lake Wanam Fasciata *Chilatherina fasciata wanamensis.* Male, length about 14 cm. N.A.

LAKE WANAM FASCIATA *Chilatherina fasciata wanamensis,* A SUBSPECIES IN TROUBLE

Barry Crockford

Introduction

Because of concern for the future of *Glossolepis wanamensis* in the wild, a special team consisting of Angfa, the Melbourne Zoo and the Rainforest Habitat in the University of Lae, PNG, was formed in June, 1999, to conduct a survey of the Wanam Lake rainbowfish population (see Lake Wanam revisited, Angfa V13-3, p. 621).

The team collected specimens of *Glossolepis wanamensis,* which formed the basis for a successful captive breeding program in Lae, PNG. Unfortunately this survey also brought to light that a second melanotaeniid species *Chilatherina fasciata,* which in previous years was quite common in the lake, could not be found during the 4 days specifically searching for it.

Although until now not recognised as being different taxonomically from *Chilatherina fasciata*, the lake population is a unique form, popularly know as the Lake Wanam Fasciata. It differs considerably from the true *C. fasciata* in appearance and from a biological point of view, it appears to represent a valid species in its own right (and in my opinion should be treated as at least a subspecies of *C. fasciata*). With this in mind, the drastic decline or possible demise of the population caused me much concern.

Back in Melbourne I set out straight away to locate specimens of the Lake Wanam Fasciata. After weeks of searching and dozens of phone calls, I finally located one male in Melbourne

Barred Rainbowfish *Chilatherina fasciata fasciata.* Male, length about 14 cm. N.A.

(Neil Armstrong) and several probable specimens in Queensland. So, I made arrangements to travel there and search those out in the sunshine state. With a lot of help from Tony Fowler, who generously provided transport and accommodation, we began our quest.

My concern for the Lake Wanam Fasciata grew even more when all the specimens we checked turned out to be the 'clear water creek' form of *Chilatherina fasciata,* until eventually we arrived at the home of Neal Stanton. Neal has a show tank in his lounge room and among his display was one large male Lake Wanam Fasciata. "Do you have any females?" I asked, fearing for the worst. "I think I have 3 females in the fish room" he replied and sure enough, there they were. My search was finally over!

Neal allowed me to bring back one female to Melbourne, which was placed into care of the Special Rainbowfish Species Group (SRSG), an autonomous arm of ANGFA Victoria, with a program to breed endangered or rare species of the family Melanotaeniidae.

Care and Breeding

The pair, comprising of the Neil and Neal specimens, were set up in a 100 ltr tank, 50% planted, ph 7.5, temp 28°C, Kh (Carbonate hardness) 3 dh (50 ppm), general hardness 100ppm, approximating the conditions of Lake Wanam.

Luckily the pair proved very compatable but seemed reluctant to spawn. The mop was checked every few days to no avail. I became a little worried that perhaps spawning conditions were wrong. Then one morning, earlier in my fish room than my usual time of feeding, I noticed the pair in full breeding colour and watched them spawning, not on the mop, but rutting in the sand and roots of the plants at the bottom of the tank.

Next morning I checked the spawning medium and found approximately 30 large eggs …

Lake Wanam Fasciata *Chilatherina fasciata wanamensis.* Male, length about 14 cm. N.A.

deposited that were then transferred to a smaller holding tank. Unfortunately, all eggs were found to be infertile when checked 3 days later, and this proved to be the case for several weeks. The eggs were kept at different water conditions but still remained infertile.

To possibly improve on the situation, the pair was then fed exclusively on live foods for ten days, mainly mosquito larvae and daphnia, and eventually some fertile eggs were produced. These also proved difficult to keep, and most turned infertile within 7 days, and the few that hatched only lived for two days. The fry were unusually large, about 6–7 mm long, so it was decided to begin feeding with larger live foods. Infusoria was by-passed and a mix of vinegar-eels and paramecium culture was fed. Fry still proved difficult but eventually some survived. After several weeks I had 18 fry, all seemingly very healthy, vigorous specimens. The growth rate on live foods was rapid. I then concentrated on raising these, mainly due to the frustration of the poor fertility of the parents.

