1911~ 2011
Celebrating 100 years of Educating Aquarists

AQUATICA

THE JOURNAL OF THE BROOKLYN AQUARIUM SOCIETY
VOL XXVI NOVEMBER-DECEMBER 2011 No. 2

1911~2011 100 Years of Educating Aquarists

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The **Brooklyn Aquarium Society Inc.** is a non-profit organization 501(c) (3) for people interested in the aquarium hobby and the study of aquatic life. The Society meets the 2nd Friday of each month except July and August at the Education Hall of the New York Aquarium at Coney Island, Surf Avenue at West 8th St., at 7:30 PM. Meetings are open to visitors. Refreshments are served. Membership is $25 per year family/$20 individual/$15 for students under 14. Send inquiries or membership checks payable to: **Brooklyn Aquarium Society,** c/o Membership Chairperson, P.O. Box 290610, Brooklyn, NY 11229-0011.

BROOKLYN AQUARIUM SOCIETY
CALENDAR OF EVENTS 2010 ~ 2011

1911 ~ 100 Years of Educating Aquarists ~ 2011

NOV 11 **Anthony Stissi ~ Lake Tanganyikan Tropheus Species** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales.
DEC 9 **BAS Holiday Party** ~ Members, their families and friends, all you can eat sit-down dinner • Fish Bingo & Prizes • BAS Awards presentations.

2012

JAN 13 **Joe Yaiullo ~11 Years of Feeding Atlantis Marine World's 20,000 Gallon Reef** Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction
FEB 10 **Peter Warny ~ Visits to Various City & State Aquaria** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction
MAR 9 **Tony Vargas ~ Successful Reef Aquariums from Around the World and How They Got There** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction
APR 13 **TBA (freshwater)**
MAY 11 **Giant Spring Auction** ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods, including a 55 gal. tank & stand
JUN 8 **Todd Gardner ~ Getting Started in Marine Aquaculture** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction

JULY/AUGUST ~ NO MEETINGS

SEPT 14 **Mike Hellwig ~ Fish Breeding Contest with Ted Judy** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction
OCT 12 **Giant Fall Auction** ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods, including a 55 gal. tank & stand
NOV 9 **Gene Ritter ~ Reef Diving** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction
DEC 14 **Holiday Party** ~ Members, their families and friends, all you can eat sit-down dinner • Fish Bingo & Prizes • BAS Awards presentations.

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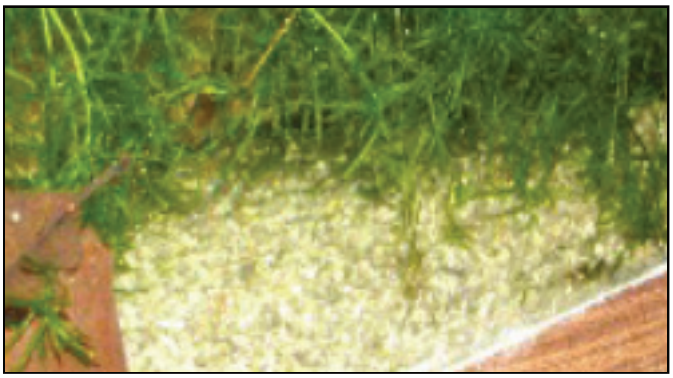
Lawrence Tagrin PVAS

Reprinted from *Delta Tale,* the official publication of the Potomac Valley Aquarium Society. Winter 2011 issue.

Spawning the African Fire Barb *Barbodes fasciolatus*

I have always been more attracted to the riverine barbs of Africa than those found in Asia. As a result, when **Mark Denaro** at Anubius Design announced that he had a source for ***Barbodes fasciolatus,*** I was quick to order a group of six. The African Fire Barb, also called the Blue banded Barb, is a very attractive fish with a torpedo shape and a delicate pattern of bands along the side. In the male, the fins are red and a reddish hue suffuses the body depending on circumstances.

These barbs are native to areas from the Republic of the Congo through Zambia. As such, they require a little warmer temperature than species like the Tiger Barb or Cherry Barb. I keep them ina range from the upper 70's to the lower 80's. I placed the six, which appeared to be three pair, in a 20L with a sinking mop and lots of plants. I used guppy grass (*Najas guadalupensis*) as the main plant with plenty of duckweed on top. This provided a sheltered environment which would keep them feeling secure.



All of the literature available said that to spawn these fish required soft, acidic water. Fortunately, fish can't read. I toyed with the idea of setting up a special spawning facility, but had a lot of other things to do. Eventually, I noticed a couple of fry when I fed the tank. When I saw the fry, they were about 1 cm long and miniature duplicates of their torpedo-shaped parents. The next time I did a water change, I pulled the plants and moved what was eventually 4 fry to another tank. I've been doing that ever since. Last year at the Catfish Convention, I pulled an adult pair and put them in the auction. I also put the three "fry" which were by then about 2" inches long, in with the parents. I've done that a few more times, I have seven adults in the breeding colony and three small batches of fry in separate tanks. I expect to offer another breeding pair in the April auction this Spring.

Most of the time I don't see the fish, but when I feed them they come out and swarm over the food. The photos of the adults I provided show them coming out to feed.

So here are the specs:

Tank: 20 L
pH: Normal tap water, about 7.5
Hardness: Normal tap water - 160-200 pmm TDS
Food: Baby Brine shrimp, Golden Pearls, Plecocaine.

These are very attractive fish that can either be the centerpiece of an African River Biotope or a great lower-stratum fish for a larger, well-planted community tank.

Some of the fry, about an inch long.

Izzy Zwerin - BAS

EDITORS NOTE: Members with questions about aquatic plants or setting up a planted tank can contact **Isidore (Izzy) Zwerin,** our plant editor. You can call him at **(646) 269-5926** between 7pm to 10pm, Monday to Friday.

The Practical Plant

Is A Planted Tank Right For Me?

Hi Everyone. I know, I know; it's been a while. After I gave you all the technical stuff I know, plus my own tried and true hints and tips, I was kinda talked out on the subject. However, I've been pondering this article for a while now. In retrospect, it should have been my first article. It's a bit more "is a planted tank right for me?" than anything else. Unfortunately, I think I may make a few people unhappy. Sometimes the truth hurts... sorry.

After answering an enormous number of questions, for people, I have noticed that it is almost always the same question but the phrasing changes with the individual. It always boils down to "Why am I having a lack of success with X?" The answer is also (after some prodding of the facts) almost always the same. You don't have a planted aquarium; you have an aquarium with plants in it. Huh, what? That's right; you heard me. You don't have a planted aquarium; you have an aquarium with plants in it. For you to have a real planted aquarium, there are just two things (O.K. three, if you count the plants) that all planted aquarium have in common. Simple enough, but if you don't adhere to it, you are going to have problems.

Most plants are every bit as fussy about certain things as any fish can be. If you do not accommodate them, just as sure as a saltwater fish in a freshwater tank, they will perish. This means you need to provide a proper environment for them. The number one requirement for a planted aquarium is acceptable lighting. The fixture you got with your

tank, I hate to be the one tell you, is practically useless in the planted aquarium. The only exception I can think of would be a "low-tech" scenario with a rather short tank and even then only with a twin bulb fixture. And even this would require a change of bulbs. You cannot escape this fact. YOU WILL REQUIRE ALMOST 2 WATTS OF LIGHTING PER GALLON OF WATER (IN A 16" DEEP TANK) FOR A "LOW-TECH" SYSTEM, AND TWICE THAT FOR "HIGH-TECH" SYSTEMS. It's going to be a little less in tanks under 16" and significantly more in deeper tanks; light travels very poorly in water. Fortunately, with the advent of T-5 lighting, the cost of a suitable lighting fixture has dropped considerably. If you are not prepared for this, don't waste your money on live plants; there are attractive alternatives these days. In the long run, you will just throw more plants away than the light to keep them alive would have cost.

You cannot escape this fact.

YOU WILL REQUIRE ALMOST 2 WATTS OF LIGHTING PER GALLON OF WATER (IN A 16" DEEP TANK) FOR A "LOW-TECH" SYSTEM, AND TWICE THAT FOR "HIGH-TECH" SYSTEMS.

