

Cichlids of the Americas - The Surinamensoids

This time, we look at the real *Geophagus*.

By Wayne Leibel

I'm going to shift gears here and address the second large assemblage of eartheaters, the "surinamensoid" complex — now *Geophagus*, strictly speaking. Bloch, in 1791, described *Sparus surinamensis* from a single juvenile specimen collected by him in Surinam. This fish was later moved to the genus *Geophagus*. Heckel (1840) described two new species collected by Natterer: *Geophagus altifrons* from the Rio Negro and *Geophagus megasema* from the Rio Guapore (Matto Grosso). Guenther (1862) placed both *G. altifrons* and *G. megasema* in synonymy with *G. surinamensis*. A fourth species, *Chromys proxima* (Castelnau 1855), was also synonymized with *G. surinamensis* by Steindachner (1875).

And so the nomenclatural situation stood until the re-evaluation of the genus *Geophagus* by Gosse in 1975. Gosse reported statistically significant differences between geographic "races" of *G. surinamensis* (e.g., Guyanan versus Amazonian, etc.), but, as a "lumper," he refused to split these into distinct species — preferring, as did his predecessors, to consider all of them as simply variants of *Geophagus surinamensis*.

Like science, like hobby. Most cichlid fish hobbyists can recognize *Geophagus surinamensis* in the same way that they can easily identify *Satanoperca jurupari*. The surinamensoids are typically elongate, generic eartheaters in shape. However, the mouth is not quite as underslung as in the juruparoids.

Their distinctive coloration includes a dark mid-lateral blotch and characteristic alternating blue/green and red iridescent longitudinal stripes. The dorsal, anal, caudal and even the ventral fins are often spotted or streaked in red, white and blue. If you've ever kept them or really looked at various shipments at your dealer, you will have noted subtle variations on the colorational theme of "surinamensis." Some have striped tails, others are spotted, some have additional black spots on their gill plates, some have black throats, the size of the mid-lateral blotch varies, the height and length of the body is variable, etc.

If you believe Gosse (and others before him), who classified *Geophagus surinamensis* as a single, widely distributed species found throughout South America, then you will have no trouble integrating these observations under the simple explanation of "geographic variation." However, this has proven to be the wrong interpretation.

Those of us interested in spawning the surinamensoids were schooled by the texts stating that this fish is a delayed mouthbrooder like the juruparoids (Axelrod 1978, for example). In fact, however, some of them are and some of them aren't! Imagine my surprise when the flag-tailed variety of "surinamensis" I was keeping spawned like a red hump! That is, the female picked up her eggs immediately.

However, my experience with the Guyanan black-throat form proved this fish had read the books: they guarded their egg clutch for 48 hours before uptaking them for further oral incubation. I shared these experiences and others in an article published in *Buntbarsche Bulletin* in 1985. At the same time, our German colleagues were reporting similar observations (Werner 1984) and were reaching similar conclusions. That is, we were dealing with a suite of different and distinct species, not simply geographic variants of the same species.

But what names to put to them? The Germans applied the noncommittal names "ovophilic" and "larvaphilic" to distinguish between those that picked up the eggs immediately (advanced mouthbrooders) and those that guarded the eggs and chewed the fry out of their shells (delayed mouthbrooders).

I believed that some of the earlier names (e.g., *megasema*, *altifrons*, *proximus*, etc.) could be assigned on the basis of coloration and geographic origin, so I suggested that the Guyanan black-throat form was *G. surinamensis*, and that the "spot-tail" and "flag-tail" forms were respectively *G. altifrons* and *G. megasema*. These designations have been subsequently followed in the literature (Stawikowski and Werner 1988).

Kullander (1986) decided that the surinamensoid from Peru was *Geophagus proximus*, and, more recently, Kullander and Nijssen (1989) suggested that the aquarium surinamensoid from Guyana (black-throat) is not *G. surinamensis* but rather the newly described *G. brachybranchus*. Apparently the real *G. surinamensis* is restricted in its distribution to Surinam itself, an area that is not a focus for commercial fish collecting. *Geophagus brachybranchus* joins *G. harreri* Gosse (1976) and *G. camopiensis* Pellegrin (1903), two previously described surinamensoid-like eartheaters from the Guyanas,

along with *G. brokopondo*, yet another new species from a very limited area described by Kullander and Nijssen (1989).

In terms of the hobby, *G. brachybranchus* (black-throat Guyanan), *G. megasema* (flag-tail Amazonian), and *G. proximus* (huge-spot Peruvian) are the usual forms available, all sold under the name *Geophagus surinamensis* (and sometimes the older, invalid name "*G. thayeri*"). Both *G. harreri* and *G. camopiensis* are in Europe, returned there by enthusiasts who collected them from Surinam and French Guiana, but don't look for them in the American hobby anytime soon (pictures in Stawikowski and Werner 1988).

There are several undescribed species that appear infrequently. There is a very elongate (and very belligerent) undescribed form from Venezuela dubbed "Wangenstrich Erdfresser" (cheek-striped eartheater) for the vertical "bandit" stripe extending from the eye down the gill covers. There are also several surinamensoids being exported from the Rio Tocantins/Rio Xingu area, now that this area has been opened primarily for the fantastic lorocariid (suckermouth) catfish it has provided. One of these, an otherwise drab fish notable for a mid-lateral splotch ringed by iridescent scales (unique among surinamensoids) has recently been named *G. argyrostictus* by Kullander (1991).

