



# AQUATICA

THE ON-LINE JOURNAL OF THE BROOKLYN AQUARIUM SOCIETY  
VOL XXVII      MAY ~ JUNE 2013      No. 5

*Discus, Symphysodon spp*



Photo: John Todaro

102 YEARS OF EDUCATING AQUARISTS  
**AQUATICA**  
VOL. XXVII MAY - JUNE 2013 NO. 5

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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:  
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# BROOKLYN AQUARIUM SOCIETY

## CALENDAR OF EVENTS ~ 2013 - 2014

**MAY 10 Giant Spring Auction** ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods, including a 55 gallon tank & stand.

**JUN 14 Laura Birenbaum - Dry Shipping Coral and Other Inverts** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction. BAS Elections.

### July/August - No Meetings

**SEPT 13 Joe Graffagnino ~ Knowledge of Useless Stuff I Acquired Over the Years** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction.

**OCT 11 Giant Fall Auction** ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods, including a 55 gallon tank & stand.

**NOV 8 John Coppolino ~ Modern Fish Keeping in Reef Aquaria** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction.

**DEC 13 Holiday Party ~ Members, their families and friends, all you can eat sit-down dinner**  
• Fish Bingo & Prizes • BAS Awards presentations.

### 2014

**JAN 10 Pat Donston ~ Marine/Reef TBA** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction.

**FEB 14 Kathy Cardineau ~ Setting up a Pond** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction.

**MAR 13 Gene Ritter - Reef Diving in NYC** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction.

**APR 11 Rachel O'Leary ~ Freshwater topic TBA** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction.

**MAY 9 Giant Spring Auction** ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods, including a 55 gal. tank & stand.

**JUN 13 Chuck Davis ~ Gizmos, gadgets and other good ideas** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction. BAS elections.

### July/August - No Meetings

**SEPT 12 Greg Sullivan ~ Saltwater for the squeamish** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction.

**OCT 10 Giant Fall Auction** ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods, including a 55 gallon tank & stand.

**NOV 14 James Fatherree ~ Reef Basics** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction.

**DEC 12 Holiday Party ~ Members, their families and friends, all you can eat sit-down dinner**  
• Fish Bingo & Prizes • BAS Awards presentations.



Over 100 Years of Educating Aquarists  
**FRIDAY, MAY 10 @ 7:30 PM**  
**THE BROOKLYN AQUARIUM SOCIETY**  
 PRESENTS THE

# Giant Tropical Fish SPRING AUCTION

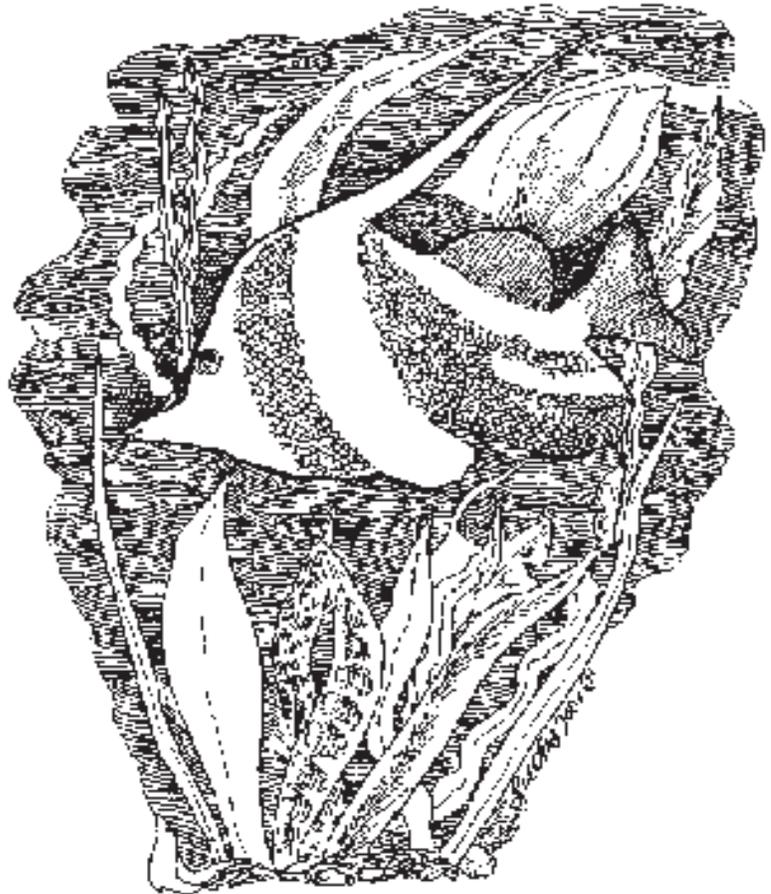
**FEATURING** all sorts  
 of Freshwater Fish,  
 Marine Fish, Aqua-cultured  
 Corals, Plants & Dry Goods,  
 Including a New 55 Gal. Tank

Rare & Hard to Find  
 Live Stock & Much More!

**VIEWING LOTS**  
 7:30pm - 8:30pm

**AUCTION STARTS**  
 8:30pm

- Free Admission
- Free Parking
- Free Refreshments
- Discount Books  
 & Sales Items
- Raffles



For Information Visit [BROOKLYNAQUARIUMSOCIETY.COM](http://BROOKLYNAQUARIUMSOCIETY.COM)  
 Or Call **BAS 24 Hr. Calendar of Events Hotline** (718) 637-4455

**At the New York Aquarium, Education Hall, Surf Ave. & West 8th St., Bklyn, NY**

Car Directions: Left Parkway to Ocean Parkway South (Exit 75). Take Ocean Parkway approx. 1/2 mile.  
 The NY Aquarium will be on your left.

Subway Directions: Either the Q or F trains to West 8th St., NY Aquarium Station.

# Donations To Non-Profit Organizations

**T**here are many methods to donate to tax exempt non-profit organizations. First and foremost, you must verify that the organization you wish to donate to is a legal 501 (C) (3) or similar tax exempt and registered organization by the State government. Once verified, you can donate products, equipment, even money to these organizations and receive a tax exempt letter from the company or organization you donated to for that year's income tax. I'm sure you are aware of many of these organizations, such as the Combined Federal Campaign, United Way, Salvation Army and others.

There are smaller organizations that also need your help, such as your local house of worship, various veterans organizations and yes, even tropical fish societies. I'm not saying that every aquarium society, veterans group or religious institution is a recognized tax exempt organization; hence your requirement to verify that organization is listed with your State.

**Lately we have received donations from the Bank of America Matching Gift funds.** By sending a donation through the Bank of America Matching Gift fund, the Bank of America will match the amount you have donated and send the combined amount to the tax exempt organization of your choice.

**Another example** of donating to the tax exempt organization of your choice is via **Pathmark Perks**. Pathmark Perks is a community reward program that allows 1% of your purchase for the non-profit organization of your choice. Simply register your Pathmark Perks card for that organization at any Pathmark store and then present that card at checkout with your purchases. 1% of that total amount (with some exceptions such as tobacco and alcohol items) will go to that organization.

**As a reminder, the Brooklyn Aquarium Society is a non-profit organization, for those that can't take a hint!**



# BEATING THE HEAT

## VERY LOW TECH

**W**hile sitting in my warm, comfortable little apartment this morning contemplating the 17° reading on my window thermometer, I recalled being warm but certainly far from comfortable several months ago.

It was the start of the summer, and I could not afford to run the air conditioning unless the heat became a serious threat to my cats, my fish, or myself. I was well able to monitor all three. However, felines and humans can tolerate much higher temperatures than the fish before coming under stress. I knew I would have to fight to keep my finny charges safe, and I braced myself for a long siege.