The number two question, which more often than not is related to issue number one, is about Algae. Algae are the Aquatic Gardeners nemesis. The most common cause of uncontrolled Algae is usually attributed to excess nutrients. Where are all these nutrients coming from? Fish food is the answer. And it doesn't matter if your fish eat it or not; what comes out the other end still counts. For this reason, the bio-load on these planted systems is typically extremely low (you can get away with slightly more in a "high-tech" system, but it is still kept quite low). Remember, it's really about the plants and what they want. A typical planted tank has a small school of tiny fish and maybe a handful of shrimp or snails. That's it, period. Get used to it. If you violate this, you most likely will have a continuous Algae war on your hands. I frequently use the term "aquatic gardener," and it really is the most appropriate term I can think of. It is all about the plants and the satisfaction that comes with creating a world of your own design and aesthetics with them. You are not supposed to be struggling to keep them alive, but instead struggling to make them do what you want through gardening techniques like pruning.

All I have said today equally applies to both "high" and "low" tech planted aquaria. The choice between these two is a lot like deciding if you want a saltwater fish tank or a reef system. If you go "high-tech" (like a reef system), expect the additional equipment cost of superior lighting and a CO_2 system with proper regulators and control system. CO_2 systems, like lighting, have seen prices drop enormously into the range of acceptable. Yes, a good CO_2 system will set you back a few hundred

bucks. Realize that when they were first introduced, the price tag was a few thousand. All things considered, not too bad. As with a reef system, the decision is not purely economical. You have to be prepared for the additional monitoring and maintenance inherent in these systems. The reason people make the decision to go "high-tech" (I mean other than masochism) is to be able to keep the fussier plants happy because these are the most colorful and visually exciting. Virtually all the absolutely stunning planted tanks you see in the magazines are "high-tech." This does not mean that you cannot have a very nice "low-tech" tank. Just don't expect to win any national awards. An indication that a plant is suitable for a "low-tech" application would be its dark green coloring. This shows that the plant contains high amounts of chlorophyll in order to use the available light most efficiently. These two things constitute 80 - 90% of the battle. If you decide on a planted tank, just invest in the right equipment, keep the stocking to a bare minimum and use plants appropriate for your situation. If you do these things, you are going to be successful. O.K., just to be sure re-read all my other articles. Only you know if you have the time, money and temperament for "high-tech."

Editors note:

As a service to our readers, I will start reprinting Izzy's articles in the 2012 January/Febuary issue of the Aquatica. There are about a dozen of these informative and educational articles on plants and planted tanks.

If you are thinking about setting one up or are already into planted tanks, these articles are a must for you to read. I will try to reprint 2 in each of the five issues next year.

JT

Joe Gargas
Reprinted from The Tampa Bay publication *The Filter* May 2009 Vo. 17 Issue 9

Water Chemistry:
Osmoregulation, Ionic Imbalance & pH

Wow! And what a long time its been. Most of you that remember me know that besides being a Discus Breeder since the 70s, I also was the director of Research and Development for the Wardley Corporation. Soon thereafter, the Hartz Mountain company bought out Wardley and I was transferred along with my whole family to this great state of Florida in the Tampa area in 1995. I left the company in 1997 as they were preparing to sell off the "Pet Specialties Division." Subsequently, I also left the Tropical Fish Industry for 12 years.

During that time I got involved in the Potable Water Industry along with the Swimming Pool Industry and learned much more about water chemistry and treatment. I tested, studied and researched other alternatives for drinking water and swimming pool disinfection utilizing ozonation and the electrolysis process. Through this effort I was granted 5 patents for the new technologies/applications I developed which are being used today in swimming pools and drinking water in the State of Florida. I recently decided to get back into the Tropical Fish hobby by giving my first presentation in 12 years last October 2009, to the Tampa Bay Aquarium Society, which I now consider my home base. I had an agreement with Hartz Mountain that I would no longer breed fish when I came down to the Tampa area. However, my interest peaked when I had a meeting schedule with the current Wardley Product line management under the Hartz Mountain banner at the Global Pet Expo in Orlando Florida last March 2009.

The Hartz Mountain pet specialties division that owns the Wardley name was sold twice since I left. My biggest surprise was that all the companies that I once knew as Tetra, Marineland, Instant Ocean, All Glass Aquarium, Perfecto Aquarium, Jungle, Aquarium Pharmaceuticals, just to name a few, are now owned by the 3 major players in the pet industry – United Pet Group, Royal Pet, and Central Garden & Pet. It seems that everyone wanted to be a GM! THE WHOLESALERS HAVE BECOME THE MANUFACTURERS. To me this was shocking! To remind the readers, I have been out of the tropical fish/pet industry for 12 years - coming back and seeing this was incredible.

I looked at many of the products for sale and I could not believe the amount of products that were being sold for aquarium use as water conditioners/additives for tropical fish that would do absolutely nothing and may even be counter productive in keeping and maintaining tropical fish. For those older hobbyists, remember in the 60s and 70s there were only a few products that you could count on one hand that were used for aquarium fish as additives and there were really no problems; fish grew and reproduced along with plants. Look at what the hobbyist is "bombarded' with now - just about everything under the sun. It appears the days of Research and Development in the Tropical Fish Industry have come to an end. If someone comes up with an idea for a product, it is determined not if the product works, but "is it marketable." Tropical fish have always been my passion and I've truly missed being involved in breeding as well as developing new products for the hobby. I've decided to get back into the breeding of low conductivity

Water Chemistry continued

soft water species of fish which I was doing, for all of those who remember me back in the Chicago area before I got transferred.

This being the first article I have written in over 12 years, I will attempt to give answers to problems that many aquarists have when adding additives, or when distributors add additives before they ship their fish, especially salt and other so called "conditioners" that have a high chloride and sodium content. First, I would like to begin with Total Dissolved Solids (TDS), which is the most important water quality parameter (not pH) in keeping tropical fish. By the way, I am sorry for the math involved here, but, there really is no other way to get the subject across to you.

TDS

First of all we must understand TDS Total Dissolved Solids. This is a gravimetric test which means it is a measurement of weight. If it is done by a meter, it is actually conductivity, not TDS. From what I can remember, cities like the Chicago, Illinois would do this once a year. They would use specific size ml. beakers, a group of them and weigh each one to get the tare weight (empty weight). The first round would be a non filterable water sample – raw water from the plant that was taken from a few miles off shore would be put in each of the beakers. The beakers would be heated slowly to get the water to evaporate; they would then be cooled. Each beaker would then be weighed and the result would be multiplied by a known factor (I think it was a 1000).

This would be non-filterable TDS. The total would be averaged together to get a TDS. The total amount in mg/l or ppm. They would do this again, but filter the raw water sample through a micron filter – the result would be filterable TDS. So usually on a water report you will have 2 TDS measurements – filterable and non filterable TDS.

Conductivity

After the TDS results were known, a conductivity test was performed and a value was then determined to multiply against the conductivity to get as close as possible to the known TDS. If a value is not known, the default value has always been around .64. The city of Chicago's value at one time was .53. Hillsborough County, where Tampa is located, is .63. All cities will have a conversion factor from conductivity to TDS. In the meantime, if you do not have one, a conversion factor default is .64.

Conductivity meters will always have 2 metal probes to measure the circuit, the amount of electric current that they give off in the water. What are called cations have a positive charge +. And what is called anions have a negative charge -. Both charges are needed to complete a circuit.

Examples of cations having a positive charge (+) are Sodium, Potassium, Calcium and Magnesium (there are many others). The anions have a negative charge (–); Examples of them are Bicarbonate, Chloride, Phosphate, Sulfate (there are many others). Cations and anions complete a circuit ... + & - ... so they give a positive reading and the more of them you have the higher the conductance ... the conductivity ... will be. Conductivity meters are available to measure in two numerical ranges; one is in MicroSiemens (μS) the second is MilliSiemens (mS). For freshwater, it is easier to use MicroSiemens. The symbol for MicroSiemens is a small μ and a large S (μS). The Symbol for MilliSiemens is a small m and large S (mS). MilliSiemens are used if the conductivity is above 2000 MicroSiemens. Swimming pools and saltwater aquaria will need a meter that reads in mS (MilliSiemens). Saltwater swimming pools that use a cell require conductivity in the range of 6-8 MilliSiemens. FYI:
1 MilliSiemens = 1000 MicroSiemens
(6 MilliSiemens = 6000 MicroSiemens)

Okay; So we know a bit about TDS and Conductivity. What does that mean to the Aquarist? Zoos and public aquariums will all agree that when you keep captive animals, you need to have an environment as close as possible to the natural environment that the species comes from. With tropical fish, it is no different. Rainforest species must have a water quality of a rain forest. Lake Species from the Rift Lakes in Africa have a water quality much different from rain forest species.

