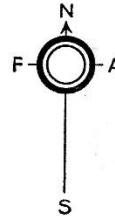


SUCCESSFUL BREEDING



The Federation of Northern Aquarium Societies, Belle Vue Gardens, Manchester

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In continuation of Bulletin Number Two, the Federation of Northern Aquarium Societies presents a further five British Aquarists' Festival, 1952, prizewinners' experiences in breeding tropical fish, and the Federation acknowledges with thanks the collaboration of Mr. G. W. Cooke, Show Secretary, and the contributors, in the production of this Bulletin.

Callichthys callichthys. (LINNAEUS). Callichthyidae. Armoured Catfish.

Description. In the wild state, length 7", aquarium specimens average 4½". The body is elongated and club-like and the head is wide and flat. There are two barbels on the upper lip pointing downwards and two on the lower lip pointing upwards. Two series of overlapping bony plates are formed along each side of the body, the underside is covered with thick skin. The fish has dorsal and adipose fins, the latter supported by a spine. General coloration green-olive to dark grey. Pectoral fins in the male longer than in the female.

Geographical location. North South America, and east of the Andes mountains.

Supplementary report by Mr. Bates (see next page): "No courting seen. All spawnings on underside of leaf but during hours of darkness. Both male and female seen once to visit leaf separately, and to turn upside down, but in a poor light and impossible to see whether eggs were deposited. Eggs covered or concealed by large bubbles, three-sixteenths of an inch in diameter, blown by male who guards eggs and drives female away. *Sexing.* Male tends to be chocolate brown, female more to slate grey. Cannot discern any marked differences in thickness of barbels as described by Messrs. Harvey and Hems. *Spawning.* Male attacks fingers if placed near leaf carrying eggs. At times eggs must be lifted slightly above water level, in some cases by buoyancy effect of bubbles. Female best removed after spawning. Male appears to make (I am not sure whether this is intentional or just caused by movements of male as he guards the eggs) a shallow pit immediately below the eggs. The young appear to be guarded by the male for about twenty-four hours, and are then ignored. Eggs may be removed with leaf and bubbles by gently floating into a shallow dish, which may be floated in another tank until the young are free swimming. After young are free swimming, male is best removed, though I do not think he deliberately eats the young. I have had best results by this method. *Fry.* Young hide away very successfully for

a week or two. *Water.* Distilled water plus 10–20 parts per 100,000 Tidman's Sea Salt, made alkaline by lime water. Spawnings also made in Durham tap water fourteen days old. *Temperature.* On one occasion when the temperature fell below 76°F., the male lost all interest in the eggs, which were eaten by snails. There have been a large number of spawnings, and the notes are based on all these experiments."

Apistogramma ramirezi. (MYERS AND HARRY). Cichlidae. Dwarf Cichlid.

Description. Length 2–3". Very colourful dwarf cichlid, rather rounded in shape when in good condition. Males develop beautiful steely-blue body colour. At breeding time females are characterized by vivid pink spots around the abdominal region. Both sexes show prominent jet-black tufts at the beginning of the dorsal fin, and a striking red and green hue about the mouth and gill plates. Colours in the male are more intense. The black third spine of the dorsal fin of the male is outstandingly long and is held erect. This characteristic is lacking in the female. Carnivorous with a preference for white worms, tubifex and crustacea. Rather timid and prefer well-planted tanks.

Geographical location. Tributaries of the Rio Apuré or Rio Meta, State of Guarico, Portuguesa or Apuré, Venezuela, South America. (Dr. G. S. Myers and Mr. R. R. Harry.)

Hyphessobrycon serpae. (DURBIN). Characidae.

Description. Length 1½". Similar in body shape to *Hyph. rosaceus*, but smaller and more solid. Fins not as pronounced. Olive brown on the back, remainder of body well suffused with red, caudal fin red, anal and ventral fins red edged with white, dorsal edged white, with dark blotch. Dark shoulder spot on both sexes. Black spot at the end of the anal fin. Body shape the safest guide to sexing, being thicker and plumper in the adult females.

Geographical location. Near Serpa, a town on the Amazon, Brazil.

Colisa lalia. (HAMILTON-BUCHANAN). Anabantidae. Popular name, Dwarf Gourami.

Description. Length 2". Labyrinth bubble-nest builder. Pelvic fins transformed into hair filaments. Brilliant colours in the male, orange red suffusion and vertical bars, electric blue iridescent spots, patterns very variable. Female olive-brown, very little coloration. Omnivorous. Peaceable to other species, but males inclined to be quarrelsome amongst themselves and pugnacious to the females.

Geographical location. Northern India and Burma.

Danio malabaricus. (JERDON). Cyprinidae. Popular name, Giant Danio.

Description. Length 6" in the wild state, 4" in the aquarium. The largest of the Danios. Slender laterally compressed body, rather deep. Colour of back steel-blue to green grey, head silvery, belly rose to brownish. Three to four steel-blue horizontal stripes of varying shades begin above the pelvic fins and extend into the caudal fin. The middle stripe is the broadest. All fins except the pectorals are faintly coloured reddish-brownish. Males are more slender and deeper in colour than the females.

Geographical location. Malabar coast of India and the island of Ceylon.