### **The Apartment**

First, the general environment had to be secured. I closed all blinds two-thirds of the way down and installed a large window fan in both the bedroom and the living room. The latter is a much larger area, so I also set up a fan inside

some distance to the left of the one in the window. Small fans were placed in the kitchen and bathroom to help ventilate these dead-air spaces.

My apartment faces west and receives the afternoon sun. This can be brutal, so during the worst hours, from 1 P.M.-5 P.M., or earlier if the temperature started rising too fast, I removed the window fans and brought them into the room. The windows were then closed and covered.

With these precautions, the heat in the apartment rarely soared beyond 86° and never went beyond 88° even when one could fry the proverbial egg on the pavement outside, and it was perceptibly cooler at night. This helped all of us, as did the occasional breaks in the weather.



## The Aquariums

We warm bloods were okay if not exactly happy, but these conditions were hard for the fish, especially as the season progressed. I had to take the war to the two active aquariums. (I had purposely left the quarantine tank empty for the duration.)

Because I know the summers are bad in my quarters, I purposely keep the water at about 80° to reduce the stress of the inevitable rise during the warm months. That helped, especially in the 120, where changes occur slowly.

Tank lights are hot. They remained off except for 2-3 hours at feeding time. – It was a cloudy season in my miniature Amazon. The piscine residents did not seem to mind living in ambient room light. The floating plants, the only live ones I have, did not flourish, meaning that I did not have to harvest more than half of them every month to keep them from filling the aquarium, but they held their own. One bonus was that the black algae suffered a severe setback and actually vanished from some sheltered surfaces.

During the day, I left the covers open to let as much air as possible in and allow excess heat to escape. They had to be closed at night lest one of the cats manage to fall in -- my tiny Katie could easily do so – or engage in a feline fishing expedition.

In the worst periods, I resorted to daily and occasionally twice-daily minute water changes, removing about two gallons from the 120 and replacing them with cold water. The result was a drop of one to three degrees. I never dared to risk anything more drastic. Obviously, when I was dealing with the 12-gallon pygmy cory aquarium, I had to be very careful indeed to avoid shocking the little residents.

## The Result

There were no losses, or none that I discovered, among the pygmy cories. They did not spawn during this time, but otherwise, they conducted themselves as usual. Their reproductive abilities suffered no damage, and they presented

me with two massive spawns this winter.

Four fish out of the approximately 140-145 in the big aquarium did succumb. (No exact count of the population is possible. Several of the cory species in there, the pandas in particular, keep presenting me with fry.)

1. A big *Corydoras aeneus* died on 6/22/12. She had been failing in health for several months and was an old fish, having spent 11 years with me after coming to me as an adult.
2. A White Cloud died on 7/4. He was not young, but I believe the heat was just too much for him. I'm fortunate that I did not lose the others as well. Given that I can expect this temperature problem to recur every summer, I shall not again bring home these fish or any other species known to require or prefer cooler water.
3. My very old male praecox rainbowfish died. He, too, had been showing signs of failing for several months.
4. A rummynose tetra died on 7/17. This fish had been swimming at an increasingly vertical angle since the middle of May and had been completely vertical for at least two weeks.

Given the fact that all of these fishes were old-very old and that three of them had exhibited significant health issues prior to the onset of the hot weather, I might well have lost them in any event.

I did my best to secure the welfare of my charges, and I hope this account will be of help to others facing environmental challenges with limited space and resources. 



# Fish Tank Enriches P.S. 346 Science Curriculum



BY AGNES E. GREEN

A visit to the main office at P.S. 346 is now a little more than to see the Principal or some other school business. Thanks to the Brooklyn Aquarium Society, it is also a visit to the school's new self-contained science lab - a fish tank.

P.S. 346 was given the fish tank by the Brooklyn Aquarium Society after the school's science teacher Veronica Wilensky reached out to Joseph Graffagnino, president of the so-

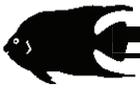
ciety that is known for its support of New York City public schools.

"[We're] proud to show off our new addition in the main office," says P.S. 346 parent Coordinator Joan Charles. "The students, staff and parents are truly enjoying having the fish tank."

Everyone is excited about the tank because it is helping to enrich the school's science exploration studies and activities. Students of all ages will study life science and the ecosystem as part of their curriculum. They will learn

fish anatomy or complex topics such as fish contributions to the ecosystem. And through observation, learn to classify types of fish, their differences and similarities. All lessons will include written reports about their findings.

The tank's presence, Charles explained, is a valuable motivator that is encouraging the elementary school's students to engage in research and inquiry for further studies. 



Jason Kim

Jason is the founder of AquaC. Inc. From his web site [www.proteinskimmer.com](http://www.proteinskimmer.com)  
Aqarticles

# Planktonic Substitutes in the Aquarium

**I would like to discuss the vital role that planktonic food plays in coral reef ecology. It might be interesting to note that before the popularity of wet/dry trickle filtration, high intensity fluorescent lighting, and protein skimming (among other developments in the reef hobby), aquarists placed more importance on their corals' need for live food. Unfortunately, many of these advanced hobbyists were ignorant to the fact that sunlight, the source of energy for photosynthesis, was just as vital a component in healthy reef ecosystems.**

A few weeks ago I was doing some research at the Scripps Institute of Oceanography and happened to come across an aquarium "how to" book written during the late 1960s. In the short section dedicated to coral care the author did hint at the importance of light.

He wrote, "your corals should be placed in a shallow dish once or twice a week and placed outside to be sunned."

I found this advice hilarious, given the fact that tanks illuminated by 400-watt metal halide lamps are hardly a rarity these days. But it really was an insightful bit of thinking back then. The author also stressed the need for live food, and recommended that corals be hand-fed, by pipette or turkey baster, live baby brine shrimp or mosquito

larvae. I think that he hit the nail on the head. Even though plenty of aquarists might scoff at this outdated book today, the author probably possessed more wisdom and insight than some of the most sophisticated "techies" today.

As I mentioned before, the importance of live food has always nagged at the back of my mind... but never really struck me until I watched, while diving, a wild pocillopora colony enthusiastically pull hundreds of organisms from the water like a vacuum cleaner.

## **NOW WE ARE POSED WITH TWO QUESTIONS:**

- 1.** If we decide to feed our corals planktonic food on a regular basis, in order to replicate the nutrient uptake levels they experience in the wild, won't we be adding excessive organics to the system and prompt an algae outbreak?
- 2.** What in the world can we feed the corals anyway?

I certainly don't have access to live plankton! The answers to the two questions are remarkably simple. I stressed the need for a large, efficient protein skimmer in one of my past articles. As long as you have a skimmer that can pull waste and excess organics out of the water, you should be fine. Out-of-control algae growth, often of the "hairy" or "bubble" varieties, is truly the nemesis of the reef aquarist. Large protein skimmers can pull so much waste out of the water that the addition of food to the tank should have a negligible effect on water quality. In fact, adding this extra food to the tank might even benefit the overall health of the tank, especially the vitality of your soft corals. If you are running your tank skimmerless, or with one of the less efficient models available,

I would recommend upgrading to a higher quality skimmer and bump up the feeding regime. If this is not an option, add food slowly and monitor your water quality carefully (you should be doing this, regardless) to see how far you can "push" your limits without getting extra algae growth. All tanks are different, regardless of their skimmer or filtration, and you should always be careful when changing your husbandry techniques.

The answer to the second question is simple, but might leave some of you unsatisfied. Since live food is so hard to come by, we must settle for whatever substitutes we can find.

Live baby brine shrimp (some people, usually those who just shelled out \$29.95 at Toy's 'R Us, call them "Sea Monkeys") can be purchased

at your local tropical fish store and raised in a small bucket in the garage.