Okay; We need to get from conductivity to TDS to Osmotic pressure. Osmotic pressure is the hydrostatic pressure produced by a difference in

Water Chemistry continued

concentration between solutions on the two sides of a surface such as a semi permeable membrane or cell (Ed: or for instance the cell on the gill of a freshwater fish and the surrounding water). Osmotic pressure also occurs in and around freshwater fish as they must keep on osmoregulating ... spending much energy retaining salts and excreting water.

Okay. We tested the tap water (Ed: Sarasota, Fl) that we used to fill a 10 gallon tank. The conductivity was 670 μS (MicroSiemens):

670 x (multiply) by .64 (We do not have a conversion from Sarasota Water Dept.) 670 X .64 = gives us an approximate TDS value of 428.80 mg/l or ppm.

Now we take the TDS and divide it by 100 to get the Osmotic Pressure:

428.80 ÷100= 4.28 lbs per square inch Osmotic Pressure.

Some fish species can tolerate higher Conductivity, TDS and Osmotic Pressures than others in comparison to their natural habitat. What makes matters worse, though, is when aquarium salt and other additives are added to the aquarium ... not only does the conductivity increase but now the ions that were in balance in the natural water (tap water or water source) are completely out of balance.

To explain this better, ionic imbalance occurs when Chloride and or Sodium become the major cations or anions in water, then it becomes imbalanced and unnatural. If you look at just about all fresh waters, with very few exceptions it is calcium and or magnesium that are the major cations, and sulfate, alkalinity/bicarbonate/ carbonate are the major anoins. Even in Lake Tanganyika, which is the biggest exception to the freshwater rule, the principle cation is magnesium and the major anion is bicarbonate/carbonate.

These ions, even though they are water soluble, are much less soluble than the chloride and sodium ions. All aquarium additives have one thing in common: included in their products are chloride and sodium. It is the chloride ion then the sodium ion that are taken in by the freshwater fish due to their water solubility. When these ions are so numerous and are the chief cations and anions in an aquarium, the freshwater fish is under much stress osmoregulating, thus spending much energy as chloride and sodium are being taken up.

Freshwater fish are hyperosmotic, which means that they have to maintain a higher concentration of salts in their body than the surrounding water. Then, if that fish is moved to waters with lower chloride and lower sodium and naturally a lower conductivit, it is stressed further as water naturally moves to the higher ionic concentration (4).

When I was with Wardley/Hartz, we analyzed competitors' products as we were looking for a product to compete with other conditioners. We tested them by analyzing blood work on fish. After using specific products, we saw that after 72 hours, the Cortisol (Cortisol is an indicator of stress. It is found in the blood and it is released as a response to stress) levels started to increase rapidly. One of the most characteristic aspects of stress in fish is osmoregulatory disturbance, which is related to the effects of both catecholamine and cortisol hormones. The extent of the disturbance following stress depends upon the ionic and osmotic gradients (difference) between the internal fluids of the fish and its surrounding environment (water). If the stress is persistent and of sufficient intensity, changes in the cellular structure of the gills may occur under the influence of cortisol. In this situation, increased death and turnover rates of branchial epithelial cells leads to accelerated aging of the gills. These degenerating and newly formed gill cells do not function normally, which further limits the fish's ability to maintain water and ion homeostasis under stressful conditions. Thus, acute stress limits the fish's capacity to osmoregulate, and prolonged periods of extreme stress may result in osmotic shock and death. This is especially true if the chloride and sodium ions are present in such abundance that they become the major anions and cations in the water superseding calcium, magnesium as the cations and alkalinity/carbonate/bicarbonate and sulfates as the anions. Even though the conductivity will always increase in an enclosed environment, it is the chloride ion then the sodium ion that are usually the culprits. That is especially true if the chloride anion along with the sodium cation increase, to the point that they are now the most abundant of both the cations and anions.

Water Chemistry continued

I would get calls when stores were having problems with aquarium fish stock. The first thing the stores would do would be to blame it on the supplier without looking at their own aquarium set up. There was an issue with a Wal-Mart store in Fayetteville, Arkansas back in 1996. They had major die-offs with in a week after receiving the shipment. I requested 2 samples of their water. The first sample was to have been from the tap water and the second from the aquariums (they were on a central system). Below is the analysis:

Tap Water
Wal-Mart, Fayetteville Arkansas

Conductivity: 174 μS (MicroSiemens)
(GREAT WATER FROM THE TAP!)
TDS: (174) x (.64) = 111.36 mg/l or ppm
Osmotic Pressure: lbs per square inch
Total Hardness 80 mg/l ppm
Calcium 70 ppm (as $CAC0_3$ Calcium Carbonate)
x .4 to get calcium ion = 28 ppm
Magnesium 10 ppm (as $CAC0_3$ Calcium Carbonate)
x .24 to get magnesium ion = 2.4 ppm
Alkalinity 60 ppm (as $CAC0_3$ Calcium Carbonate)
x .61 to get Bicarbonate ion = 36.6 ppm
Chloride 16 ppm as Chloride = 16 ppm
Sulfate 10 ppm as Sulfate = 10 ppm

Sodium Na+ can only be measured with major equipment such as an atomic adsorption or a Mass Spect. However, we can get an educated guess by multiplying the chloride ion Cl- x .65 to get an guesstimate of the Sodium. So in this case the amount of Sodium would be. Chloride: 16 x .65 = Sodium, therefore Sodium = 10.40 ppm

```
  28
   2.4
  36.6
  16            all ppm
  10
+ 10.40
----------
 103.40 ppm
```

We just dissected the tap water. Now add up all the results that are underlined and see how close we get to the TDS. The total comes to 103.40 ppm.

The approximate TDS is 111.36 ppm
After adding the ions, we got 103.40
Subtracting those two values
111.36
- 103.40
7.96 ppm

The difference is 7.96 ppm or mg/l of substances that are not accounted for from the TAP WATER... THIS IS GREAT! The water is very well balanced ionicly and the remaining difference, 7.96 ppm can be attributed to the Sodium as it may be all extra Sodium.

Now let's look at the aquarium tank water from theWal-Mart in Fayetteville, Arkansas and Compare this to the tap water starting point.

Tank Water
Wal-Mart Fayetteville Arkansas

Conductivity: 1760 μS x .64 = 1126.40 mgl/ ppm (TDS)
TDS: (1760) x (.64) = 1125.40 mg/l or ppm
Osmotic pressure: lbs per square inch
Total Hardness 100 mg/l ppm
Calcium 80 ppm (as CAC03 Calcium Carbonate)
x .4 to get calcium ion = 32 ppm
Magnesium 20 ppm (as CAC03 Calcium Carbonate)
x .24 to get magnesium ion = 4.8 ppm
Alkalinity 40 ppm (as CAC03 Calcium Carbonate)
x .61 to get Bicarbonate ion = 24.40 ppm
Chloride 424 ppm as Chloride = 424 ppm
Sulfate 4 ppm as Sulfate = 10 ppm
Nitrate No3 10 ppm = 10 ppm

Sodium Na+ can only be measured with major equipment such as atomic adsorption or Mass Spectrometer; however, we can get an educated guess by multiplying the chloride ion Cl- X .65 to get an guesstimate of the Sodium. In this case the amount of Sodium would be:
Chloride: 424x.65 = Sodium, therefore Sodium = 275.60 ppm

```
  32
   4.8
  24.40
 424            all ppm
  10
  10
+ 275.60
  ------------
 780.8 ppm
```

Water Chemistry continued

We just dissected the aquarium water. Now add up all the results that are underlined and see how close we get to the TDS. The Total comes to 780.80 ppm.

The approximate TDS is	1126.40
After adding the ions we got -	780.80
subtracting these two numbers like above: Unknown Difference	345.60

Now the difference may be other minerals besides Sodium that have been added to the water by someone!!

Not only have there been additives added to this water, but there is no longer an ionic balance- which is just as important in the osmoregulation of fish besides the Osmotic Pressure.

After looking at this data, it becomes a very strong argument against adding additives and salt ... Sodium Chloride ... to fresh water aquariums. I do know that this Wal-Mart store did use a lot of Stress Coat and salt. There may have been other additives which I was unaware of, but not only did it increase the Conductivity, TDS and Osmotic Pressure, it also produced an un-natural water by an improper balance of ions (Ionic Balance). As you can see, the Chloride ion is now the major anion superseding, alkalinity/carbonate bicarbonate, sulfate and sodium is now the major cation superseding calcium and magnesium. This is still a continual problem in some retail stores today, and is something that must be avoided at all costs.

