The Lateral Line

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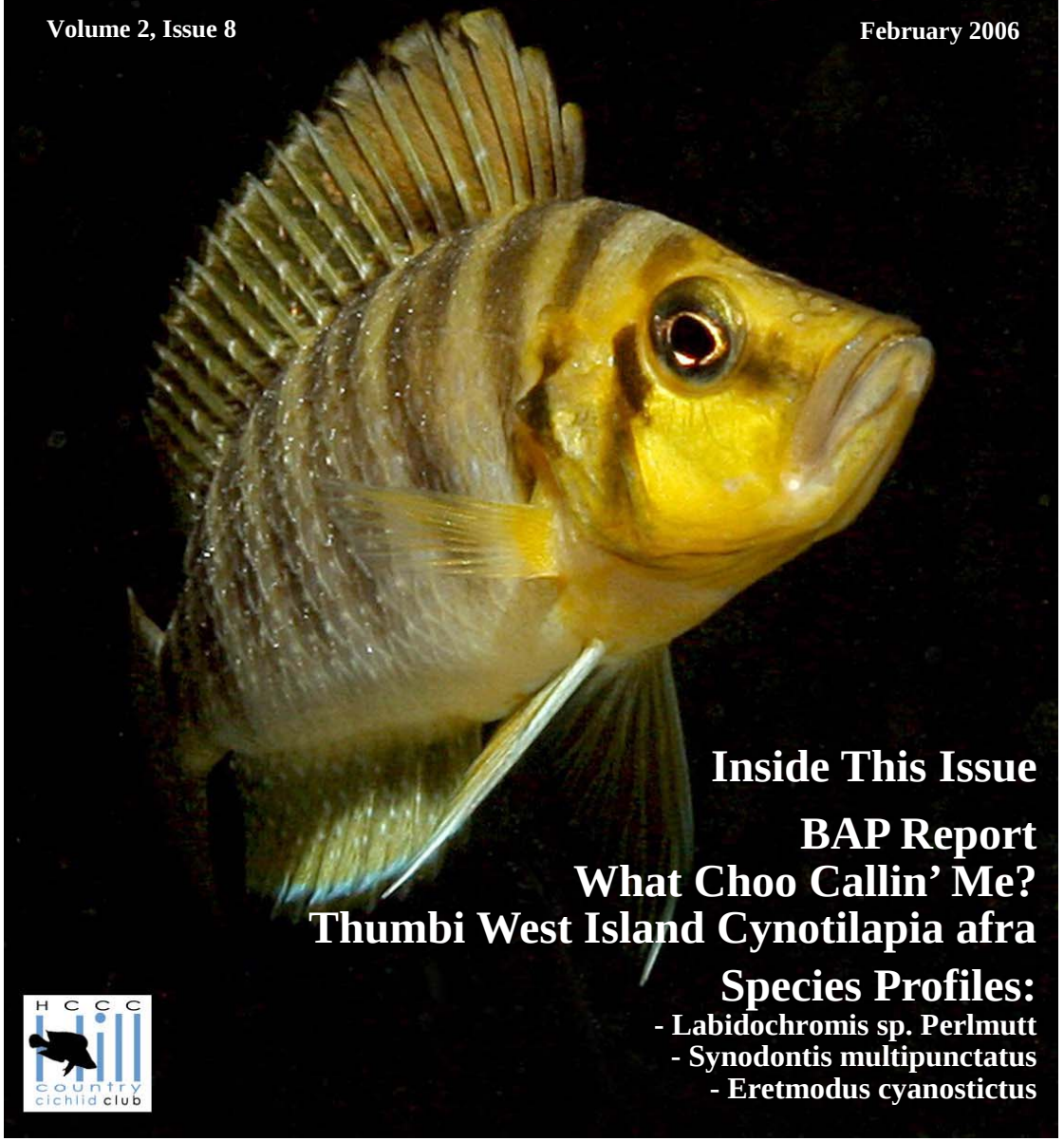

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HCCC Hill country cichlid club

February 15, 2006

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Upcoming Events:

- HCCC February meeting on the 18th.
- HCCC Spring auction March 11th.

Cover Photo:
Altolamprologus compressiceps Gold Head
by Jennifer Prince

BAP Report

With the holidays behind us, our spare time has focused back to our hobby. This was evident by the increase in BAP reports. January entries also included spawns in class "C" and 1st species. Lisa (Lisachromis) was able to accomplish both with just one entry. Her spawning of the Synodontis Multipunctatus produced points for a class "C" and a 1st in species. Lisa also added Paralabidochromis sp. "rock krib" spawn to her total points. Another 1st in species points goes to Charles (Tangfish23) for his spawning of Neolamprologus tetracanthus. Charles added to his point totals with the spawning of "SP 44". Congratulations to you both especially on you're spawning of 1st in species and to Lisa with her class "C".

