

Breeding of Nest Builders

By

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Gourami

SYSTEMATIC CLASSIFICATION

Order: Perciforme

Family: Belontiidae

Genus: *Trichogaster*

Species: *Trichogaster trichopterus* and *Trichogaster leeri*

- ❖ Other Names: Blue Gourmi and Pearl Gourmi
- ❖ Origin: Malaysia, Thailand, Burma, Vietnam
- ❖ Adult Size: 10 cm
- ❖ Lifespan: 4 years
- ❖ Tank Level: inhabit all levels of the aquarium
- ❖ Breeding: Egglayer – bubble nest
- ❑ **Required water parameter**
 - ✓ PH : 6.0 - 8.8
 - ✓ Hardness : 5-35dGH
 - ✓ Temperature: 22-28°C

□ Varieties

- ❖ Three Spot Gourami, Opaline Gourami, Cosby Gourami, Goden Gourami, Silver Gourami, Pearl Gourami, Dwarf Gourami, Kissing Gourami, Neon Dwarf Gourami, Blood red Gourami, Giant Gourami, Pigmy Gourami, Honey coloured Gourami, Snake skin Gourami, Moonlight Gourami, Chocolate Gourami, Comb tail Gourami
- All Gourami species are tropical fish belonging to the Labyrinth family, and they live exclusively in fresh water
- The presence of labyrinth-shaped accessory breathing organs connected to each gill chamber. This adaptation make Labyrinth fish, such as the Gouramis, very suitable for a life in low oxygen waters
- Since this organ makes it possible for the fish to absorb oxygen directly from the air

□ Sexual dimorphism

- The male has a longer and more pointed dorsal fin
- The dorsal fin of the female is shorter and more rounded
- Females that are prepared for spawning will show a pronounced swelling in the breast area, while the male will have a far more slender girth
- Both sexes display a much deeper blue color during breeding periods
- In case of pearl gourami, mature and healthy males will sport an elongated and pointy dorsal fin, and both the dorsal and the anal fin will have filamentous edging
- The dorsal fin of the female is shorter and more rounded and she does not have any filamentous edging in any fin
- During the breeding period, the male will be orange from his mouth to the anal fin, while the female will keep her normal coloration

❑ Feeding

- They will accept most food types. Dry or frozen prepared foods were a good base that can be supplemented with live foods
- It love Brine Shrimp and all kinds of worms
- They will consume hydra voraciously, and are prized for their ability to eliminate this pest from the home aquarium. In our hatchery we used to fed them with tubifex

❑ Breeding

Conditioning the brooders

- ❖ Separate the male and female for several days and condition them by providing live food like tubifex worms 3 or 4 time a day before putting in for breeding

Tank set up

- ❖ The glass tanks were thoroughly cleaned with fresh water and then with potassium permanganate solution
- ❖ Like most fin is this family, the Blue Gouramis and Pearl Gouramis are bubble nest builders
- ❖ So a thin piece of plastic sheet was provided to protect the bubble from bursting. Water movement should be minimum so aeration should be kept off

Spawning

- Breeding is moderately difficult, and finding a suitable pair is the biggest challenge. A healthy pair of adults should be introduced into the breeding tank
- First ready male was put to that tank one day before introducing the female. At the next day female were introducing at the ratio of 1:1 (male to female)
- Spawning begins with the building of the bubble nest by the male, which usually occurs early in the day
- After a suitable nest has been prepared, the male will attempt to entice the female under it by swimming back and forth, flaring his fins and raising his tail
- The female signals her readiness by biting his back against her belly before taking her into a spawning embrace.
- During spawning the male wraps his body tightly around the female, turning her on her side or back so the eggs will rise unimpeded to the surface
- This close embrace is also important because it brings the reproductive products as close together as possible. Because sperm cells survive only a matter of minutes in the water, the timing of their release and proximity to the eggs is critical
- Just before the sperm are released, the pair may be observed quivering – a sure sign that spawning is near completion.
- The eggs are released immediately thereafter, and are fertilized by the time they reach the bubble nest. The pair may repeat the process a number of times over the course of several hours

