

Cichlids of the Americas - The Gymnogeophagines

The key to success with these fish is excellent water quality.

By Wayne Leibel

The gymnogeophagines, like the "surinamensoids," are apparently experimenting with mouthbrooding, for no less than four of the seven currently recognized species are delayed mouthbrooders (*Gg. balzanii*, *gymnogenys*, *labiatus*, *lacustris*). Of these four, *Gg. balzanii* and *Gg. gymnogenys* are the two that aquarium hobbyists will encounter, so I will address each in turn.

Gymnogeophagus balzanii is one of my all-time favorite cichlids. In fact, so fond of it am I that a drawing of one graces my "Editorial Byline" column in *Buntbarsche Bulletin*, the Journal of the American Cichlid Association. The "blockheaded" eartheater (my designation, see below) was introduced to the American cichlid hobby by ACA Fellow Ross Socolof in the mid-1970s. It was love at first sight (the fish, not Ross)! Fueled by Richter's (1973) lavishly illustrated TFH article (reprinted in Axelrod 1975), I knew I had to have this fish. But it was only several years later that the fish finally became commercially available.

Gymnogeophagus balzanii is unlike any other eartheater in its appearance: it is neither elongate and torpediform, like the satanoperoids or the surinamensoids, nor is it "generic" cichlid in the sense that the "brasiliensoids" or the substrate-spawning gymnogeophagines are. It is just a weirdly shaped, short, chunky fish.

Part of the sexual dimorphism of this species includes development of tremendous nuchal hoods in sexually competent, dominant males. The hoods rise almost vertically from the upper lip, curving severely to the horizontal just above the eye: it is unlike the frontal gibbosity of any other cichlid I know. In large males, the hump becomes translucent and hood-like, giving the fish a definite "block-headed" look. The hump comes and goes relatively quickly depending on the social status of the male in question: only dominant males get to sport one. However, because they are precocial spawners, even 3-inch males get that "block-headed" look as soon as the testosterone gets pumping.

Individuals of the original Socolof Paraguayan strain have a metallic-blue base color that grades to gold on the ventral side. Excellent color photos of these animals accompany Richter's (1973) article. In the more recently imported Argentine strain, the metallic blue is replaced with a rich yellow-orange. Both varieties have a large, dark, mid-lateral blotch and seven to 11 pairs of thin, inverted V-shaped, brown vertical stripes extending from dorsal fin to ventral. Both sexes also have a dark vertical "bandit" eye-cheek band, the intensity of which is behaviorally related and particularly apparent in brooding females.

References

- Axelrod, H. R. 1975. *Breeding Aquarium Fishes*. Vol. 5. TFH Pub., New Jersey.
- Axelrod, H. R. 1985. *Dr. Axelrod's Atlas of Freshwater Fish*. TFH Pub., New Jersey.
- Dietrich, E. 1991. *Gymnogeophagus gymnogenys*, at long last! *Buntbarsche Bulletin*, J Am Cichlid Assoc 145:15-16.
- Gosse, J.-P. 1975. Revision du genre *Geophagus* (Pisces: Cichlidae) Monograph Mem Acad Roy Sci Outre Mer (Bruxelles) 19(3):1-172.
- Kullander, S. O. 1981. Cichlid fishes from the La Plata basin. *Rev Suisse Zoo* 88:675-692.
- Leibel, W. S. 1983. *Gymnogeophagus balzanii* (Perugia 1891). *Buntbarsche Bulletin* 97:11-20.
- Leibel, W. S. 1984. *Gymnogeophagus balzanii*. *ACA Cichlid Index* 7(5).
- Leibel, W. S. 1987. The Rainbow Eartheater is not *Gymnogeophagus australis*. *Buntbarsche Bulletin* 119:2-9.
- Leibel, W. S. 1988. A reconsideration of the genus *Gymnogeophagus*. *Buntbarsche Bulletin* 129:18-26.

