

theDARTER
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**Midsummer
Miscellany**
*it's midsummer
somewhere*

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now, legitimately small



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BOESEMAN'S RAINBOWFISH



Melanotaenia boesemani

by Mike Hellweg, CFN

Back when I first wrote this article, when I said "Australian Rainbowfish" or even just "Rainbowfish", many hobbyists would only think of *Melanotaenia splendida*, the plain gray-silver fish which for years was the only fish available from "Down Under".



M. splendida is not a bad-looking fish.

PHOTO: Aquarium Glaser

Updated from the Nov/Dec 1993 *Darter*

I remember first seeing this fish at Woolworth's Pet Department in River Roads Mall and was mesmerized by the male's flashing colors along their snout as they danced and displayed for one another in the heavily planted display tank. Under bright lights and proper conditions like these, this fish would show why it was called "Rainbowfish", but few would ever give it the chance as the only interesting thing about these fish from a dealers' standpoint was that they were (are) very hardy and would sell as an "oddball" because at that time (early 1970s) they were the only fish available from the Land Down Under. Until the early 1980's, there were no other Bows in the hobby.





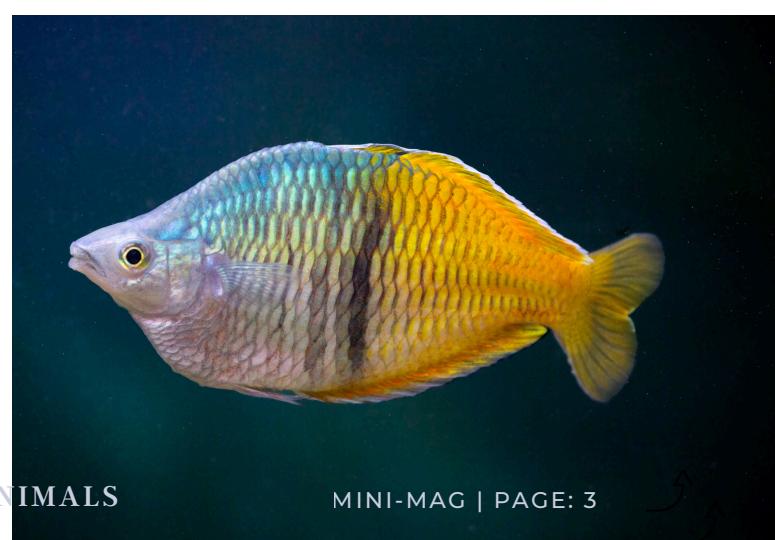
Then came the "Decade of the Rainbow". Starting with a few German expeditions in the mid-1970s, and with the monumental work of Dr. Gerald Allen in the late 1970s, a whole new fish family opened up to the hobby, the Silversides, or Atherinidae. Incidentally, they are now in their own family, Melanotaeniidae. We learned that there were more species in the genus *Melanotaenia* than *splendida* many, many more – and many much more beautiful than *M. splendida*.

Dr. Allen was primarily interested in marine fish, until he could not find the identity of some local freshwater silversides caught in the Northern Territories of Australia. He began collecting and identifying them, which lead to New Guinea as well, a great work which continues to this day. The object of this article, *M. boesemani*, comes from the world's second largest island, just off the Northwest coast of Australia, the turkey-shaped island of New Guinea. Today they are separate land masses, but in the recent past they were joined together part of a larger body of land known as Sahul. While New Guinea has seen development in the past 30 years, and environmental damage from illegal mining, logging, and introduced non-native species to "improve" the fishery, Irian Jaya, the western half of the Island, is still a vast, mountainous land with thick jungle and few airstrips, and limited permanent towns or villages. Many airstrips are just cleared fields near a mission or large village, and air travel is (still) hazardous and irregular at best.