I was finally able to catch up and entered my spawning of Tropheus sp. Black Bemba Orange Flame and Eretmodus Cyanostictus "Goby Cichlid". Both were "C" class spawns and a spawning of Labidochromis Perlmutt spawning helps put me on the YTD totals. Congratulations to Greg (GAS) with his spawning of Pundamilia Nyereri. This spawning also gave Robert (Ripple) an extra 5 point bonus for 2nd generation spawn.

Thanks to everyone with their help and suggestions (you know who you are) which have improved the BAP program. The Available BAP Fish appears to be doing its job and there is only one entry left available in January. Fish available to non-members is not receiving much attention, but we will work that. Future small auctions and our spring auction in March hopefully will clear out more fish and make room for new BAP spawns.

■ *Jim Beck*

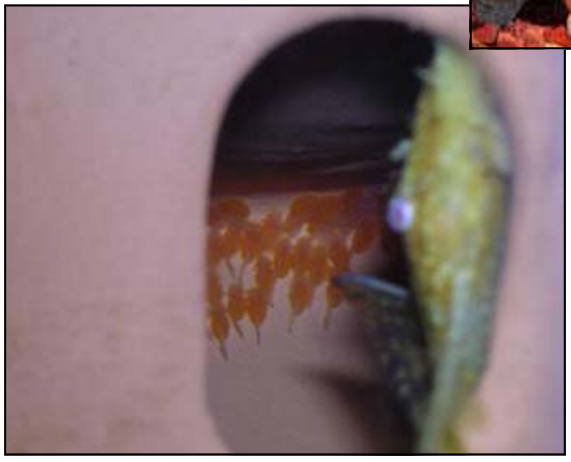
Current Standings

Name	YTD
Charles	85
Jim	60
Greg	40
Lisa	40
Diane	30
David D.	20
Jennifer	20
Nick	20
Robert	5

HCCC Monthly Photo Contest

First Place: Dave Rinaldo
Panaque sp. L330

Second Place: Yvonne Beever
Goldie Pleco L14
Scobinancistrus aureatus



Third Place: Phil Jackson
Albino Bristlenose
Ancistrus eggs hatching

Judging by Barbie Fiorentino

Lake Victoria cichlid nomenclature:
What choo callin' me?

So there you are, gazing into a friend's beautifully stocked tank. The air is thick with anticipation as he awaits your comments. You look things over and notice a brightly colored cichlid defending a rock from other tank inhabitants.

"Beautiful setup" you proclaim.

Your friend beams proudly, grinning from ear to ear.

"What is that little fish by the rock?" you ask.

Your friend, still wallowing in your positive review states "That is a Christmas fulu".

"A what?" you inquire curiously.

"Phytophagus," he answers.

"Pardon me?"

"It's a Xystichromis phytophagus or Haplochromis Christmas fulu" he stutters nervously.

"You don't know which one it is?" you ask.

"That's what it is" he replies Xystichromis phytophagus or Haplochromis Christmas fulu".

Fearing an unrehearsed offshoot from a Laurel and Hardy skit, you decide to leave well enough alone and hope that your friend's medication begins to work.

This type of conversation has happened to almost everyone whose fish keeping interests include cichlids of Lake Victoria and surrounding waters. What could be so difficult about the name of a fish? Well, in all honesty, the inhabitants of Lake Victoria are unique in biodiversity as well as situation. Firstly, species of cichlids in Lake Victoria are babies in evolutionary terms. Estimated age of the lake varies between 12,500 and 14,000 years old. This would mean that the 500 or so species of cichlids from Lake Victoria have very rapidly evolved from a few riverine ancestors. Because of man's intervention, half of the endemic cichlid population, in a generation, has been forced into extinction. What does this have to do with the name of an individual species? Well, in a nut shell, cataloguing the inhabitants of Lake Victoria is a task taken on by few, and overwhelming to all.

Can you imagine tossing a cast net into the pristine waters of the newly discovered great lake? A multitude of small fish of every color conceivable lies in front of you. None of these fish has been seen before and nothing has been named or studied. It's all new and you have just captured a minute sampling from the second largest lake on earth! Every cast contains a new fish or two you haven't seen before. How do you keep track of things? Are these fish all different species? Are some variants of others? What characteristics do you use to separate one from another? This is exactly what the pioneer ich-

thyologists (modern as well) had to endure.

Perhaps the most revered scientist to work with the fish of Lake Victoria was Humphrey Greenwood. Greenwood made it his life's work to discover, examine and classify these creatures. Modern scientists still employ many of his methods to sort furu taxonomy. Greenwood's frustration with the multitude of species to sort becomes evident with some of the descriptive names he bestowed upon them. One such cichlid he dubbed "brassy bastard".