Some stores and distributors add tremendous amounts of salt to their aquariums. Petco in Brandon Florida actually has a plastic container in each aquarium full of salt with a lid on that has been punched full of holes. The salt dissolves and the conductivity builds up. The fish look terrible. People that I know that have purchased fish from that store have lost them within a week. There maybe exceptions to that rule with very strong and hardy species that were in very good condition to begin with, but why play with fire? I have checked the conductivity of the aquariums of other stores such as PetsMart along with other stores and found that the conductivity was as high as 4000 to 6000 MicroSiemens due to the addition of salt and other additives, making the total dissolved solids 3840 ppm and the osmotic pressure over 38 lbs per square inch. What natural freshwater environment compares to that!?

One hobbyist I know who is an advanced aquarist loses at least 40% of everything he gets from a distributor/importer that uses as part of the company's protocol ½ to ¾ of a full cup of salt per 10 gallons of water. This would be ok if it were used as a quick bath or dip against parasites, but it is completely wrong to keep fish in an environment such as this for any given length of time.

Now for another example, let's look at another product:KENT Marine Discus Essential.

Being a discus enthusiast and a commercial breeder in the past of this marvolus fish, I have spent much time researching to obtain the best water quality I could produce for this fish. The Amazonian region is very low in minerals and has no metals and the conductivity is very low along with the hardness. I looked at theMSDSA sheet on this product (**Material Safety Data Sheet)**:

This product contains
CALCIUM CHLORIDE & STRONTIUM CHLORIDE and it also contains less than 50 ppm each of zinc, copper, lithium, nickel, cobalt, iron, magnesium, manganese, molybdenum, potassium, and selenium as minor trace minerals. Once again, heavy on the chloride and just look at those heavy metals. Why would anyone want to use this product with Discus? I sure would not!

So what is the solution?

The BEST water conditioner and treatment method that I have used for over 30 years is activated carbon – not in the aquarium, but for the water to run through an activated carbon tank or cartridge system on its way to the aquarium. By using this process, all the chlorine will be removed in one pass and if you have chloramines, as we do down here in Florida, the Chlorine/Ammonia bond will be broken and only a small amount of ammonia will be left that will be assimilated by the nitrification cycle. Many hobbyists have used this process for many years with great success.

Water Chemistry continued

So what are the actual benefits?

By using an activated carbon process to condition the water, no salts or other substances are being added to the aquarium. The cost is also much less. Depending on your chlorine concentration, a carbon cartridge can last a few thousand gallons vs. paying for a liquid conditioner that may cost over $50.00 a gallon and increase the conductivity in the aquarium. A pet store can really benefit from this type of application by utilizing a large carbon tank and no longer having to worry about chemicals.

I am currently working on a cartridge that contains another item besides carbon. It will treat between 8-to 12,000 gallons and works by an Electrochemical/Oxidation Reduction Process removing metals, chlorine, hydrogen sulfide, and killing any bacteria in one pass.

It does this by taking up or giving up electrons. The results so far have been good. This would not be something you would add to your aquarium filtration system, but would solely be used in filling the aquarium with tap water ... or your water changing process.

pH

Last but not least, I would like to touch on pH. First of all, pH means only one thing. The power of Hydrogen. It is the negative logarithm (Ed: meaning a very steep curve ... numbers happen quickly) of the hydrogen concentration. Thus, it is the measurement of the hydrogen ions in water which are non-toxic to fish in their own right. Fish that come from a low pH also come from soft waters with low hardness, low TDS and low conductivity. Lake Tanganyika, which has a conductivity between 606 and 700 MicroSiemens, is hard with low concentrations of Calcium and high concentrations of Magnesium (see 1,2,3) and has a very high pH, higher than seawater, and is strongly buffered with an alkalinity exceeding 300 mg/l as $CaC0_3$. A fish species from the Amazon or any rainforest, as long as the conductivity is low, then the hardness will be low and the pH will be low; however, for aquarium purposes, it does not matter if the pH is 6.8 or 7.8.

A misinformed fact regarding pH is the term "pH shock." There is no such thing!! Many Florida fish farmers can attest that. They see pH changes throughout the day especially in a pond that has many plants. In the morning, the water can be as low as 5 and at mid day it can go up to 7.5, this is NATURAL. Let me share a recent experience. I have a 150 gallon aquarium that is an Amazon tributary type set up with plants. Some of the species are Apistos, Cardinal Tetras, Checker Board Cichlids, Rummy Nose Tetras. I recently noticed my plants were not growing. They appeared to be dormant and I had a problem with black beard algae. I had no problem with the fish. I checked my nitrates and I had none. I then checked my pH, which I really never do, and found out it was 4.4. I employed a small 12" fluidize bed filter off the side stream of my main pump and filled it with 2 handfuls of aragonite, which is a refined form of calcium carbonate and is sold for reptiles and arachnids as a substrate. The fluidize bed had just enough water current to cause the sand just to tumble, not even fluidize. The result overnight was the pH increased from 4.4 to 7.2 within 8 hours. The fish did not show any signs of stress at all and one of my apistos even spawned. After 2 weeks the black beard algae began to disappear the pH is now at 7.4 and I turn the fluidize bed/carbonate buffering system off during the day and on at night. I may note using this method only increased the conductivity by 20 MicroSiemens.

With this in mind, I have a few recommendations about pH. The biggest issue with pH is that in an aquarium, the pH will always become acidic the more efficient your filter is in Nitrifying. Biologically oxidizing the ammonia to nitrate the more hydrogen ions H+ will be produced, eventually reducing the buffering capacity (alkalinity) ,then causing the pH to fall.

A few rules of thumb **never ever add an acid to lower the pH in an aquarium** as it is not needed, regardless what the hobbyist magazines say. Remember the aquarium trade magazines such as *TFH, FAMA, Aquarium Fish* are not by any means scientific journals they are referred to as periodicals in the scientific arena. The only scientific aquarium magazine that was ever available to the hobbyist was *Discus Brief* which was from Germany and was distributed in the USA. If you submit an article to a scientific magazine or journal, it has to be reviewed by a number of other scientist or peers and if it passes the intense scrutiny it will be published.

Water Chemistry continued

The other rule of thumb is no matter what type of aquarium you have, a **buffer system should be employed** as it will prevent your alkalinity from disappearing and pH from falling, allowing your nitrification (biological filtration) to continually function. Nitrification slows down at a pH of 6.5 and will stop below 6.0.

For African Cichlids, especially species from L. Tanganyika, I would use a substrate of dolomite gravel or dolomite sand. Dolomite is calcium and magnesium carbonate. It has equal parts of calcium and magnesium; it will not injure the mouth of the fish as crushed coral may, and since it is light in color, it really brings out the color of fish. You can also have a fluidized bed of dolomite. This will buffer the pH nicely without raising the conductivity that much. You can also put a bag of dolomite or aragonite in a filter bag suspended in a power filter or in the aquarium, but the results will not be as good as having it tumble in a fluidized bed.

Aquarists that are really serious about Lake Tanganyika Species require almost a separate protocol as it is different from most other freshwater species and lakes and is more similar to a marine environment first of all, the waters are hard and the calcium and magnesium ratios are much different, as now magnesium exceeds calcium. The calcium is 44 ppm as $CaC0_3$ and the magnesium is as high as 180 ppm measured as calcium carbonate, thus having a total hardness of 224 as $CaC0_3$ and a conductivity measure as high as 700 MicroSiemens. Compare this to Lake Malawi with a conductivity of 220 MicroSiemens and a total hardness of only 85.60 ppm (with the calcium at 49 ppm as $CaC0_3$ and the magnesium as 36.6 as $CaC0_3$), thus showing Lake Malawi is not as hard as one may think but is rather soft. (Any type of Malawi Cichlid Salts are a moot point (see references 1,2,3, below). However, Lake Tanganyika is so different not only in its magnesium to calcium ratio, but thealkalinity and pH is higher than seawater being around and possibly over 300 ppm as $CaC0_3$ and having a pH up to 9.06. Since this water is so different and its species are so specialized, it should be strongly advised that the aquarist invest in a couple of water test kits.

