

Cichlids of the Americas - Eartheater Update

Three new species, a misidentification and more on the "jurupari" mystery.

By Wayne Leibel

In this installment, before we move on to the dwarf eartheaters — miniature cichlids of the genus *Apistogramma* and related forms — as promised in the last installment of this series, I thought I would update the information already covered.

A New Species Creates a Misidentification

In Part 11 — an article erroneously entitled "brasiliensoids" (the result of a production error), but which was really about the substrate-spawning "naked eartheaters" — three species that are members of the genus *Gymnogeophagus* were dealt with. These fishes, which are closely related to the "*Geophagus*" *brasiliensis* species complex, were described along with the confusion surrounding the identity of the fish actually seen in the aquarium hobby. (I should note that the article did also cover "*G.*" *brasiliensis*, which I believe may some day be included in this group.)

In that article, I identified the colorful rainbow eartheater as *Gymnogeophagus rhabdotus*. This was a male of the LaCorte strain that — despite a typo at the end of the second paragraph on page 48 that states that "[I] was led to the conclusion that the LaCorte rainbow eartheater was not *Gg. rhabdotus* (Leibel 1987)" — is definitely *Gg. rhabdotus*. The sentence in question should have read "was not *Gg. australis*." If you've got nothing better to do, like me on this very snowy afternoon, you might check the original article for my real conclusions (Leibel 1987).

The reason for all the bother is that the "rainbow" eartheater, first introduced to American aquarists from near Porto Alegre, southern Brazil, by Rosario LaCorte, was first called *Gg. australis* by Paul Loiselle writing about them in 1980 and again, for a wider audience, in 1981. In other writings about eartheaters, Loiselle (1980b) bestowed the identification, again erroneously, of *Gg. rhabdotus* to the rather colorless relative of the rainbow eartheater imported occasionally from Argentina and pictured in the photo on page 46 of the same Part 11 of "Goin' South." My own work suggested differently and in 1988, when Reis and Malabarba revised the *gymnogeophagines* and added the new species *meridionalis* to the roster, I was quick to suggest that name for the "colorless" rainbow eartheater. That is the name that appears under the photo on page 46.

There was a third fish to reckon with. In the mid-1980s, a smaller "rainbow" eartheater became available from European exporters. Not only was this fish smaller, but the conspicuous blue striping in the unpaired fins (dorsal, anal, caudal) of the LaCorte strain fish was replaced by smaller spots in this European import. Although Paul and I never agreed on the identity of these two fish (he believed the European fish to be *Gg. rhabdotus* and the La Corte fish to be an undescribed relative), I had no trouble assigning the name *rhabdotus* to both fish, pleading "geographic variation" as the source of the stripe/spot and size differences.

Apparently, German aquarists agreed because in Stawikowski and Werner's (1988) book both fish are labeled *Gg. rhabdotus*. In fact, the caption under the striped fish (i.e., LaCorte strain look-alike on page 80) says that this fish is from Porto Alegre.

And so I thought the situation remained (as evidenced by the discussion in Part 11 of this series) as I have just reviewed above. Well, it turns out that I was both right and wrong! In a recent paper (November 1992), Reis, Malabarba and Pavanelli describe a new species from the Rio Parana in Paraguay and Brazil that they name *Gymnogeophagus setequedas*, which apparently is the colorless rainbow eartheater I have been calling *Gg. meridionalis* — erroneously — for the past four years. In fact, *Gg. meridionalis* now appears to be the spotted European rainbow eartheater and the true *Gg. rhabdotus* is the LaCorte strain, striped fish!

Before you start saying "Yeah, right! Why relearn the names if you (Leibel) can't get them straight yourself!" let me assure you that this time the ichthyologists have helped us aquarists. They have accompanied their article with color photographs taken by aquarists, the same ones published in Stawikowski and Werner (1988), that allow us to convert scale and ray counts into definable living fish in unstressed, aquarium-produced coloration! So, here goes.

On page 268, Figure 3 purports to show what the authors believe is the living *Gg. setequedas*. They qualify this identification only slightly by observing that "The specimen in Figure 3 agrees quite well with preserved specimens of *Gg. setequedas* and apparently belongs to that species. The specimen, however, was found in the aquarium trade in Holland

and the locality is not known; as it was not preserved and only the slide is available, the identification is tentative."