- Once spawning is complete, the female should be removed to prevent her from being attacked by the male
- From this point onwards until they hatch, the male will tend the eggs, carefully rearranging them and returning and falling eggs back to the nest
- Spitting streams of water is seen at this time in breeding males to keep the eggs positioned within the bubble nest
- In case of Pearl Gourami the major problem encounters is, the adult fish eats the eggs and fry, so care should be taken to remove the females after spawning male immediately after the fry comes out

Hatching and rearing

- The eggs hatch in approximately 30 hours. That was the male should be remove or he might eat the fry which emerge from the nest
- Do not feed the fry until they have consumed their yolk sack. After one week feed them with micro worms and powdered fry food for egg-layers
- After a while, provide them newly hatched brine shrimp
- Water changes should be frequent as the fry grow, especially during the third week, which is when the labyrinth organ develops

Serpae Tetra

SCIENTIFIC CLASSIFICATION

Order: Characiformes

Family: Characidae

Genus: *Hyphessobrycon*

Species: *H. eques*

Common name: serape tetra

☐ HABITAT

- ✓ Temperature: - 72-79°F (22-26°C)
- ✓ pH:- 5-7.8 and
- ✓ Hardness dH:- 10-25
- ✓ The tank should be well-planted, which provide shelter and hiding spots
- ✓ There should be gentle surface water movement

❑ FEEDING HABIT

- They are omnivorous and will readily accept most types of foods including pellet and flake, as well as live/frozen such as brine shrimp
- Daphnia, bloodworms and tubifex. It will also feed on insects, worms, crustaceans and plants in the wild

❑ BREEDING

Selection of male and female

- Smaller species of female tetras become sexually active at nine to twelve months old with larger species ready to breed at 1 ½ to 2 years of age
- Male tetras are generally a month or two older than females for successful spawning to take place
- The sex of the juveniles is difficult to distinguish so they should be raised together until we can sex the females by the plumpness in the abdomen
- Females are more rounded and robust than the slimmer males. However, males are usually more slim and smaller than females

Conditioning of brooders

- Prior to spawning the fish should be segregated according to sex for few days and fed two times a day with tubifex worms
- This will ensure that the fish do not prematurely spawn, before they are ready
- An added benefit is that fish will have a greater interest in each other after being separated for a while

Setting up the breeding tank

- Washed the tank properly with clean water followed by disinfected with KMnO_4
- The breeding tanks should be well arranged with spawning substrate to trap the eggs and prevent them from being eaten
- Also sufficient aeration is needed in the breeding tank
- In the wild, tetras normally breed during the rainy season, but in the aquarium, they may breed year round

Spawning

- The male to female ratio was 1:1 The spawning typically lasts for an hour or two
- The males coloring become very intense. He uses this intense beauty to show off to the female
- He shimmers and shakes and almost seems to dance around her. He then tries to lead or drive her to his selected spawning site in the plants or spawning mops
- If everything goes well, he will eventually entice her into following him there. At this point, the pair takes a side-by-side stance
- Almost seeming to be pushing against each other. With a shimmer and shake, the female release a few eggs, the male releases some milt and then they separate
- Tetras typically love to eat their own eggs so the parents should be removed as soon as possible after they are finished spawning
- The small transparent eggs will stick to the spawning substrate. After few hours methylene blue should be added to prevent fungal infection

Hatching of eggs

- The eggs hatch in about 24 hours and look like silvers of glass clinging to the spawning substrate
- Then gently remove the artificial spawning mops from the tank. Shake them into the water to free any fry and fry that may be caught in them
- In about 5 days the fry will have absorbed the yolk sac and started free swimming
- Do not try to feed the fry before they are free swimming
- The best feed at this stage is infusoria (2 times a day). Then later feed them with artemia nauplii and daphnia