Some reef-oriented stores sell packages of live, frozen, or vacuum packed foods like lobster eggs, mysid shrimp, insect larvae, etc. These are all viable alternatives. I've fed my small polyped stony corals a special mash I make from store-bought seafood. Large polyped stony corals like *Catalaphyllia* (Elegance coral) and sea anemones can be fed small pieces of chopped raw squid, shrimp, clam, or fish. I feed mine once or twice a week. I don't feed them huge amounts of food since they are accustomed to catching small organisms in the wild on a constant basis. Remember, you should not stuff your corals as if they were at an all-you-can-eat buffet. 

## JASON'S SPECIAL REEF MASH

1/2 CUP RAW TIGER SHRIMP (SHELLS, GUTS, YOU NAME IT)

1/2 CUP RAW SQUID

1/2 CUP KRILL

1/2 CUP UNCOOKED SPINACH

And here is the interesting part...

1 TBS. KALKWASSER

1 TBS. MARINE DELUXE\*

Chop up all the ingredients in a blender until you have a uniform slurry (not quite watery - you want little pieces the size of brine shrimp or larvae). I then strain out the watery leftovers and spread the mixture onto a flat sheet, which I then freeze. Every other night or so I break off a marble-size chunk of the special mash and place it in a cup of warm water to thaw. I then use a medical syringe to feed my small polyped stony corals individually, with the powerhead and return pumps off. After about ten minutes I turn the powerheads back on, but leave the main circulation pump off for another hour or so. This allows whatever is left of the mash to circulate through the tank completely, without being skimmed away. My hermits, echinoderms (brittle stars), and other detritivores (creatures that eat detritus, or organic waste) consume whatever remains in the tank.

\*The Marine Deluxe is a product you may or may not be familiar with, but it is essentially a mix of vitamins, essential elements, and some other stuff which the company refuses to divulge to the public. If you can't get your hands on this product, don't worry. I doubt it is anything special, regardless of what they would have you believe. I bet Combisan would work well, or any of those other full spectrum "trace element" solutions you can find. For those daring aquarists, it might be a worthy experiment to try dosing Iodine, Strontium, etc. via food. I have never personally tried this and cannot guarantee that there will be no harmful side effects. I do add the kalkwasser to try and simulate the calcareous nature of some plankton exoskeletons. Give it a try!

Brett Fogle

Reprinted, with permission, from *Pond Stuff*, newsletter of [macarthurwatergardens.com](http://macarthurwatergardens.com)  
of Baton Rouge, Florida - Aquarticles

# HOW TO CHOOSE BETWEEN GOLDFISH AND KOI

**MANY PEOPLE HAVE ASKED US OVER  
THE YEARS "SHOULD I ADD GOLDFISH  
OR KOI (OR BOTH) TO MY POND? THE  
ANSWER IS "IT DEPENDS.**

**G**oldfish are better suited to smaller water gardens and ponds, in the 50 - 500 gallon range. Goldfish are extremely hardy and easy to care for, which makes them the perfect choice for the new pond owner or water gardener.



KOI, on the other hand, require a little more knowledge and better water quality in most cases, than goldfish and are better suited to the more experienced pond keeper. KOI generally thrive best in ponds over 500 gallons (the bigger - the better.)

This is because KOI can grow quite large and therefore require more water in the pond for proper biological breakdown of waste. KOI are

also more expensive (and harder to replace) than goldfish, so this should also be taken into account before filling your new pond full of KOI fish. More considerations...

Goldfish are an excellent choice for the average water garden that is usually also full of a variety of potted plants. Lilies, Lotus, Iris, and submerged annuals - these all do well in a water garden pond with goldfish. Goldfish will not disturb



the plants, and will enjoy playing around under the lily pads without disturbing the plants.



Japanese KOI on the other hand, and especially the larger ones, will often create a huge mess out of submerged potted plants. They seem to enjoy 'digging' in the soil of the plants and sometimes even knocking them over. This all leads to added mess in the pond, and can create a real problem for the pond owner.



As far as mixing Goldfish with KOI, this is fine and very common, we've just tried to highlight the most important differences between the two and between the average water garden and KOI pond. Feel free to experiment with both, and then decide which fish is more to your liking.

*Brett Fogle is*

Generally, it's best to not have submerged plants in large pots when also keeping KOI. The ideal KOI pond is much deeper than the average water garden, so the necessity for plants to help with water quality and shade is reduced.

However, if you still do want to keep potted plants in your KOI pond, we recommend wrapping netting over the tops of the pots, to keep the fish from digging in the pots. Another thing you can do is to top the pots with 1" of pea gravel, and then larger river stones or similar over that. The KOI will not be able to get past the larger rocks.

*the owner of MacArthur Water Gardens and several pond-related websites including [macarthurwatergardens.com](http://macarthurwatergardens.com) and [pond-filters-online.com](http://pond-filters-online.com).*

*He also publishes a free monthly newsletter called PondStuff! with a reader circulation of over 6,000 pond owners. To sign up for the free newsletter and receive a complimentary 'New Pond Owners Guide' for joining, just visit <http://www.macarthurwatergardens.com>*

*Specializing in pond filtration and clear water solutions since 1995.* 





# The Practical Plant

## Chapter 7

**A**s promised, this article will tackle the issue of keeping your plants well fed and healthy. But what exactly do plants eat? Well, plants eat all kinds of stuff, including light. Technically speaking, light is not considered a nutrient, but in practice you can think of light as the number one “nutrient.” Carbon falls into the same category as light - not something commonly considered a nutrient, but crucial. In fact, carbon makes up almost half the dry weight of a plant. Carbon is such an important topic that we will deal with it in depth in the next article (and, of course we already covered light). The rest of the stuff that plants eat falls into two broad categories, the macronutrients and the micronutrients. Macronutrients include nitrate (NO<sub>3</sub>), phosphate (PO<sub>4</sub>), potassium (K<sup>+</sup>), sulfate (SO<sub>4</sub>), calcium (Ca), magnesium (Mg) and ammonium (NH<sub>4</sub>). The micronutrients are also known as trace elements. They are an assortment of minerals that plants use in very small amounts.

How much of these nutrients you will need to be adding to your system will vary greatly, according to the type of setup you have. The intensity of your lighting and your usage of CO<sub>2</sub> or LOC (Liquid Organic Carbon) will be the major determining factors in how much nutrients will be required. The more light and carbon they are provided with, the faster the plants will want to grow. The faster they grow, the more nutrients they will consume. In a low tech system with minimal lighting and no carbon enrichment, you

should not need much (if any at all) in the way of supplements. The food you are feeding the fish should provide all the nutrients the plants need. If you have chosen a more powerful lighting system, you will need to increase your use of supplements proportionately.

You will need to decide on which product(s) you will use to supply these nutrients for your plants. You could buy these things as dry chemicals in bulk from an online supply house and mix up your own. More effort, but it will save money. I

personally decided to go with one of the commercial preparations available. I picked the Seachem product line because it was the only one I could find which has all the nutrients I use separated into individual products. This may or may not be important to you depending upon your needs. Most of the other commercial preparations were a single product which contains all the nutrients mixed together, macro and micro. Some were separated into two products, but no other brand was able to offer what Seachem does. I find it

useful to be able to manipulate individual nutrients in order to fine tune my systems. Although plants will usually consume nutrients at known ratios (this is what the all in one type products rely on), this ratio can vary by species, if the plant is deficient in a given nutrient (a surge uptake), or even by the maturity level of the plants. Some plants may just use more of a given nutrient than others do. My sword plants seem to like Potassium a lot, and most red plants really like a little extra iron in their diet. The bottom line is that in certain systems/circumstances, you may wish to have finer control over individual nutrients. The Seachem product line breaks down as follows:

### **Flourish:**

This is Seachem's version of the comprehensive supplement (read as all in one type). If your system is of modest lighting, this type of product will serve you well. It would also serve as a good foundation in high light systems to be supplemented by the rest of the product line.