That's good enough for me. Presumably these ichthyologists saw the life coloration of the types they pulled from the Rio Parana. In fact, they include the color pattern as the first diagnostic in their dichotomous key separating the three species. "Bright-blue longitudinal flank striping very conspicuous; color pattern of unpaired fins very conspicuous, formed by dots or small stripes" (for meridionalis and rhabdotus) versus "Bright-blue longitudinal flank striping hardly visible; color pattern of unpaired fins very faint without conspicuous dots or stripes" (setequedas). Yeah, I know, the photo on page 46 (of the March 1993 AFI) shows light spots on the fins, but so does the photo dubbed "Gg. setequedas" in the Reis et al. article. I think we have our fish!

That, of course, leaves a decision to be made between the other two rainbow eartheaters. The dichotomous key tells us that the one with "well-defined circular dots" (i.e., the European "rhabdotus"), is really Gg. meridionalis, and there's the color picture to prove it on page 268 of the description.

Finally, the LaCorte strain fish spread across the title page of Part 11 is the real Gg. rhabdotus: the photo (Figure 5) accompanying the Reis et al. article and the key ("dorsal and anal fins with small stripes") make this identification ambiguous for once and for all!

Who cares? Well I do, for starters. And so do a number of advanced cichlid aquarists who are keeping/would like to keep the rainbow eartheaters. Because they are usually not inexpensive fish, I would rather get the real Gg. meridionalis or Gg. rhabdotus than the relatively colorless and less rare (in the trade) Gg. setequedas when I order them, sight unseen, from the ACA Trading Post or from other mail-order or wholesale sources.

There are a few more interesting aspects of this paper that bear mentioning, before we move on to the next duo of new species. The new species Gg. setequedas, along with Gg. meridionalis and Gg. rhabdotus, are readily distinguished from most other *Gymnogeophagus* species (e.g., balzanii, gymnogenys, and the other delayed mouthbrooders — see Part 12) by having 23 to 35 scales in a longitudinal series versus 26 to 29 for the other species. Hence, they represent a "monophyletic" group (similar ancestry) within the *gymnogeophagines*. Clearly their spawning behavior — all substrate spawners — corroborates the scale counts!

The unhandy name of the new species, setequedas, stems from the major waterfalls of the Rio Parana, the Sete Quedas falls, which presumably once kept this species, and others living in the lower reaches of the Rio Parana, from penetrating upstream. In 1983 the falls "disappeared" when the Itaipu hydroelectric dam submerged them and created the Itaipu reservoir. The authors note that modern dispersion upstream is now quite possible, and so the range of the species may ultimately increase. Finally, Reis et al. report that the mysterious Gg. australis is actually a member of the Gg. gymnogenys species group and not one of the rainbow eartheaters! Needless to say, we probably have never had it in the hobby — yet — and so it goes.

Two "New" Surinamensoid Names

Part 10 of this series (February 1993) was devoted to the "surinamensoid" eartheaters, members of the newly restricted genus *Geophagus* (Kullander 1985). We reviewed the nine species currently included in the genus (*altifrons*, *argyrostictus*, *brachybranchus*, *brokopondo*, *camopiensis*, *harreri*, *megasema*, *proximus* and, of course, *surinamensis*).

In our discussion of the three modes of reproductive behavior in this group — immediate mouthbrooding, delayed mouthbrooding and, yes, even substrate spawning — I mentioned an as yet undescribed species from Venezuela. This very elongate surinamensoid, which has appeared very infrequently and which the Germans have called "wangenstrich erdfresser," the cheek-stripe eartheater, (for the vertical "bandit" stripe extending down through the eye) has been formally described and has an official name — actually two names! The descriptions appeared in a recent (December 1992) paper by Kullander, Royero and Taphorn that also appeared, like the above description, in the new journal *Ichthyological Exploration of Freshwaters*.

The two new fish are: *G. grammepareius* and *G. taeniopareius*. In both cases the Latin names refer to the bandit stripe that separates these two *Geophagus* species from all the other surinamensoids. They are also the two smallest of the clan, maximum sizes of wild fish being 103 millimeters and 143 millimeters respectively, whereas most surinamensoids grow to more than 150 millimeters.