Tiger barb

SCIENTIFIC CLASSIFICATION

Order: Cypriniformes

Family: Cyprinidae

Genus: *Puntius*

Species: *Puntius tetrazona*

Common name: Tiger barb, Green tiger barb

- ❖ **Origin:** Indonesia, Borneo
- ❖ **Adult Size:** 7cm
- ❖ **Lifespan:** 6 years
- ❖ **Tank Level:** inhabit mid level of the aquarium

Acceptable water conditions

- ✓ pH: 6.0-8.0
- ✓ Hardness: 5-19dGH
- ✓ Temperature: 20-26°C
- ✓ Breeding: egg layers
- ✓ Fecundity: 300-500 eggs

❑ Varieties

- Albino tiger barb, Green tier barb
- The tiger barbs are silver to brownish yellow with four vertical black stripes and red fins and snout
- The green tiger barb is the same size and has the same nature as the normal barb but has a green body

❑ Sexual dimorphism

- The females are larger with rounder belly and a mainly black dorsal fin while Male tiger Barbs are slimmer and more colorful than the females, they have a bright, red nose with a distinct red line above the black on their dorsal fin

❑ Feeding

- They will accept all types of food including flake and frozen, besides worms like tubifex, sometimes we fed them with artificial pelleted feed

□ Breeding

Conditioning the brooders

- Before introducing the spawners, separate the male and females and rear them in different tanks if they are collected from a community tank
- Condition the spawners with the best food possible for a few days before transferring them to the breeding tank preferably live food like tubifex worms 3 or 4 times a day. Daily water exchange of about 30% enhance the maturation

Tank set up

- The glass tanks were thoroughly cleaned with fresh water and then with potassium permanganate solution
- The breeding tank should have substrate or a few leafy plants so spawning mops, which are nylon wires were spread at the bottom of the tank after cleaning and disinfecting as substratum
- Their eggs were adhesive in nature and it prevent the spawners from eating the eggs after releasing to compensate for the energy lose during spawning

Spawning

- They breed similar to other Barb species. After conditioning introduce the male and female in to the breeding tank in 1:1 ratio. Provide aeration
- They usually will spawn the morning after being introduced to the tank; a partial water change can also induce spawning
- After chasing the partners will come alongside each other and the male twisting around the female
- The eggs are scattered among the substratum and they can be quite large in number
- Tigers, like most Barbs are spawn eaters and should be removed from the tank right after mating

Hatching and rearing

- The transparent eggs will hatch in about 24-36 hours and the fry become free swimming after 4-5 days and fed them with rotifer or the finest of food like Brine shrimp Nauplii
- After two weeks rearing strips were shown. In 21 days rearing time the survival is about 95% in both green and normal tiger barb

Rosy barb

SCIENTIFIC CLASSIFICATION

Order: Cypriniformes

Family: Cyprinidae

Genus: *Puntius*

Species: *Puntius conchonius*

Common Name: Rosy barb

- ❖ Origin: India
- ❖ Adult Size: 10 cm
- ❖ Lifespan: 6 years
- ❖ Tank Level: inhabit bottom middle and upper level of the aquarium

Acceptable water conditions

- ✓ pH: 6.0-8.0
- ✓ Hardness: 5-19dGH
- ✓ Temperature: 18-22°C
- ✓ Breeding: egg layers
- ✓ Fecundity: 300-500 eggs

❑ Sexual dimorphism

- The female Rosy barb is silver coloured with a red tinge, and the male Rosy barb will change from silver to rich claret flush during the breeding period
- The female will also change during the breeding period and her look becomes more luminous
- Both male and female Rosy barb have black decorations on their fins
- Some Rosy barbs also display black markings on their sides
- Female Rosy barbs tend to grow larger than male Rosy barbs

❑ Feeding

- Rosy barbs are omnivores that feed on plant matter, insects, worms and crustaceans
- They will accept a wide range of food types, including flakes, pellets and frozen food
- Rosy barbs will also eat live food and also algae
- They will however also feed on the plants in the aquarium, so sensitive soft leaved species should be avoided