It is these common names usually given to the fish shortly after collection that we use in lieu of anything better. Names like "flameback", "all red", "golden duck", and many others are the briefest of descriptive monikers by which we know these fish by. These titles are given by the collector, the scientist, the importer or exporter, or the hobbyist. It is no wonder there is such confusion with Victorian nomenclature.

The first species description of a Lake Victoria cichlid was done by Dr. Franz Hilgendorf in 1888. This fish was the infamous Haplochromis obliquidens. The genus name of Haplochromis represented small brightly colored cichlids. Unfortunately, Haplochromis has become a catch all for any Victorian cichlid lacking a scientific description.

Greenwood reviewed, examined; substantiated or corrected work made by his predecessors and erected or verified 28 new genera. To this grouping he sorted and named about 200 fish on a species level. This is an incredible feat providing us with a reference point to which further classifications can be made. Revisions to cichlid nomenclature, as anyone with a vague knowledge of cichlid taxonomy can attest, are in a state of constant flux. As species are examined, more stable groupings based on a variety of criteria occur. In effect, names change but the fish remains the same. Many times we will use a "Greenwood approved" genus to label an undescribed species. An example of this would be Lipochromis sp. "Matumbi hunter". With good fortune, someday a universally accepted description will be made on this fish, but in the meantime, we understand that this species conforms to Lipochromis (Regan, 1920). Some people prefer to refer to this fish as Haplochromis sp. "Matumbi hunter" because, in their opinion, until a modern description is made, the species is in limbo. I can understand the reasoning behind this somewhat, but to me it seems redundant to not utilize effort made by this great scientist.

Greenwood's methodology is highly revered by the scientists of today. Les Kaufman has dubbed newly discovered species with such names as "ruby" and "madonna". The latter descriptive name refers to the dorsal coloration which reminds him of the blonde hair and black roots of a famous singer. This fish conforms to another Greenwood approved genus Neochromis (Regan, 1920). We most accurately refer to this particular fish as Neochromis sp. "madonna". In 1998 Ole Seehausen (and others) erected three new genera. Many factors Seehausen considered in these classifications are the same Greenwood used in his notes. Today's scientist has an arsenal of tools such as genetic analysis not available in Greenwood's day but the basic cues used in classification (dentition, scale profiles, coloration, pharyngeal examination, etc.) remains unchanged.

Another method used to classify undescribed fish is to assign each species a number. This numbering scheme warrants consideration as plausible, especially when it comes to cataloguing in the field. German collectors in particular have an affinity for this system. For the unwary aquarists, this process of numerical categorization is popular today with the many undescribed species of catfish from South America (Datz "L" and Das "LDA" numbers). Using this practice, and adding further to the confusion, a Victorian cichlid can also be known by its Greenwood classification or the ever popular "Haplochromis". An example of this would be Astatotilapia sp. "44" or Haplochromis sp. "44". Oh and in case that didn't confuse you, that particular fish was given the eloquent name of "thick skin" in the field so it can also be known as Astatotilapia sp. "thick skin" or Haplochromis sp. "thick skin". If all that wasn't bewildering enough. retailers routinely sell this species as none other than Haplochromis obliquidens. Do you feel like screaming yet?

So what do you call a fish with no name? There are two trains of thought on the subject. The first is to use Hilgendorf's Haplochromis to describe everything not described by modern scientists and omitting the life work of Humphrey Greenwood (wasn't the Haplochromis genus erected before Greenwood's time?) or make every attempt to classify these fish using whatever tools and references you have at your disposal. Whatever methodologies you employ to portray these vibrant cichlids, try to remember that naming and categorizing fish is man's game. No matter what we choose to call them, Victorian cichlids know what they are and isn't that what's important?

■ *Greg Steeves*

Species Profile:

Labidochromis sp. Perlmutt

The common trade names of this Labidochromis species are Perlmutt and Yellow Bar. I first noticed this fish at River City Aquatics in the Austin area during a club meeting of the Hill Country Cichlid Club. The female was a very attractive fish with a yellowish body with dark colored bars running parallel along its sides. At the time the male's bars were not visible but a bright yellow covered most of its body. The yellow was on the top portion from nose to tail. The yellow faded to a white color on the bottom half of its body. The male's dorsal carried tints of yellow and the anal fin had noticeable egg spots. This appearance and their activity in the tank may have been what attracted me to the fish.