The Greek word *pareia*, in both names, means "cheek," while *taenia* means "stripe" and *gramme* means "line." Despite the concordance of appearance and names, the two fish are quite distinct. *Geophagus taeniopareius* has the typical "striped" sides of the surinamensoids, whereas *G. grammepareius* is plain. The other differences, including the degree of dorsal fin scalation, details of the lower lip morphology and the presence or absence of micro gill rakers (absent in *G.*

grammepareius), separate the species neatly, as do their discrete ranges in Venezuela.

The species that we have had in the American hobby — off and on — and which is illustrated in the accompanying photo is *G. taeniopareius*, according to Kullander et al. They make note of photos of live specimens by Stawikowski that appeared in 1981 in the German aquarium magazine DATZ (and again in Stawikowski and Werner 1988) and publish the same color photo with this description. Incidentally, the fish photo labeled "Biotodoma wavrini" in the ACA slide series (Set 6, slide 3), which many of us knew couldn't be as identified, is, in fact, *G. taeniopareius* according to Kullander et al. In their paper, the authors make a specific reference to this slide and its misidentification in their discussion.

Geophagus taeniopareius has been spawned successfully in the aquarium and has proven to be a non-mouthbrooding substrate spawner! *Geophagus grammepareius* has not yet been captively propagated — at least I've not yet seen reference to such a spawning in the German aquarium magazines, such as DATZ or the German Cichlid Group (DCG) cichlid journal — so we don't know whether it follows suit. Including the recently described *G. argyrostictus* from the Rio Tocantins, *taeniopareius* is the second known substrate brooder in the genus.

The rather limited distributions of both *G. taeniopareius* and *G. grammepareius* in relatively remote southeastern tributaries (Rio Caura, Rio Paragua) of the Rio Orinoco explain the rarity of these fish in the hobby. I'm hopeful that tank-raised fry from the German aquarist/collectors will be imported soon.

Additional Insight Into the Mythology of the Name "Jurupari"

Most aquarists who have done any reading about the "jurupari" eartheater (*Satanoperca* species) will have read that the species name *jurupari* derives from the native name for "jungle demon." In Part 7 of this series — the first installment on eartheaters — I reviewed what I knew about the demonic reference to these fishes, the *Satanoperca* or Satan's perches.

As I wrote then (November 1992), Johannes Heckel, the author of the species *jurupari*, related that the collector, Natterer, told him that the Tupi (native) name for these fish was "juruparipindi" or "devil's lure." I suggested that, in the absence of any other explanation, the natives who believed the evil spirit *Jurupari* (or sometimes *Yurupari*) lurked in the night jungle in various animal forms to lure unwitting hunters to their deaths, attributed similar demonic properties to his most bizarre-looking fish. That was about the extent of what my ethnographic sleuthing had turned up in nearly a decade of wondering.

I also then shared a letter I had recently received from Edwin Robinson, who had lived in Brazil, in which he had similarly questioned the name, and who had consulted his "trustworthy Tupi Dictionary," which yielded some interesting answers.

I quote again as I did then: "They believe that there are some malignant spirits, of which they are very afraid, the spirits of the paths, *Jurupari* or *Anhanga*, for them that they call bad, or devils, *Jurupari* hides himself beside the paths, the name 'Jurupari' means demon; from the words *juru* — mouth — and *apara* — crooked, crippled. The crooked mouth; *Jurupari* is a bad spirit that at night squeezes the throats of children or even of men, to bring them affliction and bad dreams." I think you get the idea.

Nevertheless, I have always (at least since I first read that the name "Jurupari" had demonic associations) been obsessed with clearing up that etymological association and have always felt gypped by Heckel (and Natterer for that matter) for not having shared the entire story with us. Why was this fish called "juruparipindi?" Despite consultation with a variety of South American ethnographies and compulsive index checking of any and every book having to do with Amazonian exploration, I have never found a satisfactory answer, although Mr. Robinson's contribution came the closest.

Well, I think I have finally stumbled across the full association. While browsing in a college bookstore the other week, I noticed — in the Anthropology/Sociology section — two books entitled, respectively, *Mythology of North America* and *Mythology of Mexico and Central America* by John Bierhorst. Upon further inspection, the fly leaves provided the information that this same author had written a companion — and earlier — volume entitled (you guessed it!) *Mythology of South America* (1988, Quill/William Morrow Co., New York, 270 pp.). Well, I thought just maybe he'd have the answer, so gambling \$10, I special ordered it.