M. boesemani is one of the most photographed of the rainbowfishes, hence all the photos in this article.
(Photos: Public Domain)

Boeseman's Rainbow was formally described by Allen and Cross only in 1980. It has been in the hobby since 1982 (just 9 years before the original article was written!), and in that short time it had already become one of the most popular of the New Rainbows. And it remains so today. It comes from the New Guinean Highlands, near the center of the Vogelkop Peninsula of Irian Jaya in the Ajamaru Lakes at the head of the Ajamaru River. Since it is a lake dwelling Rainbow, setting up a tank is very easy. They prefer the shallow, inshore waters of the Ajamaru Lakes where water plants grow in great abundance. Planted or aquascaped tanks are perfect for them.

In the wild, they average about 90 mm SL (a little over 3 1/2 inches) in the male and 70 mm SL (3 inches) in the female. In our tanks, they grow a little larger. The male fish is the real stunner. Its coloration is unusual – the fish looks like it was dipped in paint, dark gray blue on the front half and gold on the rear half. The males body deepens in height as it grows, and this continues throughout its life. Females are a plain olive grayish color, with sometimes a bit of yellow on their rear half, but usually not. They remain more torpedo shaped throughout their lives.





A 20 gallon long is ideal for a small group-of 1 or 3 males and 4 or 5 females. Plant the tank heavily and give the Bows room in front to swim and "dance". Strong filtration is not necessary, but regular water changes should be done. The Bows will breed in the plants, and will put on a dazzling show for you if that is all you want. If you wish to breed them, read on. Rainbows are EXTREMELY easy to induce to spawn. The difficult part is rearing the fry. Unlike most eggayers, Rainbows lay their eggs every day, a few at a time, as long as conditions, i.e. food and spawning sites, are ideal. This is known as 'continuous spawning'. A breeding setup is simple. All you need is water and a pair or better a trio of Bows. Add somewhere for the eggs and you are ready. Some breeders use Java Moss or fine leaved plants, most use spawning mops.



M. boesemani with its spawning mop

Mops can be made from nylon or acrylic yarn. I buy my dark green yarn at Walmart for 88 cents a skein (in 1993 – now they're \$3.22). A single skein will make several mops. Wrap the yarn around a book about 10" long. Wrap it 25 to 50 times. Cut it along the bottom and tie it at the top with a different color yarn so you can find it if you need to. Add a large cork, or piece of Styrofoam (I now use Styrofoam fishing floats) and your mop is nearly ready. Boil it for 15 - 20 minutes to release the dye and kill any unwanted guests. Rinse it and you are ready to go. It is a good idea to boil it whenever you are going to use it, just as extra insurance against pests or even of mixing species. Pop it in a container of water and put it in the microwave for 3 or 4 minutes, then let it cool and it's ready to use. Use at least one mop per male, or they will spend all of their time quarrelling over the mop and ignore the females. It's also a good idea to use an odd number of males, if possible. That way at least one is available to breed at most any time.

With first light, you can watch Boeseman's Bow's spawning "dance" begin. The males display for one another and for the females. Their color intensifies to the point where the gray blue becomes a dark purple/blue/black and the pale yellow is a fire orange to almost brick red, depending on the population. The fins are held erect, and they begin "flashing". The males have a special electric blue gray bar that extends along the back from the snout to the dorsal fin. Usually you can't see it, but now they are flicking it on and off like a neon sign! I've never seen anything like it in any other fish. The males entice the females to the mops where both quiver and the eggs are released and fertilized. The eggs attach by adhesive threads to the mop and are largely ignore by the parents. You can leave the eggs in the mop, and remove the mops on a weekly basis, or you can pick the eggs every few days. The eggs are sturdy and stand up well to handling and exposure to air for a short period of time.