- Leibel, W. S. 1990. *Gymnogeophagus gymnogenys* for once and for all! *Buntbarsche Bulletin* 140:21-24.
- Loiselle, P. V. 1980a. The maintenance and breeding of the Rainbow Eartheater. *Buntbarsche Bulletin* 80:1-12.
- Loiselle, P. V. 1980b. South American eartheaters: the genus *Geophagus* and its allies. *Freshwater and Marine Aquarium (FAMA)* 3(6):23-27.
- Loiselle, P. V. 1981. A jewel of unexpected provenance. *Freshwater and Marine Aquarium (FAMA)* 4(5):31-35 et. seq.
- Reis, R. E. and L. R. Malabarba. 1988. Revision of the neotropical cichlid genus *Gymnogeophagus* Ribeiro, 1918, with descriptions of two new species (Pisces: Perciformes). *Revista Brasileira de Zoologia* 4(4):259-305.
- Ribeiro, A. de Miranda. 1918. Fauna brasiliense, Peixes. T.V. *Archivos do Museo Nacional de Rio de Janeiro* 21:1-277.
- Richter, H. J. 1973. A new beauty from Paraguay — *Geophagus balzanii*. *Tropical Fish Hobbyist (TFH)* Oct., Pp. 42-54 (reprinted in Axelrod 1975).
- Socolof, R. 1974. *Geophagus balzanii* (Perugia 1891). *Buntbarsche Bulletin* 43: 8-9.
- Stawikowski, R. and U. Werner. 1988. *Die Buntbarsche der Neuen Welt: Sudamerika*. Reimar Hobbing Verlag, West Germany.
- Sterba, G. 1966. *Freshwater Fishes of the World*. Studio Vista, London.

Males and, to a lesser extent, females, develop four to five parallel, spotted metallic-blue longitudinal stripes that run just behind the pectorals back to the mid-lateral blotch. The ventral fins, which are wide and yellow in females, are similarly colored but larger and more fan-like, and more liberally peppered with bright-blue spots in the male. The dorsal fin is high and spotted in blue, as is the anal fin.

The largest male recorded in the literature is that of Ribeiro (1918), a 5.8-inch (147-millimeter) male, but I have seen and kept wild males of both origins that were nearly 8 inches in total length. Females typically attain one-half to two-thirds the size of males, and I have had rare wild females of 6 inches. But, as a rule, females are considerably smaller than similarly aged consorts. This size discrepancy holds true for juvenile *Gg. balzanii* and allows accurate sexing of sibling fishes at a small size. Reproductive maturity is reached at one year post-spawn, when the fish attain 2 to 3 inches total length.

In terms of maintenance, think of them as satanoperoids. That is, the water must be kept scrupulously clean. *Gymnogeophagus balzanii* is not particular about the chemistry of the water, just the quality. I think of *Gg. balzanii* as the canary of the neotropical cichlid world: when water quality erodes in a community tank of mixed cichlids, these are the first to react to it. And react they do.

The neuromasts of the head (sensory pits of the lateral line system) turn red and inflamed and, if nothing is done to correct the water situation, they will begin to erode — a condition known to discuss enthusiasts as "head hole." Drugs won't help. Only quick and massive intervention in the filtration and quality of the water will. Large (50 percent), regular water changes are a must, as is high-quality filtration.

Unlike the satanoperoids, however, these fish needn't be kept hot. Hailing from the subtropical regions of Paraguay and Argentina, they can take temperatures down to the low 60s, but are best maintained at 75 to 80 degrees Fahrenheit.

Feeding is no problem at all. The regular repertory of prepared, frozen and live foods suffice to keep these eager eaters in the pique of health. They do sift the substrate, so sinking foods are relished. Their molariform, pharyngeal-mill teeth suggest that they feed on snails and other shelled invertebrates in the wild.

Despite Richter's (1973) description of *Gg. balzanii* as a peaceful, community tank resident, in my experience they are anything but, including those that are tank-raised. Males are particularly aggressive: In a community including several males, a dominance hierarchy will be established early on. In a one male/one female situation, the female will be harassed incessantly as *Gg. balzanii* males are programmed to do just two things: eat and court.

Like the red hump eartheaters (see Part 9, AFI, January 1993), these are best maintained as harems — one male to at

least two and as many as five or six females, depending on the area of the tank. Obviously, ceramic flowerpots, rockwork, PVC pipes, driftwood and so on will allow females to escape the male's unwanted attentions and will provide an eventual haven for egg-carrying females, recognized by their distended throats, skulking behavior and total avoidance of food.

Mature, reproductively active males spend most of their non-feeding moments actively courting any and all females in their immediate vicinity. Male courtship behavior is similar to that of red hump males. It is perfunctory and consists of head snapping and lip extrusion.

Unripe, unreceptive females flee — ripe, receptive females respond aggressively. They establish and defend territories with a spawn receptacle (e.g., rock) as a focal point and spend much time cleaning the receptacle or digging in the territory. About 24 hours prior to egg laying, ripe females assume brood-care coloration, which consists of a darkening of the mid-lateral splotch and bandit eye-cheek stripe and a darkening of the edges of the ventral fins. This distinctive coloration, not unlike that of female dwarf cichlids of the genus *Apistogramma*, will be maintained throughout spawning and subsequent brood care.