When it came, I paged quickly to the index and looked up *Jurupari* — nothing! Frantically, I paged to the alternate spelling and found seven pages devoted to "Yurupari," mythological character! What Bierhorst had done in these books was to collect myths that pop up time and time again throughout the native tribes, noting their similarities and differences. These myths had been collected and reported on historically by a legion of earlier ethnographers: Bierhorst simply read all of the published material, put it together and wrote representative narratives of the major myths surrounding creation, etc. There on pages 45 and 46, in the chapter devoted to the mythology of greater Brazil, I read with rapt attention:

"As set forth in an intricate Baniwa version, the first three people on earth were created by the supreme being Nothing But Bones, who made them by pronouncing a simple word. The three were Exhaler and Inhaler, both males, and a female, Amaru, who became the mother of Yurupari. Amaru conceived her child by lightly touching a branch to her face.

"When Amaru's little boy was born he had no mouth and could neither speak nor eat. But Exhaler nourished him by blowing on him with tobacco smoke. He grew so fast that in a single day he attained the age of six years. Still unable to speak, he was asked by Nothing But Bones if he was man, animal or fish. With his head the child signaled "no" each time and would not give assent until asked, "Are you Yurupari?" His body, it is said, was covered with hair like a monkey's. Only his legs, arms, and head were human. When at last his mouth was formed, he let loose a roar that could be heard all over the world."

Now we come to the interesting stuff.

"One day he followed some little boys who were going into the forest to gather wild fruit. The children had been forbidden to eat this fruit, and when they broke the prohibition, Yurupari called down thunder and opened his mouth so wide that the children thought it was a cave. Running inside to protect themselves from the storm, they were eaten alive. Later, when he returned to the village, Yurupari vomited the three children, filling four baskets."

The italics are mine. If that weren't enough, Bierhorst continues.

"To escape the vengeance of Nothing But Bones, who now feared for the lives of the people, Yurupari fled to the sky. But the deity lured him back to earth with a tempting dish of ants, tobacco fumes, and smoked fish."

Juruparipindi, perhaps? Or is the mouth/cave the Devil's Lure?

Reflect that the practice of mouthbrooding, which characterizes all of the "juruparoid" *Satanoperca* that have been spawned in the aquarium hobby to date, was probably known to the natives. Indeed, it was the eminent Swiss/American scientist Louis Agassiz who first reported scientifically on this curious phenomenon in his book *A Journey to Brazil*, co-authored with his wife and published in 1868. On page 220 of that book he describes mouthbrooding in a "*Geophagus*" species from Tefe.

He writes: "This same fish has a most extraordinary mode of reproduction. The eggs pass, I know not how, into the mouth, the bottom of which is lined by them, between the inner appendages of the branchial arches, and especially into a pouch, formed by the upper pharyngeals which they completely fill. There they are hatched, and the little ones, freed from the egg case, are developed until they are in a condition to provide for their own existence." Agassiz goes on to speculate about the anatomical innovation, the lobed gill arch, which he believes permits mouthbrooding."

The book goes on to state: "Mr. Agassiz has already secured quite a number of the singular type of *acara* which carries its young in its mouth and he has gathered a good deal of information about its habits. The fishermen here say that this mode of caring for the young prevails more or less in all the family of *acara*. They are not all born there, however, some lay their eggs in the sand, and, hovering over their nest, take up the little ones in their mouths when they are hatched. The fishermen also add, that these fish do not always keep their young in the mouth, but leave them sometimes in the nest, taking them up only on the approach of danger." Italics are mine again.

Clearly the native fishermen knew about the curious reproductive behaviors of geophagine cichlids well before science did! Just like the mythological Yurupari, parental *Satanoperca* "open [their] mouth so wide that the children [think] it is a cave" and the fry swarm and dive deep into their throats for protection only to be spat out later, when the danger is past.

I would say the mystery is finally solved thanks to John Bierhorst and some serendipity on my part. Ten dollars well spent! I think I'll read the rest of the book — and the other two as well.