# Cichlids of the Americas - The South American Cichlasomines

**The False Basketmouths**

*By Wayne Leibel*

When it comes to the basketmouths, true and false make quite a difference. The true basketmouth (Acaronia nassa) is a medium-size acara-derived fish named for its lifestyle as a "gape-and-suck" fish predator.

The specific nomen "nassa" is the Latin term for wicker basket (in reference to wicker fish traps used in Guyana), and commemorates the predatory lifestyle and anatomical specializations of this fish. In particular, the jaws are protractile and modified to be highly protrusible. The fish skulks under logs or other shelter and effectively "vacuums up" smaller fish that come within a few inches of its mouth. It does so by quickly extending its jaws outward forming a tube. The negative pressure generated within the mouth sucks the prey to its doom. The maneuver is exceedingly rapid and highly effective. Thus, the name basketmouth seems appropriate.

As might be expected, gape-and-suck piscivory has evolved several times in both New and Old World cichlids, with convergent morphological adaptations involving the mouth and jaws. The cichlasomine lineage has produced its own lineage of gape-and-suck predators of the genus Caquetaia Fowler 1945, which have come to be known as the "false basketmouths." They are "false" only in the sense that Acaronia nassa is the original, or true basketmouth: the structure and function of the protrusible mouth in each case is remarkably similar.

This suite of three (or arguably four or five) fish is the focus of this installment. I will first review the nomenclatural history of these fish — and how many there are — and then discuss the false basketmouths as aquarium fish. If you have little patience or tolerance for my nomenclatorial digressions, please skip down to the maintenance/breeding section. However, the story is interesting from an evolutionary perspective and possibly worth your effort.

Nomenclatural Evolutionary History
The genus Caquetaia was erected by Fowler in 1945 to hold his newly described species amploris. This fish was subsequently synonymized with the species myersi, which had been described the previous year by Schultz (1944) and initially installed in the genus Petenia Gunther 1862. Gunther (1862) had created the genus Petenia for the Central American species P. splendida, the Red Bay snook, well known to advanced cichlid hobbyists. Incidentally, the genus name "Caquetaia" proposed by Fowler (1945) recognizes the Rio Caqueta (and the Colombian province of Caqueta), a major tributary of the Amazon in Colombia from whence C. amploris (= C. myersi) had been taken.

The Red Bay snook was originally described from Lake Peten in Guatemala, but actually has a wider distribution on the Atlantic slope of Central America, from southeastern Mexico down through northern Guatemala into Belize. This distinctive, highly elongate cichlid, which can attain lengths of nearly 2 feet, is the ultimate gape-and-suck predator.

When fully extended, the tube-like mouth can expand to nearly a quarter to a third of the entire body length, creating an incredible vacuum that sucks in fish. The torpedo-shaped body allows the fish to dart through the water with great speed in pursuit of its prey, quite unlike Acaronia nassa, which is more of a skulker.

There are two color morphs — the typical golden-brown form that resembles the jaguar guapote, "C." (Nandopsis) managuense, in the reticulated spotting pattern it develops on its sides, and a rarer (in the wild) red/gold morph that is coveted by hobbyists and which has been made available in the trade in recent years. This morph develops a gold to bright-orange — even red — coloration as it matures (transformation from normal gray to red takes place gradually after they reach more than 1 inch) and is quite beautiful.

Despite their large size and the obvious menace of their mouths, these are quite unaggressive fish that should not be kept in an aggressive cichlid community because their jaws are quite fragile and subject to injury. Breeding pairs are quite compatible. See Conkel (1993) or Wessell (1993 ) for more information about this delightful fish; we will not discuss it further in this article.

Now, this article is about South American cichlasomines — and P. splendida certainly is not one — but the issue of evolutionary convergence versus evolutionary relatedness is central to our discussion, and it may well be that the Red Bay snook should be thought of as the evolutionary descendant of an ancestral Caquetaia species that invaded from the south. And if that is true, the Red Bay snook represents the pinnacle of anatomical adaptation for the gape-and-suck

lifestyle. We will return to this point in a few paragraphs.

There were three other species that were described in the genus Petenia subsequent to Gunther's (1862) description of P. splendida. They include P. spectabilis Steindachner 1875, P. kraussi Steindachner 1879 and P. myersi Schultz 1944: these are the fish commonly known as false basketmouths, which were subsequently placed in the new genus Caquetaia by Fowler (1945).