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	Callichthys callichthys <i>Mr. F. Bates, Consett</i>	Apistogramma ramirezi <i>Mr. J. Eaves, Eccles</i>
How many adults used and proportion of males to females. Sexing methods.	One pair. Male darker in colour. Female larger and when ready to spawn, heavier in body. This pair estimated to be about two years. Male 2½-3"; Female 3-3½".	One pair. Male larger, rear of dorsal more pointed. Female shows pinkish glow in front of vent. Two years for the best broods, but they will spawn at 12 months. Body length: Male 2¼", Female 1½".
The best breeding age.		
Size at this age (body length).		
Types of food used.	Tubifex.	Live food. Whiteworm and small garden worms for best results. Will eat raw fish and red meat when hungry.
Favourite food.	Tubifex.	Whiteworm and chopped fresh garden worms or small garden worms.
Size of breeding tank.	24" x 12" x 12".	Any size of tank above three gallons.
Type of lighting and intensity.	60-watt bulb for 12-14 hours a day.	Lighting is very important. Too much light, natural or artificial, disturbs them. Moderate light necessary.
Type of heating and temperature.	Base heated, thermostatically controlled at 80-86°F.	Base heating 78°F. increasing to 80-84°F. for spawning.
Whether aeration or other means of water circulation.	None.	None.
How tank is set up and arranged for these fish.	Not important except that there should be large leaves on or very near surface. Most spawnings on underside of Aponogeton ulvaceus.	Plenty of rocks and fine gravel full length of the rear of the tank. One 4" plant pot at each end of the tank.
pH of water and degrees of hardness: (a) at spawning time; (b) at hatching time and source of water supply.	pH 7.0-7.4 at different spawnings. Hardness from .5-3°. Both spawnings and hatchings under these conditions.	pH 7.4.
The action of courting and spawning.	No courting seen. All spawnings on underside of leaf in hours of darkness.	Usual cichlid manner. Habit of "butterfly" swimming during courtship.
Estimated number of eggs and description.	100 large and clear when laid. 1/16" diameter.	From 40-100.
Incubation period (hours).	96 hours. Varies with mean temperature.	72 hours at 80°F. 65 hours at 84°F.
Time in hours after hatching before fry are free swimming.	24 hours, but can swim quite well before this, if disturbed.	24 hours at 80°F. 36 hours at 78°F.
Are fry easily seen.	Like small 3/16" black tadpoles.	Yes, quite easily.
First food requirements and for how many days.	Mashed tubifex and daphnia gradually changing to chopped tubifex.	Old water containing plenty of infusoria for the first few days, micro, brine shrimp after one week.
Number of fry considered satisfactory to rear from one spawning.	50.	50.
Number of rearings made.	Three.	Four.
Average proportion of males to females.	No record. Estimate 50 per cent of each.	Females outnumber males in ratio of four to one.
Other "musts" for the successful spawning and rearing of these fish.	See separate report.	Must have mutually attracted pair, tank for themselves only, plenty of heat. Just the right diffusion of light, as much live food as they can eat. A quiet situation and a minimum of disturbance.

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Hyphessobrycon serpae <i>Mr. J. R. Taylor, Radcliffe</i>	Colisia lalia <i>Mr. A. Morgan, Bolton</i>	Danio malabaricus. <i>Mr. D. C. Crisp, Norton</i>
One pair.	One pair.	One pair.
Female slightly deeper in body, distinct "square" appearance near vent when "heavy" with eggs. 12-15 months.	Intense colour in the male and red pelvic fins. About 9 months.	Deeper body in the female and more colour in the male. About 12 months.
1¼-1½".	1½-2".	2½-3".
Take anything. Conditioned on daphnia and grindal worm.	Live daphnia, tubifex and occasionally dried daphnia.	Daphnia, earthworm, Bemax and tubifex. Conditioned for a week or two before spawning.
Grindal worm.	Live daphnia.	Daphnia and tubifex. Tubifex to be fed through a feeder (see below).
14" x 8" x 8". 150-watt house light, eight feet from tank.	24" x 12" x 12". Daylight or one 100-watt bulb.	18" x 10" x 10". Daylight and artificial light used with equal success.
Immersion heater. 74°F.	Base heating. 80°F.	Immersion heater. 76-77°F. increasing to 80°F. for breeding.
Aeration used.	None.	None.
No gravel. Half tank thick with aquafern, no other plants. Water depth 5".	One inch of gravel. Vallisneria, Cabomba, Ambulia, or similar plants for nest making.	Bottom of breeding tank covered with thin layer of sterile compost. Half filled with aquafern, remainder ⅔" sea shells. Water 4" deep.
pH 7.5. Hardness 4° at spawning and hatching.	pH and hardness not of importance. Old tap water used.	pH not known. Tap water allowed to stand one week.
In similar manner to barbs but quicker. Bodies inclined towards each other, almost touching in sex regions.	Male builds nest at water surface bubble. Pair embrace under nest, turn upside down, eggs extruded, float up into nest.	Actual spawning not observed. Both fish chase each other.
Not seen.	Approximately 300, opaque.	Not seen.
18-20 hours.	Approximately 48 hours.	Approximately 30-36 hours.
Appear to swim near surface immediately, but disappear after 4-5 hours.	24 hours.	30 hours.
No, very small.	Yes. Very small but so numerous as to be noticeable.	Yes.
Thick paramoecium infusoria for eighteen to twenty days, then brine shrimp.	Green water for two days, very small infusoria for one week, then brine shrimp.	Pond infusoria was found to give better results than cultivated infusoria. Fed for five days.
50.	30.	50-70.
Two.	At least fifteen.	Three.
Estimate 50 per cent of each.	Average 50 per cent. Occasionally larger percentage of females.	Two females to one male.
Sexes must be separated at least seven days before attempt at spawning. Hopeless if temperature above 76°F. Fry very lazy feeders so infusoria must be thick. Fry dislike light. Suggest covering tank with thin tissue paper.	Tank with plenty of mulm on the bottom. Good light, no draughts. 9-12" water depth.	A large tank for conditioning as fish are vigorous swimmers. Live food to be fed in such a manner that it does not fall to the bottom before being eaten. Add one pint of cold boiled water if fish do not spawn in 48 hours.