



AQUATICA

THE ON-LINE JOURNAL OF THE BROOKLYN AQUARIUM SOCIETY
VOL XXVIII SEPTEMBER ~ OCTOBER 2013 No. 1

Arowana ~ *Osteoglossum bicirrhosum*

**AQUATICA WINS 1st PLACE
IN FAAS 2012 PUBLICATION
CONTEST - SEE PAGE 4**

Photo: John Todaro





102 YEARS OF EDUCATING AQUARISTS **AQUATICA**

VOL. XXVIII SEPTEMBER ~ OCTOBER 2013 NO. 1

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AQUATICA STAFF



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Note: The Editor takes full responsibility for misspellings and punctuation errors.

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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. Family membership is \$25 per year/\$20 individual/\$15 students under 14/\$10 web membership. See last page for more information. Send inquiries or membership checks payable to: **Brooklyn Aquarium Society, c/o Membership Chairperson, P.O. Box 290610, Brooklyn, NY 11229-0011.**

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BROOKLYN AQUARIUM SOCIETY

CALENDAR OF EVENTS ~ 2013 - 2014

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.

AQUATICA WINS FIRST PLACE IN THE FAAS PUBLICATION AWARDS FOR 2012

* Best Editor and Publication - Six Issues or Less:
FIRST PLACE ~ John Todaro

* Best Exchange Article:
FIRST PLACE ~ Stuart Hershkowitz

* Best Article on Plants - Maintenance, Cultivation or Reproduction:
FIRST PLACE ~ Izzy Zwerin
Cryptocryne walkeri

* Best Changing Cover - Original Art:
SECOND PLACE ~ John Todaro

* Best How-To-Do-It-Yourself Article:
SECOND PLACE ~ John Todaro
A Cure for the Heartbreak of Duckweed

* Best Continuing Column:
THIRD PLACE ~ Izzy Zwerin
The Practical Plant

* Best Article - All Other Categories:
THIRD PLACE ~ Dan Hagan
Orange Eyed Blue Tiger Shrimp

* Best Article - All Other Categories:
Honorable Mention - John Todaro
Why Do Fish Do What They Do?

* Best Spawning Article - 500-1000 words:
Honorable Mention - Joe Graffagnino
Breeding Anabantoids with Emphasis on Bettas



1st annual **PHOTO CONTEST**



FRESH WATER categories

Best Aquascape
Best Nano Aquarium (2½ – 10 gallons)
Best Med-sized aquarium (15 – 40 gallons)
Best Large aquarium (50 + gallons)
Spectacular Freshwater Fish
Most Fabulous Plant
Most Amazing Freshwater Invert
Best Freshwater Photo (any category)
Spectacular Cichlid

SALTWATER categories

Best Aquascape
Best Nano Aquarium (2 ½ – 10 gallons)
Best Med-sized aquarium (15 – 40 gallons)
Best Large aquarium (50 + gallons)
Spectacular Saltwater Fish
Most Breathtaking Corals Reefs
Most Amazing Saltwater Invert
Best Saltwater Photo (any category)

Deadline

September 30th, 2013



OFFICIAL CONTEST RULES



No purchase or payment necessary to enter or win.

How to Enter

The 1st Brooklyn Aquarium Photo Contest was announced June 14th, 2013 at the monthly Society meeting. All entries will be accepted until September 30th, 2013. The results of the Contest as well as the award ceremony will take place on October 11th at the Society's monthly meeting. Digital photos must be 6 MP (mega pixel) or greater, submitted to the (BROOKLYN AQUARIUM SOCIETY YAHOO GROUP in JPEG format.) As a condition of registration, you will be required to click where indicated to signify that you accept and agree to be bound by these Official Rules.

With each submission, participants must include the following:

- 1) Name of Photographer,
- 2) Address of Photographer,
- 3) Phone Number,
- 4) Email,
- 5) Which Category of Freshwater or Saltwater photo is to be entered,
- 6) Scientific and Common Name of Subject in Photo.

Photo Eligibility

To enter, you do not have to be a member of the Brooklyn Aquarium Society or a member of the BAS Forum. Contest is open to all; no age restrictions. BAS judging individuals and their immediate family are not eligible. BAS non-members taking part in the Contest and winning a prize for any of the 17 categories will receive a free 1 year membership to BAS. Entries that fail to comply with the Official Contest Rules will be disqualified.

Image Modifications

Minor digital enhancement is permitted, but images that have been significantly modified or appear unnatural will be disqualified.

Number of Entries

An individual may submit a maximum of 3 photos per category, any category.

Photo Subject Restrictions

Photos must be appropriate for category entered. Photos unrelated to the contest or of questionable content will not be considered. BAS retains sole discretion as to what constitutes appropriate content. Photos must not contain people or other objects other than the subject for the category entered.

Deadline

Contest ends midnight September 30th, 2013. Any late entries will not be considered.

Prizes

Prizes for each category were announced during the June 14th, 2013 BAS meeting, and on the (BROOKLYN AQUARIUM SOCIETY YAHOO GROUP, on the BROOKLYN AQUARIUM SOCIETY) Facebook page and on our web site (WWW.BROOKLYNAQUARIUMSOCIETY.ORG). No substitution or transfer of prize permitted by winner. Sponsors reserve the right to substitute prize of equal or greater value.

Judging

Entries will be judged on the basis of photographic quality and effectiveness in conveying the beauty and/or unique character of the object in their respective categories. A panel of judges consisting of representatives of the Contest's sponsors, as well as members of the BAS Board, will judge the entries and all contest decisions are final. You must be the sole owner of the image submitted. By submitting your photo, you guarantee that you are the author and copyright holder of the photo. By submitting, the contestant waives all rights upon submission and therefore has no recourse whatsoever in the use of the photo.

Additional Terms and Conditions

BAS is not responsible for computer system, hardware, software, or program malfunctions or other errors, failures, or delayed computer transactions or network connections that are human or technical in nature. Furthermore, BAS is not responsible for (i) lost, misdirected, misplaced, illegible, unintelligible, incomplete, or late entries or (ii) any act, failure to act, or delay regarding the transmitting or processing of entries. BAS reserves the right, in its sole discretion, to cancel or suspend all or any portion of this contest without notice. BAS is entitled to interpret these rules as needed and its decisions are final. BAS reserves the right to disqualify any entrant that BAS has reason to believe is not the original work of entrant, or does not otherwise meet the contest rules.



HOBBY HAPPENINGS



Belonging to as many aquarium

societies (fish clubs) as I do, I get a lot of club publications. Invariably, the editors have a similar request: we need articles!

I was thinking (which occasionally happens when my two remaining neurons fire at the same time) that, being retired now, I should have the time to do some writing. While recently attending the Northeast Council of Aquarium Societies annual convention near Hartford, Connecticut, I spoke with many people in the

hobby that I haven't seen in a while and thought it would be nice to let them know how I'm doing on a regular basis. I have adamantly refused to go on Facebook (and acquire 1700 new friends). I thought I would write something monthly to share my experiences (both good and bad) with other hobbyists and send it to all the clubs of which I'm a member. I promise not to let you know what I had for breakfast each morning! So here goes.

As my speaker's biography says, I joined the North Jersey Aquarium Society and the organized? fish hobby in 1994. I had raised tropical fish as a youth (what's a yout? – apologies to **Danny DeVito**), but stopped when I went to Rutgers and pursued a career in collegiate track and field and earned a bachelor's degree in biology. After college I embarked on a 37 year career as a high school biology teacher and coach, earning a master's in biology along the way.

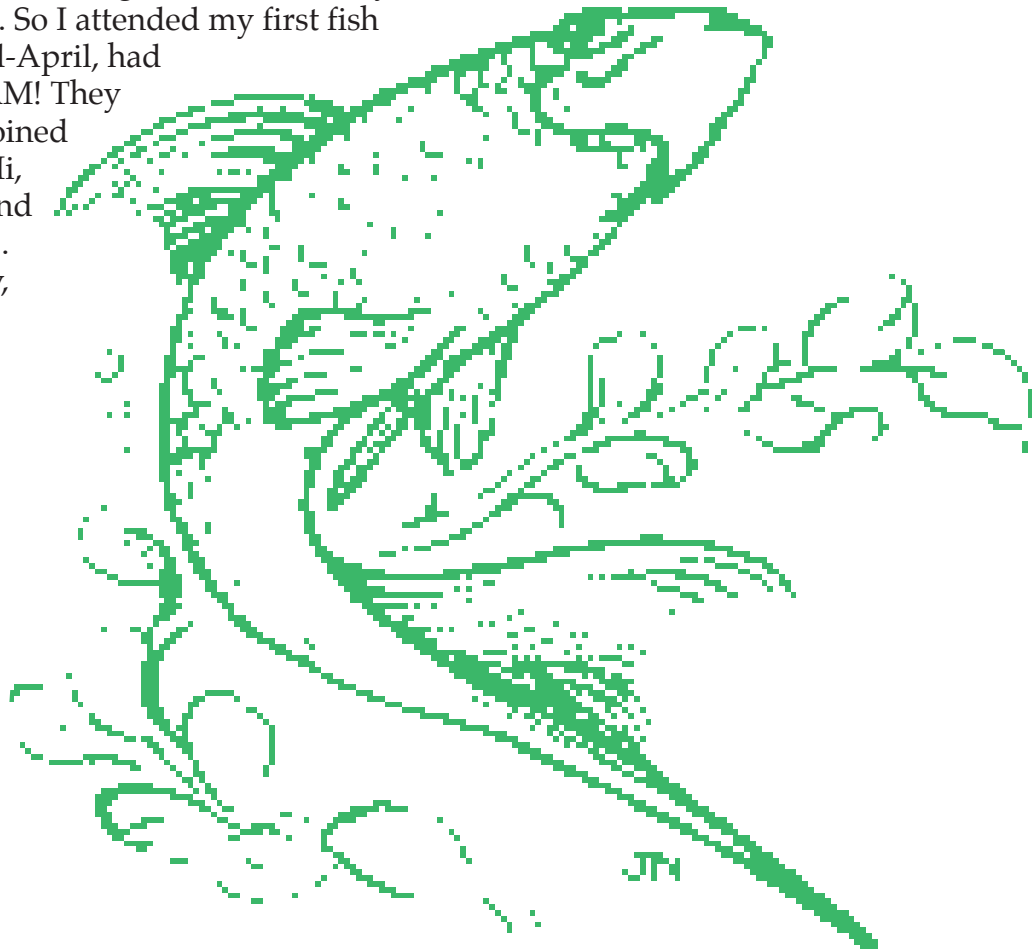
After marrying my wonderful wife, **Joanne**, and setting up in a house we bought in Nutley, NJ, I only kept fish in school. While I was remodeling the basement (five year project), another faculty member offered me a 55 gallon tank, stand and light, so I picture-framed it into a wall of the family room with access behind the tank from the laundry room (future fishroom).