There is some debate whether a fourth species, "Cichlasoma" umbriferum Meek and Hildebrand 1913, the blue freckled guapote, should be included in the genus Caquetaia (i.e., Caquetaia umbrifera). Kullander (1983) suggested as much in his review of the orphaned species of "Cichlasoma" and Ufermann et al. (1987) in their Cichlid Cataloque — a comprehensive history of the nomenclatural history of all described cichlids — suggest this ambiguity with a question mark (?) next to the name. However, Conkel (1993), in a popular account of Central American cichlasomines, places it with guapotes of the section Nandopsis, which includes other piscivorous species, such as "C." managuense and "C." fredrichstahlii.

As an appropriate counterpoint, Regan (1905) had also placed "C." kraussii and "C." spectabile in the section Parapetenia, now called Nandopsis. I will defer a definitive resolution of this problem to a future article in which I will review the remaining cichlasomines of northwestern South America. "C." umbriferum hails from the Pacific slope of Panama south to the Rio Magdalena basin (Atlantic slope) in Colombia.

With respect to the Petenia splendida/Caquetaia species relationship, it is useful to recall that species are lumped or split on the basis of shared similarities (synapomorphies) or differences. Thus, the fish's anatomy should tell us if we are, in fact, choosing the correct characteristics for comparison.

With respect to the protrusible jaws that both the snook and the false basketmouths seemingly have in common, Eaton (1943) studied the jaw anatomy and protractile mechanism (bones and muscles) of a series of cichlasomines he dissected, including "C." (Theraps) melanurum, "C." (Nandopsis) urophthalmum, "C." (Nandopsis) friedrichstahlii, Caquetaia kraussii and Petenia splendida. He also notes in passing that he has examined the skull of "C." umbriferum in a cursory fashion.

While noting a trend toward lengthening of all jaw bones concerned with jaw protraction, especially the premaxillary spine that extends back beyond the head and slips forward to allow protrusion, and an adjustment of the muscles that work the jaw, Eaton (1943) concludes that these species may not represent an "adaptive series" (i.e., direct evolutionary relatedness). This is because "not all other parts of the same fishes differ in the same order..."

Kullander (1983) would agree. His diagnosis of the genus Caquetaia involves shared derived characters, primarily involving the jaws. In short, all of the major elements of the jaw are elongated so that the mouth becomes protrusible (i.e., long ascending premaxillary processes reaching to near the dorsal fin, ventrad prolonged maxilla, enlarged anterior teeth, and a well-developed maxillad premaxillary process). In addition, all Caquetaia have moderately large scales, five to seven anal spines, and all their unpaired fins (e.g., dorsal, anal, caudal) are scaly at and just beyond their insertion.

Petenia splendida, according to Kullander (1983), differs in lacking enlarged jaw teeth and fin scales, and has smaller body scales. Thus, the split is warranted. "Cichlasoma" umbriferum, in Kullander's (1983) opinion, may be a Caquetaia species, but he offers no further discussion or proof other than this brief suggestion.

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With respect to the Petenia/Caquetaia connection, Kullander (1983) notes that in Caquetaia (i.e., C. myersi, kraussii and spectabilis), defining characters other than those of the jaws are "more ancestral than in Cichlasoma." This, of course, reinforces the concept of the invasion of Mesoamerica by ancestral cichlasomines from the south, followed by isolation and diversification.

Petenia splendida is a more recent, more highly evolved cichlid than the South American Caquetaia, which may or may not be its ancestral evolutionary precursor. And "C." umbriferum may be a related ancestor to the Caquetaia or may, in fact, be a more highly evolved guapote whose jaw structure has converged with that of the false basketmouths.

Molecular analysis of these species' DNA would probably resolve the relationship. But for purposes of this article we will consider the false basketmouths of the genus Caquetaia as currently comprising three species: C. kraussii, C. myersi and C. spectabilis.

False Basketmouths in the Aquarium

Two of the three Caquetaia species, C. spectabilis and C. kraussii, have been available in the American hobby only since the early 1970s (Sterba 1966 records 1935 as the date of importation into Germany), but are now more or less established and continuously available as captive-bred fish in this country. Caquetaia spectabilis hails, in the wild, from the blackwaters of the Rio Negro in Brazil, the Brazilian Amazon basin in general, and parts of Guyana (Stawikowski and Werner 1988). Consequently, it initially entered in small numbers as a contaminant of shipments of better-known cichlids.

Caquetaia kraussii is its Colombian equivalent, where it is found in the Rio Atrato and Rio Magdalena drainages. According to Infante and LaBar (1977) it was introduced into Lake Valencia, Venezuela, as a food fish, and, according to

Winemiller (1989), it has been recently collected from the western llanos of Venezuela in the Orinoco drainage. I have never seen C. kraussii mentioned in hobby literature prior to 1973 (Goldstein, Cichlids of the World) and was myself introduced in some depth to this fish by Loiselle's (1980) article, in which he suggests an introduction into the hobby of 1970.