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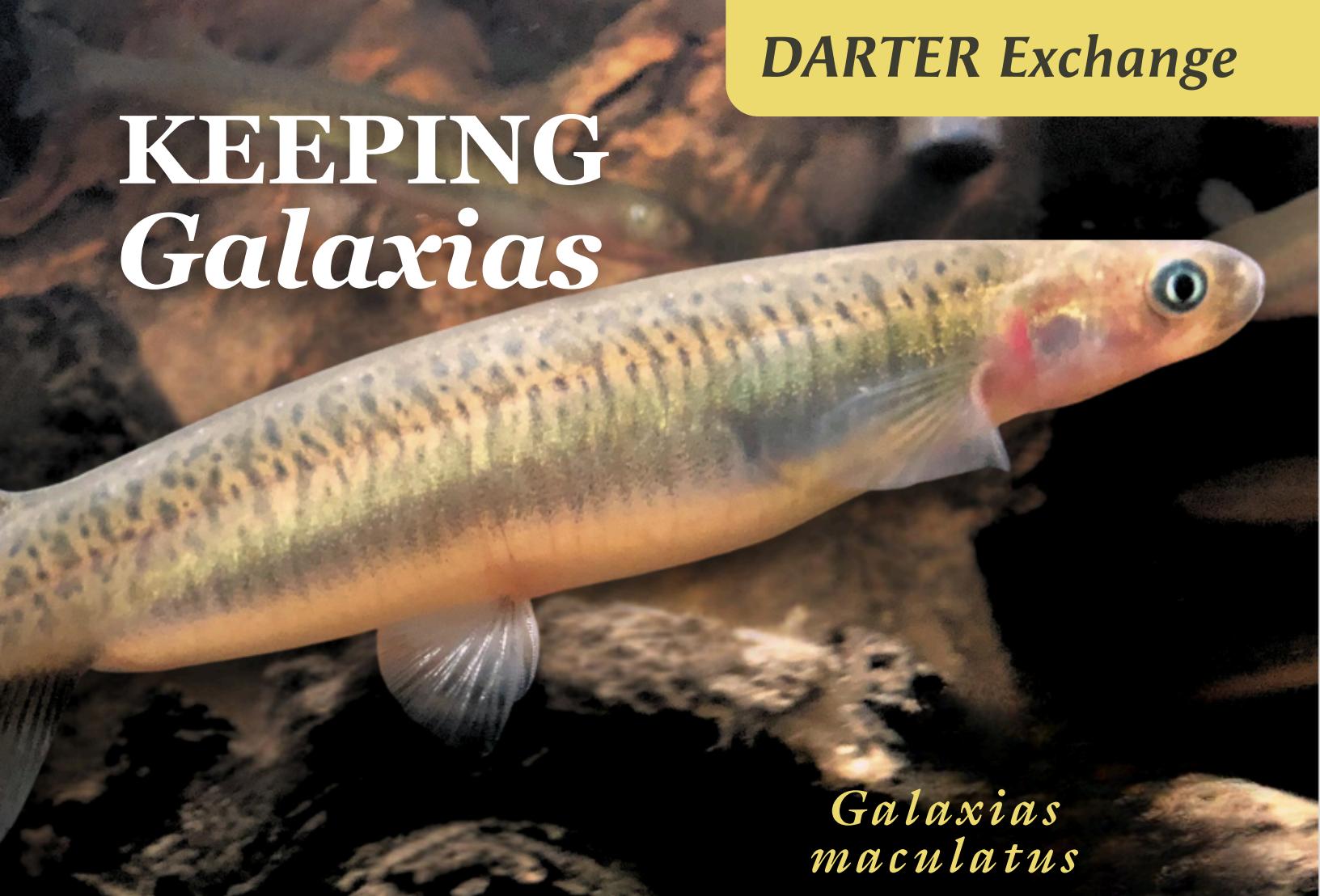
One of the secrets to success with rainbow fry is to keep them warm, about 80 degrees Fahrenheit – no need to go warmer. They hatch about 10 to 14 days after being laid, so if you move the mop, leave it in the hatching container for at least 2 weeks. As you see fry swimming at the top, remove them with a turkey baster to a shoe box or other container filled with green water and Java Moss. The fry will eat the organisms on the Moss and in the water for the first several days. They can also be fed A.P.R. (no longer available – I now use Sera Micron, other folks use Golden Pearls, and still others use other types of finely powdered "dust"-type fry foods) and vinegar eels. Don't feed microworms since they sink to the bottom, and rainbow fry stay in the top inch or so of the water column. When the oldest are about five days old, start adding newly hatched baby brine and crushed flake food. When all are at least 5 days old, stop feeding the powdered foods. When they reach a half inch or so, move them to a 10 gallon tank so they have more room to grow. Give them lots of water changes, and soon you will have to find homes for them!