In the spring of 1994 a former student, **Dave Shuster**, who was president of NJAS, came to school and asked if I would hang a poster advertising a tropical fish auction they were holding right in Nutley! I said: "Sure, Dave. You know I used to raise fish as a kid. Maybe I'll stop by the auction." Dave said that another former student, **Tony Metta**, and others I knew would be there. So I attended my first fish auction in early April and bought a bag of large and beautiful green swordtails. Then they said that they met monthly at the American Legion Hall in Nutley and I should attend. So I attended my first fish club meeting in mid-April, had a good time and BAM! They set the hook and I joined my first fish club (Hi, my name is Larry and I raise tropical fish). The rest, as they say,

is history.

In 2009 my daughter and son-in-law moved to Wake Forest, NC with our grandchildren. Following the kids, we closed up in Nutley and moved into an apartment in NC in January 2010. We contracted to build a new house (with a new fishroom) and moved in November 2010. My new fishroom has over sixty tanks ranging in size from five to 125 gallons. I've given my "Building My New Fishroom" talk at clubs from NY to Atlanta and have started developing other talks on keeping and breeding various types of fish. I've already given my "Breeding Catfish" talk at Raleigh and Atlanta and will be debuting "Working With Livebearers" in Raleigh in May.

That's it for now. Any comments, questions, or suggestions will be accepted at bapman13@hotmail.com. I'll keep you posted!





MORE HOBBY HAPPENINGS FROM LARRY JINKS



My first BAP points brought in to North Jersey AS in September 1994 were silver lyretail mollies. I then continued to bid on every livebearing species that showed up at monthly NJAS auctions. After turning in five more livebearing species a funny thing happened. The angelfish spawned in my 55 gallon show tank. These were the first cichlids that spawned in my laundry room.

Three more livebearers followed and then white clouds (everybody in the club said they were easy to spawn). At a monthly meeting while standing with **Mike Sheridan** and bidding on livebearers, Mike said: "Why don't you do some cichlids?" Reply: "I can't do cichlids, they're too difficult." Mike put his arm around me and said: "Do julies. Anybody can do julies." That night I

bought a bag of *Julidochromis regani* fry (I think **Matt Kaufmann** brought them in).

In 1995, my wife, **Joanne**, graduated from college with a degree in accounting. She went to college after the kids were born. It took her eight and a half years with two kids and a part time job and a fishnut husband! She got a job doing audit with Deloitte-Touche and had to do some interstate travel. She said to me: "Lar, you'll have to give up coaching." I stupidly said: "Why?" She gave me that look and said: "I get home at 8 PM and you get home at 7 PM. Where's **Christopher**?" My son, Chris, was only in sixth grade at the time and got out of school at 3:20 PM. 1995 was my last year of coaching. After school I painted the kitchen and did some other things around the house and stood around looking bored when Joanne uttered those fateful words: "You should get a hobby!" She regrets saying that to this day.

In 1995, julies turned in for points, followed by convicts. North Jersey was primarily a cichlid club at the time, so I ended up bringing in a stream of cichlids for BAP points. **Dean Majorino** kept telling me that killies were easy BAP points, so I tried them and brought in my first killifish



points in 1996 (*Aphyosemion bivittatum*). After a few more cichlids, I had over 150 BAP points and had earned my second award.

I was entering fish in the NJAS shows starting in 1994 and doing well. In 1997 **Kevin Carr** convinced me to enter in the **Greater City AS** show held at the Laguardia Marriott. My *Aequidens metae* scored a third place in the New World Cichlid class (against angels and discus!). **Dave Shuster** and **Charlie Materowski** went with Kevin and me. There was also a black-tie affair going on in another room and their cocktail party spilled over into the hallway. Charlie and I got in their pictures carrying buckets of water! Bizarre!

That same year while walking by my 55 gallon show tank I noticed that the water was very cloudy. Probably have to do a water change. Wait a minute! That is a cloud of fry! My first



Joann and Larry Jinks



anabantoid points were entered in 1997 (blue gouramies). Joanne was now working for GAF Building Materials and my hobby was taking off: attending fish conventions, going to fish shows and breeding more fish. In 1998, I turned in my first catfish for points (*Corydoras aeneus*). In 1999, my first characin spawned was a pencil fish (*Nannostomus beckfordi*) which was

being used as dither fish for some dwarf cichlids.

One day Joanne came home and told me that she had an opportunity for a job in internal audit for her company, but it would involve some travel. I told her this was the kind of opportunity that she had to take advantage of. She was away for 22 of 52 weeks. She traveled all over the US, Mexico, Europe and even Tokyo!

Mr. Mom was home with high school and middle school children, and his fish. Between soccer practice and play practice, I managed to spawn more fish. Every time Joanne went away, more tanks appeared. Up to 40 tanks now. "Are these new tanks?" she asked. "No. They were here before." (I'm probably going to hell. I hope they have fish there.)

Matt Kaufmann sucked me in to being the NJAS BAP chairman and after joining the **Jersey Shore BAP**, became chairman there, as well. In 1999, **Jack Borgese** talked me into going to my first ACA convention in Detroit and I remember falling asleep at the late talks. I had so much fun that I resolved to train for the next year's ACA by staying up late and drinking more beer!

The year 2000 brought two

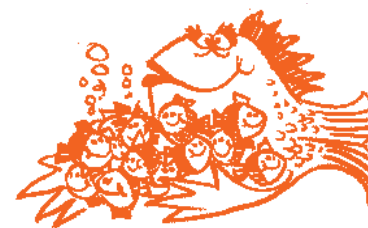
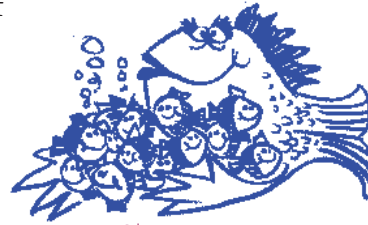


Larry in his new 66 tank dream fishroom in his new home in Raleigh, NC. It has skylights and 48" fluorescent fixtures for lighting.



milestones: The 1000 point mark was passed in the NJAS BAP and a third place in the ACA convention show in Cleveland with a buffalohead. In 2001, we hosted the ACA convention in NJ and I did very well in the show, winning several classes and Reserve of Show with my Cuban cichlid. Riding high, but brought to earth when my Dad passed away in 2002. He was the one that got me started with tropical fish. I still attended meetings and raised fish, but was just going through the motions. Joanne convinced me to snap out of my funk and get on with life. I did so by joining the **Brooklyn AS Breeder Award Program** to stimulate my competitive juices and beginning by entering over 200 points at my first meeting in January 2003.

Really into the hobby now: attending one meeting per week with



my fish buddies (joined the **Metropolitan Area Killifish Association**, too) going to conventions and fish shows at other clubs in different states; and spawning a lot of fish. The NJAS 2000 point plateau in 2005 and 3000 points in 2009. In January 2009, my daughter announced that she and her husband were going to move to Wake Forest, NC with our three grandchildren. After retiring from public school in 2006. I was teaching in a girl's Catholic HS. Joanne and I looked at each other and said: "Let's go!" Closed my NJ fishroom in April 2009. Hmmmm, I see they have a fish club in Raleigh, NC..... 





BREEDING ANGELFISH THE EASY WAY!



***How to breed Angelfish the easy way...
is this guy kidding or what?***

***No, I'm not kidding. I'm going to tell
you a shortcut which will make the
process a lot easier,
just sit back, read, and enjoy.***



Of course, you have to start out with a breeding pair of Angelfish. There are three ways of achieving this; one is simply buying a known breeding pair (be careful if you use this method as there's no way of telling if the pair is spent, meaning they could be an old pair and they've served their usefulness). The second way is by buying 6 young fish, raise them up, and let them pair up between themselves; having 6 will guarantee at least one pair. The third, and perhaps the quickest way, is to plan a day and visit a pet shop to observe the Angelfish they have for sale. Most likely the Angelfish will be courting and pairing off right in their tanks. Look at the breeding tubes located in the anal area. The female's tube will be wider & more blunt than the male's. I've purchased many a pair in this manner.

Once you've acquired the pair, it's best to house them in a bare 20 gal high aquarium, with a black slate measuring 3" x 12" x 1/4" propped against the glass on an angle, as a breeding site. Filtration should consist of an outside power filter and a sponge filter; you should also use a 100 watt heater to maintain the temperature at 82-84° F. It is important to keep the breeding pair well fed with a variety of foods. Live black-worms will help greatly in the development of eggs for the female. It is important that you do not over feed, and keep water quality at an optimum.

Keep in mind that when a breeding pair of Angelfish lays eggs for the first time, they are apt to eat their eggs. After a few more spawnings, their

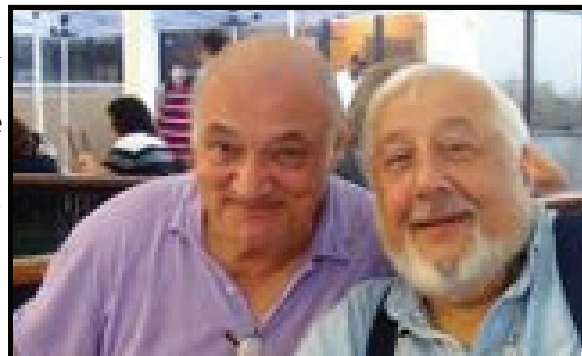
instincts will kick in and eventually they will be able to raise their young to the free swimming stage.