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I mention these latter two species because both have proven (Stawikowski 1990, Werner 1992, Kiefel 1992) to be non-mouthbrooding substrate spawners! So much for our understanding of the evolution of mouthbrooding in the geophagine cichlid fish. A nice pat story would suggest that mouthbrooding arose only once in the eartheater lineage (with the substrate-spawning "G." brasiliensis and many of the *Gymnogeophagus* species, primitive relics of the ancestral eartheater), evolved to delayed mouthbrooding, of which *Satanoperca* and *Geophagus* and a very few of the *Gymnogeophagus* are contemporary examples, and ultimately evolved toward immediate mouthbrooding, a behavior exhibited only in the red hump clan in the South American cichlidae.

Our captive spawning observations, primarily of the surinamensoids in which substrate-spawning as well as delayed and immediate mouthbrooding behaviors are all manifest, argue for a multiple origin for mouthbrooding in this otherwise coherent group of fishes (shared gill lobe, etc.). I had to laugh at the recent article in TFH magazine (Palicka 1992) that describes *Geophagus surinamensis* as a delayed mouthbrooder but which further suggests that *G. surinamensis*, *G. altifrons*, *G. megasema* and *G. proxima* are, in fact, the same fish. Talk about outdated material!

Experience has proven otherwise. Here is one place where aquarists have really helped science in the cause of trying to unravel the workings of evolution. We really don't have the full answer regarding the evolution of mouthbrooding in these fish, but we now know where to look.

Maintaining and Breeding the Surinamensoids

My experience with the surinamensoids has been limited to date, with the more commonly available *G. brachybranchus*, *G. megasema* and *G. proximus*. I haven't as yet laid my hands on the rare substrate spawners — but some generalizations suggest themselves. I would judge the surinamensoids to be of intermediate difficulty, with the red hump and the juruparoids serving as "easy" and "difficult" end points.

Like the *Satanoperca* species, these are large fish easily reaching 10-plus inches in captivity. They will, however, spawn at 4 to 6 inches. They are also sexually isomorphic — the only "recognizable" difference between male and female is the slightly heavier girth of the female when ripe. Again, this is another fish where when the tubes come down and I can actually sex them, I'm surprised at least half the time.

Both sexes of some species (e.g., *G. megasema*, *G. altifrons*) are notable for the dramatic streamers extending from the upper and lower tips of the caudal fin, as well as the dorsal, anal and ventral fins. I have seen best-in-show specimens, reared in isolation, with streamers easily as long as the fish itself (i.e., 9-inch filaments on a 9-inch fish!). These are excellent show fish. They are, however, somewhat belligerent and not the best of community aquarium fish. Choose their tankmates accordingly!

Maintenance of these fish is not particularly demanding. If you're set up for *Satanoperca* as per our last installment, your fish will prosper. If not...well, there's some room for slack.

They should be kept warm (78 to 86 degrees Fahrenheit [26 to 30 degrees Celsius]) and the water should be clean, but the surinamensoids don't seem nearly as susceptible to lapses in water-quality maintenance. That is not to say you shouldn't care, just that less-than-perfect water quality will not affect them nearly as much as it will the *Satanoperca*.

Nothing special is needed to induce spawning. I find the rest of Palicka's (1992) suggestions regarding care right on the money. Good feeding with a variety of prepared and frozen fish foods, coupled with a few water changes, and presto! In the case of the delayed mouthbrooders (e.g., *G. brachybranchus*), a pair bond is formed and both parents participate in egg guarding and brood care, as is apparently true for the substrate spawners (Stawikowski 1990).

The immediate mouthbrooders (e.g., *G. megasema*, *G. proximus*, *G. altifrons*) show no such fidelity, and it is the female who picks up the eggs and is responsible for brood care. Because these fish will spawn readily in a group situation, it may be necessary to isolate the pair by either dividing the aquarium or removing the other fish, or, in the case of immediate mouthbrooders, simply removing the egg-carrying female to another brooding aquarium as per the red humps.

In all cases, the fry are large enough to eat newly hatched brine shrimp immediately, and grow quickly and steadily

to a size of 2 inches or more in the first year. For an intermediate challenge, I recommend this group of attractive eartheaters. Hopefully, some of the rarer forms (e.g., *G. harreri*, *G. camopiensis*) — including the substrate-spawning *G. argyrostictus* — will be available in the American hobby soon.

Conclusion

In this and the previous installments of Goin' South we have met two groups of eartheaters, the red humps and the surinamensoids. Both are of interest as aquarium subjects and for the peculiarity of their reproductive behaviors relative to other South American cichlid fish. The fact that substrate spawning, as well as delayed and immediate mouthbrooding, occur within the surinamensoid lineage suggests that these fish are still experimenting on an evolutionary scale with alternate modes of reproductive behaviors, unlike either the satanoperoids (delayed mouthbrooding) or the red humps (immediate mouthbrooding).

In the next installment of this examination of South American eartheaters, we will meet the "naked" eartheaters, members of the genus *Gymnogeophagus*, and the remaining orphan of the Kullander splitting of *Geophagus*: "*G.*" *brasiliensis*. Apart from their attractiveness as a freshwater aquarium fish, this group — as with the surinamensoids — seems a behavioral "experiment in progress." Next time, the naked eartheaters.