I recommend the following kits from **LaMotte**:

1) Hardness Kit Model PHT-CM-DR-LT CODE 4824-DR-LT. This is a titration kit and it reads in ppm and is very accurate. You will be able to determine Total Hardness, Calcium Hardness and Magnesium Hardness.
2) Alkalinity Test Kit model WAT-DR CODE 4491-DR. This is another titration lit and it reads in ppm and is very accurate.
3) Any High Range pH kit.
4) A conductivity meter which all serious aquarists should have. Here is the link to find one
http://www.coleparmer.com/catalog/product_view.asp?sku=3546230
This is what is called WU-35462-30 Eco Testr EC Low
Only $60.

I would add to the Lake Tanganyika Aquarium definitely some sort of buffering system described above. Along with that, I would then add enough magnesium in the form of magnesium sulfate (Epsom salts) to obtain around 100 ppm as Magnesium Carbonate CaC03, say a tablespoon per 10 gallons at a time to start. Then you would have to test for hardness by titrating and see what the levels have climbed to. If you had a scale, it would be better; then you can weigh exact amounts.

To raise your alkalinity, and this is something I would only do for these species, add "Potassium Carbonate," "Sodium Hydrogen Carbonate" or "Magnesium Carbonate" the same way you added the Epsom salts, but instead of performing a hardness test, you would test your alkalinity after each addition. (Magnesium Carbonate would be great to add to a fluidized bed). Before you do this, make sure your pH is already above 7 and that you have no ammonia present. If your water is already basic and you have no ammonia present, you will not have a problem increasing your pH rapidly.

The Tropical Fish industry and aquarium hobby is going through a big transition. Nobody knows what is going to happen due to the economy and having most of the products owned by three major companies. In fact, one of those companies just recently filed a type of chapter 11. The keeping of tropical fish has been the 3rd most popular hobby next to photography, which is

number #1 and stamp collecting #2. Our hobby is very unique since it is the end user, not the manufacturer/distributor, that becomes the authority/expert on the species we keep and how they are best kept. We have been slammed with so much marketing, misinformation and confusion that we now lost that edge. It's time to find out, when we are successful breeding and keeping species of fish, why are we successful so we can have a point of reference to go back to.

Remember what we add to our aquariums stays and builds up over time even if you do water changes, unless you do a 100% change! Water analysis also needs to be performed and data needs to be collected and maintained. After we start collecting this information and have a point of reference, we just may become the experts once again - getting our edge back from the mass marketing system. Then we can tell them what works for us instead of being told what we need!

It's Good to Be Back

If anyone has any questions, they can email me at joegar@tampabay.rr.com. I am also available as a speaker on any topic pertaining water quality, water treatment/filtration, nutrition, disease recognition and prevention.

References Cited

1. Lake Tanganyika Fisheries Research (*Physicaland limnological aspects*) Lindqvist O.V., Mölsä H., Salonen K. & J. Sarvala (eds.), 1999, From Limnology to Fisheries: *Lake Tanganyika and Other Large Lakes, Developments in Hydrobiology* 141, ISBN 0-7923-6017-6, Kluwer Academic Publishers, Dordrecht, The Netherlands: 218 p. (sold and distributed in North, Central and South America by Kluwer Academic Publishers, 101 Philip Drive, Norwell, MA 02061, USA)

2. *What is the chemical composition of Lake Malawi Water? How does it compare to Lake Victoria and Lake Tanganyika* Last Update: 18 April 2009 Web Author: M. K. Oliver, Ph.D. Copyright © 1997-2009 by M. K. Oliver - All Rights Reserved

3. Fluoride: *Geochemical And Ecological Significance In East African Waters And Sediments.* Peter Kilham 2 and Robert E. Hecky 3 Volume 18 issue 6 page 934 Department of Zoology, Duke University, Durham, N. C. 27706

4 Gordon's page on ionic balance and osmoregulation. www.earthlife.net/fish/oregulate.html

Dan Hagan runs TheShrimp Farm.com.
The place to go for dwarf freshwater shrimp.
Shrimp are the perfect aquatic inhabitants for your under water planted garden.
If you're interested in keeping dwarf freshwater shrimp or have a question about them, go to Dan's blog site and ask your question. It's a great site with reliable and accurate information on dwarf shrimp.

Crystal Red Shrimp

Crystal Red Shrimp History

The Crystal Red Shrimp is the selectively bred red color variant of the Bee Shrimp. Originally selectively bred in Japan for its red coloration, the Crystal Red Shrimp is becoming one of the most popular Dwarf Shrimp across the globe.

Crystal Red Shrimp Care

Crystal Red Shrimp are a little more demanding than many other Dwarf Shrimp, and have the same care requirements as the wild type of this species, the Bee Shrimp. The water is required to be soft and slightly acidic for the Crystal Red Shrimp to be happy. They also prefer a little less than tropical temperatures. As with all Dwarf Shrimp, the aquarium should be well established and parameters should be kept stable. The higher grade Crystal Red Shrimp are more sensitive to nitrates than many other Dwarf Shrimp so care must be taken to ensure high quality water.

Crystal Red Shrimp Diet

Crystal Red Shrimp are omnivores and share the same diet that most Dwarf Shrimp enjoy. Crystal Red Shrimp are algae eaters, but will often times need supplemental feedings. Aquarium foods intended for bottom feeders and aquatic invertebrates are readily accepted, as are blanched vegetables (boiled until soft). There are foods made in Japan specifically for Crystal Red Shrimp that are high quality foods, but are not necessary.

Crystal Red Shrimp Breeding

If optimal care requirements are met, the Crystal is fairly easy to breed. Crystal Red Shrimp carry their eggs a little longer than many other Dwarf Shrimp, and after hatching develop a little more slowly. It can be difficult to determine the sex of a Crystal Red Shrimp', the males are slightly smaller and have shorter, thinner tail sections. The females are larger with a longer and wider tail section.

Crystal Red Shrimp Behavior

Crystal Red Shrimp are non-aggressive, and are quite active. In an aquarium that has no predators, Crystal Red Shrimp will often be observed grazing on algae, on aquarium plants, decorations and on the substrate. When fed, the shrimp will often form large groups that are quite striking in appearance.

Crystal Red Shrimp

Scientific Name:
Caridina cf. cantonensis
Other Scientific Names: N/A
Common Name:
Crystal Red Shrimp
Other Common Names:
Red Bee Shrimp
Origin: South East Asia
Found in the wild: No

pH Range: 5.8 - 6.8 Ideal pH 6.2
Temperature Range: 62˚ - 72˚
Ideal Temperature: 68˚F
Hardness Range: -1-5 dkh
Ideal Hardness: 3 dkh
Life Span: 1 - 2 years
Size: 1 - 2 inches
Gestation Period: 30 days
Diet: Omnivore

Special Notes

As with all aquatic invertebrates, it is important to make sure copper does not get into the aquarium. Copper is toxic to all Dwarf Shrimp. Many medications contain elevated levels of copper, so it is recommended not to medicate an aquarium with Dwarf Shrimp in it.

Exchange Editor's Report

The Exchange Editor's job is reading publications from different clubs and suggesting items of interest to our members.

• **New Hampshire Aquarium Society**, *The Granite-Fisher*, Volume 20, Number 4 April 2011. **Jonathan Farrand** writes an article titled *"Progression of a Planted Tank, Tank growth and Development: Stage One."* He notes how a lot can change when you decide to keep aquarium plants, especially when you let Mother Nature do the work.

• **North Jersey Aquarium Society,** *The Reporter*, October, November, December 2010. **Jim Martini** has a story titled *"The Old Days Remembered,"* where he contacted **Chuck Davis** in Florida and they reminisced. Chuck Davis pens another one of his articles in October, *"OK! Let's Show That Fish"* (preparation is the key). In November, he writes *"Tiger Loach"* (he goes into detail about the tiger loach); *"The World's Most Popular Cichlid"* (Oscars in a poll of three major wholesalers of tropical fish), and in December, *"Community Aquariums Revisited."*

Chuck Davis has another interestingly informative article on *Puntius rhomboocelatus* which was mistaken for a "rosy barb with different markings." He purchased the fish (3 of them) at a dollar fish sale and brought them to the experts, **Dr. Paul Loiselle, Marc Weiss** and **Larry Jinks**. All agreed Chuck was correct and the rest is history. Of course, you'll have to read it.

Chuck also did his own product test of a Pro-Dechlorinator by **Kent Marine** of Franklin, Wisconsin. Since he moved to Florida, he has had some problems with water that is added to tanks. He always uses a dechlorinator, but some don't do what he wants them to do. So he did his own product test and was very satisfied with this one.