Photo by Greg Steeves

In its native tropical habitat, the Perlmutt is found along the coast line in the rocky area at a depth of 30 to 45 meters. These areas include Higga Reef and Mbamba Bay Island. They are also found further south of Mbamba Bay along the rocky coast. The males are not territorial and occupy cave areas, but do not remain in one certain cave. Spawning will take place in any area. However in your aquarium the male will defend a spawning site. The Perlmutt feeds on small vertebrates it finds on overhanging rocks and on the ceiling of the caves.

The males reach a length of 9 cm and females are about 7 cm in length. I described the color that attracted me to these fish when I first saw them at River City Aquatics. Needless to say they were **purchased 10-15-05**, that same day. They were placed in a divided 20 gallon tall tank. The colors lessened slightly the first day but soon intensified. The pair **spawned 10-19-05** (5 days later). The male was removed and placed in a community tank. I soon realize the colors that attracted me were their spawning attire and they would lessen their intensity after the spawn. They are both still nice looking, but the male developed light brown colored bars on a lighter yellow body. The same pattern was present in the female but was distinguishable by size and fin coloration in the male and has egg spots on his anal fin. Later that week I noticed she was **not holding 10-26-05** (7 days later).

I assumed since it was such a short duration to hold the fry that she did not hold them long enough. I did check the tank and did not see

any fry. The female was left in the breeding compartment and I began feeding her so that she could gain strength and be healthy when placed in community tank. I finally **removed female 11-01-05** (6 days later). During the "catching phase" of the female I still did not see any fry. When tank space becomes available it receives maintenance by cleaning the glass and vacuuming the substrate and rinsing the sponge filter. This time however, there were new fry located in the next compartment of the tank and I did not want to disturb them. Plus there was no other females holding at the time, and the space was not needed, so the Perlmutt's tank space was left untouched. Lucky for me, these occurrences took place.

Later during one of my feedings, I spotted movement in the empty portion of the divided tank that belonged to the Perlmutt. On further investigation there was **noticeable fry in tank on 11-06-05** (5 days later). They were very small and only visible in the substrate when they moved about. I had missed them the first time I checked and blame this on the tank being on the bottom level and me and my bifocals. I was very lucky that I was in no hurry to clean that tank.

There are 7 fry that survived and all are growing very fast. During spawning that took place the male was very active, displaying his colors and vibrating his body to attract the female. She was easily attracted and both were circling each other and I assume spawned later that day. Which of course I missed because I thought the spawning had just started and I would be able to observe later on. But what I failed to realize was the courtship had been going on since the time they were purchased.

The pair was housed in a divided 20 gallon tall tank, with water temperature of 80 degrees F. The luminescent lighting was on approximately 14 to 15 hours daily. No water changes or cleaning of the sponge filter takes place until the fry are two weeks or older and then only 20% of water volume is changed. Sponge filters are not touched until the fry are removed to make room for more spawning fish. NOTE: by not cleaning the sponge filter, the fry were able to feed on the fine particles attached to the sponge and kept them healthy until they were seen and I realized my mistake. Both the adults and the fry are feed the

Ps. elongates & Lab. sp Perlmutt Photo by Greg Steeves

same food, HBH Seafood Lovers Flake and a small amount of HBH Veggie Flake but the flakes are crushed into fine particles for feeding the fry.

Only now that I have moved the pair to a community tank can I observe the male displaying his defensive colors. These colors are very striking and intense along with circling and nipping at intruders. This fish was not hard to breed and if they are set aside alone in another tank they will surely spawn. Make sure that when the female is not holding any longer that you check very closely for any small fry that maybe hiding. Two reminders, and this is for most mouth brooders not just Perlmutt. The male should be removed once the spawning is over and the female is holding, unless the tank is large and there are places for the female to hide. The other is always feed the female for several days to ensure she has her strength back and will be ready to be placed back in a community environment .

Most of the information I have gathered from Ad Konings book "Back to Nature Guide to Malawi Cichlids" shows that the Perlmutt's natural habitat is at Higga Reef, Mbamba Bay Island. And south of Mbamba Bay in the rocky coast line. These fish are found in large cave areas in deep water of 30 to 45 meters. These caves are also where they locate their food source. They dine on the invertebrates that live on the cave ceilings or under the overhanging rocks. In the wild the males are not territorial and move around from cave to cave and spawning can take place any where that a female may be encountered. The information states that in an aquarium, the male will defend a spawning site. I did not observe any defenses because there were no other fish around.

This fish has not shown any aggression in the community tank, but will not back off from any others that may attempt to intimidate him. It was an easy fish to breed, but I do not know how long they normally hold the fry, since she released in only seven days.