During the following 7–8 months some young died and only 10 had reached sub-adult size, but these, 3 females and 7 males, provided a strong and healthy stock. They ranged in size from 55–65 mm and were placed into the tank with the parents.

Over the next few months they reached sexual maturity and it was a delight to observe the spawning frenzies each morning. Fertility improved greatly, about 80% and from this point the Lake Wanam Fasciata could be handled much more easily and similar to the other species of *Chilatherina.*

It is now several months since the start of the second generation and about 50 juveniles have been distributed at 9 different locations, and all are doing well.

Observations and Conclusions

The Lake Wanam Fasciata is an endemic taxon to the lake where it was quite common during collections over a period between 1979 to 1982. In 1999, during the survey, not a single specimens could be found, despite specifically searching for them.

Lake Wanam Rainbowfish *Glossolepis wanamensis.* Male, length about 60 mm. N.A.

Due to the near identical morphogy with *Chilatherina fasciata,* a species that prefers clear forest streams, the unique lake population was not recognised as being different. It is clear to me that this form should be treated as distinct and at least given a subspecific status, calling it *Chilatherina fasciata wanamensis.* In addition, until another survey is taken, I like to declare this subspecies as highly vulnerable, possibly extinct in the wild. Apart from the few captive specimens in Australia it is believed some specimens are still available in Europe.

To maintain a pure stock, care must be taken to avoid crossing subspecies (including all the *Chilatherina fasciata* forms, as well as similar species in the genus). Whilst the males are markedly different, the females are near identical. *C. fasciata wanamensis* is rather unique amongst its congeners in the fact it prefers bottom spawning. Since its introduction, Lake Wanam has now a large *Tilapia* populations that are also bottom spawners, digging large volcanic pits for egg and fry raising, perhaps displacing the *Chilatherina* population. Like in so many places, the introduction of exotic species leads to the demise of native populations.

A captive breeding program, besides our own effort, should be initiated as soon as possible from our rather limited number of fish presently kept, to build-up the numbers to ensure the future of this unique form, and in addition supply to the PNG Rainforest Habitat in Lae to initiate a breeding stock there for possible return to the wild.

The Lake Wanam Fasciata can be considered drab when young, but with a little patience one can watch it develop into a highly desirable aquarium fish, growing to 14–15 cm in length. They are deep-bodied for a *Chilatherina,* and a fully coloured male is highlighted by an extremely intense orange nape from the upper lip to the 2nd dorsal fin, worthwhile for any collection.

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Cox's gudgeon *Gobiomorphis coxii.* Length about 14 cm. Rainforest Creek, Coffs Harbour, NSW. G.B.

DIVING FRESHWATER

The photographs on this page were taken by Gary Bell, one of the top underwater photographers, who lives near Coffs Harbour, an area that I've been interested in for exploring the freshwater systems with my camera. I managed to talk Gary in to take some shots for me and I hope to do the same in the near future. I like to encourage more people to get in to the freshwater diving and take photographs of the variuos creatures or habitats. We can learn much from observing and photographing species in the wild and compliment what we are learning from our ponds or aquariums. Fishes show their true colours and in most cases behave naturally. It may be surprising to learn that many of the species can be approached at close range, showing little fear to a person that must look enormous to them. I hope that we can create some articles that include *in situ* photographs soon. On the left another photo by Gary Bell of a large, 40 mm long, tadpole and a subject that we eventually like to identify during studies of the creeks.

Rudie Kuiter, editor.

photos in this issue of the journal are by Gerry Allen, (G.A.), Neil Armstrong, (N.A.), Gary Bell (G.B.), and Rudie Kuiter (R.K.)
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