• **Diamond State Aquarium Society**, *The Gravel Gossip*, Volume 48, Nos. 4 and 5, April and May 2011, have two articles worth reading and both are by **Bob Berdoulay**. *"The Amateur Hour"* is a monthly column he writes. *"So Why Guppy?"* is one and *"Infusoria"* is the other. *Poecilia reticulata is* the scientific name for the little fish we know as the guppy. Infusoria is the common name for the thousands of microscopic or near microscopic organisms. Bob's articles are worth reading.

• **Missouri Aquarium Society, Inc**. *The Darter,* Volume 36, No. 5 Sept/Oct and No. 6 Nov/Dec 2010. **Mike Hellweg** pens a piece on *"Fish-o-nomics 101, How Much is That Guppy in the Window?"* He talks of the price of fish in the hobby, but reminds us all that fish keeping should be just that, a hobby and not a get-rich-quick thing. He goes into detail, talking about selling at auctions, the web and Craig's List too. Vice President **Kathy Deutsch** writes *"The Kale Trick,"* a type of cabbage that she flash-fries and feeds to fish and humans too. Mike also writes *"Fish (and Frogs) do the Strangest Things!!"* This one needs no explanation; just read it. **Ed Millinger** writes his *"From The Fish Room"* and he reminds everyone in the hobby to have fun above all else when fish keeping.

• *I'A O Hawaii* is the publication of the **Honolulu Aquarium Society.** They have recently started publishing some of their work in color which is a very nice touch. In their April publication, they publish some color photos. They commemorate their 60th anniversary which they celebrated in March 2011. Best wishes to our sister society from the most beautiful state of Hawaii.

• On Saturday, September 17, 2011, I attended the meeting of a "sister" club, **The Aquarium Club of Lancaster County.** The meeting was held at **That Fish Place** in Lancaster, PA. President **Kurt Johnston** was happy to see someone travelled almost three hours from Brooklyn to attend their meeting. The speaker was **Dr. Stephan Tanner** and the topic was *Plecos: Let's Breed Them Before They Vanish*. It was a spirited and informative talk about the suckers themselves.

Born in Switzerland, Tanner got his first tropical fish tank when he was 14 years old. Stephan's interest in biology earned him a master's degree in Behavioral Ecology and Molecular Biology (1995) and finally a Ph.D. in Human Molecular Genetics (1998). Stephan is a big fan of tetras, barbs, loaches, and catfish. In 2006, he founded Swiss Tropicals LLC, breeding and selling fish as well as Poret foam and B&H Jetlifters.

That's it for now. See you all next issue. Happy fish reading everyone.

STU

WE NEED A FEW GOOD MEMBERS TO HELP RUN THE BAS

We are in need of a TREASURER and an EXCHANGE EDITOR! Denise Hershkowitz, our treasurer and her husband Stu, Exchange Editor, will be moving to Florida's sunshine.next year. We need members to step up and handle these essential jobs.

We also need a CORRESPONDING SECRETARY. This position entails handling all external correspondence, soliciting donations. We 're also need an ASSISTANT EDITOR to help John Todaro in publishing both the *BAS Bulletin* and the *Aquatica*.

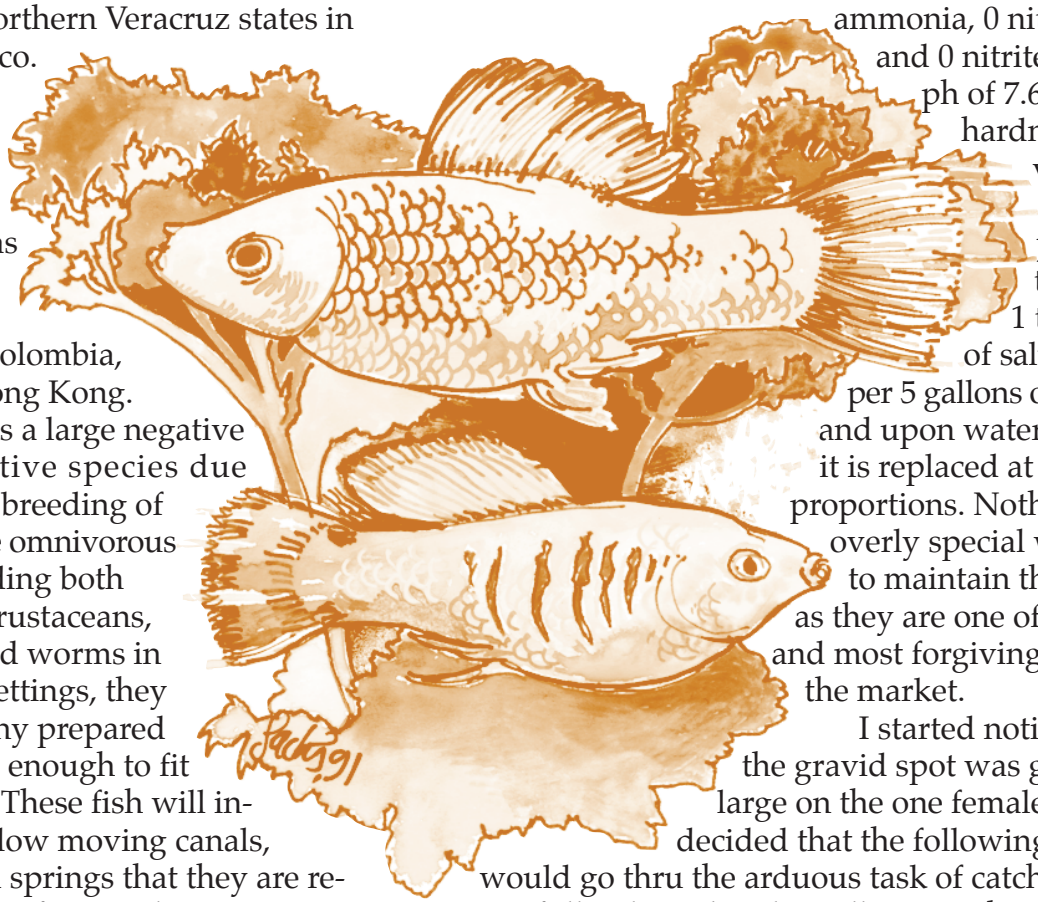
Please contact Joe Graffagnino at 917 922-5108 and he'll fill you in on what the different offices are and what is expected. This is your Society please consider working with us.

BAP Report by **Michael Steffen**
TANK TALES November 2010 Volume 39, No. 10
The Official Publication of the Aquarium Club of Lancaster County

Platy Variatus

I acquired a few of the "Sunset" variety of this species in early May while fish shop hopping with my father. The time spent with him would have sufficed, but to find a few gems to bring home that day put it over the top for me. I purchased 1 male and 2 females with the females being prehit; and before long I knew I would have fry.

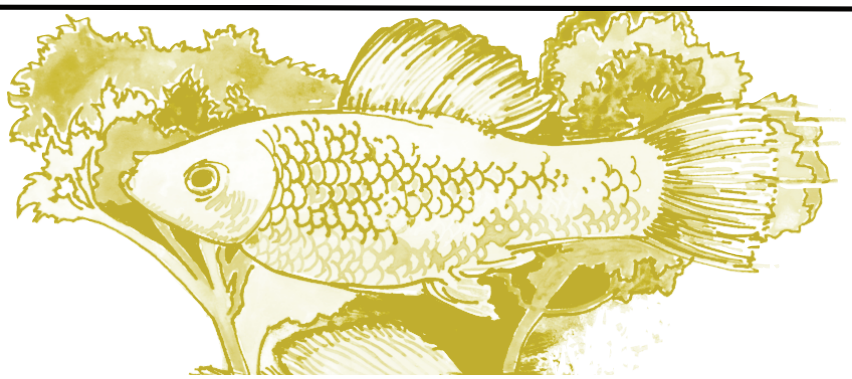
The *Platy variatus* hails from the southern Tamaulipas and northern Veracruz states in northeastern Mexico. This species presents an invasive problem in Florida and Montana. as well as a few other countries of the world including Colombia, Singapore, and Hong Kong. Hong Kong reports a large negative impact on their native species due to the prodigious breeding of these fish. They are omnivorous with its diet including both plants and small crustaceans, insects, and annelid worms in the wild. In tank settings, they will accept most any prepared or live foods small enough to fit into their mouths. These fish will inhabit almost any slow moving canals, ditches, and warm springs that they are released into and therefore can become invasive very quickly.