Spawn Timetable
Purchased 10-15-05
Spawned 10-19-05
Not holding 10-26-05
Removed female 11-01-05
Noticeable fry in tank 11-06-05

■ *Jim Beck*

Species Profile:

Synodontis multipunctatus

Etymology: The genus name Synodontis comes from the Greek words syn meaning together and odont meaning tooth. This is in reference to the closely spaced lower jaw teeth. The species name multipunctatus is derived from the Latin words multi meaning many and punctat meaning. This refers to the spotting on the catfish.

Common Names: Cuckoo Catfish

Described: Boulenger, 1898

Family: Mochokidae (Squeakers or upside-down catfishes)

Max Size: 16 cm (6 ½")

Distribution: Lake Tanganyika, Africa and the tributaries of the Malagarasi River, Tanzania. The type species was collected from Sumbu, Lake Tanganyika.

Habitat: Inhabits the muddy bottom down to a depth of at least 100m. (328ft.) in Lake Tanganyika. Often found in large schools.

Natural diet: Snails (Neothauma sp.) and other gastropods, eggs, insects, shrimps.

Temperature: 23-26°C (73-78°F)

pH: 7.5-9

Description: Body color is golden beige and the belly is white. There are black spots of varying sizes that cover the upper body and head. The body usually gets larger spots than the head. They have large eyes. The caudal fin is forked. The black dorsal and caudal fins are edged in white. The mouth is underneath the head and has 3 pairs of feathery barbels. Males can be identified by their genital papillae.

The common name of Cuckoo catfish comes from the reproductive method of the catfish. It is similar to the way that Cuckoo birds lay their eggs in other birds nests. This is the only fish known to practice brood parasitism. When the catfish spawns, it likes to spawn with host fish. They are mouthbrooding cichlids. When the host fish is spawning, the Synodontis like to rush in and spawn as well. They steal some eggs as well, if they can. The female mouthbrooder gets in a panic wanting to save her eggs. She picks up both her eggs and the eggs of the catfish. Inside the mouthbrooders mouth, the catfish fry hatch first (approximately 3 days). The catfish fry then start eating the eggs and fry of the host fish. They will even try to cannibalize their siblings if there isn't enough host eggs/fry to

eat. The host mother's instinct is so strong, that when she releases the catfish fry, she may take them back in her mouth again when danger is present as if they were her own. However, that does not mean they require hosts. They can and do spawn with just laying eggs like other fish. The hosting method works a lot better and seems to have best results.

Baby Synodontis multipunctatus come out looking like miniatures of their parents. They

Photo by Lisa Boorman

start off looking quite dark until they start putting some size on their bodies. It takes a long time for these fish to become sexually mature. It can take from 3-5 years before they are ready to spawn, so be prepared to wait if you have purchased small Synos for your tank.

As they are a schooling fish, they should be kept in groups. The bare minimum group is 3, but more is preferable. They tend to peaceful fish, but can eat small tankmates such as fry. At times they can cruise the tank looking for meals. They do prefer meaty meals, but will accept just about everything in the aquarium. Be careful if you have to net Synodontis multipunctatus as they have strong spines that can become entangled in the net. They can live up to 15 years in the aquarium.

I got my group of Synodontis multipunctatus from a friend who imported them from the Lake. He told me they were collected at Karilani Island. I have 3 males and 1 female. They were full-sized already, but I don't think that they were mature yet. I placed them into my 225 gallon tank. This tank has a light layer of sand for a substrate. There are a few rocks, and lots of clay pots and larger shells as well. My aquascaping does not get 'built up'. I keep all the decorations on the bottom of the tank. I occasionally have to catch holding females in this tank, and I really do not want to tear the tank down to catch a fish. I feed this tank with pellets and assorted flake food. They also get crushed snails, and occasional treats of frozen foods. They get biweekly water changes of 40%. This tank is actually not heated anymore. I did not notice when the heater stopped

working, and since the fish were fine, I did not replace the heater. The temperature of the tank tends to be around 73°F (23°C) in the winter and 75°F(24°C) or so in the summer. I had no

Oct. 27th '05 Photos by Lisa Boorman

fish holding in the tank for a while. I guess they were taking a break!