Boeseman's Rainbows can live for up to four years in the wild, and several will live to six or more years in the home aquarium, so plan on sharing your home with them for many years to come. Once you have seen the beauty of a male in his spawning glory, you will be hooked (no pun intended). And don't forget to just sit and watch your fish – these gorgeous rainbowfish will certainly give you a good reason! After all, isn't that why we all got into this amazing hobby in the first place?

G'day!



KEEPING *Galaxias*



*Galaxias
maculatus*

by **Brendan Moar, Liam Moar
and Al Moar, ANGFA**

If you've ever been to a creek, river or lagoon in New South Wales, chances are you've come across one of our Galaxiids. Like little serpentine cigars, they dart about the stones and disappear into overhanging vegetation the moment they become aware of your presence.

There are eight species of galaxiid present in New South Wales, but only three of these – *Galaxias maculatus*, *G. coxii* and *G. olidus* – are commonly kept in aquariums. This article will focus on the most encountered and easiest of these to keep, the Common Galaxias or 'Common Jollytail' (*G. maculatus*).

Originally published in *Rivus*, Australia
New-Guinea Fishkeeping Association

Over the years I've (BM) kept *G. maculatus* and *G. olidus* a number of times. Every time I get them back into the aquarium I'm reminded of just how much I love them and how beautiful they are. Galaxias have a quiet elegance about them – sleek, torpedo-shaped bodies with complex, subtle patterns adorning their flanks. At the same time, some species – such as Golden, Dwarf and Mountain Galaxias – display insanely vibrant colours, and a big Galaxias like a Trout Galaxias will put any rainbowfish to shame on its day.





G. maculatus caught on an ANGFA NSW field trip | J. Buckley

But it's not just what they look like. It's their behaviour too. Watching a school of them zipping around through a good strong current is absolutely mesmerising; they're so fast and so incredibly agile. It's also a great challenge to create a tank that really shows off these fish and feels like their natural river home.

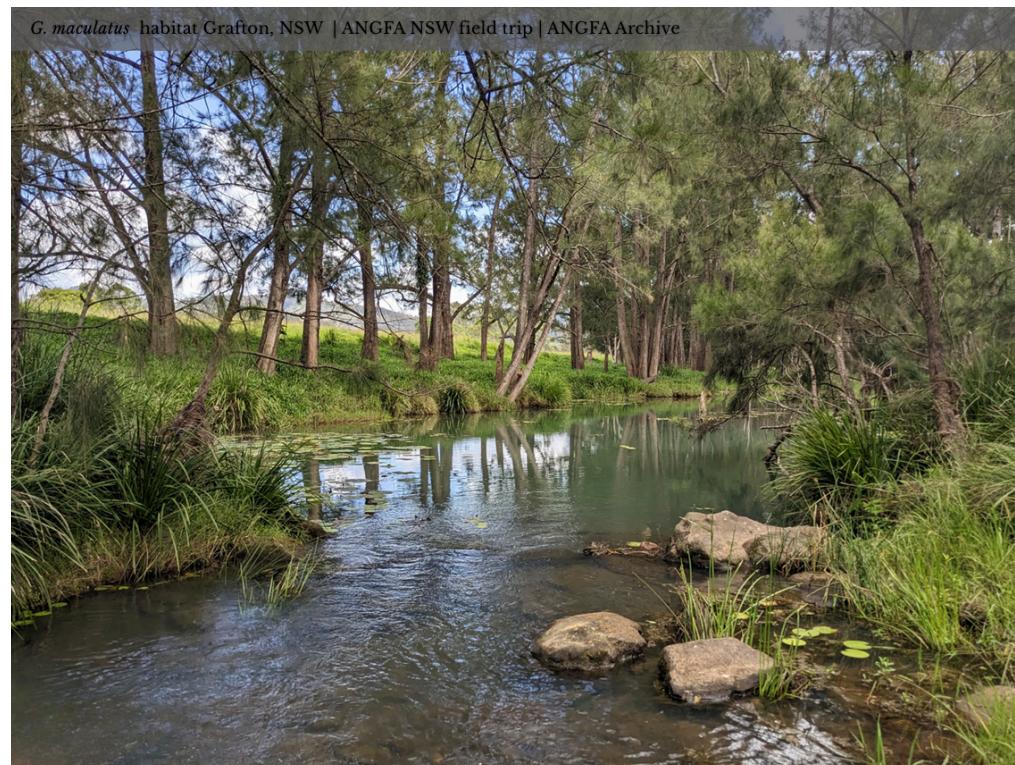
One of our personal dream fish is the Giant Kōkopu (*Galaxias argenteus*), a species of Galaxias found only in New Zealand. This big boy reaches up to 2ft in length! In my (LM) opinion, it's also one of, if not the best looking Galaxias as well: ornate spangling and markings all along the body really help this fish live up to the name Galaxias.