The fish were maintained in a 10 gallon tank with a few assorted other livebearers and my ghost shrimp. The tank is fully planted with a dual sponge filter and a composite substrate consisting of a peat moss layer covered by a sand layer topped with a small gravel layer. This tank also boasts a 3 dimensional back ground that I crafted a while back from styrofoam and dry lock paint, but more on that in other article in the future.

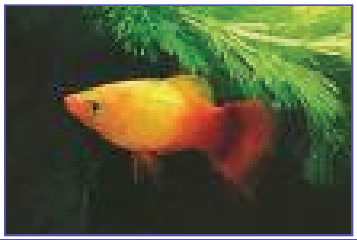
The chemical levels of this tank are 0 ammonia, 0 nitrates, and 0 nitrites with a ph of 7.6 and a hardness of very hard by the jungle test strip. 1 teaspoon of salt is added per 5 gallons of water and upon water changes it is replaced at the same proportions. Nothing overly special was done to maintain these fish as they are one of the best and most forgiving fish on the market.

I started noticing that the gravid spot was getting large on the one female and decided that the following day I would go thru the arduous task of catching a fish in a fully planted tank. Well, to my shock the next morning I didn't have to catch anything since she had given birth that morning before I got to the



tank and there were little platys all over the tank. I am not one to leave livebearer fry in the tank with their parents due to the high protein snack factor that the fry often become. But trying to chase these tiny fish in a tightly planted tank was turning into a nightmare and after 30 minutes of chasing them and tearing almost every plant loose, I decided to let the chips fall where they lay and I'll get the next batch. At this point I had given up on having any fry from the first birthing but with the platy's ability to store sperm I knew that even if the male didn't get his job done, I would have more fry in 4-5 weeks. Plus I also had the backup plan of the second female who was not quite ready to pop.

In the next few days, I spent some time in front of the tank and noticed some fry hiding in the plants and sneaking out to grab a flake every now and then. This thrilled me with delight and I also noticed that the adults I had were hanging at the top of the tank more and more. Over the next few days I lost the 3 that I purchased from the big box pet store but still had the fry. Slowly but surely, they started venturing out and I could count them and saw that I had 8 little perfectly clear fry. Over the next month or 6 weeks, they started developing their colors and man-oh-man the color from the fry eating high quality food vs. their parents was astonishing. The fry had bright clear colors ranging from yellow on the dorsal thru orange to red to green on their stomach. They were really becoming a sight to see and a true gem in my fish room. For some unknown reason, I lost 1 during week 8 and another during week 10. I now believe the ones I lost to be males since the ones I have left are now pushing the 5 month age and seem to be 5 females and 1 male. I think that the strongest male nipped the fins of the other 2 males to take dominance and they didn't fare too well in the fighting.



Over the next month or 6 weeks they started developing their colors and man oh man the color from the fry eating high quality food vs. their parents was astonishing. The fry had bright clear colors ranging from yellow on the dorsal thru orange to red to green on their stomach. They were really becoming a sight to see and a true gem in my fish room.

In conclusion, these fish are great fish to keep and have a dog like personality. They are always happy to see you come to the tank and even happier after you toss in some food. "Highly colored" and "energetic" are some more descriptive words for these little jewels. Personally, I usually have a nicely planted livebearer tank and often spend many restful hours in front of it.

So till you peek behind my shell to see me again I bid you happy fish keeping.

Joe Graffagnino, BAS, President

Black Eggs

I have bred many species of fish, but I have never seen black eggs. I was amazed when I saw them and from a West African cichlid no less. I obtained a breeding pair of *Tilipia snyderea* from fellow fish breeder **Vinny Babino**. Vinny informed me that these are very beautiful fish, with striking color markings. They are aggressive fish when spawning and protecting their young, and they are the gift that continues to give – once they start spawning, you can't get them to stop.

Tilipia snyderea are the smallest of all Tilipia and they hail from Lake Bermin in Cameroon, West Africa. This species' common name is "Snyder's dwarf tilapia." There are three colors that these species can display, based on their mood and especially during breeding. They can go from a pale bland color to a green, to a red. In breeding dress, both the male and female are absolutely stunning with a green top that goes to the middle of their body (lateral line) which extends from the head through the anal fin. The lower portion of the body is an orange red. But that's not all -- the face changes color as the mouth becomes a dark black, while the lips become pure white -- truly amazing coloration on a fish that gets no larger than 4 - 5 inches.

When I received this beautiful pair of fish, I realized they were too large for a 20 gallon aquarium, so I quickly did some rearranging and since I believe in species tanks, I kept them by themselves. After less than one month in their new home, they started moving large amounts of gravel in the tank. They really like to landscape. Four days after the landscaping began, the female took up residence in a small clay breeding cave that had an opening the size of a thumb. It was obvious that the male could not enter. I assumed that they would lay their eggs on the glass bottom since they made it bare by moving all the gravel away. A day or two later I used a flashlight to see into the cave and lo and behold! I saw around 20 or so black eggs.

A few days later, they must have hatched because the parents moved the fry one foot away from the cave and under a piece of coral. I was worried for the fry because this tank was overrun with Malaysian burrowing snails, who I thought may go for the babies. However, within a few days my snail problem was a problem no more. After their yolk sacs disappeared and the fry started free swimming, I fed them microworms, vinegar eels and frozen baby brine shrimp. The fry grew quickly and they tended to clone each other, for although I initially counted around 20 eggs, I now counted about 80 swimming fry.

I would highly recommend this beautiful, but aggressive West African cichlid as a welcome addition to a species only tank. Also, this fish is on the endangered list of fish species, so maintaining this fish will help it from becoming extinct in the wild. Please share this wonderful fish with other members of local fish clubs and let everyone enjoy them.

H. Blair Howell
www.hillcountrycichlidclub.com/articles

Species Profile:
Cyprichromis leptosoma

Cyprichromis leptosoma or the sardine cichlids, as they are called in the hobby, come from Lake Tanganyika where they live in schools numbering in the 1000s or more. They are one of the only true schooling cichlids known. They occur in a number of different geographical variants, each displaying a different coloration and each variant occurring in both a blue and a yellow tailed morph. While the females remain a dull dusky color, the male's colors can be quite stunning.

Cyprichromis are found around rocky shorelines and in open water all over the lake. They prefer a temperature of 74 - 78 degrees and, as with all rift lake cichlids, like hard alkaline water.

Male Photo: Blair Howell

In the aquarium, *Cyprichromis* should be kept in groups of at least 6 individuals or more. They are sensitive to water quality and good filtration is a must. They are great for a Tanganyikan community tank because they occupy the upper layers of the tank.

Some care should be taken in choosing tank mates for *Cyprichromis*. They should never be housed with frontosa, as they are a primary food source in the wild.

Cyprichromis can be very entertaining to watch as the males are constantly displaying either to females or to display dominance.

When spawning, the males will stake out a three dimensional area in the open water at the top of the tank. They defend this area vigorously against intrusion by other males while trying to entice the female to enter. As a rule, they are quite nonaggressive, but I have seen them chase away fish much larger than themselves while defending their territory.

I have one male that is particularly aggressive in defense of his territory which he always stakes out right near my highly aggressive male Hap. sp. 44's territory in my 125. On more than one occasion, I have seen the male 44 and the Cyp. get into a face off. Ultimately the sp. 44 always backs down. While they look quite fragile it has been my experience that these guys can be quite tough. By no means are *Cyprichromis* aggressive towards other fish though; they in fact seem to have a calming effect on the tank. This is especially true with my

Displaying Male Photo: Blair Howell

Julidochromis marlieri gombe.

I was never able to get a photograph of him because he was always hiding in the rocks before I added the *Cyprichromis*. He now will come out and patrol an area around his rocky home and I have gotten several good shots of him.

Breeding *Cyprichromis* is not difficult provided they feel secure in their environment. Once a male has successfully lured a female into his territory, he will display for her with his dorsal and anal fin clamped tight against his body and his mouth protruding. In this way he induces her to lay an egg. She then turns around and catches the egg in mid fall. Once the egg is in her mouth, she nuzzles the male's ventral fins, fertilizing the egg and the dance is repeated.

Female Photo: Blair Howell

Depending on the size and condition of the female, she may lay up to 20 or 25 eggs.

Cyprichromis are a very active and fun to watch addition to any large Tanganyikan community tank. This fish is always in demand and is a great fish to breed. All in all, I would recommend them to any Tanganyikan enthusiast.