□ Breeding

Conditioning the brooders

- Separate the male and female for several days and condition them by providing live food like tubifex worms 3 or 4 day before putting in for breeding

Tank set up

- The glass tanks were thoroughly cleaned with fresh water and then with potassium permanganate solution
- Spawning mops, which are nylon wires were spread at the bottom of the tank after cleaning and disinfecting, to prevent the spawners from eating the eggs after releasing to compensate for the energy lose during spawning Cover side of the tank with papers to prevent from any disturbances

Spawning

- Choose a female that was plump and bursting with eggs and richly coloured males
- Add them to the breeding tank when it's getting dark. This helps them to settle in before they do in the morning or the day after
- After the female has dropped all her eggs remove the parents, as they will eat on the eggs

Hatching and rearing

- The fry hatch in 24 to 48 hours. The fry were very small and fed with infusoria when they start to swim
- After a week they can be fed freshly hatched brine shrimp, then larger foods as they grow, Survival rate in 21 days rearing is very good

WIDOW TETRA

SCIENTIFIC CLASSIFICATION

Order: Characiformes

Family: Characidae

Genus: *Gymnocorymbus*

Species: *G. ternetzi*

❑ HABITAT

- ❖ Window tetras undemanding species that will adapt to a range of conditions
- ✓ Temperature – 79F or 26°C,
- ✓ pH – 5.8 – 8.5, will accept slightly soft to hard water

❑ FEEDING HABIT

- The window tetra is an omnivore and will eat nearly anything it can fit into its mouth
- Virtually any kind live, fresh, frozen, freeze dried, or flake food are suitable
- For optimal health, provide a variety of foods that include high quality flake foods, brine shrimp, any type of worms, as well as vegetable supplements

□ BREEDING

Selection of male and female

- The window tetra reaches sexual maturity at about two years of age
- The females displays a rounder belly and males look slimmer than females

Conditioning brooders

- Two weeks before breeding separate male and female and fed with live feed such as tubifexworms two times a day
- This allows keeping control of breeding and improves the chance of achieving a successful hatch of fry

Setting up the tank

- The breeding tank should be prepared with spawning mops (Nylon netting) to hide the eggs away from hungry adults
- Sufficient aeration is also needed in the breeding tank
- In the wild, tetras normally breed during the rainy season, but in the aquarium, they may breed year round

Spawning

- The male to female ratio is 1:1 the spawning typically lasts for an hour or two. The male's coloring becomes very intense
- He uses this intense beauty to show off to the female. He shimmers and shakes and almost seems to dance around her
- He then tries to lead or drive her to his selected spawning site in the plants or spawning mops
- If everything goes well, he will eventually entice her into following him there. At this point, the pair takes a side-by-side stance, almost seeming to be pushing against each other
- With a shimmer and shake, the female releases a few eggs, the male releases some milt and then they separate
- Tetras typically love to eat their own eggs so the parents should be removed as soon as possible after they are finished spawning
- The small transparent eggs will stick to the spawning substrate
- After few hours methylene blue should be added to prevent fungal infection

Hatching of eggs

- The eggs will hatch within 2 days
- Then gently remove the artificial spawning mops from the tank
- Shake them into the water to free any fry that may be caught in them
- In about 5 days the fry will have absorbed the yolk sac and started free swimming
- Do not try to feed the fry before they are free swimming
- The best feed at this stage is infusoria (2 times a day). Then later feed them with artemia naupali and daphnia

Fighter fish

SCIENTIFIC CLASSIFICATION

Order: Cypriniformes

Family: Belontiidae

Genus: *Betta*

Species: *Betta Splendens*

Common Name: Betta fighter fish

❖ **Origin:** Cambodia, Thailand

❖ **Adult Size:** 7cm

❖ **Lifespan:** 2-3 years

❖ **Tank Level:** Top dweller

❖ **Breeding:** Egg layer – bubble nest

❖ **Fecundity:** 300 – 500 eggs

☐ **Acceptable water conditions**

✓ pH: 6.8 – 7.4

✓ Hardness: up to 20 dGH

✓ Temperature: 24-30°C

❑ Varieties

- ❖ Round tail, veil tail, double tail, delta tail, half moon tail, comb tail, Crown tail
- ❖ The betas are with brilliant coloration, and long flowing fins, making it one of the most well known of aquarium fish. Colors range from red to blue to white