Now most people separate the eggs from the parents to prevent them from eating the eggs, and add methylene blue or other medications to prevent the eggs from fungusing. I skip this process and so can you. Be patient; after only a few spawns, the parents will get the hang of it, and carry the young to the free swimming stage. Some of the eggs are guaranteed to fungus. These are the unfertilized eggs that are turning from a clear or pale yellow color to a white fuzzy stage. The fungus on the unfertilized eggs can spread to and destroy healthy, fertilized

eggs. One way to eliminate the unfertilized eggs is by taking a small clear rigid tubing, and very carefully knocking off these fuzzy eggs from the slate, while trying not to agitate the parents. During this process, you may also knock off some of the viable eggs; it happens, and you have to think they may have become fungused anyway. The next step would be to siphon out the fungused eggs from the floor by using the rigid tubing with

airline tubing attached. By leaving the fertilized eggs on the bottom of the tank, there is a chance that the parents will pick up the eggs and place them back on the slate with the others. At this time you want to have a 5 1/2 gal aquarium set up with a heater, and the water and sponge filter from the parent tank as the filter for the fry.



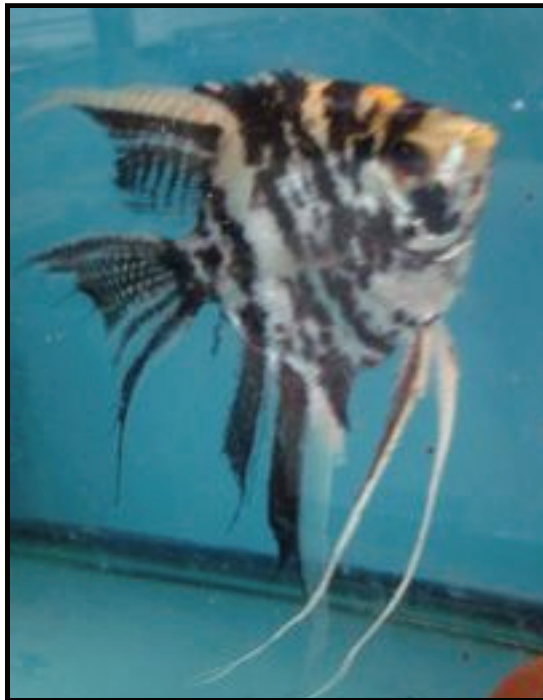
Al, our Angelfish breeder and John T, having a few beers.



Now this step is crucial as "the main short cut." Once the eggs have hatched and the fry have just become free swimming, unplug the heater in the 5 1/2 gallon tank, drain the water. Take a piece of 1" inside diameter, flexible tubing about 5' long, and siphon the fry from the parent tank to the 5 1/2 gal tank; but this must be done very delicately. First fill the 5 1/2 gallon tank. When it reaches one third the way up, start going after the fry and transfer as many of the fry as you can. You will also start developing your instincts to place the end of the hose at the far end of the tank so that the fry don't bang up against the glass and injure themselves (don't forget to plug the heater back in). Of course, by this time you should have been hatching brine shrimp to feed the fry.


It is important to feed the fry about 3-4 times a day. After each feeding, it is important to clean out the bottom of the tank, removing the brine shrimp egg shells, debris, etc.

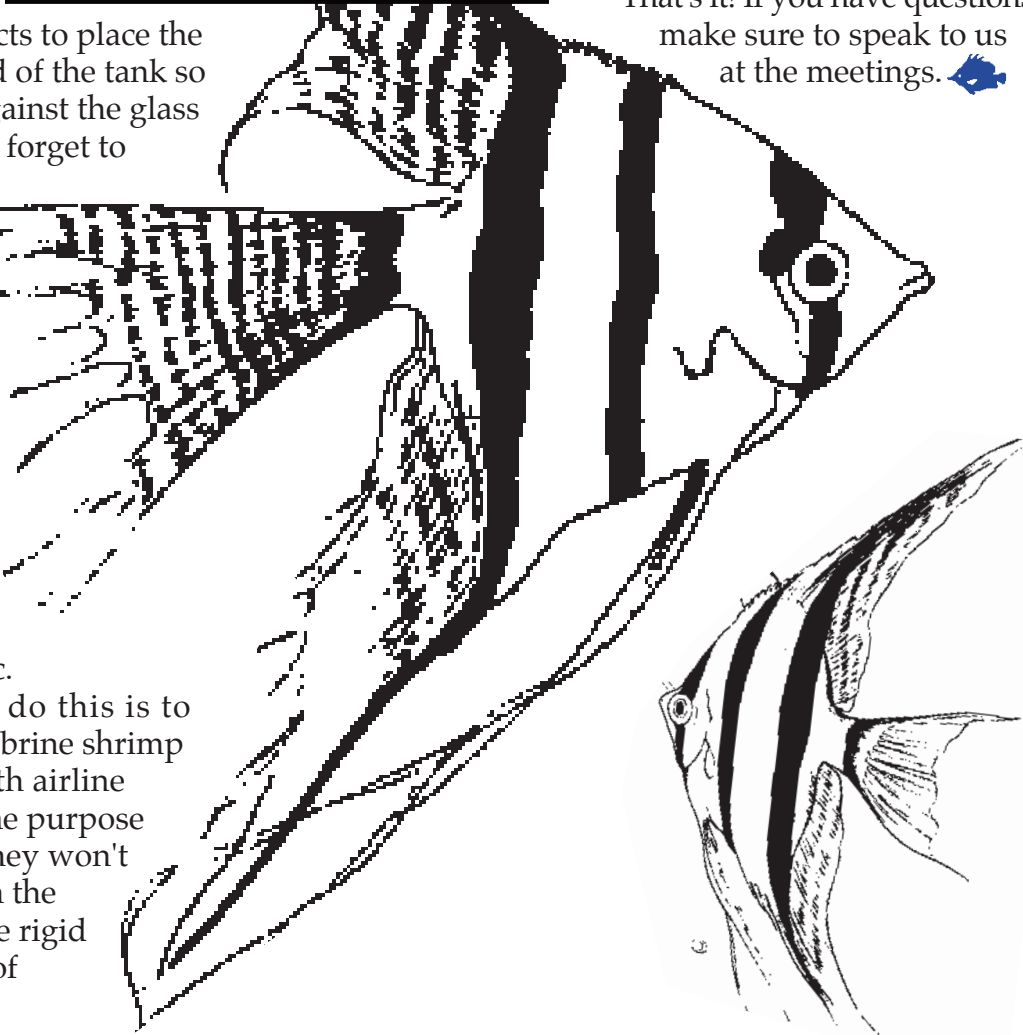
The fail safe way to do this is to designate a clean fish pail, a brine shrimp net, and the rigid tubing with airline tubing attached, solely for the purpose of these water changes, so they won't become contaminated. Begin the siphon into the pail using the rigid tubing scraping the bottom of



the tank, being careful not to siphon up any of the fry. Check the pail of water carefully to be sure you have not siphoned any of the fry into it; if you have, simply remove them with the net and place them back into the tank. You want to keep an eye on these fry as their lateral line and fins may have been damaged in the siphoning process.

You also want to keep an eye on the parents; one may blame the other for the loss of their off spring and could kill the other. Now you wait for the next spawn and repeat the process over again.

That's it! If you have questions make sure to speak to us at the meetings. 





THE DANGERS OF BREATHING BAGS THEY DON'T TELL YOU ABOUT!

Breathing Bags™ are a miracle of modern science and a boon to wholesalers who ship fishes, but there is a dark side to this miracle that potentially makes them a death trap for fishes.

**What are breathing bags? What do they do? How do they work?
To explain it, I have reprinted the following from the
manufacturer's web site.**

Kordon® Breathing Bags™ represent a new approach to the problems of shipping live fishes and other aquatic animals and aquatic plants, including over long distances or for extended time periods. The product development staff at Kordon, teamed with plastics chemical engineers, have taken a technology first developed in space/military research and refined it to produce the bags being offered today. The Breathing Bags allow the transfer of simple and complex gas molecules through the plastic wall of the bag -- carbon dioxide and oxygen in particular, as well as other gases - providing a true "breathing" bag in place of a "barrier" bag as is used in plastic polyethylene bags. As long as there is a breathable atmosphere outside the Breathing Bag, the animals inside will not run out of oxygen.

Carbon dioxide exits the bags at 4 times the rate oxygen enters the bags, thereby constantly purging the water of toxic carbon dioxide, and allowing oxygen to replace it in the water.

Kordon has shipped around the world millions of bags (termed "Sachets") of living foods (tubifex worms, brine shrimp, daphnia, glass worms, etc.) for aquarium fishes using the Breathing Bag technology, and hundreds of thousands of Breathing Bags have been used successfully to ship fishes, coral reef animals, and aquatic plants.

In other words... Breather Bags work by allowing gas exchange through the walls of the bag. The CO₂ exits the bag and O₂ enters the bag. This makes it unnecessary to leave an air pocket in the bag. In fact, they work better if you completely remove all the air. Occasionally it may be necessary to leave a small pocket of air if you are shipping a delicate species that likes to get the occasional gulp of air from the surface like Bettas. Since there is a gas exchange occurring through the walls of the bag, you also don't want to double bag or you'll end up reducing the

ability of the bags to breath by about 50%.

These bags aren't recommended for labyrinth fish because they need to gulp air or Corys or fish like Plecos with sharp fins, or for some marine fish, corals and inverts that also have sharp spines.

You can't stack the bags right next to each other because that may block the surface of the bag to make the CO₂ - O₂ exchange. You have to keep them separate. Use crumpled newspaper or shipping peanuts or even loosely wrapped bubble wrap...anything that keeps the bags away from

each other and in contact with the surrounding air.

If you don't keep this in mind and you stuff the bags into a styro or shipping carton so that they touch, the fish may drown!