**Flourish Trace:** This is Seachem's trace element mixture.

**Flourish Nitrogen, Flourish Potassium, Flourish Iron, Flourish Phosphorus:** These are single ingredient products and what they are should be evident by their names.

**Flourish Excel:** This is a really great product which I have not found from any other manufacturer. It is a liquid organic form of carbon (LOC), and we will cover it in more detail in the next article.

**Flourish Tabs:** This is their gravel bed fertilizer for the roots, just follow the directions.

**Flourish Equilibrium:** This product is designed to increase your GH. It will provide your plants with a good source of Potassium, Calcium and Magnesium.

In general, I am not a big fan of aquarium test kits. Unless you are prepared to spend truly astronomical prices for laboratory grade test kits and instruments you can be assured that the kits you buy for \$8 bucks or so are inaccurate. If these test kits were highly accurate, professional laboratories would be using them. I also feel that if you are maintaining

**When testing a planted aquarium you need take the time of day into account. As the day/night cycle progresses photosynthesis, respiration and CO<sub>2</sub> injection will all have their effect on water chemistry. You will not get the same values in the morning versus the evening.**



the system properly (meaning: not over-stocking, not overfeeding, making regular water changes and providing adequate filtration), frequent testing should not even be that critical. The water quality in a properly maintained planted aquaria should always be superb. Now that I have delivered that glowing review of test kits, I should add that they have their place as well. We can use them to determine the proper dosing of supplements. What I'm really trying to say is that you don't need to get neurotic about constant testing, unless

you are into that sort of thing. When testing a planted aquarium you need take the time of day into account. As the day / night cycle progresses photosynthesis, respiration and CO<sub>2</sub> injection will all have their effect on water chemistry. You will not get the same values in the morning versus the evening. The test kits I find useful are pH, GH, KH, Nitrite, Nitrate, Ammonia, Phosphate, Iron and Silicate. Other than Silicate, these test kits will be used in determining the proper amount of supplements and your dosing regime for your individual system. Even though we will not be supplementing with Silicate, it is nice to know if it is present in your tap water. Silicate and Phosphate can be present in municipal water systems and they can contribute to an algae problem. If you have Silicate, you should filter it out using some sort of targeted resin filter media designed to specifically remove Silicate, and if you have Phosphate present, it will save you some cash on supplements. Of course if you have excessively high Phosphate levels, you would remedy this like you did for Silicate; just use the appropriate type of resin. Test your tap water for pH, GH, KH, Phosphate, etc. Now you have a good idea of what you are working with.

Even though our kits are not that accurate, it is O.K. because we are not trying to maintain a specific target value for any given nutrient (which would prove to be virtually impossible anyway), but rather to stay within a given range of values. There are a number of different dosing strategies people

employ. I use a system known as the Estimated Index method (EI). The EI method relies on "resetting" the system once a week with a large water change. Then, throughout the rest of the week, you alternate dosing the macro and micro nutrients. So start out with a big water change of 50-75% and test the water for each parameter we discussed.

The correct nutrient ranges for the high intensity lighted tank (5.5+ watts/gallon of compact fluorescent lighting) with CO<sub>2</sub> injection would be as follows; CO<sub>2</sub> is 20-30ppm, NO<sub>3</sub> is 5-30 ppm, K is 10-30ppm, PO<sub>4</sub> is 1.0-3.0 ppm and Fe is 0.2-0.5 ppm. Note that iron is used as a proxy for the dosing of trace elements in general, since it is the easiest to measure. These ranges can be considerably lower, depending upon your system. Let's say you start on Saturday. After the testing, you should be able to calculate the needed amount of supplements to add to your aquarium to get into the target range. Now add your Nitrate, Phosphate, and Potassium. Sunday, you add the trace elements. Monday, again add Nitrate, Phosphate, and Potassium. Tuesday is trace elements again; Wednesday will repeat Monday. Thursday will repeat Tuesday.

Friday is a day off, do nothing. If you would like to do further reading about the Estimated Index method, there is an in depth article in the July-September 2006 (Vol. 19 No.3) of *The Aquatic Gardener*. They do sell back issues at their website, [www.aquatic-gardeners.org](http://www.aquatic-gardeners.org). Even though we don't supplement for GH, KH and pH, you should be aware of their



values and maintain them in the proper range. Most plants like the water slightly soft and slightly acid, but most will be fine in GH 3-60, KH 4-60 and pH 6.0-7.0. You should research the correct parameters for the species you wish to keep.

If you have several planted aquariums you are maintaining you will find that it becomes time consuming to dose all these supplements every morning. I got around this by purchasing small (1oz and 2oz size) "medicine" style blue glass bottles. They also come in amber. I label these bottles as to which tank and day of week they are for. I can then pre-measure all my supplements for the week in advance. This works really well and saves me a lot of time in the morning. The only thing you need to be aware of is that it is okay to premix these Seachem plant supplements in advance, with the exception of phosphorus which may precipitate out of solution. I found these bottles inexpensively (about .60¢ each) at [www.specialtybottle.com](http://www.specialtybottle.com). If cash is not an issue, you can consider the purchase an automatic dosing pump and automate your daily supplementing for the week.

The only other supplement I use is Miracle-Gro's™ "indoor plant food spikes for flowering plants." You can find this in Home Depot or any other garden center. I make use of these to provide an additional nutrient boost when working with plants like swords, Crypts, lotuses, *Aponogetons*, and any other plants which are heavy root feeders. I cut one of these food spikes

in half and push it into the gravel a couple of inches from the base of the plant. Do this about three to four times a year.

As a final footnote, I would like to take a minute to talk about measuring and calculating dosages. When you calculate the dosage of any

supplement, additive or medication, remember that you are not dealing with a bare tank. Your substrate, driftwood, etc, are all taking up space which otherwise would be occupied with water. To get a better estimate of how much water your decorated tank really contains, you take the number of gallons it is supposed to hold and multiply that by 0.85. It is equally important to accurately measure the dosage you are putting in. It is common to read a phrase like "use one capful or 5ml to 50 gallons" in the directions for many of these products. If you have ever tried using the bottle's cap as a measuring device then you already know how inadequate it is. One can never really be sure exactly how much supplement was actually given. This small degree of error may not be a problem

with larger systems, but with small tanks, it can be significant. And always consider yourself lucky if you don't spill it all over the place. These spills can not only cost you \$ but can be hazardous to your health. Many aquarium additives carry warning labels to remind you of how nasty these substances are. Also, if you use too little of whatever supplement you are adding, it may be ineffective; use too much and you can kill your fish or fuel an

**The only other supplement I use is Miracle-Gro's™ "indoor plant food spikes for flowering plants." You can find this in Home Depot or any other garden center. I make use of these to provide an additional nutrient boost when working with plants like swords, Crypts, lotuses, *Aponogetons*, and any other plants which are heavy root feeders.**



algae breakout.