ETYMOLOGY

Galaxius = galaxy. From the ancient Greek *gála* (γάλα), meaning "milk". It was applied to the 'Milky Way' and then adopted to refer to galaxies in general. Maculatus = spotted, blotched. Latin

HABITAT

The most widespread of all Galaxiids, *G. maculatus* favours coastal streams. They form large schools, swimming close to the bottom in open water and darting into overhanging vegetation and undercut banks for cover.





Close up of an anaesthetised specimen showing the sparkly 'galaxy' covering the flanks.

Galaxias are scaleless fish with long torpedo like bodies; slender in younger fish and more stocky in older individuals. Base colours range from brown and green through to darker grey and olive in adults. Older fish generally have intricate dark-blotched markings on their sides with a pale silvery belly. *G. maculatus* show a wonderful green/gold iridescence below the lateral line when they come into the light (you'll think the fish has been rolled in glitter!)

G. maculatus are catadromous, migrating from freshwater to estuaries and brackish streams to spawn on riparian vegetation during the Autumn spring tides. Eggs develop above the water-line and hatch during re-inundation at the next spring tide. Larvae spend several months at sea before returning to estuaries en masse in Spring. From here they develop further and migrate back into freshwater streams. Some self-sustaining landlocked populations exist, suggesting that aquarium reproduction is possible. However, this may be an adaptation specific to these populations.



GALAXIAS IN THE AQUARIUM

Here in Sydney we (BM + LM) only keep Common Galaxias (*G. maculatus*) nowadays. Most Galaxias species need consistently cool water and the high dissolved oxygen levels associated with these lower water temperatures. As soon as the temperature goes over about 24°C, they get heat stress and fold in half (yes, they literally bend at a 90 degree angle!) and die soon after. The only real way to keep some of the cold-preferring species is to 1) live where it's cold or, 2) run a chiller on the tank.

G. maculatus however, have a wider temperature tolerance, making them a more viable and responsible choice for a home aquarium. If I could get some of the Climbing Galaxias (*G. coxi*) I would consider giving them a go, however they're not very available and are protected in some places (such as Manly Dam.)

Galaxias maculatus are frequently caught on ANGFA NSW field trips. Their patterns vary with locations, so it's worth going along and seeing what surprises you can find. Wild Galaxias are often infected with trematode cysts - a developmental stage of a parasitic trematode (or "fluke") where the parasite is encased within a protective, multi-layered wall. They appear as a black dot embedded in the muscle. These parasites won't harm the fish and won't infect other fish in the aquarium (the parasite needs an intermediate host like a bird or mussel to continue its life-cycle). It can however, look unsightly, especially when the infestation is heavy. Regardless, it's worth quarantining any wild fish you bring in before adding them to established tanks as you don't know what they are carrying internally, or what diseases will surface once capture-stress lowers their ability to suppress existing pathogens.