Also, there is no warning on the bag, to hobbyist, that they should never ever float the bags in a tank to regulate the temperature before releasing the fish. If you float a Breather Bag that has almost no air space, (in regular plastic bags, there is usually one-third water and two-thirds air; those bags and can be floated) you run the risk of drowning your new fish because there's not enough air in the bag and the water the bag is floating in, is blocking this vital gas exchange.

If you float a bag and come back in 15 or 20 minutes to release the fish, you may find them either in distress or worse...dead!

I know this happened to me...and it will never happen again. Whenever I get fish in breather bags, I'm now always careful to make sure there's enough space between bags when I pack them for the trip home and never float them in water.

When I get home, I now remove the fishes from the bag and put them in a holding or isolation tank. I slowly add tank water from where they'll be housed until the temperatures are the same, then I can release them into their new home.

For transport, folded or crumpled sheets of newspaper or even a piece of plastic lighting egg crate placed on the bottom of a styro or carrying bag works.

The plastic egg-crate raises the bag off the bottom of the styro or carrying container just enough so even if the bags touch, the bag is in contact with the air and the gas exchange can happen. The egg crate also stops the fish bags from sliding around in the container.

Breather Bags allow shippers to put just enough water in the bags to contain the fish with



no need for an air space, so shippers can fill the entire fish bag with water. This provides more room for more bags of fish and also prevents stressful sloshing that occurs in transport. The unlimited source of atmospheric oxygen around the bag allows shippers to choose slower and more economical methods of transport.

Let me be clear: the advantages of the Breather Bags are a great advance for shipping, but the following should always be kept in mind by the hobbyist when dealing with them:

1] These bags should never be used for fish, corals or inverts that have spines as the bags are very thin and are easily punctured.

2] Labyrinth fish, such as bettas and gourami and some corys that need to gulp a bubble of air should not be shipped in these bags.

3] In shipping or carrying them home, make sure the bags do not touch each other. There should be air space around them.

4] Never float breather bags to regulate the water temperature in the bag to match that of the aquarium.

5] Do not write on the bag unless you have a peel off label because with sharpies and markers the ink will go into the bag and kill the fish.

Kordon should print a warning on the Breather Bags not to float them or have them touch each other for any length of time, to remind the hobbyist that if we don't use the bags properly, we could suffocate fishes.

Warnings on many commercial plastic bags are pretty much standard to remind us to keep them away from children, so they do not suffocate.

Kordon should do the same! 



The Practical Plant

Chapter 8

Understanding & Using Carbon Enrichment

Welcome back. This article completes a series in which we covered the setup of a planted aquarium from A to Z. This is not my last article, just the last about getting all set up. In this case, the old saying “last but not least” couldn’t be truer. When you see a tank that’s an absolutely eye popping display of dense, lush, colorful plants, think Carbon. These displays are not possible any other way. I said it last time, but it’s worth repeating, almost half the dry weight of a plant is Carbon. Yes, that’s right, almost every other atom in a plant is a carbon atom. It is clearly the most important supplement you can provide them with. There are a few different ways to get this wonder element into your tank, and we will explore them today.

The cheapest and easiest way to get started with Carbon enrichment is a product made by Seachem™ called Excel®. This is an organic form of Carbon and is sold as a liquid supplement. Excel is easy to use and effective. It is not a plants-preferred form of Carbon, which would be Carbon Dioxide. It does not enter the plant and become metabolized by the same pathways as Carbon Dioxide.

Although it is the number two choice of carbon sources, it is far better than using nothing. It also has an interesting advantage over CO₂. Since Excel is a liquid, it is far less likely to escape the tank because of water surface agitation. Additionally, since it operates via different pathways, it can be

used in conjunction with CO₂ to max out available Carbon. A 500ml bottle will treat a 100 gallon setup for 1-2 months and will set you back about \$10 (buying larger size bottles will generate significant savings).

Carbon Dioxide, or CO₂, is what your plants really crave, and if you give it to them stand back and prepare for explosive growth. For many, the first attempt at carbon enrichment is some type of fermentation reactor. There are commercial units available for \$20-\$30 bucks, or you can find do-it-yourself plans run amok on the web. The way they work is to capitalize on a reaction between yeast and sugar. As yeast ferments, the

sugar CO_2 is created as a waste byproduct. The basic principle is to mix yeast, sugar and water in the bottle. The sealed bottle has a hole in the cap which is threaded with airline tubing. As CO_2 is created, pressure builds up and forces it through the tubing and into the aquarium. The allure of these systems is a very low start up cost, and I have fallen prey to this myself. I have to say I am not a fan of this method. These systems have a number of problems. The first problem is that the CO_2 output is inconsistent, and somewhat unpredictable. There is no simple way to solve this. When you start up a batch there is very little CO_2 being produced. As the yeast come out of dormancy and start reproducing, they will cause CO_2 production to soar. All will be fine until alcohol (another byproduct of fermentation) kills off the yeast. Problem number two: these fermentation systems can be really messy. As the yeast do their thing, thick foam develops like the head on a beer. It is possible for this foam to back up all the way into your fish tank. Remember this stuff is under pressure, so if your do-it-yourself unit fails, it can be explosively messy. Problem number three is high maintenance. The entire cycle, from activating the yeast to them dying off, is about two weeks. The exact species of yeast used, temperature of the reaction and other variables will affect this time. I cannot think of any practical way to automate these systems so you will have to shut them off manually when the lights go off. If you forget to shut it off, you may have put your fish to sleep permanently. I have recently heard this issue challenged, and the counterclaim was made that you could run the CO_2 continuously if you have sufficient buffers present in the water (although this speaker could not tell me how much buffer he has added to his system). I have not tried this myself, nor do I intend to. I cannot understand why I would want to use gas I am paying for at a time when the plants cannot use it. When the lights go off, the plants switch from photosynthesis to respiration. During photosynthesis the plants consume Carbon and produce Oxygen; during respiration, the process is reversed. Just because you can do something does not mean it is a good idea. My final beef with this

method is the operating cost. Yeast itself is not so cheap, as a 2 liter mixture uses about two cups of sugar, multiplied by twice per month. I would rather use Excel, close to the same operating expense without all the work, mess and inconsistencies.

There are also systems which operate much the same as the fermentation systems, but rely on chemical reactions. These are not very popular, but are available. I would make all the same criticisms as the fermentation systems, plus they use some nasty chemicals you will have to be careful with.

In my opinion, the best way to get CO_2 into a planted aquarium is out of a commercial high pressure CO_2 bottle. This system does have a high start up cost, but makes up for it in durability, reliability, ease of operation, low maintenance and a low operating cost. Refills are inexpensive and last a long time. I can operate six aquariums off one 10lb bottle for months. The bottles come in many different sizes and are measured in pounds. I consider a 10lb bottle the smallest practical size, but they do make a 5lb size. A new 10lb bottle can be had for around \$125. You can get a used one for about half of that. If you are interested in a used tank, and live in Brooklyn, I recommend Simplex Fire Extinguisher Corp. at 1621 McDonald Avenue. Let **Dave** know you are with the Brooklyn Aquarium Society. You will also find these things at welding supply stores. If you decide to use Simplex, make sure you call ahead as they are often out on service calls. If you go with a used bottle, consider going for the 15lb bottle. The purchase price on the used bottle and the cost of refill are almost the same for the 10lb and 15lb sizes. This will cut down on these inconvenient trips for refills. The other thing to be aware of is the recertification date. These bottles need to be tested and recertified every five years, so make sure you have as much time as possible until recertification is required on a used one.

You will also need to purchase a regulator for your CO_2 bottle. This is something I would purchase new. I have tried a couple of different ones and like the one made by Milwaukee best. I like this one because it is compact and has the solenoid valve built in. I spoke with the folks over



at Milwaukee, and they told me they only make one model, so do not become confused by retailers and varying descriptions. If you shop round, it can be had for about \$90. You can use thick walled vinyl tubing or specialty tubing made for this purpose. Wait, we're not done yet. If you try to simply bubble CO₂ gas through an airstone, it will not work very well. We need some way to get the gas to be delivered into the water. There are a few ways to do this. The simplest way is to increase the contact time between the gas and water. To get this accomplished, there are several different gadgets available. One is called a bell, because it looks like one. It is mounted via a suction cup to the glass and traps the gas under it. These are hard to find and really inefficient.

There is a gadget made by Hagen called the "Bubble Counter/Diffuser" which operates on a similar principle, but has better efficiency. It is available as a replacement part for their "CO₂ Natural Plant System" (which is one of these fermentation systems we spoke about). It's about 8" tall and 2" wide. It's essentially a track bent into a series of switchbacks; the bubbles march back and forth. Visually, it is a little large, but since it is very flat, it doesn't protrude into the aquarium much. It does have its own charm. As the bubbles march back and forth, you will see them shrink in size along their journey. I paid \$10 for mine, and you will need a CO₂ safety check valve, so add another \$3.

Another way to improve gas absorption is to increase the surface area that the water comes into contact with. We do this by turning one big CO₂ bubble into lots of tiny ones. They are also

more efficient than the previous method I just described. There are many different models like this. But they all work on the same principle. They tend to be very small and easily concealed. What they do is force the gas through sintered glass producing a mist of fine bubbles. I am using the one made by Red Sea. I have a few of these and they work really well. They will set you back about \$18, but have a built in check valve and bubble counter. Locate these as deep in the aquarium as possible to increase the contact time as well. A trick to further increase contact time (not required) is to locate the diffuser near the intake strainer or spray bar of your canister filter. The filter will suck up the bubbles and behave as a reactor and forcibly mix the gas into the water. I would only do this on a small tank with a modest flow of bubbles so as not to create problems in the filter. I run my spray bars vertically, aimed into a side wall of the aquarium. I do this to cut down on strong currents and minimize surface agitation. When I locate the diffuser under the spray bar, the rinsing bubbles get caught in this vortex before being swept around the tank. This also improves contact time. The ultimate in diffusers is the membrane diffuser. These work by forcing the gas through a selectively permeable membrane. They provide the most efficient use of gas, but are a bit more expensive than the other diffusers discussed.