Obviously, you would want to measure your additives safely and accurately. So let's talk about better options for measuring our supplements. A "Graduated Cylinder" is a reasonably priced gizmo which will vastly improve your accuracy and reduce the chance of accidents. A graduated cylinder looks like a test tube with a flat base so it doesn't tip over. There are calibrations running the length of it so you can measure the contents. Graduates are available in many different sizes, so get one appropriate for your uses. These are available in plastic for around \$5 and in lab glass for around \$10. If you go for the glass one, make sure it comes with a bumper guard. This is a plastic ring which fits around the cylinder to protect against breakage if it happens to tip over. If you try pouring from the bottle directly into the graduated cylinder, you will not only overshoot your desired mark, but may still experience a spill. To avoid this, you will need an oversized eyedropper to go with the cylinder. The supply house that you find which carries the graduated cylinder will most likely carry long eye droppers as well. I have seen these available as long as 10". This method will work fairly well, but if you would like to treat yourself to the ultimate in dosing ease, accuracy and neatness, you cannot beat the pipette. A pipette is a long, thin tube (think of a foot long eyedropper without the rubber part) with calibrations running along it. Pipettes will work best in conjunction with a gadget called a pipette pump. The pipette pump looks like a handle for the pipette. The pump has a fitting on the end which looks and acts like a rubber drill chuck. One end of the pipette will fit into this. The pump now becomes the handle. There is a thumb controlled flywheel on the pump which controls the pressure inside the pipette. By raising or lowering the pressure, you will cause the pipette to either draw liquids up, or release them. Pipettes are highly accurate, capable of measuring extremely small quantities and are available in many different sizes (1ml, 2ml, 5ml, 10ml & 25ml). I have a 5ml pipette, which is capable of measuring quantities as small as 0.05ml. Make

sure you get the right size pump to fit your pipette, as they also come in different sizes. They are virtually spill proof as well. Simply insert the pipette with pump attached into the supplement bottle, draw up desired amount, and dispense. It really eases the chore of dosing, especially when you have multiple aquaria. Although pipettes are not marketed for the purpose, I see no reason why they cannot do double duty as a target feeder for corals and other filter feeders or maybe to feed (and not overfeed) some young fry. These pipettes and pumps are inexpensive. The pumps are about \$10, and the pipettes are just a couple of bucks each. All of these things are fully washable and can be reused indefinitely. The only problem with the pipettes is that they come in a ten pack, which is more than you will need and it makes it a little pricey, so split an order with some fellow club members. The pipettes are glass so it pays to have a backup or two, depending upon how clumsy you are. If you have trouble finding any of these items, check out [www.schoolmasters.com](http://www.schoolmasters.com), they had the best price and selection I could find for these items. 



Larry Jinks ~ RAS - BAS

Reprinted from The Raleigh Aquarium Society, November 2012

# SPAWNING

## *Callochromis pleurospilus*



**C***allochromis pleurospilus* is a sand-sifting mouthbrooder from Lake Tanganyika. I acquired a spawning quad at the October 1998 weekend workshop auction (from Tom Gillooly) as well as a bag of four young specimens. In reading the literature, I found out that there is very strong intraspecific aggression and only one male should be kept with several females. I placed the spawning quad of one male and three females in a 20 gallon long tank with a crushed coral substrate, a few small lava rocks, and two box filters.

The four young went into a twenty gallon long tank with some other young Malawi and Tanganyikan cichlids to grow out. The spawning quad fed well right away on flake food, Tetra bits, live baby brine, and occasionally frozen adult brine shrimp or blood worms. A thirty percent water change was done every 10 to 14 days with Seachem Cichlid Lake Salts added at each water change. The water temperature was 78 degrees F, pH of about 8.5, and a hardness of

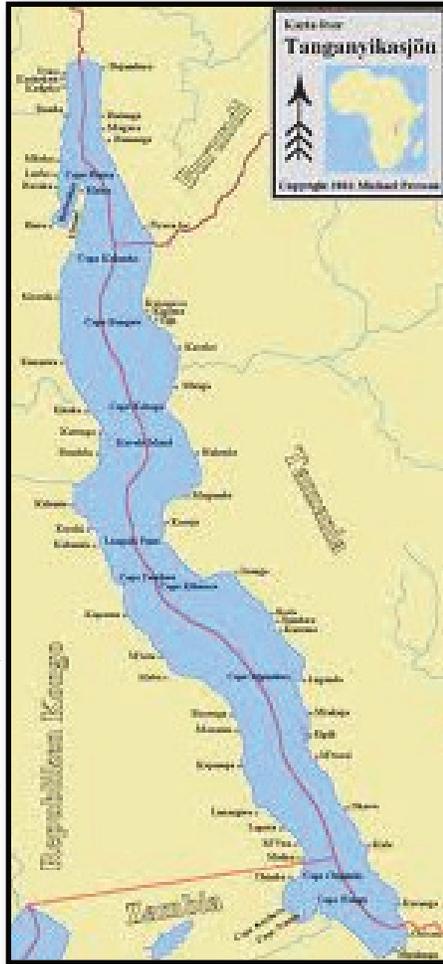
about 220 ppm. The male showed egg spots on his anal fin and was slightly larger than the females. All of the adults hid frequently behind the lava rocks and box filters, making it difficult to monitor them. When they were out in view they were usually taking mouthfuls of the substrate, searching for food. The books claim you should use a fine sand substrate, but mine seemed to do well with crushed coral.

It took several months before anything



happened, but finally, in January, I found the male dead. Great! I looked to the growout tank where the other four young had reduced themselves to one, and it was a male! Pretty lucky for a Jinks! I put him in with the three females and he seemed to adjust with no problems. About a week later I spotted one female with the characteristic throat bulge of mouthbrooders. I decided to let nature take her course, which resulted in only two fry scooped out in early February. Almost immediately after I spotted another female with eggs and then another. I called Tom Gillyooly for advice (an advantage of being a club member). Should I attempt to strip the fry? Tom said that when he tried to net a female with fry she would either swallow the fry or spit them out. So, old livebearer hand that I am, I decided to try a vee shaped breeding trap with the bottom sealed.

I placed the breeding trap in the tank and let the female go for another week before attempting to net her. As soon as I got the net around her she spit out some fry, so I put the whole netful, female



Lake Tanganyika

and fry, into the breeding trap. The fry went through the vee and stayed in the bottom compartment. I left the female in for another four or five days until I noticed more fry in the bottom compartment. After removing the female I removed eighteen fry to a separate rearing tank (actually a one gallon beaker with a seasoned sponge filter). Flushed with my success, I immediately netted the second female with eggs and placed her in the breeding trap (after I had cleaned it) in a twenty gallon long. Since there were no other fish in the tank I left the breeding trap open on the bottom. This second female didn't spit out any fry during netting but two weeks later I was rewarded with over twenty fry. The fry fed hungrily on crushed flake and live baby brine twice a day, but showed the slow growth characteristic of the Tanganyikans I've worked with. I heartily recommend working with this species. I've only kept them in a species tank,

but I don't think it would be a problem to keep them with other species that are not too aggressive.



© 2006 Jennifer Prince



# SPECIES PROFILE

## *Callochromis pleurospilus*



**Family:** Cichlidae

**Common Name:** Red Flame.

**Species:** *Callochromis pleurospilus*

**Range:** Africa: Lake Tanganyika, except the South end of the Lake.

**Habits:** Shallow Sediment-Rich Habitat.

**Size:** Up to 4 inches.

**Water Conditions:** pH range 7.0 to 8.5.

**Water hardness:** Very hard.

**Temperature:** 77 - 79°F.

**Diet:** Carnivore. In the wild the fish feeds mostly on small crustaceans, insects and insect larvae. In the aquarium environment they will readily adjust to a varied diet of commercial meaty foods.

**Breeding:** Maternal Mouthbrooder. After the eggs are released and then fertilized by the male, the female scoops them into her mouth in order to protect the eggs until they hatch. The female does all of the rearing of the brood, which generally lasts approximately 3 weeks. The young fry should be fed freshly hatched baby brine shrimp or given finely crushed flake food.