Site preparation is the sole responsibility of the female until about one hour before the actual spawning event. Her thick genital papilla (tube) will have appeared by now. The male, who has been courting any and all females in the tank, will begin spending more time near the spawning site and, as the time grows near, will participate in "nipping-off" the object where the eggs will be placed.

Eventually, both male and female begin a series of dry runs over the receptacle, pressing their abdomens to the surface — the male's tube will have appeared. Approximately 30 minutes after commencing this dress rehearsal, the first eggs appear. The eggs are laid in a haphazard series of intersecting lines that eventually forms a circular plaque of 200 to 500 ivory, elliptical (0.5 x 1 millimeter) eggs pasted directly to the surface — no filaments — along their long axis. Egg laying is over in about one hour.

With the male's role discharged, he is summarily chased away — and kept away — by the female for the next 24 to 48 hours while she guards and fans the eggs before chewing the larvae out of their eggshells and incubating them in her mouth for an additional six to eight days (they are delayed mouthbrooders). Interestingly, like the "juruparoids," the female covers the eggs with a fine layer of sand or gravel.

In many spawnings of *Gg. balzanii* that I have been fortunate to witness over the past decade, which involved many different individuals, the female, with one exception, always took complete charge of incubating and rearing the brood. I did have one particular male who routinely turned the tables on his many consorts and took over the job of raising the kids completely, but I have never witnessed biparental cooperation. However, I have always spawned them in harems and the males seemed just as happy to leave in order to spawn with the next ripe female. When maintained in a harem situation, the females tend to cycle and ripen together so that it is not unusual to have two or three females spawn with the same dominant male within a few hours of each other.

As was recommended for the red humps, egg-carrying females should be gently removed to a smaller "brooding" tank where they can be left to raise their kids and to recover fully before reintroduction into the harem. Mom can be trusted with her kids two to three weeks. It's neat to frighten them and watch them scurry for safety into mom's waiting mouth (this will be discussed in a future installment of this series).

The fry, despite Richter's (1973) experience, are too small to take newly hatched brine shrimp and should be fed on the usual diet of microworms, Liquifry and so on, provided to other gymnogeophagine fry for a few days. Growth to 1 inch is rather slow, despite regular water changes and copious regular feedings. The fish are sexually mature at a size of 2 to 3 inches, which is attained at one year or so.

The other mouthbrooding naked eartheater you're liable to encounter in the hobby is *Gymnogeophagus gymnogenys*, but only rarely. Historically, *Gg. gymnogenys* was one of the first of the eartheaters to have been imported (along with the chanchito, "*Cichlasoma*" facetum) and was bred around the turn of the 20th century. That is, if the books catalogued the right fish! Sterba (1966) cites 1900 as the initial importation date of this fish into Germany, and line drawings, some in color, appear in the early literature. Our classical interpretation of *Gg. gymnogenys* (the German dunklen Perlmutterfisch: dark mother-of-pearl fish) has been a somewhat elongate "brasiliensoid" with a pronounced nuchal hump.

I, among others, am guilty of propagating misidentification of this fish. In 1984 I received and maintained a fish I acquired as, and believed to be, the "true" *Gg. gymnogenys*. Superficially, the fish resembled "*G.*" brasiliensis but it was more elongate than any I had seen. The male developed an impressive nuchal knot and expressed the diagnostic black vertical eyeband that Gosse (1975) has figured in his description of this fish. The female remained much smaller than her consort

and when they spawned they were typical non-mouthbrooding substrate spawners. Photos of these fish were circulated as slides in the ACA slide series.

Four years earlier, Paul Loiselle (1980b) in his review of the eartheaters, had published a photo by Rosario LaCorte of a putative female *Gg. gymnogenys* sitting over a clutch of eggs. The female did not look the least "brasiliensoid." LaCorte had collected the fish in Southern Brazil on the same trip that yielded the rainbow eartheater. He reported this fish to be a delayed mouthbrooder. No one had ever seen this fish before in the hobby and, frankly, I doubted its identification as *Gg. gymnogenys* and said so much in private and in print.

In 1987, photos of a fish identified as *Gg. gymnogenys*, including shots of the male, appeared in the German Cichlid Association's (DCG) journal and these same photos were reprinted in Stawikowski and Werner (1988). The female looked identical to the one in LaCorte's photo. The male looked like an elongated "brasiliensoid" with a humped head and with the diagnostic eye band. They were reported to be delayed mouthbrooders. Boy, was I embarrassed!