❑ Sexual dimorphism

- ❖ Male betas were more colorful of the sexes, and have the long flowing fins
- ❖ Females have much shorter fins, and their colors are more drab, although some are quite colorful
- ❖ A well conditioned breeding female will often display horizontal stripes

□ Habitat/Care

- Bettas originate in the shallow waters in Thailand, Indonesia, Malaysia, Vietnam, and parts of China
- They proliferate in rice paddies, shallow ponds, and even slow moving streams
- The home countries of the Betta are tropical, which means the water temperature is quite warm, Bettas thrive on heat, and will become increasingly listless when the water temperature falls below 75 degrees F
- Bettas do well in waters with low dissolved oxygen, since they have a special respiratory organ called labyrinthine organ that allows them to breath air directly from the surface
- Optimally the water for keeping healthy Bettas should be soft, warm, with a neutral to slightly acidic pH
- Water movement should be kept to a minimum, power filters and power heads are not suitable

- Bettas may be kept in a community tank as long as the water conditions are met, and if no aggressive or fin-nipping fish are present
- However, only one male may be kept in each aquarium, unless they are separated by a barrier

❑ Feeding

- ❖ In nature Bettas subsist almost exclusively on insects and insects larvae
- ❖ They are built with an upturned mouth that is well suited to snatching any hapless insect that might fall into the water
- ❖ Live foods are the ideal diet for the betta, however they will adapt to eating flake foods and frozen and freeze dried foods

□ Breeding

Conditioning the brooders

- Both the male and female should be conditioned prior to breeding, by feeding them a diet of live food in separate tanks for several days, 3 or 4 times a day and 10% water exchange should be done every day

Tank setup

- The glass tank were thoroughly cleaned with fresh water and then with potassium permanganate solution
- The male will blow an elaborate bubble nest when he is ready to spawn
- So in order to provide support to these bubbles from being disturbed by air, a piece of plastic sheet is to be put on the water surface
- Care should be taken while putting the plastic from falling in to the water
- In order to avoid any disturbance that prevents the fish from breeding, separate the tanks using paper on both the sides before the female is put

Spawning

- Breeding betas are most successful when they are under a year old. They breed in bubble nests
- The male was put into the tank when the male developed bubble
female was introduced
- The female should be provided with a hiding place, as males may become aggressive during courtship
- Even with a hiding place, it is common for the female to lose a few scales or have their fins frayed during spawning
- When they are ready to spawn, the pair will display intense coloration and begin circling each other under the bubble nest

- The male will wrap himself around the female who has turned on her back
- As she expels the eggs, they are fertilized and begin to sink
- The male will scoop up the eggs and spit them into the nest
- The female will stay motionless for a while longer
- From this point on the male will tend the brood. Now remove the female, as the male may become aggressive towards her as he tends his young
- The male will continue to tend the bubble nest, spitting eggs that fall out back into the nest

Hatching and rearing

- In one to two days the eggs will hatch, and the fry will be visible hanging in the bubble nest with their tails pointing downward
- They will feed off their yolk sack for another thirty six hours, during which time the male will continue to pick up any fry that fall out of the nest
- The male should be removed within two days after the fry hatch, as they may eat the young once they are free swimming
- For the first to days feed the fry with infusoria or rotifer 2 times daily
- Afterwards the fry should be fed a couple of feedings daily of baby brine or very fine baby food
- Take care not to overfeed, as the uneaten food will foul the water and can quickly prove lethal to the fry
- As the young ones attains size feed them with daphnia and artificial feeds