**Remarks:** A spectacular fish, the males can show particularly strong conspecific aggression, with members of the same sex being hounded through the whole tank. Females will also be hounded, but less so than males. It is recommended to keep a single male to four to six females because of this, and some cover for the females to escape the males. This aggression rarely leads to damage, even with males, but relentless chasing can lead to the weaker fishes' demise through exhaustion. It is noted that tank raised specimens are somewhat less persistent in their chasing than wild caught ones are. In the wild, they dine on insect larvae and small crustaceans, so a diet including flakes, mysis shrimp, daphnia, mosquito larvae, live baby brine shrimp, and cyclops is recommended. 

John Todaro BAS

From the Brooklyn Aquarium Society's publication

SCRUMPTIOUS MEALS & LIVE FOOD TREATS Compiled, Edited & Written by John Todaro



## Tom's Perpetual Super Microworm Culture Recipe

**T**om Miglio (BAS) has kept his culture of Microworms going for over 12 years following the simple recipe and procedure outlined here. If Tom can it do, so can you! 

### R E C I P E

#### INGREDIENTS:

- 1/2 to 1 cup  
Gerber® Oatmeal cereal flakes  
Rich in vitamin C, calcium and iron.)
- Enough water from an established aquarium (contains  
live bacteria) to mix a paste to heavy cream consistency.
- 1 tsp. Paprika
- Paprika (sweet) helps add color to fry that eat the microworms that have ingested it.
- 1 pkg. Fleischman's® yeast (Enough yeast to cover mixture).

#### YOU WILL ALSO NEED:

- A plastic lidded container 4 x 4 or 6 x 6 inches.  
The lid should have holes drilled or punched in it .
- A small block of wood and some small thin strips of wood, such as a from a clean paint stirrer.

#### DIRECTIONS:

Mix oatmeal, water, and paprika in container until it's the consistency of heavy cream, adding water or oatmeal, if necessary, to achieve this. Now add a block of wood (unpainted pine will do fine) about 1 to 1 1/2 inches to the center of the medium for the microworms to crawl onto. Add a few thin strips of either wood or plastic (1-1/2 to 2 inches long). By the time the worms reach the strips they will be clean of the culture medium and the strips can be picked up and dipped into the tank to feed fish, without disturbing the rest of the culture. Now you're ready to add the Microworms. Spread the microworms on the surface of the mixture. Next comes the secret step that gives you an exceptionally active culture.

Add the yeast to the surface of the culture only, sprinkling it evenly over the surface. DO NOT MIX YEAST INTO THE CULTURE. By not mixing it into the culture, you avoid the problem of carbon dioxide bubbles of gas building up in the culture that could kill the Microworms by depriving them of oxygen. Sitting on top of the medium the yeast gases are dissipated quickly through the holes in the lid. The lid keeps the culture moist. When the culture looks like it is drying out, you can refresh it by first sprinkling water over the culture and then fresh oatmeal cereal over the water until it's soaked in. Then liberally sprinkle yeast over the mixture. DO NOT MIX. Cover and let sit for 24 hrs. The culture should be in full "bloom" again. It's a good idea to keep 2 cultures going. After the first culture is in full swing, start a second as a backup.



# Raleigh Aquarium Society 28th Carolina Aquarium Workshop February 15 - 17, 2013

**L**arry Jinks, fellow BAS member and the best tropical fish breeder Brooklyn, and every other club he is a member of, has ever seen, invited me to attend his Raleigh club's workshop. I thought it was a great idea and I could combine the trip and visit

several of my US Postal Service friends that I worked with some years ago. I thought it would be an enjoyable way of getting away from the horrible weather in New York City and I could bask in the beautiful Carolina sun where it was in the mid 60's.



It was a 480 mile trip to Larry's home and took me 8½ hours to get there and 10 hours to return to Brooklyn. Friday evening, Larry had a "meet and greet" at his home where he had members and speakers attend an informal gathering. Many thought that the highlight of the evening was a tour of Larry's famous fish room. Larry has a "state of the art" design for a beautiful and automated fish room.

There was a room heater, de-humidifier, automatic water changer, high output florescent ceiling fixtures and a unique filtration system

Larry in his new 66 tank fishroom. It has skylights and 48" florescent fixtures for lighting .

for his 66 aquariums, not counting fry tanks. He also has skylights and a window on the outside door to allow natural sunlight to enter the room so tetras, barbs and other species can enjoy the early spawn wake up call. Not surprisingly, Larry found spare wall space so he is planning to add another twenty, 20 long aquariums.



Joann and Larry Jinks

The real treat of the evening was the cooking by Larry's wife **Joann**. She made delicious meat pies, vegetarian delights, cakes and brownies. There was soda, beer and coffee/tea for all attendees. I can assure you that I didn't lose any weight while I was there.



Members gather for the Raleigh Aquarium Society 28th Carolina Aquarium Workshop.

Back to the Workshop event! On Friday, there was a local fish collecting trip in the streams around town. The weather was perfect with sunny skies and a temperature of 64 degrees. On Saturday, they had guest speakers and lectures. It was a "who's who" of the greatest speakers in the hobby.



Left to right: Mike Hellweg, Ray "Kingfish" Lucas, Mo Devlin and Chuck Davis, guest speakers at the workshop.

Starting with **David Herlong**, a world traveler for the love of tropical fish and an officer in the American Cichlid Association for decades, whose topic was "*Fish Keepers and Aquarium Shops in Europe.*"

**Chuck Davis** was next and his topic was "*Catfish – An Unscientific Approach.*" As always with Chuck, you were entertained with his wonderful sense of humor and blunt manner of stating complicated issues in basic terms.

**Dr. Robert Goldstein** wrote many books and magazine articles over the past 50 years on every type of tropical fish. His topic for the day was "*Killifish Keeping and Breeding.*" He currently is an environmental consulting biologist, editor of the American Killifish Association and a founding member of the Raleigh Aquarium Society.

**Tom Henderson** spoke on "*Lake Tanganyika: Shellies and Julies.*"

**Mike Hellweg** was next and his topic was "*Breeding Tips and Tricks for Oddball Fish.*" Who better to speak on breeding fish than Mike, who is one of best tropical fish breeders in the United States. Mike mentioned something to me that I thought was quite profound – in the spawning contest he had with **Ted Judy**, everyone concentrated on the number of fish that was spawned in that year, but no one was interested in the amount of failures. While there were 189 fish species that spawned, he had over 300 species that didn't spawn. The number of species that Mike worked with in one year was approximately 500!

**Mo Devlin** was the final speaker and Mo's topic was "*Today in the Fishroom: Segrest Farms.*" Mo took over 3,500 photos in one week at one of the largest tropical fish importers in the world. He took pictures of marine and freshwater



Dr. Robert Goldstein, killifish expert.



species along with invertebrates. He is innovative and very creative in his craft, which makes him, in my opinion, one of the best photographers of tropical fish in the world.

While the speakers were presenting, it had snowed and it covered the area in a couple of inches of snow; later that evening, the temperature dropped into the 20's. What happened to the mid 60's from the day before? Everyone yelled at me for bringing the cold and snow from New York down with me.



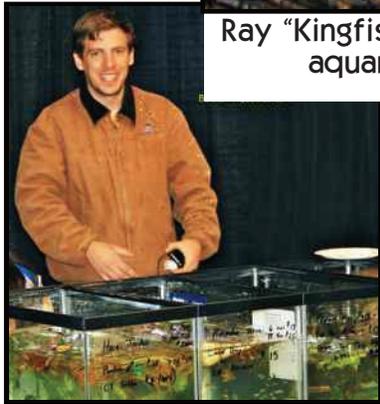
Ray "Kingfish" Lucas and his display of aquarium related products.

Sunday was the big auction and also a silent auction for aquarium products and books. There were a couple of vendors there such as Joshua from BatfishAquatics.com.

Ray "The Kingfish" Lucas attended to promote a wide variety of aquarium related companies. Ray has been providing this service for over 24 years.