After several months, I got a few mouthfuls from my Cyrtocara moorii. However, I never seemed to get any Syno fry in these. I started running out of room for fry, so I stopped checking the holding females for several more months. I would estimate that it was approximately a full year after I got these guys, that anything happened. I had a female Labidochromis caeruleus hold. Since this was the only female I had (I had lost a bunch of larger ones earlier for some unknown reason), I figured I better strip her. I was hoping again that maybe… just maybe I'd get Syno fry. Again, I was disappointed. However, a few days later I noticed that a moorii female was holding again. I figured the fry would be close to the same size so they could share a tank, so I stripped her. Out came a ton of moorii fry and 3 little catfish. I was ecstatic! That means the Synodontis I had were finally sexually mature and knew what to do. So, I put them in a container and fed them a few eggs from a female I stripped early, but mostly they were fed baby brine shrimp. I did lose a couple of the fry from that batch. The one survived and was placed in a small tank with some cichlid fry. He never seemed to bother them. A month or so later, I had 2 female mooriis holding. One was all moorii fry, and the other had 9 baby Synodontis multipunctatus with some moorii eggs. This time however, I didn't lose any of the Synos and they are currently residing with the moorii fry from the other female in a small tank. They get fed small pellets, flake and baby brine shrimp. I love how these guys eat in a bare bottom tank. They look like little vacuum cleaners scooting across the bottom of the tank. I haven't had any fry from them in a while as it seems the fish are on a slow cycle of breeding again, but since spring is coming soon, I imagine that will change. I just wish I could actually witness the spawning, but hopefully one day I can. I highly recommend keeping the little vacuum cleaners! They are a welcome addition to any Rift Lake tank.

Nov. 12th '05

■ *Lisa Boorman*

Research Article:

Thumbi West Island *Cynotilapia afra*

The *Cynotilapia* species can be distinguished from *Pseudotropheus* species by one anatomical characteristic, *Cynotilapia* possesses conical (unicuspid) teeth which are similar to the dentition found in dogs. The word *Cynotilapia* is Latin for "dog-tilapia" and refers to the shape of their teeth. *Pseudotropheus* on the other hand have teeth that have two points or bicuspid. The structure of their unicuspid teeth may be a remnant of some other feeding regime than they possessed in the past. Males use these teeth to intimidate other males when they are defending their territory rather than feeding on plankton.

Cynotilapia prefer the deeper sediment-free rocky habitat that is found in Lake Malawi but can be found in open water feeding on plankton when available. Males are territorial and use small caves as breeding sites and tend not to move to far away from their territory and thus will feed on the biocover as well. Females will enter the male's territory to spawn and after spawning females will hide in the rocks until releasing their fry. As night falls *Cynotilapia* will seek refuge amongst the rocks and will only venture back into open water at dawn. *Cynotilapia* can be found in open water and are not restricted to cover like other Mbuna species thus *Cynotilapia* may find it easier to colonize other areas.

Cynotilapia afra has the widest distribution of all the *Cynotilapia* species. They can be found from Nkhata Bay north to Chewere in Malawi as well as Mbjenji Island and Jalo Reef. They are also located down the eastern shore from Ikombe in Tanzania, right through Mozambique in suitable habitats, as far as Ntekete in Malawi. There is also a population of *Cynotilapia afra* that is also located in Thumbi West Island but more on that particular population later.

Photo by Paul Cooley

Cynotilapia afra has become a very popular species amongst aquarists because of its striking color pattern. Each location provides slight variations to a blue fish with black bands. Some variations include striking yellow contrasts and markings. These variations have been explained by a number of different theories, some more likely than others.

The two main schools of thought on the topic

of speciation from the mother population are the *sympatric* theorists and the *allopatric* theorists. Sympatric theorists espouse that speciation can occur within the presence of the mother population. The likely hood that two fish with the same variation will breed is reduced by both males and females using color and patterns to help recognize conspecifics. If the variant fails to find a mate with the same variation then the genes of the parent population will eventually re-establish itself. It hard for those that espouse this theory to support their argument by finding examples in the cichlid population in Lake Malawi.

The allopatric theorists on the other hand propose that speciation occurs because of geographical isolation from the mother population. There are two major allopatric schools of thought. The vicarious theory (Rosen, 1975) advocates that the isolation of the daughter population occurs because of a geographical event such as a rise in the lake level. Once the daughter population is isolated then it is able to follow a different evolutionary path. The *peripatric* speciation or the founder effect theory (Mayr, 1963) believe that as the mother population spreads out a few individuals may reach a previously un-colonised location. These few are then able to breed and stabilise any variation prior to arrival of others from the mother population.

Variation can also be attributed to the *introgressive* hybridization of cichlids. Riseberg and Wendel (1993) as well as Arnold (1997) through their studies formulated that offspring from two different, closely related parental species will result in hybrid offspring that possess a complex mixture of parental genes. It is the mating back or introgression to the parent species over a number of generations that new species are formed.

There have been a number of research studies undertaken to examine hybridization events in cichlids. Stauffer and Hert (1992) examined hybridization in translocated species, Seehausen et al. (1997) under turbid water conditions, Ruber et al. (2001) when secondary contact was made due to fluctuations in the water levels in the lake and McElroy and Kornfield (1993) in the aquarium.

All these theories may help explain why speciation of cichlids in Lake Malawi and other Rift lakes has taken place at a frenetic pace. The use of DNA evidence is not only helping us understand the phylogenetic tree of Lake Malawi cichlids but also identifying possible hybridization events.