Any of these methods are suitable for an aquarium up to about 50-gallons; larger systems require either more diffusers or reactors which use a pump to mix water and gas. The really nice thing about CO₂ reactors is that they are external, so you don't have to look





at additional equipment in your aquarium. They are also highly efficient.

Sorry, still not done yet. Depending on your regulator, you may also need a quality needle valve to regulate the fine flow of gas into your aquarium. Red Sea makes a really cool one, but it's a little pricey at \$35. You can find one which will work just fine for about \$25. I purchased something called a CO₂ manifold. It has six needle valves built into a single block and allows me to share one CO₂ bottle and can regulate six fish tanks. It was very expensive, but still worked out a little cheaper than purchasing individual valves for each aquarium.

The way to hook all this up is fairly straight forward and easy enough. First, make sure the threads on the CO₂ bottle are clean and free of any dirt or grease. Wrap the threads with plumbers' Teflon tape (you can get this at any hardware store) and slightly open the valve to allow a short burst of gas to escape. This will blow out any dirt so it does not end up in your regulator. Insert the washer into the regulator and attach it to the bottle with a wrench. Carefully read the directions which came with your regulator; failure to comply with your manufacturers' operating instructions can cause serious damage. Then use CO₂ safe tubing to connect the regulator to (in the following order) the needle valve, check valve, bubble counter and diffuser. Depending on your exact hookup, the needle valve, check valve and/or bubble counter may be optional, so adjust your configuration accordingly.

Periodically, your diffuser may become clogged and you will have to remove it for cleaning. Plan ahead accordingly when you decide where to locate the diffuser. If you don't mind getting off a little, Marine Depot sells airline quick disconnect valves with automatic shutoff when opened. These valves are impossible to find elsewhere

Another way to improve gas absorption is to increase the surface area that the water comes into contact with. We do this by turning one big CO₂ bubble into lots of tiny ones.

and I think they know it. They are getting \$12 for each valve; outrageous, but they are awfully convenient.

The regulator has two gauges on it. The first is a high pressure gauge to measure the internal pressure. The other is a low pressure gauge to measure outgoing pressure. You can ignore the high pressure gauge as it is a totally inaccurate way to tell how much gas is left. Follow the directions and adjust

the low pressure gauge to about 5 PSI (pounds/square/inch). If you set the pressure too high, it will cause the system to become overly sensitive and difficult to adjust. By using the needle valve you will adjust the flow of gas to the desired amount. We discuss this flow in bubbles per second. But how much gas is desired? There is no amount of CO₂ that will harm your plants, but adding more than they can use is just wasting it. In the last article, I gave you a CO₂ range of 20-30ppm for a system using compact fluorescent lighting totaling 5.5 watts/gallon or more. But with less light, the plants cannot use as much. A system using 2 watts/gallon might do well in the 15-20 ppm range.

CO₂ is not the easiest thing for the hobbyist to measure. The Chart above will estimate CO₂ [page 20] concentrations, or you can purchase another test kit for Carbon Dioxide. Neither method will be especially accurate, but what can you do. I'm going to skip the chemistry lesson (I know how disappointed you are) and keep it as simple as possible. You know that pH is a measure of how acidic the water is. KH measures the water hardness related to buffering capacity, Buffering capacity is the water's ability to resist a drop in pH. When CO₂ combines with water, it forms an acid, causing the pH to drop. The chart works by comparing the pH to the KH and calculating how much CO₂ needs to be present for these values. It is best to adjust the gas by starting with your needle valve closed (0 bubbles/sec). Slowly make upward



adjustments till the desired flow rate is achieved. The desired flow rate is the one which gives you the desired CO₂ concentration. This can test one's patience. You will need to make these upward adjustments in very small increments. When you make your adjustment, it's going to take a while for the pressure to fully stabilize. You need to wait 15-20 minutes to get an accurate bubble count after it is adjusted. Then you need to wait a while for the water chemistry to stabilize at this flow rate. Then you can test your pH and KH, look them up on the chart and see if you are in the right CO₂ range. Exercise caution as you increase the amount of CO₂ you are using; too much can kill your fish. If they start acting funny, back off a little on the CO₂.

If your regulator does not have a built in solenoid, you have what is called a manual system. This means you will have to turn it on and off yourself in concert with the light cycle. If your regulator has a solenoid, you can connect it to a timer to control the on/off cycle. These are known as

semi-automatic. In line solenoids are available and can be added if your regulator does not have it. It is much cheaper in the long run to get a regulator that has one built in to start out with. And for another \$100 (plus another \$30 every 18 months to replace the electrode) you can turn your semi-automatic system into a fully automatic one by adding a pH controller. The pH controller has an electrode to measure the pH, and an outlet for your solenoid valve. When the pH valve you pre-selected is reached, the system will tell the solenoid valve to shut and stop adding gas. It will then turn the solenoid valve on and off to maintain that pH. If you have this gadget, you can forget the testing and adjusting regimen described above. Just test your KH, check the chart for the pH which will give you the desired CO₂ level, plug that value into your controller and let her rip.

There is one other device I have seen for enriching CO₂ in the aquarium. It's called the "Carbo Plus CO₂ Unitil." It works by liberating carbon atoms from a solid block of carbon. Really

high tech and is an extremely small system. It is moderately expensive at about \$150, but the real problem is the high maintenance costs associated with replacing these carbon blocks. I have not used one myself so this is all I can tell you. If you have tried one of these I'd like to hear about it.

If you've been keeping track of the costs, believe me I know, it adds up. The results, however, cannot be matched any other way.

If you've been following this series of articles you should now be able to create a beautiful and healthy planted aquarium.

Happy aquatic gardening! 

CO₂ Levels Based on KH (in Degrees) and pH

pH	6.4	6.5	6.6	6.7	6.8	6.9	7	7.1	7.2	7.3	7.4	7.6	7.8
KH													
3.0	41	33	26	21	17	13	10	8	7	5	4	3	2
3.5	48	38	31	24	19	15	12	10	8	6	5	3	2
4.0	55	44	35	28	22	17	14	11	9	7	6	3	2
4.5	62	49	39	31	25	20	16	12	10	8	6	4	2
5.0	69	55	44	35	28	22	17	14	11	9	7	4	3
5.5	76	60	48	38	30	24	19	15	12	10	8	5	3
6.0	83	66	52	42	33	26	21	17	13	10	8	5	3
6.5	90	71	57	45	36	28	23	18	14	11	9	6	4
7.0	97	77	61	49	39	31	24	19	15	12	10	6	4
7.5	104	82	65	52	41	33	26	21	16	13	10	7	4
8.0	111	88	70	55	44	35	28	22	18	14	11	7	4
8.5	118	93	74	59	47	37	30	23	19	15	12	7	5
9.0	124	99	79	62	50	39	31	25	20	16	12	8	5
9.5	131	104	83	66	52	42	33	26	21	17	13	8	5
10.	138	110	87	69	55	44	35	28	22	17	14	9	6
10.5	145	115	92	73	58	46	36	29	23	18	15	9	6
11.0	152	121	96	76	61	48	38	30	24	19	15	10	6
11.5	159	126	100	80	63	50	40	32	25	20	16	10	6
12.0	166	132	105	83	66	52	42	33	26	21	17	10	7
12.5	173	137	109	87	69	55	43	34	28	22	17	11	7
13.0	180	143	113	90	72	57	45	36	28	23	18	11	7

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Spawning *Corydoras aeneus*, albino

I don't want to offend any of our Cory lovers,
but I don't really care much for Corydoras cats.

Perhaps they can sense this and that helps explain my extraordinarily bad luck with convincing them to spawn. I know there are numerous people in our club and others that are spectacular Cory breeders. When I attempted to breed my first Cories, I bought a colony of 12 or so

pygmy Cories, *Corydoras pygmaeus*. I tried mops, oak leaves, Indian almond leaves, rain water, cool water changes, and live black worms. Nothing. I asked for advice; I read articles on the web. Nothing. I know I told those fish I hated them on a near daily basis. Spawn already! I finally dumped the pygmy Cories in a community tank and ignored them except to occasionally curse their existence. To this day, the remaining ancient few from the colony still grace a community tank.

Meanwhile I endured more than one novice aquarist who told me stories of buying a couple of Cories in a pet store, setting them up in a community tank and having eggs and eggs and eggs and not even trying to spawn them. I decided



Pygmy Corydoras cats,
Corydoras pygmaeus.

to try again with albino *Corydoras aeneus*. They are supposed to be quite easy to breed and I figured it was time for another try. I set the tank on the stone floor of my fish room at my husband's

suggestion. The 20 gallon tank initially had a bare bottom with two sponge filters and no other decor except for the large balls of black worms left for the original three catfish to eat. The tank was filled with mostly rain water mixed with just a little well water. My well has exceptionally hard water so very little is needed to make nice soft Cory water. I was not taking hardness readings at the time, but I now know that the well water is about 350ppm and the rain water is measuring at about 20ppm. The mixture was mostly rain water so I am assuming that they were in at the time was close to 100ppm. The room was typically about 74-76°F with the floor being slightly cooler, around 70°F.



The Cories did finally spawn after a few weeks in this set up. I moved the adults to a 20 gallon tank with black sand and left the eggs to hatch in the spawning tank. Few fry survived. It was hard to see the eggs/fry developing on the dark floor where the tank was located. I added another albino Cory that was in a different community tank to the group. A few weeks later, the Cories gave me another chance and this time I moved their eggs to a shoebox to hatch. Eggs were deposited everywhere in the tank, all sides, the sponge filter lift tube... A drop of methylene blue, an air stone and a few days were all that were needed for the fry to hatch. Unfortunately, although I routinely use the shoeboxes for many of my fry, the Cory babies didn't do well in this set up much past initial hatching and again I ended up with few fry.