Caquetaia myersi, represented in this country over that same time period by a quartet of fish offered only once at an American Cichlid Association convention in the 1980s (photo in Loiselle 1985, page 44), has been absent from the American hobby until just recently. In 1993, some European hobbyists trekked to its type locality in the province of Caqueta in the southern part of Colombia, not far from the border with Ecuador, and caught living specimens in the Rio Aqua Calientes just southwest of the city of Florenzia, the provincial capital of Caqueta (Anderson 1994, Hansen 1995). They have been captively bred (see Hansen 1995) and the first of these tank-raised offspring hit our shores in July of 1995.

All three fish are moderately large (about 8 to 12 inches) and moderately elongate, with distinctly pointed snouts that enable the protrusible mouths that characterize the false basketmouths. Of the three, C. spectabilis is the most colorful and most commercial, as the Latin root spectabil (= remarkable) would indicate.

Ventrally, the fish is bright orange from its face back to the anal fin, and its sides are magnificently spangled in bright iridescent blue. There are two black side-by-side mid-lateral blotches, a third blotch just behind the eye on the operculum (humeral blotch), and a fourth on the upper quadrant of the caudal peduncle. When stressed or when courting/spawning, adults express 10 to 12 dark, indistinct vertical bands. The unpaired fins are moderately produced and have blue interradial streaks. The paired pelvic fins are orange and somewhat fan-like.

This species is essentially sexually isomorphic (visually indistinguishable), with females being somewhat smaller and less elongate than males. When ripe, females are also "fuller" in the abdomen. Additionally, Szot (1993) observed that males reach lengths of 10 inches and have longer pelvic fins, whereas females attain only 7 to 8 inches. They will, however, spawn at 5 inches or so (Szot 1993).

The second species, Caquetaia kraussii, is larger and more elongate than the preceding species, and is a symphony of iridescent golds and browns. Like the previous species, C. kraussii has black humeral, mid-lateral and caudal peduncle blotches. However, the humeral blotch is much larger and extends well onto the operculum. The ground color is yellow-brown and the flanks are metallic gold/brown, with each scale edged in black.

When stressed or courting, the fish develop indistinct vertical bands much like C. spectabilis, and, when stressed, a longitudinal black stripe. According to Szot (1994), who has also written recently about this fish, males are larger than females (12 versus 8 inches) and females display significantly heavier spotting along their bodies.

The third species, Caquetaia myersi, is quite unlike the other two Caquetaia species if one can judge from the recent published photos of adult, ripe fish (Andersen 1994, Hansen 1995). Recently, I was the fortunate recipient of four 1- to 2-inch juveniles, and when I went by their tank I initially thought I was looking at leaf fish of the family Nandidae, so chiselled was their head profiles.

Andersen (1994) refers to these as a yellow banded cichlid, and published a photo of a hand-held wild individual whose base color is an attractive gold with distinct black vertical stripes. Better photos of adults appear in Hansen (1995) and show a metallic gold fish (actually orangy burnt umber ) with two distinctive black vertical bands — one at mid body and a second halfway between it and the caudal peduncle — extending from the back (dorsum, near the insertion of the fin) to the belly (ventrum). There is also a distinct oblique black band through the eye.

Andersen (1994) describes catching an 8-inch adult, while Hansen (1995), who brought back fry and raised them, reported the male growing to almost 8 inches and the female to 6 inches at the time of their spawning. According to Hansen (1995) there were no other sexually dimorphic characters visible in his fish, although the male in his photo seems more high-bodied to my eye. Andersen (1994) confirms the size dimorphism in wild specimens and adds that the females have a "red-brown color just below the dorsal fin." This is not clear in the Hansen (1995) photos. Incidentally, there is a marvelous photo of a C. myersi "vacuuming" with its protrusible mouth in the Hansen (1995) article, along with spawn-tending photos.

The best maintenance/spawning accounts of C. spectabilis and C. kraussii are those of Szot (1993 and 1994 respectively), and I will summarize his experiences here, while directing you to find these two excellent articles. I have never taken the time to spawn either species, although I have kept both briefly.

The only spawning account of C. myersi to date is that of Hansen (1995). However, I am hopeful that at least one of the four American aquarists who split the recent shipment of juveniles will succeed in the near future. I will also take the liberty of summarizing Hansen's experiences.

Caquetaia spectabilis can be finicky when it comes to water quality and, in my experience and Szot's, will develop head-hole (usually reversible) if maintenance is lax. I would recommend soft, acid water for these fish, possibly with peat filtration, but, as Szot (1993) points out, "it can prosper over a wide range of pH values so long as extremes are avoided." I concur that higher temperatures are best (around 78 to 85 degrees Fahrenheit) and that this fish is sensitive to lower temperatures (low to mid 70s Fahrenheit).

