

Biotoecus Opercularis, When opportunity arises.....

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An article detailing the authors observations regarding the captive maintenance and reproduction of this unique but rather elusive South American dwarf cichlid.

The dwarf cichlids of South America are classified into a number of taxonomic groups and over the years i have kept and bred a wide variety of species from many of these groups but the one species that, in recent years, i have had an increasing fascination for belongs to the genus Biotoecus. (Eigenmann and Kennedy, 1903.)

I have recently had the opportunity to purchase a group of six wild Biotoecus Opercularis (Steindachner 1875), a rather beautiful and distinct South American dwarf cichlid species that despite occasional imports into Germany is rather elusive. It has never become established in the hobby and is only very rarely available on the import lists of suppliers within the UK.

According to the hobbyist literature and the very sparse information i had been able to gather on this species i was led to believe that Biotoecus Opercularis was one of the most sensitive cichlid species in the aquarium and only recommended for highly experienced aquarists. I could simply not resist this excellent breeding opportunity despite the relatively high price tag for a dwarf cichlid species. Money well spent i thought.....

Description.

Biotoecus Opercularis is primarily a Brazilian blackwater species that has a wide distribution throught the Amazon region of northern Brazil and the Orinoco region of Venezuela. Populations occur in the catchment and drainage areas that take in the Rio Trombetas,Rio Branco,Rio Negro and the Orinocos Casiquiare canal. Its preferred habitat are sandy stretches of open water but it can occassionally be found amongst thick layers of leaf litter in the smaller creeks (igarapes) and lagoons. The water in these blackwater habitats is extremely soft and acidic with a ph value of between 4.5 - 5.5 and a conductivity value nearly always less than 30ppm. Temperature fluctuates seasonally but is always relatively warm and in the region of 84f.

Its appearance at first looks rather dull with a sandy grey body colouration that seems appropriate for its life in sandy biotopes however under certain lighting conditions within the aquarium the fishes magnificent, eye catching, irredescent body and fin colouration comes to the fore. They exhibit a dazzling display of metallic blue/green and pastel shades on both body and finnage that is rather difficult to describe and to which photos do not do justice.

Biotoecus species have a body shape unlike any other S.A.dwarf cichlid. Mature male Opercularis reach a total length of approximately 2"whilst females are slightly smaller. They have a pointed head with a rather large eye, leading to a slender, wedge shaped body and extremely narrow, elongated, caudal penduncle.

The fishes markings include a large dark spot on the gill cover that lends itself to the scientific name Opercularis, gill spot or gill cover. Five dark dorsal blotches are present as well as a row of rather faint lateral blotches. A dark lateral and caudal spot is almost always visible but this is dependent upon the fishes mood.

Sexual dimorphism is rather difficult until the fish reach maturity at approximately 10 months or 1-1/2" and often not until they start to exhibit their breeding colouration. At this point there are distinct differences present. Mature males exhibit short white extensions on the ventrals and fine extended filaments on the top and occasionally on the bottom of the caudal fin. These extended filaments grow more pronounced in extremely soft water and also when very fine sand is used as a substrate. Coarse substrates will inhibit the growth of these filaments especially those present on the ventrals and the bottom of the caudal. In female specimens none of these extended filaments are present, they are stockier than males and the belly region is always much more pronounced. There is a row of metallic green spots visible running horizontally along the entire length of the males dorsal fin, in females these spots fuse together to form a continuous metallic green line.

Maintenance and breeding in captivity.

The six, recently imported, *Biotococcus Opercularis* that arrived in late Oct 05 turned out to be rather young and slightly emaciated juvenile/semi-adult specimens at approximately 1" total length. There was no sexual dimorphism present, due to their small size, so it was decided to house all six fish together in the hope that pairs would form naturally as the fish matured to adulthood.