About this time, I had the opportunity to listen to **Ian Fuller** [Editors Note: Ian is a member of the Brooklyn Aquarium Society] give his Cory presentation. I have heard this same talk before, but this time I really paid attention. He said he kept sand in all the tanks, even those for fry. This time I poured all the eggs from the next spawn into a 5 gallon tank with a sponge filter and a light dusting of white sand. I added the methylene blue and left them at room temperature in my fish room, which was about 78°F degrees at the time. The Cory eggs were not easily visible on the white sand. Two days later, I saw no movement and assumed the eggs were bad or I had somehow failed in some way again. Just to be sure, I shined a flashlight on the tank and as the bright light hit the sand, the newly hatched fry which were all but invisible on the white sand, began spinning and whirling in

circles creating little eddies in the sand. The hatch rate was quite good and they ate well on microworms. After they were obviously flourishing and actively foraging for food, I began adding Hikari sinking catfish wafers. They were obviously eating well as you could see the color of their food through their pale abdomens.

After a few weeks, the Cories were obviously too much bio load for the 5 gallon tank. A dozen were moved to another tank and a carbon filter was added to the original tank. About 30+ were left in the original tank. The cats were kept in this setup until they were about an inch in length.

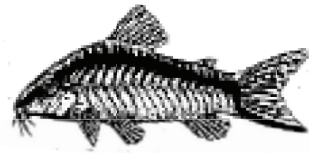
They were voracious eaters and polished off about 4-6 wafers twice a day in the 5 gallon tank. Water changes were not done too often, probably not nearly often enough. With a new fish room and relying on well and rain water, I was afraid of shocking them with water changes. They did get small water changes with their parents' tank water every few days when they were newly hatched, larger fresh water changes when they were over a month old. I did end up with a couple with spinal deformities, which may have been due to poor water quality. I am sure that they would have fared better if I had kept better water quality while they were small. All told, I had over four dozen live, which was far better than I had done in the past, so I am considering that a great success considering my Cory breeding past. While my husband is quick to want to get me another species of Cories, I think I will just revel in my great achievement for now! 🐟





SPECIES PROFILE

Corydoras aeneus, albino



Family: *Callichthyidae*

Common Name: Albino Cory.

Species: *Corydoras aeneus*

Range: Farm raised - USA, Indonesia, Singapore

Habits: Bottom dwelling. Peaceful.

Size: Up to 2 inches.

Water Conditions: pH range 5.8 to 7.0.


Water hardness: KH 2-12

Temperature: 72 - 82°F.

Diet: Omnivore. Considered scavengers, these fishes are often neglected when it comes to feeding. They must be fed in the morning and just after the lights are extinguished at night to ensure optimum health and prepare them for spawning. Will accept a wide variety of meaty and herbivore aquarium fare, including flakes and pellets, especially those specifically designed for corys.

Breeding: Breeding the Aeneus Cory Cat is relatively easy if kept in a large enough school to allow the cats to pair off. The water needs to be slightly acidic, and within the ideal temperature range. Sudden decrease in temperature has been shown to spark the Aeneus to spawn. This can be induced by a 20% water change with the added water being a few degrees cooler than the aquarium water. Remove all fry after they have become waterborne and feed with baby brine shrimp.

Remarks: The albino variety is an albino variety of the bronze corydoras that has been developed for the aquarium trade, with a pale pink or orange body and red eyes. It is physically similar to normally-colored individuals, although some breeders report that the fry are a little slower to develop.

The Aeneus Cory Cat requires a well planted aquarium with plenty of hiding places that provide relief from the light. A smooth sand or gravel substrate is needed because of the easily damaged barbels. They enjoy being in numbers, so a small school of six or more is ideal for these cats. 



John Todaro BAS

From the Brooklyn Aquarium Society's publication

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



Guppy Color Blend Paste Dinner

Searching for great color in your guppies? Here is a recipe from *Guppy News* by **William Driscoll**. He designed this recipe with hopes of growing and coloring up guppies fast.

According to William, in his search for the best guppy food, he hoped this recipe would increase growth and intensify color and also decrease the percentage of sterility. William carefully recorded the results of his recipe and here is what he found.

At three months, the growth and coloration for guppies fed exclusively on this formula was excellent. But at five months, it was determined the growth difference of guppies fed this recipe was insignificant, but coloration was more brilliant than those fed other foods.

So, if brilliant color of your fish is your goal, along with a good solid fish food, your search is over. 

R E C I P E

INGREDIENTS:

- 4 packages of dry yeast
- 1 qt. of blended haddock roe
- 8 tsp. of cod liver oil
- 1 jar of Gerbers® strained green string beans
- 4 tbsp. of paprika
- Salmon egg meal

DIRECTIONS:

Mix all the ingredients in a blender to a paste. Add salmon egg meal to thicken the mixture. Place blended paste in plastic food bags and flatten to about 1/4 " inch. Seal and freeze flat in freezer.

FEEDING:

To feed, break off small pieces and drop directly into tank. Care should be exercised when feeding this food, as an over abundance has a tendency to cloud the water. It is also not recommended that this food be fed in tanks with gravel on the bottom because the food will settle below the gravel and contaminate the tank unless you have energetic catfish in the tank to clean it up.





TheShrimp Farm.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.

The Best Types Of Fish For Your Shrimp Aquarium



Keeping different types of tropical fish is a great hobby, and it's an ideal one for anyone who keeps shrimp, because there are so many types that go well with them. But what with the sheer magnitude of available types of freshwater fish, it can be quite difficult to know which ones are suitable for keeping with shrimp.

It's very important that you get the right types of freshwater fish for your shrimp tank – choose the wrong types of tropical fish and you could end up unleashing an Armageddon for your poor little shrimp! There have been dozens of stories reported to us of people releasing their new shrimp into their aquarium, only to see them instantly be gulped down by predatory fish who think it's Christmas time!

The problem with shrimp and different types of fish is that for many of them, shrimp are the natural food for many types of freshwater fish. Many types of tropical fish see shrimp as delicious snacks, or even a part of their staple diet, and so if you go putting predatory fish into your shrimp tank, or vice versa, then you are almost certainly going to see a feast of shrimp, in which your beloved shrimp are on the menu.

Environment:

One more thing to consider, while we are on this subject, is whether or not your shrimp are

able to hide. In nature, shrimp spend most of their lives hiding out from types of freshwater fish. Indeed, some have a natural coloration that helps them to mimic their surroundings and help them to evade predators. Shrimp breeders have completely removed this line of defense for your shrimp, with selective breeding to make them look more beautiful. Many shrimp have colors that are rarely, if ever, seen in the wild – for example; solid reds, whites, blues etc. are never normally seen. Therefore, your brightly colored shrimp often look like a beacon for predatory types of freshwater fish.

The point of all this is not to deter you from keeping types of tropical fish with your shrimp. Rather, we just want to enlighten you so that you don't make any mistakes. Some shrimp can be very expensive and if they get eaten, you will not be very happy about it

So which types of fish are suitable for our shrimp? Luckily, there are a few fish you can keep with them safely. But it would always be a good



idea to have plenty of plants and bits and pieces in your tank for the shrimp to hide from the different types of freshwater fish. As well, you should remember the golden rule:

“If a shrimp looks like it can fit in a fish’s mouth, then the fish will probably eat it.”

So, with this in mind, let’s take a look at some of the best types of tropical fish for our shrimp aquariums:

Neon Tetras

These little fish are actually some of the best types of freshwater fish for keeping in large communities, as they don’t seem to harm anything. On top of that, the spectacle of these little guys swimming around together in a school of 7, 8 or more can be an awesome sight. Peaceful and small fish, they are highly unlikely to bother your shrimp, and they are very adaptable as well, being able to live in a pH range from 5.0 to 7.0 quite comfortably. These types of fish are a beautiful addition to any shrimp tank and come well recommended.

Glow-light Tetras

Much like their neon cousins, the glow-light tetras are ideal types of tropical fish to keep with your shrimp because they are small and peaceable. They act in much the same way to their cousins as well, though they are perhaps a little bit more shy, and will take time to adjust to a new tank. During this time, you can expect them to be hiding out with your shrimp.

Harlequin Rasboras

These small, intensely colorful fish are great types of tropical fish for your shrimp tank. They can be kept alone, or in shoals, or even with groups of other peaceful fish. Harlequin Rasboras generally prefer water that is slightly acidic and soft, but they can be kept in neutral or even so slightly alkaline water without too many health problems. Note that they do like to eat live food, as well as flakes, and so if you are trying to breed shrimp then keeping them together is not such a good idea when the babies start popping out.

White Clouds

Extremely beautiful types of freshwater fish! Don’t go making the mistake of assuming it looks like the white clouds that you see up in the sky. They take their name not from the clouds in the sky, but rather the mountain in China in which they were first discovered – the White Cloud Mountain.


They used to be known as a “poor man’s tetra” due to the coppery stripe that runs lengthwise along its body and the fact they have a similar body shape. These types of fish are not actually tropical fish, although they are often labeled as such, due to the fact that they do so well in tropical aquariums.

These types of freshwater fish are ideal for keeping with shrimp – they are peaceful, happy enough to eat flake food and leave your shrimp well alone.

Glassfish

A delightful and incredibly unique type of tropical fish, the glassfish gets its name from its distinctive translucent flesh. You can see right through them, making out their bone structure, internal organs and more.

There are several different types of glassfish, but most of them act and look similar enough. They are usually quite shy fish, and will spend a lot of time hiding out. Non-aggressive, they are unlikely to bother your shrimp too much, and usually they never grow to a large enough size to be much threat to them.

Don’t be put off by their false reputation for being difficult to keep alive. It’s said that these types of tropical fish need brackish water to survive, but in the wild they are actually found in streams rather than estuaries. So long as you keep them in true freshwater, you should have no trouble with them. 

Brad



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.

Reprinted from the May 1991 *Aquatica*.

Dom's Livebearer Corner

Gambusia Species of the U.S. **PART 1**

In 1976 I was living in Coconut Grove, FL, keeping and breeding angels and assorted African cichlids. On weekends, I would sometimes picnic at the Viscya estate. I noticed schools of small fish in the canals used for watering the extensive gardens. One day I brought a small dip net and jar and captured some of these small, active fish.