I had a great time and I would highly recommend that tropical fish lovers attend these various club events.

I had a great time and I would highly recommend that tropical fish lovers attend these various club events. 



Joshua representing BatfishAquatics.com



Larry with a BAS insulated transporting bag presented to him by Joe Graffagnino.

He's surrounded by some of the fish he is breeding.





**EDITOR'S NOTE:** Dominique Isla was a member of BAS back in the 1990's; unfortunately for the hobby, he passed away in 2008. He was an avid livebearer aquarist and wrote for *Aquatica* in the past.

## Dom's Livebearer Corner

### *Characodon audux*



**T**his elegant Goodeid (the Black Prince in some circles) is a real beauty.

A lot of Goodeids are not good community fish, and can grow 8 inches, for example, *Allophorus robustus*. But *C. audux* is, in my opinion, the best example of a dwarf Goodeid, by **Dr. Loiséle's** definition of a dwarf cichlid used on Goodeids.

*C. audux* is peaceful, doesn't grow large (male:3-4 cm. females 3.5- 5.5 cm.), and you can even allow the female to give birth in the same tank as her mate. Breeding can be easy with a little common sense and skill.

When the babies are born, they are helpless; they drop to the bottom and may not come up. Those who do usually survive. Even though you don't have to isolate the gravid female, it helps get a higher ratio of viable fry if you do. I strongly recommend a shallow container with 2" - 3" of slightly alkaline, aged water, java moss and optional, a weak airline. When moving a pregnant Goodeid, handle her gently so as not to

damage the young. The A.L.A. brood record is a fantastic 59, but I have found that most people who keep *C. audux* get 12 to 20 fry. Also, the species is not, to my

knowledge, a seasonal breeder like some other Goodeids.

A good method for feeding the fry is to drop brine shrimp nauplii in front of them from an eye dropper. Once they are swimming and eating, the survival rate for the fry is one hundred percent.

They can be kept in a community tank with small, gentle fish, and even though the adult males chase each other a little, nothing serious comes of it. Now I said they are elegant. The males have bright, black edges on their caudal, dorsal and anal fins. Their bodies are small, torpedo-shaped with iridescent, metallic sheen. I hope this fish can become established in the hobby. Maybe our BAS killie keepers will get some and breed them. Their geographic range is confined to Coahuila, Mexico. 

## Brad Kemp

[TheShrimp Farm.com](http://TheShrimpFarm.com) is the place to go for freshwater shrimp. The owner, **Brad Kemp**, has a new address: The Shrimp Farm USA, 11936 West 119th St., #197, Overland Park, KS 66213, U S A and has set up an Aquarium Shrimp Forum <http://theshrimpfarm.com/forum/index.php>. You can go to this forum and ask questions, talk to other shrimp nuts and discuss anything and everything related to Aquarium Shrimp.



# ORANGE SAKURA SHRIMP

**Scientific Name:**

*Neocaridina heteropoda*

**Common Name:**

Orange Shrimp, Pumpkin Shrimp, Orange Sakura Shrimp

**Origin:**

Found in the wild: No

pH Range: 6.5 - 7.8

Ideal pH: 7.2

Temperature Range: 65° - 85°F

Ideal Temperature: 72°F

Ideal Hardness: 8 dkh

Life Span: 1 - 2 years

Size: 1/4 - 1/2 inch

Gestation Period: 30 days

Diet: Omnivore

## To Hybridize or Not to Hybridize

Over the years there has been a lot of talk and debate about whether or not hybridizing different species of Dwarf Shrimp is a good idea. In all public forums that I have contributed to, the debate, I have always made it clear where I stand. But before we get into that, let's discuss what hybridizing is.

Webster defines Hybridizing as: To cause to produce hybrids (an offspring of animals of two different species).

When discussing Dwarf Shrimp, there is quite a bit of confusion about what shrimp is what species and this is because there are far more species of shrimp than have been described, and the amount of study that is dedicated to Dwarf Shrimp is not that great. The most common Dwarf Shrimp in the hobby have been studied a bit and have been given scientific names (many of which are being debated even with the most popular species). For example, the Amano Shrimp's scientific name is *Caridina multidentata* (formerly known as *Caridina japonica*). The first part of the name is known as the Genus and the entire name is known as the species.

So let's relate the hybridizing definition to Dwarf Shrimp. The offspring of a *Neocaridina*

*heteropoda* and a *Neocaridina* cf. *zhangjiajiensis* would be considered a hybrid. The offspring of a Red Cherry Shrimp (*Neocaridina heteropoda* var. Red) and a Yellow Shrimp (*Neocaridina heteropoda* var. yellow) would not be a hybrid. The Red Cherry Shrimp and Yellow Cherry Shrimp are the same species and are just color variants.

Now that we have that kind of cleared up, here are my thoughts on hybridizing Dwarf Shrimp. Dwarf Shrimp should not be hybridized at this time for many reasons. Here are just a few of them.

**Problems with Dwarf Shrimp Hybridizing:**

- Possible release into the wild (major problems possible)
- Slow down of the currently slow scientific research
- Muddying of the gene pool
- Loss of purity in the hobby
- Added confusion for the hobbyist
- Arguments for Hybridizing
- Possibly genetically stronger shrimp
- Possible better looking shrimp
- Greater control over aesthetics. 

*Brad*

# StartSmart Complete awarded the BAS's HOBBYIST TESTED & RECOMMENDED SEAL OF APPROVAL

Matt Gurchik  
TLC-Products.com  
P.O. Box 45301  
Westlake, OH. 44145

Dear Matt,

On behalf of the Board, officers and membership of the Brooklyn Aquarium Society, I would like to thank you for allowing us to field test your new products. Many of our accomplished marine and freshwater aquarium keepers have tried your products for an extended period of time.

Congratulations! TLC-Products has been awarded the Brooklyn Aquarium Society's HOBBYIST TESTED & RECOMMENDED SEAL OF APPROVAL for the following product:  
**StartSmart Complete** (Freshwater & Saltwater).

Our most experienced hobbyists and breeders with marine and freshwater aquariums have tested this product. The seal stands for an assurance of quality. Hobbyists will know your products have been tried and approved by other hobbyists and each endorsed product will perform as stated on your labels, when used as directed.

Congratulations again,

**Joseph Graffagnino**  
President



After trying TLC StartSmart in several tanks at the Brooklyn Aquarium Society setups in schools and for personal use, we found it to be very beneficial to cycling the tanks. All the tanks we set up were ready to go almost immediately. All the tanks' water parameters stayed stable and did not fluctuate. We had no fish loss in any of the tanks we started and the fish all looked healthy. We strongly recommend using StartSmart whenever setting up a new tank, either fresh or saltwater.  
**Steven Matassa**

StartSmart Complete is a great product. I use it with every water change and my fish thrive. Thanks for the free sample. **Louise Bergstresser**

I have been using the StartSmart Complete for my 12 gallon freshwater tank for the past few months during my weekly water changes. I must say that I have seen a visibly dramatic improvement in my water quality within just a few hours. Usually, following a 15-25% water change, the water would become a bit hazy and would remain so for about 2 days. Although I am a strong believer in that no chemicals or outside intrusion should be added to the aquarium, that nature should take its course, I am impressed by the performance of StartSmart and believe it is beneficial in bringing my aquarium's natural balance faster to the benefit of my fish, shrimp and plants.  
**Tomasz Lis**

I recently started up a 300 gal. acrylic tank setup for African cichlids. After having the tank run for several days, I decided to try StartSmart Complete to cycle the tank. Prior to administering to the tank, the water was buffered to 8.2 pH, but new tank syndrome was still present as the water was cloudy.