With this in mind a 3ft (26gallon) tank was set up and decorated to recreate the natural habitat and biotope of *Biotococcus* species. A thick layer of very fine sand was employed as a substrate to which pieces of bogwood, java moss and leaf litter were added in the form of oak and beech leaves. These were utilised to provide cover and hiding places for these reputedly shy fish. Terracotta pots (3.5"-1.5" diameter) are incorporated as prospective spawning sites.

Water parameters were matched to its natural biotope using peat filtered, 100% reverse osmosis water. This was adjusted using minute amounts of phosphoric acid to reach a value of 4.6ph. Both Gh and Kh was measured at almost undetectable levels and temperature was set at a stable 83f. Two air powered double sponge filters were used to provide both mechanical and biological filtration and the waters flow rate was set at a low to medium turnover. Water changes at 25% would be carried out every two weeks to maintain stability within the aquarium and to alleviate any bacterial and fungal infections caused by stress and fluctuating water chemistry which *Biotococcus* species are extremely susceptible too.

The fish were introduced slowly into their new surroundings after water and temperature equalisation to minimise stress. They had been allowed a period of recovery and quarantine at the importers but i thought it may be beneficial if the fish were treated for intestinal nematode infection, a practice i carry out on most of my wild stock, upon introduction to my fish house. Levamisole hydrochloride was administered daily, for seven days, in the form of a long term bath to eradicate any worm infestation present. After the initial acclimatisation period the *Biotococcus* settled well and rapidly began to gain size and weight. Twice daily offerings of live

foods in the form of brine shrimp nauplii, daphnia and occasional feeds of whiteworm were eagerly accepted. High protein granulated foods and brine shrimp flake were also taken but only after a period of some reluctance. Despite what i had been informed they seemed to eat just about anything offered although they showed the most enthusiasm for small live crustaceans(bbs and daphnia) which is probably similar to their natural diet.

Over the next few weeks a definite pecking order was established but there were no defined territories or pairs forming. Size was the only visible factor to use for sexing and i could only assume that the slightly larger fish were males as there was still no sexual dimorphism present. I did however have a suspicion that all six fish in the group were female specimens. Surely this could not be possible..... A couple of the larger fish soon became dominant and began to keep the other fish from eating due to their constant harassment. Two of the *Biotocus* in particular began to look rather stressed and emaciated so it was decided to add a dithers to act as target fish for this aggression. A group of six *Nannostomus Trilineatus*(Three Lined Pencilfish) were added for this purpose. This seemed to work reasonably well as there were no further signs of aggression and the fish continued to do well.

As the fish approached 1 1/2" total length there was still no sign of any pairs forming and i was adamant that i had a group of six females. I decided to contact the importer and managed to acquire a mature male specimen whose caudal and ventral extensions were clearly visible. He was a fish in excellent condition, better developed and much bigger than the specimens that i had. Soon after the males introduction into the tank the largest and most dominant female began to develop a full and rotund belly as she became ripe with eggs. It became obvious that a pair was forming and as *Biotocus* species are defined cave brooders the female started to take an increased interest in one of the terracotta spawning pots. A territory was defined and the pair began to colour up nicely as they began their courtship ritual. Both male and female became territorial and the tanks other inhabitants were constantly driven well away from the proposed spawning site.

The courtship display, which was initiated by the male, consisted of the male fish diving at the female from a distance of approximately 8" and coming to a halt just short of colliding. The male then hovers, head down, spreads his fins and beats his pectorals. He also flares his gills and shakes his body vigorously before retreating backwards, using a nodding motion to the point where he began his dive. The female then copies the males routine almost to perfection as she acknowledges his intentions. This courtship display continued for quite some time prior to the female breaking away and starting to excavate the sand from inside the terracotta spawning cave until there is quite a mound built up outside the mouth of the cave creating a very narrow entrance. The female fish also mounds the sand up from the outside using jerking motions with her head to flick sand towards the entrance of the cave. Quite some time was spent preparing the spawning site and defending the territory which took place over a two day period.