This brings us back to the *Cynotilapia afra* population that is located at Thumbi West Island. In the early 1960's T. E. "Peter" Davies

and his wife Henny operated a lucrative cichlid export business out of Cape Maclear in southern Lake Malawi, just opposite Thumbi West Island. Ad Konings in talking to Peter Davies on his return to the U.K. and was informed of the circumstances of the establishment of *C. afra* on the island. After operating for several years at Cape Maclear Peter Davies received a letter from the government that he had 48 hours to pack up his belongings and to leave the country as the Malawi government was going to take over his property. He didn't want to kill the fish (that he had in the holding tanks) so he just released them into the lake in front of his house. This is a sandy beach and most of the fish released were rock-dwelling mbuna. The southern part of Thumbi West (Mitande Point) is the nearest rocky habitat of that release site and some fish made it to those rocks and established themselves. Ad Konings also said that this one-time release scenario is also confirmed by David Eccles, who was fisheries officer at the time.

The original population at Thumbi West had black dorsal fins. There have been suggestions that the original location of *C. afra* was from Mara Rocks (Stauffer et al. 1996) and Likoma Island (Munthali & Ribbink 1998). Ad Konings believes that the Likoma Island variant is the more likely of the two as the Mara Rocks variant is more elongated than the others.

There have been various studies undertaken of this population and other translocated cichlid species at Thumbi West since the early 1980s. Ribbink et al (1983) conducted a survey of rock dwelling cichlids (i.e. mbuna) and commented that *C. afra* was still confined to Mitande Point. In the work carried out by Stauffer and colleagues in 1991-92 it was observed that specimens were being collected that had blue barring in the black dorsal fins. Stauffer et al. 1996 concluded that this change in color pattern as well as a change in the intermediate dentition was due to hybridizing with the native *Metriaclima zebra*. There was no clear genetic evidence that this was the case.

Streelman and colleagues undertook a research to establish the cause of this change in *C. afra* on the island in July 2001. By this stage the population had dispersed to all suitable habitats around the island. The population density varied around the island and like Stauffer et al. before them they too noticed variations in the blue barring in the dorsal fins. They collected male specimens from six

C. afra Likoma Island Photo by Ad Konings

different sites around the island and then immediately scored the dorsal fins. A zero was given to specimens with pure black dorsal fins to six for specimens that had six vertical blue bands.

Streelman et al. then used the specimen's DNA to try and establish if hybridization had occurred. Once the DNA had been extracted from thirty two specimens from each site six microsatellite loci were identified. Four of the six microsatellite loci were typed in common with *Metriaclima zebra*. This was also done with the M. zebra population at each site which were distinguished from *C. afra* by their abundance at each site, larger in body size, blue barring in the dorsal fin and bicuspid teeth in the first row.

The visual results showed that fishes at the six sites differed in color pattern. The mean number of blue bars interrupting the black dorsal fin was greater at sites 3 and 4. At these sites more than half the individuals collected had 5 or more blue bars. Fishes at sites 1, 2, 5 and 6 had color patterns similar to one another. In the decade between Stauffer et al study in 1991 the population which was free from blue bars had evolved this color polymorphism. Thus *C. afra* had diverged into northern and southern populations with different colored dorsal fins.

It is believed that divergence in phenotype can take place over 10-15 generations through reproductive isolation from the mother population. If we assume that a generation is able to reproduce every 10-12 months then the allopatric theorists "Founder Effect" may explain the difference in dorsal fins of each test site.

The north vs. south population dorsal coloration may have been selected by ecological conditions. On the southern side of the island trade winds stir up the water and make it cloudier than the northern side for four

Metriaclima zebra Photo by Ad Konings

months of the year. In their native habitat *C. afra* would not have had to contend with this cloudy water and this change in color pattern may have developed as part of the selection process for a mate.

Streelman et al confirmed through their DNA testing of the population that hybridization had occurred with the native population of *M. zebra* at Thumbi West Island. Most significantly the population on the southern side of the island (1, 5, and 6) possessed mosaic genomes or a mixture of both *C. afra* and *M. zebra* whilst the northern populations on the other hand possessed predominantly *C. afra* genomes (2, 3, and 4). These results may not accurately reflect the situation that has devel-

oped on the island as only four microsatellite loci were used in the analysis and many mbuna species share the same ancestral history.

To what extent hybridization has occurred and the reason for it taking place will require further study. Has hybridization occurred because of environmental influences i.e. the trade winds making the water cloudy or is the abundance and size of *M. zebra* males a factor. This does not help explain why the northern population where hybridization is the lowest that blue barring is found in more individuals. Streelman et al. suggests that this is a re-expression of a phenotype that was absent in the translocated stock. One thing is for sure that *Cynotilapia afra* and Thumbi West Island may help us understand the evolutionary divergence of cichlids and how speciation takes place.