TANK SETUP FOR G. MACULATUS

Tank Size: Aim for a decent sized tank of around at least 3-4 foot to allow for school. Schooling behaviour is part of the appeal in keeping them and it makes them more confident. Whatever size you choose you must have a tight fitting lid! Galaxias will jump out of the smallest gaps, especially when they are new to a tank.

Filtration: The filter type probably isn't that important, but make sure you clean your filter regularly to avoid a build up of organic matter as this can impact the dissolved oxygen available as well. Likewise, make sure you have a good current in the tank. Not only do they enjoy the water movement, but they need strongly oxygenated water: surface movement is a must. This can be achieved via airstones or directing the outflow from a filter across the surface. This will become especially important when it heats up, as the water can't hold as much oxygen as these fish need at higher temperatures. Note: These fish love to swim up filter intakes, outflows, weirs etc. Make sure they are appropriately screened. The overflows of hang-on-the- back filters are particularly enticing to Galaxias and so are probably not the best choice unless you can screen them off

Temperature: Aim for 18-22 deg, definitely below 24 deg. G. maculatus can handle a little bit higher (I've had them up to 27 deg for a few days with no issues) but not for a long time. Basically, keep at a comfortable room temperature



G. maculatus from Spring Ck and Deep Ck, Torquay, Vic. One season all the fish in Deep Ck were heavily banded and Spring Ck weren't. The following season those attributes completely swapped, with the Spring Ck fish displaying heavy banding and Deep Ck lacking banding. The creeks are part of the same system, a couple of kilometres apart. [Al Moar]



Decor: You want to aim for what their natural environment looks like, which for most Galaxias is creeks, ponds and fast flowing mountain streams. A riverbed scape with a river-sand bottom, smooth rocks, drift wood and *Valisneria* sp. flowing through the current will look great for macs. Definitely do some research on the Galaxias species you want to keep as they all occupy different niches. For example, Dwarf Galaxias (*Galaxiella pusilla*) prefer blackwater/boggy slow-flowing creeks and ponds.

Tank Mates: Choose other cool-water, non-aggressive native fish such as empire, striped, and coxes Gudgeons, smelt, *Pseudomugil signifer*, *Melanotaenia dubalayi*, and *M. fluviatilis*. Keep in mind that Galaxias are slender and tube-shaped perfect for fitting into the mouth of larger fish; so large bass, catfish and any other predators should be avoided.

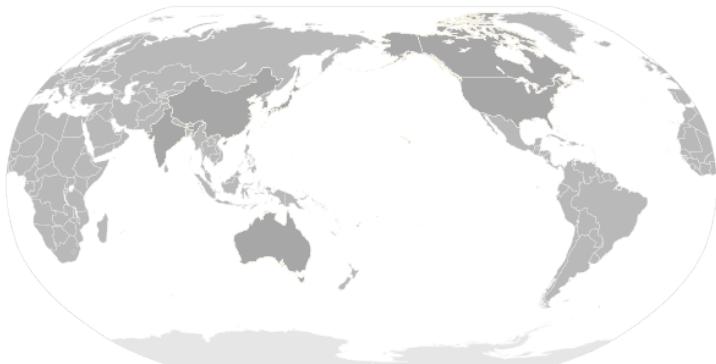


South-Western Victoria *G. maculatus* biotope | A. Moar



NSW GALAXIAS SPECIES AND ROUGH LOCATIONS

New South Wales is home to eight Galaxias species, each with unique habitats:



Galaxias maculatus may be the only freshwater fish found in both Australia & South America

1) *Galaxias maculatus*

(Common Galaxias, Common Jollytail)

Widespread in coastal streams and estuaries, from the Victorian border up to southern Queensland. Also found in New Zealand and South America.