I did not witness the actual spawning act but *Biotocus* are pronounced cave brooders and spawn much like *Apistogramma*. Approximately 80 cream coloured eggs could be seen by torchlight on the underside of the caves roof. The eggs looked very small in comparison to those of *Apistogramma* species. At a

temperature of 83f the eggs hatched in about 3 days. The newly hatched larvae were not moved as is the case with some dwarf cichlid species. At 4 days post hatch a group of very small free swimming fry were deposited by the female within a shallow depression that had been excavated in the substrate within the vicinity of a clump of Java Moss. The fry were definitely the smallest cichlid fry i had ever seen, certainly not large enough for newly hatched brine shrimp nauplii. The vinegar eel and microworm cultures that had been prepared in anticipation of this would be fully utilised.

The fry seemed to be actively searching for their first food source and were ready to eat. I used a small 10ml syringe to deposit a cloud of vinegar eel in the general direction of the fry which could be seen accepting the food. I fed alternate feeds of vinegar eel and microworm 4 times daily for the first 5 days until the fry were large enough to accept baby brine shrimp which they eat with gusto. At the time i was using the rather inferior Siberian brine shrimp nauplii which is slightly larger than the GSL and San Fransisco Bay nauplii so i suggest that if these were fed the *Biotoecus* fry would be able to accept these strains much earlier at approximately 3 days.

Despite the parents excellent territorial displays and acts of aggression prior to spawning their parenting skills were now lacking and they were struggling to properly care for the fry which i found rather dissappointing. The female was practising the broodcare alone with no intervention from the male whatsoever, he also seemed to be showing no interest in his territorial duties. The female would herd the fry around the tank but would not pick up and place the strays back into the group, this allowed the fry to dissipate over a rather large area. These combined factors allowed the non-reproductive *Biotoecus* in the tank to pick off any stray youngsters, the stalkers being able to get really close to the fry without any intervention from the parents. I did not witness at any time the *Nannostomus Trilineatus* predate on the fry. The group was slowly beginning to get smaller by the day so it was decided that i would split the remainder and rear a small group of fry away from the parents. Approximately 40 youngsters were syphoned from the group and housed initially in a 12"-8"-8" tank to grow on until being moved to more substantial quarters as they mature. Within the week the remainder of the group that were left with the parents were lost. Fortunately i now have two pairs that are courting and it looks for all intent and purposes that there will soon be broods at either end of the tank. My only hope is that the initial breeding pair will have learned from their previous experiences.

The juveniles seemed to grow really quickly at the onset and at 3 months old were approximately 3/4" total length. It is envisaged that this growth would slow considerably over the next few months as this species can take up to 10 months to reach maturity.

One interesting aspect of the fishes behaviour has been observed by the author that seems to occur in only one other group of South American dwarf cichlids, the genus *Teleocichla*. Whilst in a state of shock or fright both juvenile and adult *Biotoecus* have the ability to dive into, and completely emerse themselves in, very fine substrates in an attempt to evade capture and avoid predation.

This behaviour is possibly due to the fact that the preferred habitats of *Biotoecus* species are vast open sandbanks often bereft of vegetation, leaf litter etc that offers little or no cover from predators. It is therefore envisaged that this behaviour is a trait that has been adopted to help sustain life in these open habitats.

Conclusion.

I have certainly enjoyed my first experience with this species and overall, despite what i was led to believe, found them to be quite forgiving and not too difficult a species to maintain and breed if conditions are too their liking. They do however from my experience require very soft and acidic water. Getting the young to feed is definately the key to successful reproduction as they will only take very small first foods such as vinegar eel and microworm. I also found them to be reasonably peaceful when kept in a group as long as dither fish were present. They are an interesting species to observe and they also possess many of the character and personality traits associated with the larger Neotropical cichlids.

I would, without any hesitation, recommend *Biotoecus Opercularis* to other like minded aquarists and hopefully this brood, when mature, will go some way to help get this species established and in the tanks of many of the more serious Cichlidophiles both within the United Kingdom and overseas.

References.

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