That was my introduction to not only wild-form livebearers, but also to *Gambusia* species. There are other *Gambusia* species to be found in the U.S.; from New Jersey to Florida and over to Texas, quite a few species occur. In this two-part article, I will give an up-to-date account of our native *Gambusia*.

Even with the efforts and resources of the **U.S. Fish and Wildlife Agency**, two of our native livebearers have disappeared, but there is good news: several other *gambusia* species are being managed and saved thanks to the work being done at **Dexter National Fish Hatchery** and also at the state level. Thanks to their endangered status, there is hope for their future.

***Gambusia* are widely distributed over Central America and the Caribbean. The U.S. species are as follows:**

- 1] *Gambusia affinis* - Western mosquito fish.
- 2] *Gambusia. amistadensis* - Goodenough *gambusia* (**Editors Note:** The FWS ruled the *Amistad gambusia* extinct in 1987, and removed it from the endangered species list.)
- 3] *Gambusia gaigei* - Big bend *gambusia*. (**Editor's Note:** Endangered The only known

remaining population is in a protected pond in the Big Bend National Park.)

4] *Gambusia geiseri* - Larger Spring *gambusia*.

5] *Gambusia georgei* - San Marcos *gambusia*.

(**Editor's Note:** The San Marcos *gambusia* is an endangered species of fish, found only in the San Marcos Springs of Central Texas. The fish has not been seen since 1983, so it may be extinct.)

6] *Gambusia heterochir* - Clear Creek *gambusia*.

(**Editor's Note:** Endangered. They have recently fallen victim to damming, relocation which has presented a change of climate, and nutria feeding. Thus, the Clear Creek *gambusia* was put on the United States' list of endangered species in 1967.)

7] *Gambusia holbrooki* - Eastern mosquito fish.

(**Editor's Note:** The eastern mosquitofish, *Gambusia holbrooki*, is a species of freshwater fish, closely related to the western mosquitofish, *Gambusia affinis*. It is a member of the family *Poeciliidae* of order *Cyprinodontiformes*. Native to the eastern and southern United States, and grows to 3.5 cm in length.)

8] *Gambusia nobilis* - Pecos *gambusia*.

(**Editors Note:** Endangered. They are endangered due to loss of their spring-fed desert habitat.)

9] *Gambusia rhizophorae* - Mangrove *gambusia*

(**Editors Note:** Inhabits tidal creeks under high-storied red mangroves. Vulnerable because of its highly specific habitat requirements.)

10] *Gambusia senilis* - Blotched *gambusia*

(**Editor's Note:** It is found in Mexico and the United States.) 



Coralline Algae Propagation in the Home Aquarium

Have you ever looked into a saltwater aquarium and realized that everything in it is purple, pink, white, red or blue? If you have, then you have seen just how colorful that this side of the hobby can be. In this article, I am not only going to tell you all about the base colors of the saltwater aquarium, but also how you can increase the amount of it that you have in yours.

Coralline algae are a highly sought after and loved algae in the saltwater aquarium. It is the base of the filtration that live rock provides. Coralline algae comes in six different forms. The colors that are often seen are purple, blue, pink, red, white and green. These algae can grow in an encrusting form as well as plate like shingles and even small balls. Not only does that algae contribute color to your rock and sand, it can also become the center piece in a FOWELER set up.

There are currently over 1600 different species of coralline algae known to exist. We will not be covering different species in this article, but rather covering the general care, maintenance, and propagation of the corallines found in the common saltwater home aquarium.

Corallines have been around since the

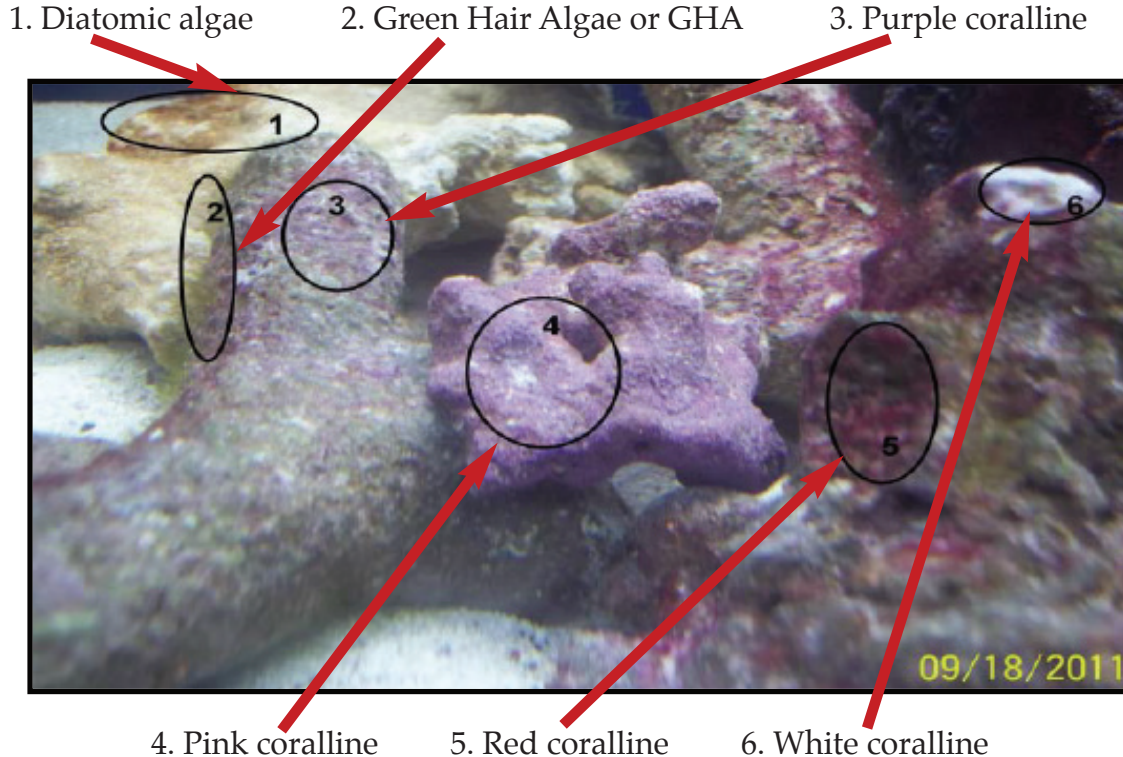
early cretaceous period and have remained very much the same simple organism. Corallines require herbivores to continue to grow and to be carried to other locations to spread.

There are a few things though that we can do to help this process along in our home saltwater tank. In the wild, corallines usually spread between .01 and 88mm per year. This would take years to cover our live rock so there has got to be a faster way to get it seeded throughout our home aquarium.

In the home aquarium, we hope for a total encrusting of all of the live rocks in coralline with minimal encrusting on equipment and other aquarium residents. This is achievable, but not always easy. We will cover both the propagation and the removal of coralline in this article.



Let's identify some of the different alga with the help of this picture:



Diatomic algae are the tell tale signs of a newly set-up tank. This brown harmless algae comes with every new tank that is set - up; once the cycle is complete, it often leaves faster than it arrives.

Green hair algae or GHA as it is often referred to, comes from an overabundance of nutrients in your saltwater aquarium. Since I am cycling this nano tank, I have some things that came in on the pieces of live rock that may have died off during transport to my home and thus my nutrients are slightly elevated. Once it's time for the clean-up crew to go in, they will be more than happy to mow this grass and trim the hedges for me. For the time being, I am just limiting the white light cycle to fewer hours per day so that I can keep the GHA in check during cycling.

The other 4 alga in this picture are the sought after ones of the coralline persuasion. I got lucky to have gotten 4 different colors on my Tonga branch rock. These starters of coralline will be all that it takes to literally create endless amounts of live rock.

There are two ways that we can "force"

culture of coralline algae and cause it to propagate in our saltwater aquarium.

The first way is the directional flow method. Here, you direct a powerhead or the output of your hang-on-the-back filter to hit the rocks that have your starter algae growing on it for a natural dispersion of the algae throughout the tank. This is my current method for spreading the coralline that I have growing. I am using this method since I do not have a thick build-up of coralline anywhere that I can perform the second method of propagation with.

The second method of coralline propagation is often referred to as the "purple water method." This propagation technique calls for you to simply scrape some coralline algae from a piece of live rock, glass or even from your equipment. Cleaning the coralline algae from your glass will become part of your maintenance in time. This method is also great for setting up a new tank and importing coralline from other more established tanks for seeding in your tank.



The process for purple water is as follows:

1. Collect your starter scrapings of coralline algae. This can be from your existing tank, or even from your local fish store's tanks. Many times people trade coralline algae scrapings to create a more diverse algae population in their own tanks so do not be afraid to ask around for some scrapings!

2. After you have your starter scrapings in a small container of saltwater, put them into a blender or use a small hand held blender to pulverize the algae into duct sized particles. This often causes the water to turn purple, hence the name "purple water method."

3. Next, you need to turn off all filters and protein skimmers that you have running to prevent the purple water from being removed from the water column. You can leave water circulation pumps running and also turn off your sump drain valve if you have one.

4. With a quick fluid motion, pour the purple water across the entire length of your saltwater aquarium from end to end. In a few moments you will see the particles settle to the bottom of the tank and find new homes. It is important that you allow the filters and protein skimmer to remain turned off for the next hour or more to give your seeds a chance to settle in.

5. After the time has elapsed, you can turn on your filtration and skimmer as normal.

A few things to keep in mind about speeding the process of coralline propagation up are:


- Coralline algae likes the blue spectrum of lighting; running your actinic lighting 24 hours can greatly speed up the process of growing coralline algae in new aquaria.

- Coralline algae is mostly not eaten by clean-up crew members, but some do in fact eat it - so do your research before bringing home that cute little crab that you found at the pet store.

- There's a few products on the market that help to promote higher coralline algae growth. I personally do not endorse any particular company but Kent, Seachem and other companies all have products that provide exactly what coralline algae need to grow. I rely on water changes and proper lighting for its development.

Coralline algae can also become a problem in your saltwater aquarium over time. It always seems that you have an easier time growing it everywhere but where you actually want it to grow! It is easily enough scraped off of undesirable locations and either tossed or turned into purple water and reseeded with hopes of it landing where you want it this time.