2) *Galaxias coxii*

(Climbing Galaxias)

Known for climbing waterfalls; found in high-rainfall, forested streams of the Great Dividing Range. Population in Manly Dam, Sydney. This species is commonly mis-labelled as *G. brevipinnis* due to a confusing taxonomic history. True *G. brevipinnis* only occurs in New Zealand (Rudie Kuiter, Victoria's Galaxiid Fishes, 2).

3) *Galaxias truttaceus*

(Spotted Galaxias, Trout Galaxias)

Has a distinct spotted pattern; found in coastal drainages of southern Australia. There is a single record in NSW near Wentworth. One of the largest Galaxias species.

4) *Galaxias rostratus*

(Flathead Galaxias)

Distinguished by a flattened head; lives in the southern part of the Murray-Darling Basin.

5) *Galaxias olidus*

(Mountain Galaxias)

Found in cool, high-altitude streams of the Great Dividing Range.

6-8) Endangered Species:

Includes *G. tanycephalus* (Swan Galaxias), found only in the headwaters of the Swan River in the Snowy Mountains; *G. tantangara* (Stocky Galaxias), found in Tantangara Creek; and *G. brevissimus* (Short-tail Galaxias), found in a few spots in the upper Tuross River system. These species aren't kept in the aquarium hobby, mostly due to their difficult care and protected status.

Also available in the trade, thanks to Chris Lamin at Middle Creek Farm, are Dwarf Galaxias (*Galaxiella pusilla*), endemic to Victoria. These tiny fish (~4cm) are found in slow-moving, cool streams filled with dense aquatic vegetation. Dwarf Galaxias appear a couple of times a year at ANGFA NSW auctions and, unlike most other Galaxiids, can be bred in the aquarium.



THE PEACOCK GUDGEON



Tateurndina ocellicauda

by Mike Hellweg, CFN

Original published Sept. 2004

The beautiful Peacock Gudgeon has only been with the hobby a short time, but its beauty has already made it one of the most sought after species. While it was described scientifically in 1955, it was not imported alive until the early 1980's from its home in Eastern Papua New Guinea. This was during the beginning of the "Rainbowfish Boom" when a large number of species (mostly Rainbowfish, but also several Gobies) were being imported from both Australia and Papua New Guinea. It is one of a dozen or so species that became mainstays in the general aquarium hobby.

Peacock Gudgeons easily adapted to aquarium life, and have proven a hobbyist favorite ever since. Taxonomically speaking, it is one of the group of Gobies known as "Sleeper Gobies" for the slight cloudiness that can be seen in the iris of adult fish. This is a physiological adaptation that allows them to see better in the dark. *T. ocellicauda* is one of the smallest, if not the smallest, member of the "Sleeper" group. It is also one of the most colorful of all of the freshwater Gobies. It is peaceful with other fishes, and is not even very scrappy among members of its own species, except when defending its nest. Even then, it's not a real monster.



Keeping the Peacock Gudgeon couldn't be simpler. It loves regular community tanks with other non-aggressive fishes such as Barbs, Rasboras, Tetras, Corys, etc. It thrives in planted aquaria. Give each male a small cave, and that's about it. Water parameters (temperature, pH, hardness, etc.) don't seem to be too important, as long as extremes are avoided. Hobbyists have successfully kept and bred them in soft, acid water similar to their native haunts; and others have had success in moderately hard, alkaline water. The only thing that seems to be important is that the water be clean, and that means doing regular water changes.

Feeding is also easy. They will take any small moving food. It doesn't have to be alive, just moving in the current. They ignore anything that is too big to fit in their mouths, and anything that is not moving. For best results, though, they should get live baby brine shrimp or *Daphnia* at least a few times a week.