Species Profile:
Cyprichromis Leptosoma

- **Scientific Name:** *Cyprichromis leptosoma* (Mpulungu)
- **Common Name(s):** Blue Flash, Blue Neon, Neon Head
- **Geo. Origin:** From Kasanga to Mpulungu
- **Habitat:** Open Water
- **Diet:** Carnivore
- **Gender Differences:** Dimorphic
- **Breeding:** Maternal Mouthbrooder
- **Temperament:** Mildly Aggressive
- **Conspecific Temperament:** Mildly Aggressive
- **Maximum Size:** 4.5"
- **Temperature:** 77 - 79°F
- **pH:** 8.6
- **Water Hardness:** Very Hard
- **Difficulty:** 2

COMMENTS:

Certainly one of the more popular Cyps in the hobby, this geographical variant is known by several nicknames: Blue Flash, Blue Neon, and Neon Head. The Blue Flash is the holotype for the species *Cyprichromis leptosoma*. It is found at the southernmost end of the lake, from Kasanga, Tanzania to Mpulungu, Zambia. Specimens are collected at several locations, including Kasanga, Kambwimba, Isanga, Chituta Bay, and Mpulungu. Like all *Cyprichromis leptosoma*, it is found in 2 distinct color morphs: blue-tailed males and yellow-tailed males. It differs from the other 4 leptosoma in the following manner: Males are not as blue-bodied, but are primarily grayish-brown with a strong blue highlight on the head (hence the name Neonhead). Blue-tailed males have a light-blue anal and dorsal fins. The dorsal fin is speckled throughout with small, dark spots. Yellow-tailed males have a blue dorsal fin with a black band running along its base. The anal fin is also blue and may or may not be streaked with black markings.

SUPPORT OUR SPONSORS. THEY SUPPORT US. WE MUST SUPPORT THEM!

Absolutely Fish's staff is knowledgeable and can help you solve your aquatic problems. **They offer a 15% discount on select fish, marine life & supplies with current BAS membership card.** A really great aquatic shop. Well worth the trip.
Absolutely Fish 1080 Route 46 W. Clifton, NJ 07013
Ph: **1 (973) 365-0200**
Open 7 days a week: Mon-Fri 12-9 Sat 12-8 Sun 12-5

Aquatic Wildlife, features 11,000 gal. of freshwater fish, plants & marine life. **Discount with current membership card.**
Aquatic Wildlife, 179D Demming St., Manchester, CT 06040 (In Panera Plaza) Ph: **1 (860) 648-1166**
www.aquaticwildlifecompany.com

Brooklyn Zoo & Aquarium Inc. A classic pet shop with a full line of aquarium supplies, freshwater, marine fish and corals. **BAS members get a 10% discount with a current membership card.** Some restrictions apply.
Brooklyn Zoo & Aquarium Inc.
2377 Ralph Ave., Bklyn, NY • Ph: **1 (718) 251-7389**
Hrs: Sat - Sun 10am - 6pm & Mon - Fri 10am - 8pm

"C" The Jungle Pet Store In the heart of Brooklyn carries a full line of pet supplies, tropical fish, birds, and small animals.
They offer a **10% discount to BAS members with a current membership card.**
"C" The Jungle Pet Store
247 New Lots Ave., Bklyn NY 11207
Ph: **1 (718) 649-2536**
Hrs: Tue -Sat 10am-8pm • Sun 10am-6pm

Petland Discounts, the complete pet store, carries a full line of pet supplies for fish, dogs, cats, birds, reptiles and small animals. Also a variety of fish, birds, small animals and reptiles.
Open 7 days a week. Locations in New York, New Jersey & Connecticut. Over 15 stores in Brooklyn. Shop on line at: See the white pages, for a store near you.
www.petlanddiscounts.com.

Pet Shanty. Family owned & operated; 3 rooms of freshwater fish & 1 of marine fish & corals. They stock a vast list of fish which is posted on line at http://petshanty.com. They also carry other pets and pet supplies. Check them out; they probably have the fish or corals you want. **Members get a 10% discount.**
Pet Shanty
2507 U.S. Hway 22, Scotch Plains, NJ 07076
Ph: **1 (908) 889-8262** • Fax: **1 (908) 889-0803**
Mon-Fri: 10am-9pm • Sat: 10am-7pm • Sun 10am-5pm

Fauna is Manhattan's largest exotic pet boutique and a new sponsor of the BAS. **Dan, the owner, offers a 10% discount to members.** They keep over 2,300 gallons stocked with freshwater, marine fish and corals. They also carry small animals, birds and reptiles. Make a point to visit and tell them you saw their ad in the *BAS Bulletin* and *Aquatica*. This store will blow you away!
FAUNA 265 West 87th St.
between Bway & West End Ave., NY, NY
Ph: **212-877-2473**
Hrs: M-W-T-F 11am- 7pm • Closed Tues.
Sat 11am-7pm • Sun 11am-6pm

Mark's Discus over 4,000 gallons of hormone free Brooklyn bred discus & angelfish. Mark stands behind his quality fish with a live delivery guarantee. Feel free to contact him with your questions. **10% discount for BAS members with current membership card.**
MARKSDISCUS.COM
You're welcome to visit their hatchery by appointment only. Call for directions.
Ph: **917-202-7699**
Open 7 days and all Holidays • 9am -11pm

Nassau Discus has different varieties of Discus available at various times. All fish are quarantined before they are sold. **Members get a 10% discount with a current membership card.** To learn what's in stock Email Nassau Discus at morgansfin@aol.com or NassauDiscus@aol.com To make an appointment
Call Mark Rubanow Ph: 516 939-0257
205 8th Street, Hicksville, NY 11801

Royal Aqua World Inc. Over 100 tanks of marine fish, hard & soft corals, freshwater fish, goldfish & koi imported from Japan, plus plants and pond supplies. **BAS members get a 10% discount on all purchases with a current membership card.**
Open 7 days a week.
Royal Aqua World Inc., 815 65th St., Bklyn, NY 11220
Ph: **1 (718) 238-0918**
Hrs: 7 days a week 10:30am-8pm

Pacific Aquarium & Pet Inc., in Manhattan's Chinatown, carries ornamental goldfish, koi, freshwater fish, & aquatic plants. **BAS members get 10% discount with current card** (Discounts not to be combined with other specials). They have a full line of aquarium supplies. You can order custom size tanks.
Pacific Aquarium & Pet Inc.
46 Delancy St., NY, NY 10002 • Ph: **1 (212) 995-5895**
Open 7 days a week and all holidays
10am to 7:30pm

Membership & Renewal Application Brooklyn Aquarium Society

Mail This Form Or A Copy And Your Check Payable to Brooklyn Aquarium Society to
BROOKLYN AQUARIUM SOCIETY, ATT: MEMBERSHIP CHAIRPERSON
P.O. BOX 290610, BROOKLYN, NEW YORK 11229-0011

Please check your address label to see when your membership expires

Meetings are held at the NY Aquarium Education Hall on the 2nd Friday of the month at 7:30pm. Knowledgeable speakers on fish care and culture, door prizes, raffles, and fish auctions. All meetings are free to members. Visit us on line:
BROOKLYNAQUARIUMSOCIETY.ORG

NAME_____OCCUPATION_____

ADDRESS_____CITY_____STATE____ZIP_____

PHONE (DAY) _____(EVE)_____(FAX)_____

E-mail Address_____

TYPE & LENGTH of MEMBERSHIP: (CHECK ONE)

INDIVIDUAL				FAMILY				[ ] $15 STUDENT 1YEAR
1yr. $20	2yr. $36	3yr. $51	4yr. $68	1yr. $25	2yr. $45	3yr. $63	4yr. $85	(UNDER 18 YEARS)

*If family membership, please list all family members. **Only first two listed will have voting rights.**

1_____ 2_____ 3_____

4_____ 5_____ 6_____

Number of tanks [ ] marine [ ] freshwater [ ] Do you breed fish? [yes] [no]

If yes, what types do you breed:_____

_____

Special interest (if any)_____

_____

How did you hear about BAS [friend] [dealer] [flyer] [*Aquatica*] [mag ad] [online] **other**_____

To volunteer check [yes] [no] A board member will contact you if you check yes.

On occasion, the Brooklyn Aquarium Society uses its mailing list to send notices of interest to our members.
If you **DO NOT** wish to receive these mailings please check here [ ]

Official use

Member number:_____ Type of membership [F] [I] [S] Date paid:_____ Board approved date _____
Amount paid:_____ Renewal/member since_____