After pouring StartSmart Complete into the tank as per manufacturer's instructions, I waited approximately one hour and added six small one and a half inch Mainganos.

After observing them and seeing them acclimated at day 5, I added another 50 small 1.5 inch to 2 inch assorted Malawi cichlids. Feeding them one small feeding once a day, they seemed to be fine; though the water started to clear, it was still a little cloudy. At day 7, I added another 25 assorted 2 inch to 3 inch cichlids and at day 8 and over the course of 3 days, I lost a total of 5 fish. I may have made a mistake by stocking too many fish in too short a period, but since then the tank has settled with no more losses and the water is almost crystal clear. Feeding has been extended to one small feeding every other day.

I am satisfied with the results from using StartSmart Complete and I believe that had I not used this product, I would not have been able to stock the tank in such a short period of time. This product has definitely sped up the cycling process in my new tank and I would use it again in the future when setting up a new aquarium.

**Ted Louie**

## 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

**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

**Fauna** is Manhattan's largest exotic pet boutique and a new sponsor of the BAS. **Dan 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

**Manhattan Aquarium** has one of the largest Selections of Marine Fish & Corals on the East Coast. Located conveniently at 522 West 37th St. in Manhattan. You should check them out for all your Marine Fish & Coral needs.

**Manhattan Aquarium**

522 West 37th Street, NYC, NY 10018

Ph: 212 594-2271 • Fax: 212 594-2271

[www.ManhattanAquarium.Com](http://www.ManhattanAquarium.Com) • [www.UniqueCorals.Com](http://www.UniqueCorals.Com)

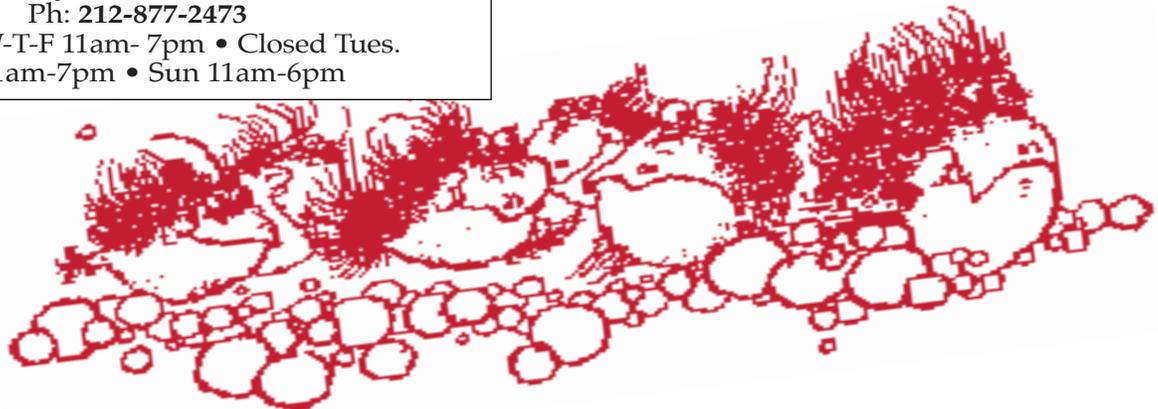
**Pet Shanty.** Family owned & operated; 3 rooms of freshwater fish & 1 of marine fish & corals. They stock a vast list of fish, posted on line at <http://pet-shanty.com>. They also carry other pets and pet supplies. Check them out; they probably have what you want. **Members get a 10% discount.**

**Pet Shanty**

2507 U.S. Hwy 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



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

**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](http://www.petlanddiscounts.com).

**Reefs2Go.Com** has joined the BAS family of quality sponsors. They're located in sunny Florida. Visit their web site to view the full line of saltwater fish, inverts, corals, live foods for marine fish and corals plus a complete line of saltwater dry goods and equipment. Get all the details on FREE SHIPPING and their 14 day Guaranteed Living or Credit policy. If saltwater is your passion and you're looking for deals, check their Daily Deals and Over Stocked Items page. For more great buys, check Buy 1 get 1 Free Offers. Check out the site. Read the testimonials and if you still have questions, call them Monday to Thursday from 10am to 5pm EST at 727-623-0914.

**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

**Wardley Advanced Nutrition Perfect Protein** formula is the first fish food designed to meet the amino acid requirements of fish to support their growth and good health. Amino acid content determines a foods quality, not the percentage of protein.

**Better Nutrition and Cleaner Water  
Now that's advanced.**

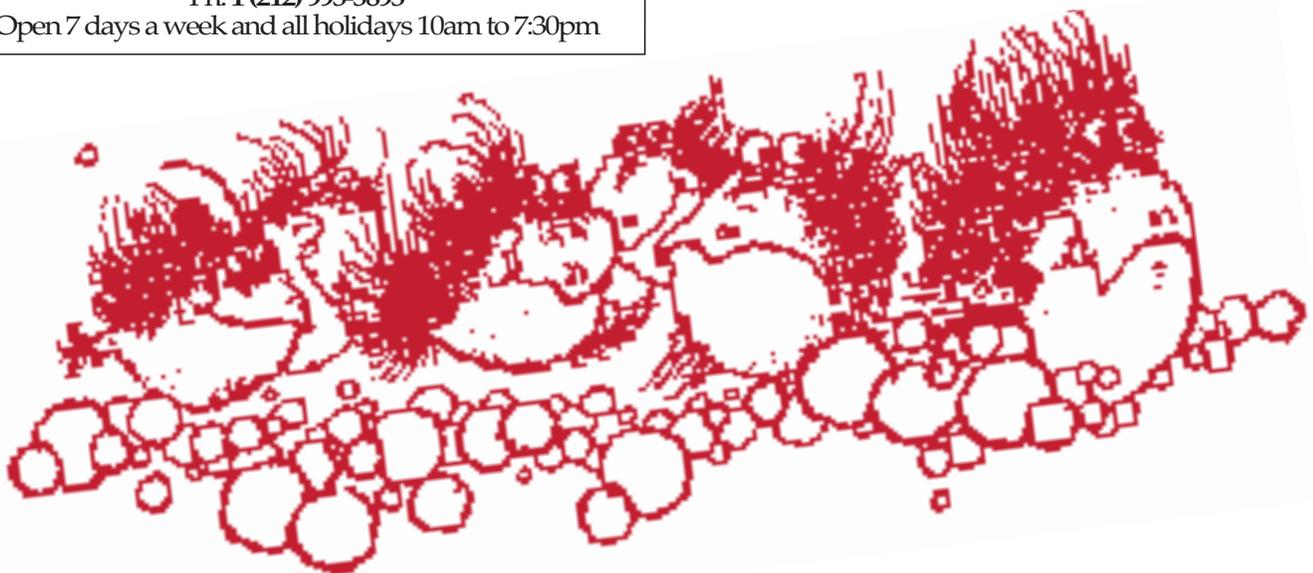
**Joseph S. Reisman & Assoc.** Accounting & Tax Experts. They specialize in aquarium societies, aquarium hobbyists, aquarium retail suppliers and stores and aquarium wholesale suppliers. They offer a 10% discount to Brooklyn Aquarium members with a valid membership card.

Ph: 718-332-1040 • Fax: 800-518-5251

or [www.TAXHELP1040.COM](http://www.TAXHELP1040.COM)

**ZooMed Aquarium Log** not only floats but also provides security, comfort and stress reduction for fish and other aquatic pets. It floats at the surface so that fish can swim inside and it comes in three sizes for any aquarium. Find out more about it and other ZooMed aquatic products at

[www.zoomed.com](http://www.zoomed.com)



### 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: [WWW.BROOKLYNAQUARIUMSOCIETY.ORG](http://WWW.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 1 YEAR
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 \_\_\_\_\_