Sexing adult Peacock Gudgeons isn't any more difficult than keeping them! Adult males have a much thicker profile to the head when looking from the side. Some of them will even develop a slight hump on the forehead. Adult females, by contrast, are much slimmer, with their profile appearing much more pointed. In addition, adult females have a wide black band on the outer edge of both the bright yellow anal fin and the yellow and red dorsal fins, which males do not have. Adult males have bright red, blue and pale yellow in these fins, but no black. Finally, a ripe female has a lemon yellow ventral area that almost looks like she swallowed a miniature lemon.

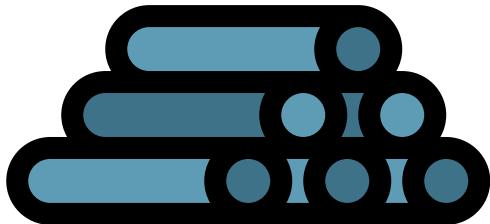


ABOVE:
not a
gudgeon

Spawning occurs in the male's cave. I use three to four inch pieces of three quarters to one inch PVC pipe, with a cap on one end. The tighter the spot, the better the male likes it. The males routinely choose narrower PVC over larger PVC. The males leave their cave and try to attract the female by doing a little dance, wherein they flick their fins and try to attract the females back to their cave. A willing female enters the cave and lays a batch of eggs, which the male then fertilizes. This may be repeated a few times, and with a couple of different females. They do not form pair bonds. A ripe female may spawn with several males over the course of a few days.

*The Peacock Gudgeon
spawning cave*





*Peacock Gudgeon fry tank decor.
Noticing a pattern yet?*

After spawning is complete, the male drives the female(s) away and guards the eggs. He can be seen in the cave hovering just above the clutch of eggs, slowly fanning them with his fins. The slightly elongated, clear to whitish gray eggs, sway in the current of his fins like grass swaying in the breeze. Over the next few days, you can see the embryos develop. The eggs hatch in 4 to 6 days, depending on temperature. The wrigglers will stay with the male until their yolk sac is absorbed; then the free swimming fry head out into the water column.

The free swimming fry will take live baby brine shrimp and powdered commercial fry foods such as Sera Micron or Golden Pearls along with freeze-dried copepods and rotifers. The secret is to keep the food moving in the current. Once the food settles to the bottom, the fry will no longer eat it. The fry grow rather slowly, and finally reach 1" at about 4 months old.

This is the point where most hobbyists run into trouble. Unlike most tropical fish, these guys grow VERY slowly. Many hobbyists give up and figure that they are doing something wrong. The fry spend the first several weeks in the water column, and settle down to the bottom once they reach about 1" in size. At this time, you should start separating them and providing them with "caves" of their own so they can continue to grow. I take a couple of dozen pieces of PVC pipe, cut to about 2" in length, and tie them together into bundles with electrical cable ties. This provides hiding spaces for a large number of males, all at once.

One important tip to ensure the health of your breeding males: Remove the male and eggs to a separate tank filled with water from the main tank. I do this by covering the open end of the PVC tube with my finger and moving it with the male and eggs inside to another tank filled with water from the spawning tank. You can also wait until the fry hatch, then siphon them out of the tube, but this risks the chance of missing the fry leaving the tube and getting consumed by other fish in the tank.

Either way, make sure the male has some time to recover before putting him back into the tank with the females, since he will spawn again immediately if there are ripe females around. Since he doesn't eat while guarding the nest, he can starve to death if he doesn't get this "recovery time". Let me remind you again that the adults are voracious predators on their own fry once they leave the protection of the male, so the best thing to do is to move the male and eggs in their cave to a different tank than the spawning tank, and move the adult male from the tank in which you are raising the fry. He'll be hungry and is not above eating his own fry after they are free swimming.

Once they are about one inch long it is time to start finding homes for the young adults. Keep a few juveniles for your own next generation to keep them going in your tanks for years to come. Enjoy watching the antics of the colorful males as they spar with one another, hunt food, and go about their daily business. Don't forget to sit and watch your fish from time to time. You'll be amazed at their interesting behavior and you might learn something new. After all, isn't watching fish why we all got started in this wonderful hobby in the first place?



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