I would like to thank Ad Konings for his input into the article and for allowing me to use his outstanding photographs.

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■ *Gerard Delany*

Species Profile:

Eretmodus cyanostictus

The Eretmodus cyanostictus is commonly known as the Goby Cichlid and sometimes referred to as the Horseface Cichlid. Without showing you a picture it would be difficult to describe this fish. But imagine for a moment if you will that the head does not look like most of the fish you are familiar with. Imagine the top of the head just over the eye region and then have it slope downward, like a ski ramp. The shape of their head is not like most fish but resembling the face of a horse or a turtle beak.

Not only are the physical characteristics different, but they are bi-parental mouthbreeders. The term implies that both female and male will carry the fry. The female will carry the eggs for 8 to 12 days and then transfer the brood to the male. He continues parental duties for another 8 to 12 days.

Goby Cichlid is found lake wide and in several different variants. They are located in the rocky area of water no deeper than 3 cm. Their main food is the algae they scrape off from the rock structures. In the wild it will reach a length of 8 cm of which the male is larger than the female. Very hard to identify the sexes until they pair off and separate themselves from the others.

I placed all in a 36 gallon corner tank. Water temperature is 80 degrees F and tank contain small piece of holey rock and PVC pipe. I placed a tank divider flat against one side of the tank, which came into play later on. Also a power head was added to a sponge filter to create water movement and some filtration. Majority of filtration was accomplished by an Emperor 200 filter. Florescent lighting was used 14 to 15 hours daily. Tank maintenance was a 20% change of water volume once a week and changing filter was every two or three weeks. The Gobys were fed HBH Veggie flakes and Spirulina pellets.

Photo by Dave Hansen

As you can see the Goby is a very unique fish, not only is it a bi-parental mouth brooder and not only because of the shape of its head but also its short stocky body frame and long dorsal fin. The fin and body shape help the Goby maintain balance in the turbulent water that is its habitat. Not only does the long dorsal help keep its balance but helps in its defense from predators. Their dorsal contain the most spines in the cichlid family which deter the fishing birds that circle above. Another unique item

of the Goby is it's under slung mouth which allows feeding in a horizontal position on the algae covered rocks in the shallow water. Last but not least is the size of the Goby's swim bladder. It is smaller in size and thus they are not buoyant and when not swimming they will rest on the bottom. They will anchor themselves with their pectoral and pelvic fins amongst the rock covered substrate.

I have learned quite a bit from breeding these fish and I made a few mistakes which lead to several fatalities. First of all, the literature I read and information gathered showed to keep them in groups of six or more. So I purchased 14 of the "Blue Spot" from Bluechip Aquatics on October 15, 2005. A pair was soon observed and in a short time the female was holding fry. I did not actually see the spawning. My first mistake was to catch the pair and move them to a 10 gallon tank. I mentioned a tank divider that was initially placed in breeding tank was now used to slowly maneuver the fish to a corner and made catching the "right" fish a lot easier. Without the divider they would swim back in the group and hard to identify the right pair.

I watched the pair and it appeared that everything was doing fine when I observed the male nipping at the female's mouth. I thought this was where they would switch the fry. I was wrong this time, because I later found her dead and no fry. The male went back into the breeding tank. The swapping of the fry The next pair I placed in a 20 gallon and waited. Soon the female was holding. Later she transferred fry to the male, which of course I did not observe.

Everything appeared fine until a couple of days later; I found male dead and no fry. The female went back into breeding tank. On my third attempt I waited for another pair to form, produce fry and switch fry to the male. I then waited several more days before I moved only the male to a 10 gallon tank. On November 22, 2005 he released 3 fry. I took him out immediately and placed back into breeding tank. The three fry were fed the HBH flake in a finely crushed form. They are growing fast and doing well.

I am hoping to observe more of the spawning and the swapping of the fry among the parents. This has been quite a learning experience for me and it did not fair well with some of the Gobys. Because of their nature, I assume I need a larger tank to place the "pairs" in for spawning. The 20 gallons did not suit their personality. For those that have bred this fish, I hope you had a better time of it than I did. And if you read this article and it is a fish you keep and breed, let me know your secrets. For all the reasons I have mentioned you should realize this was not an easy fish to spawn and to have fry survive. If you attempt to breed this fish, I suggest you contact some one who has managed to successfully spawn the Goby cichlid or do extensive research.

Information on geographic locations and other information on the Eretmodus cyanostictus was gathered from forums on the internet and from Ad Konings "Tanganyika Cichlids in their natural habitat".

■ *Jim Beck*

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