I hope that this article has not only shown you how to increase your coralline algae growth, but also has taught you that there are a few little tricks to getting that amazingly colored live rock that you have been desiring all this time.

As always, until I peek from behind my shell and see you again, I bid you happy fish keeping. 





Exchange Editor's Report



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

I said this before and I'm saying it again because it needs repeating.

I'm going to level with everyone. Volunteering for this or any fish club is thankless work. Each month a small group of individuals work to bring together a memorable speaker, an outstanding *Bulletin* and publication, an auction that has extremely reasonable(sic) prices for livestock, plants, tanks, dry goods and more. Those individuals put in a number of hours each month without any thought of their own time and "neglect" of their own family. They consider BAS part of their "family." Take a moment and thank them. And by all means help out and volunteer your time and expertise. You might even have fun doing it. Especially the Board meetings!! (Thanks again, Frog.)

And another thing I have noticed while reading through publications from our Exchange clubs. Is it only my eyes or is everyone in the hobby "OLD"? I look through the pictures and everything and all I see is gray hair and white hair and no hair. The hobby needs to pass knowledge and expertise on to a younger generation or there will be no hobby left to pass on. I never thought I would truly believe my own words, but here it is and it bites us when we don't want to be bitten. The younger generation needs to be educated in fish keeping and even fish killing since that's how we all learn, from our mistakes. I guess it's a circle of life. Now there's a catchy phrase. I wonder if someone beat me to it?



• *Tank Tales*, Durham Region Aquarium Society, June 2013. *My Green Wet Thumb* by **Derek P.S. Tustin**. A nice article about the *Lobelia* plant and its several species.

Aquarium Photography Part 3 – Post Processing by **Dave Hansen**.

Also read their monthly column on catfish by **Derek Tustin** as well.

• *Modern Aquarium*, Greater City Aquarium Society, April, May & June 2013 had several nice articles so I have decided to just list them all here.

• *Should You Be Cooking For Your Fish?* by **Jules Birnbaum**. It's all about the food, especially **Repashy Super Foods**.

• *Fish Bytes* (Exchange article) by **Stephen** and **Donna Sosna Sica**.

• *The Guppy King*: **Paul Hahnell**, reprinted



from a *Modern Aquarium* classic October 1969. **Paul Hahnell** was a Hobby Builder who died just before this story was published. **Dan Carson** was the author of this piece

- *LIONFISH of the Turks & Caicos* by **Stephen Sica**. Very nice pictures.

- *Black Eggs Tilapia Snyderae* by **Joseph Graffagnino** reprinted from our own *Aquatica* May / June 2011.

- *Divide and Conquer!* By **Jules Birnbaum**. Not enough room to breed fish? Try dividing your tanks for more space.

- *SHARKS of Grand Bahama* by **Stephen Sica**. It's all about taming and feeding large sharks. In the 5 to 8 foot range. Amazing story with many pictures.

- *A Hobbyist's Dream Home for sale*. In Truth or Consequences, New Mexico where there were 340 sunny days last year there is a home for sale for the price of \$189,000. Includes a Fishroom, Pondroom and the rest of the house too. And taxes are only \$600 for the year.

- *The Fish From Outer Space* by **Susan Priest**. A story about the African Knifefish with a few nice pictures as well.

- *Brine Shrimp, You Could Write a Book On The Subject* by **Jules Birnbaum**.

- *Key Largo Revisited* by **Stephen Sica** with some nice shots of different fish species. Thanks to Donna too, "bad hair day" or not.

- *The Darter*, Missouri Aquarium Society, Inc. May / June 2013.

- *Faowi Wowee* by **Gary Lange**: Exploring for Rainbow Fish in Papua. Nice pictures too

- *Decapsulating Brine Shrimp Eggs* by **Gary Lange**. A quite extensive and informative article. And more pics too.

- *Their HAP and Auction chair*, **Mike Hellweg**, who spoke at Brooklyn back in September 2012, does some reporting too.

- *From the Fish Room* by **Ed Millinger**. Thanks to their president **Pat Tosie** just for being the president.

- *Finformation*, Greater Pittsburgh Aquarium Society, Inc. (Pennsylvania), May 2013.

- *Tour at Imperial Tropicals-Lakeland, Florida* by **Steve Okabayashi**.

- *Cichlidae Communiqué* #196, Pacific Coast Cichlid Association (California) Mar / Apr 2013.

- *Collecting California Cichlids* - by **Mark Tomasello**. *Ask Pam* #109, by **Pam Chin**. Pam answers questions in her regular column about cichlids with great expertise. Really nice pics.

- *Cichlidae Communiqué* #197, Pacific Coast Cichlid Association (California), May / June 2013.

- *Chocolates for All*, by **Daniel Spielman**. Photos taken with his new iPhone and he goes into detail about how to set up a South American Community Cichlid Tank.

- *Cichlids in the News*, by **Pam Chin**. A review of **Ad Konings** book on *Tropheus in Their Natural Habitat*. *The Last Word*, by **Kevin Plazak**.

- **Michael Pyle** (first printed in CC#156). Michael writes about his success with *Julidochromis regaini* "Sumbu," a Lake Tanganyika cichlid.

- *Ask Pam* #110, by **Pam Chin** again. Pam answers questions in her regular column about cichlids with great expertise.

- *NEC Newsletter*, The Northeast Council of Aquarium Societies April 2013.

- *How to Get Your Summer Tub On: A Practical Guide* by **Ted Coletti**. Ted writes about setting up summer breeding tubs and water gardens. There are lots of details on which plants and fish to choose, sun concerns and needs, netting, mosquitoes, and raccoons. Very nice photos too.

- *The Raleigh Aquarium Society Newsletter*, Raleigh Aquarium Society (North Carolina) April 2013.

- *Jumbo Catfishes* by **Kevin Thurston**, from CAS Newsletter and Aquarist, Colorado Aquarium Society. Kevin writes about different catfish especially ones that grow too large and are unmanageable.

That's it for now. See you all next time.

Happy fish reading everyone. 

Stu



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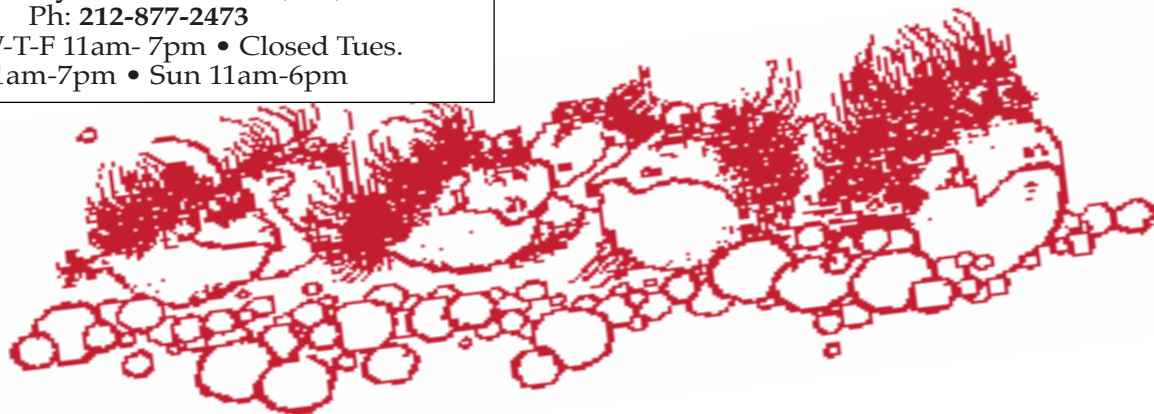
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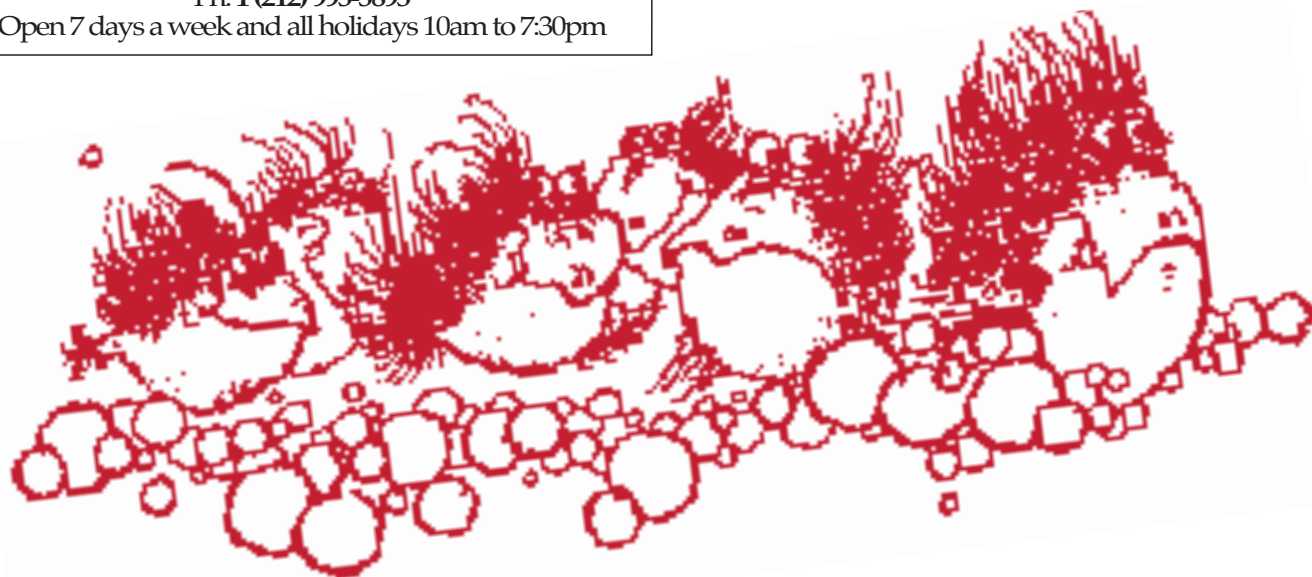
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