According to Szot (1994), C. kraussii tolerates a wider range of water chemistries and doesn't seem as susceptible to neuromast erosion (head-hole disease) as C. spectabilis, nor does it need such warm water. In his experience 76 to 80 degrees Fahrenheit is adequate.

According to Andersen (1994), C. myersi was taken in the Rio Aquas Calientes, whose salient chemistry was measured to be pH 7.5, total hardness of 2 DH, and a carbonate (temporary) hardness (KH) of 0. The water temperature was 76 degrees Fahrenheit. Hansen (1995) reports observing C. myersi in water that measured pH 8.5, 0 KH, and a temperature of nearly 89 degrees Fahrenheit which, after three days of rain, was now pH 7.0 and a temperature of 73 degrees Fahrenheit!

Hansen (1995) marvels at the apparent adaptability of these fish. He reports spawning them at a temperature of 77degrees Fahrenheit and a total hardness of 10 DH. Andersen (1994) reports finding C. myersi in most rivers in the Caqueta province in southern Colombia, living over a bottom of round stones and rocks. Given this riverine existence, I would expect C. myersi to be particularly demanding with respect to dissolved oxygen — I am giving mine heavy aeration and water movement.

All three species of Caquetaia are easily fed and do not require live feeder fish. Despite my expectation of habitual piscivory, these fish readily take freeze-dried krill, earthworms, frozen bloodworms and pelletized foods, including "sticks." In fact, Infante and LaBar (1977), analyzing gut contents of C. kraussii taken from Lake Valencia in Venezuela, found that the bulk of the stomachs contained primarily aquatic invertebrates, such as ostracods, and mayfly larvae (Campsurus sp.). However, prey fish are taken and representing anywhere from 5 to 39 percent of the total food intake, varying seasonally throughout the year.

While live feeder fish can be good conditioning food and certainly provide some entertainment (or enlightenment into functional morphology, as the case may be), the hazards of feeding diseased feeder fish have been discussed in reference to other piscivorous cichlids, particularly pike cichlids. I just wouldn't! Szot (1993, 1994) cautions that most prepared foods are ignored once they reach the bottom of the tank, so feed lightly or use floating sticks or krill.

All three species can be particularly aggressive, so lots of shelter should be provided in the form of PVC piping of appropriate size or other relevant aquarium furnishings (see Leibel 1995 for other suggestions). Also, while these fish can be kept in a peaceful cichlid community, attention must be paid in selecting compatible tankmates. Target fish will help cement pair bonds. However, you should be ready to keep large adults separated until the female ripens and courts the male.

Szot (1993) reports that the appearance of a genital tube in the female C. spectabilis is a reliable indication that spawning will occur within 24 hours. Szot (1993) removes the divider separating the breeders at this point. You may also choose to breed them via the incomplete divider method (see Leibel 1995 or Loiselle 1985).

Courtship behaviors for C. spectabilis and C. kraussii have been described in detail by Szot (1993, 1994) and I refer you there for a complete account. All three species are apparently biparental substrate spawners, spending much of the prenuptials digging in the gravel and selecting and cleaning the intended spawn receptacle — usually a rock, but which can be the bare bottom of the tank if nothing else is available. Szot (1993) reports that his C. spectabilis preferentially choose the bare bottom over rocks or flowerpots.

These are very prolific cichlids. Egg plaques consist of about 500 eggs in the case of C. spectabilis (Szot 1993) , about 1000 eggs in the case of C. myersi (Hansen 1995) and about 1500 in the case of C. kraussii (Szot 1994). Szot (1993,1994) reports that the eggs of both C. spectabilis and C. kraussii hatch in three days at 78 degrees Fahrenheit, wrigglers become free-swimming five days later, and are immediately able to eat newly hatched brine shrimp (Artemia) nauplii. No such observations are yet available in print for C. myersi.

Pairs ripen again within four to five weeks and the fry, which are initially well cared for by both parents, must be relocated before this time lest they be eaten as a prelude to the next spawning. The fry grow quickly and, according to Szot (1993), C. spectabilis can attain 1 inch in 12 weeks with the proper feeding and frequent partial water changes. At this size, C. spectabilis begins to acquire its iridescent blue coloration.

Conclusion

The false basketmouths are a group of interesting and beautiful cichlids that have been largely unavailable in the American hobby. This situation is happily changing as more and more advanced cichlid hobbyists become aware of, and choose to work with, these lovely fish. These days, they are available principally through the Trading Post of the American Cichlid Association and through more sophisticated retail stores. I'm hopeful they will continue their ascent up the popularity curve and become more generally available.