Shortly thereafter, Reis and Malabarba's (1988) revision of the gymnogeophagines appeared with photos of preserved *Gg. gymnogenys*. And the live fish finally appeared in the American hobby as both wild-caught and European-imported stock.

The "real" *Gg. gymnogenys* reaches maximum lengths of about 6 inches, with females considerably smaller. The males do resemble "*G.*" *brasiliensis*, with rows of small pearly spots on the scale centers. Like "*G.*" *brasiliensis*, there is a large, black, mid-lateral splotch. Unlike *brasiliensis*, there is a series of five to six vertical, double, dark cross-bands on the flanks and a black "saddle" mark just behind the nuchal knot. Females are very elongate, have a convex head profile and look nothing like female *brasiliensis*. It is a lovely and distinctive fish that is finally making an appearance in the American hobby.

I am sad to say, the fish has not done well under my care. I have had big ones, little ones, wild ones, imported ones — and they've all gone the same way: down, usually bloated. I've tried making my water hard and alkaline with dolomite and it extended their lives. I do know of two people who have succeeded with these fish. One is Eric Dietrich (1991), who spawned a pair of wild *Gg. gymnogenys* two years ago.

AFI columnist and photographer John O'Malley has recently had a harem spawning of his wild fish. John kept a single male with seven females in a 30-gallon tank on the floor (literally) of his fish room, believing that high temperatures and the associated lowered oxygen content of the water were what were doing them in (he had killed roughly the same batches of them I had — we're often partners in imported fish). His water, incidentally, is moderately hard and alkaline and the temperature was in the low 70s Fahrenheit. His male spawned with several of the females within a day or so of each other. They were indeed delayed mouthbrooders.

The clutch sizes experienced by both aquarists were relatively small — Dietrich (1991) reported 50, O'Malley's largest (personal communication) was 90. Hopefully, distribution of tank-raised fry will result in the establishment of this beautiful eartheater in the American hobby.

Before closing, I should at least mention the two other nominal species of gymnogeophagines. *Gymnogeophagus labiatus*, originally described by Hensel (1870) was synonymized early on with *Gg. gymnogenys*. Kullander (1981) suggested that this fish should be granted valid species status by virtue of several characters, predominant among them the huge orange lips — the origin of the specific name. Reis and Malabarba (1988) have formalized this suggestion in their revision.

I have seen living *Gg. labiatus* and I can summarize my impression of them thusly: They are ugly *gymnogenys* with big lips. I have had living *Gg. labiatus*, but not for long! They came in with wild *Gg. gymnogenys* (see Dietrich 1991). I photographed them with my new camera and by the time the overexposed slides were returned from the film processor, the fish in question had bloated and gone to the big aquarium in the sky. Sigh!

Gymnogeophagus lacustris was newly described by Reis and Malabarba (1988) in their revision. The fish was collected from Southern Brazilian coastal lagoons — hence the specific name meaning "of a lake." Regrettably, the occurrence of this species is limited to areas not normally collected by commercial exporters, so the future availability of the species in the hobby seems unlikely unless some enthusiastic amateur goes after them. They are very *gymnogenys*-like in appearance and are believed to also be mouthbrooders (a live specimen was observed uptaking young in the wild).

So counting the "real" *Gg. australis* as likewise missing in action, there are a total of only four of the seven naked eartheaters available in the aquarium hobby. Here's hoping these missing three and several new forms will eventually grace our tanks! The naked eartheaters are an interesting and spectacular assemblage of cichlids.

With this article, we bring our discussion of neotropical eartheaters almost to a close. We have met the "brasiliensoids," variants of the aberrant species "Geophagus" brasiliensis, which perhaps one day will be a valid species populating a distinct, as yet unnamed and undescribed, genus. By virtue of shared gross morphology and behavior, I have grouped them with the "naked" eartheaters, members of the genus *Gymnogeophagus*. It is my own, as yet unsubstantiated belief, that both groups share the same immediate ancestor and that they are more closely related to each other than either is to any other geophagine group.

We have looked at both the substrate-spawning and delayed-mouthbrooding examples of this genus currently available in the hobby — in particular, *Gg. rhabdotus*, *meridionalis*, *balzani* and *gymnogenys*. What remains to be considered are species of three related genera, *Biotodoma*, *Retroculus*, and *Acarichthys*, which are closely related to the geophagines and *gymnogeophagines*. We will meet these "honorary" eartheaters in the next installment of "Goin' South."