

The  
**DARTER**



**SEPTEMBER/OCTOBER 2015**

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Cover photo by Pat Tosie



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## FROM THE PRESIDENT

Pat Tosie



Summers end is fast approaching, people are starting to clean out their ponds and beat the weather changes. We have several things still to take place this year; the Swap Meet September 27, Super Bowl at our monthly meeting October 15 and our Fall Auction November 1. So there is something everyone can participate in.

This is a VOLUNTEER organization and we are looking for a few people to step up and help out, so please see me or any of the council members about what you can do to be an active participant in our club. immediate needs are: Bowl Show Chairman, and Annual Show Chairman following this spring's show. I am bringing this

up now so the person can work alongside Kathy and Holly to get a little "seasoning" before they start planning the 2017 show.

I have heard several people asking and talking about us hosting another national convention and without a strong base of volunteers, there is no way we can host one. We would need at least 30-40 active volunteers to run any type of convention and with our current volunteers handling numerous jobs each, we cannot count on them to handle the workload. Step up, help out, volunteer, and be active in our club's activities so we can bring a major convention back to St. Louis.

FYI: This years' MASI challenge, the Amazon Research Center for Ornamental Fishes, currently has over \$1,600 and Dr. Mazeroll is sending up some more fish that we will have at the swap meet on September 27! You can also bring fish to donate at the swap and drop them off to me at the MASI sales table. Please keep bringing donations in and let's finish the year with a bang. With everyone's support, maybe we can surpass our goal of \$2,500!!

Our speaker program is top notch, Thank you, Gary, and we want to continue that way so be sure to support our speakers by attending their talks, buying the donations they may bring, and

staying around to visit and talk to them. Speakers take a lot of time out of their schedules to com. They enjoy meeting and talking to our members after their talks.

Always feel free to call or send me an e-mail with any suggestions, concerns and ideas that you may have for MASI to do or try. We are starting to look at other ideas about our next MASI Challenge, so please send your thoughts to me.

Keep looking below water....

## FROM THE EDITOR

Mark England



As I talk to MASI members, I'm repeatedly amazed at the diversity of their hobby interests. You name it, aquatic animal, vegetable, or mineral—somebody in the club is into it, has done it, or knows something about it.

With this in mind, I've been seeking to broaden the range of subjects covered by *The Darter*

over the past several months. I realize we can't be all things to all people, but I'd like to have enough breadth of subject matter that each issue has something for everyone.

This issue has a beginner article, stuff for the catfish lovers, a unique livebearer, and even a piece on salt water. Gary Lange wrote a great story on the Peacock Gudgeon, an unusual, but interesting species. There's news on the passing of Takeshi Amano and his recent project in Lisbon. We've got a breeding article on hillstream loaches and one on planted tanks. And sadly,

we note the death of Tony McMillan. I hope no one feels left out.

In the spirit of having fun, I've included a couple of aquarium related items that made me smile—giant lobsters, stray goldfish, and the like. I hope they bring a smile to you, too.

If you don't like what you see or if you don't see what you like, write a letter to the editor. Sound off! I'll print letters if I ever get one.

Along this line, I'm taking the opportunity to sound off on an issue that I think needs to be

addressed—the tremendous failure rate of beginning hobbyists. It's a shame how many fish die before reaching the hobbyist and how many die from ignorance, misinformation, or neglect at the hands of those who love them most. I hope our hobby can one day be called sustainable because we no longer take fish from the wild and when an accomplished hobbyist is one who's a net producer of fish rather than a consumer.

## OPINION: BEGINNER FAILURES—WHO WILL STEP UP?



By Mark England

I worked at three different pet stores, both full and part time. All had sizeable fish departments. I had a lot of fun, but also a lot of frustration. Most of that came from seeing customers fail in the hobby. I did my best to educate and advise them (when I had time). And we had quite a few success stories, but they were far outnumbered by the failures.

I was most frustrated by those who refused to learn from their mistakes. Many seemed to think all they needed was the right chemical to cure their tank when what they needed was half as many fish and a quarter as much fish food.

Faced with repeated frustration in the form of fish deaths, they finally give up. “It’s too hard” they say. “It takes too much time!”

Unfortunately, I don’t find statistics for turnover in the hobby, but anyone with experience on the retail side knows it’s

true. Should we be concerned? I am. It seems to me a growing hobby will drive innovation, better equipment and techniques, and wider availability of quality specimens. That’s better for every hobbyist.

Who bears the responsibility for turnover among beginners? Aren’t the fish stores supposed to tell them how to do it? After all, they’re the ones making the money from it. I can tell you from my own experience, pet store clerks often don’t have the time or the knowledge to do an adequate job. The results bear this out. Independent fish stores don’t seem to have the resources to help and the chains don’t do much. Online stores offer a few resources, but you would be better served by the many forums available on the internet.

Who then? I think we have to look at ourselves. Experienced hobbyists and aquarium clubs have a responsibility to begin-

ners to help them along, correct their mistakes, and ensure lack of knowledge is not a reason for failure. I was fortunate to have several mentors when I was young in the hobby. I owe them a debt that can only be repaid in kind by helping other hobbyists to success,

Our club should be doing more. We should be encouraging novices to join the club by offering programs geared toward their level of experience. Our club’s future existence and growth depends on new members. The reason our club exists is to exchange experience and knowledge. We benefit each other. We should be offering classes and workshops for novice hobbyists. We should be working with local fish stores to reach out to hobbyists who need help. We should mentor others in areas where we have expertise.

That’s my two cents worth.

*“Our club should be doing more.”*



## SEPTEMBER 17—DUSTIN WONDERLICH “TOP 20 SPECIES FOR PLANTED TANKS”



Dustin has been into aquariums for over twenty years. He started at the age of 14 and spent every dime he made on his paper route buying stuff for his aquarium. He recalls spending so much time at the Findlay, OH “Pet Supplies Plus” that he got hired the day he turned 16.

Dustin runs the Largest Aquarium YouTube Channel in the US, “Dustin’s Fishtanks”. Every Sunday for the past 5 years Dustin has put out his “Species Sunday” videos. His YouTube channel now has over 47,000 subscribers and 10 million views. He’s

online at [dustinsfishtanks.com](http://dustinsfishtanks.com). He specializes in making the planted aquarium easy.

In his back yard he has a 12x 24 foot greenhouse which has four 125’s, three 75’s and a 90 and a few random “experimental” 10 gallons. He also sells aquarium plants and supplies on [Dustins-fishtanks.com](http://Dustins-fishtanks.com)

Dustin has been fish collecting in Peru twice, once on the Napo River and once on the Nanay River with Margarita Tours. He would go to the Amazon once a year if he could.

## NOV 19—CHARLEY GRIMES

MASI meets on the third Thursday of each month at 7:30 PM.



When he isn’t playing in his greenhouse or aquariums, Dustin enjoys being outside. He hikes about one day a month in the Red River Gorge nearby his home in Lexington, KY. He enjoys travel and, a

couple of times a year, snowboarding and fishing.

Dustin has a wife and two girls, 5 and 4, who enjoy the many aquariums and the projects with him.

# SuperBowl

## OCTOBER 15—MICHAEL BARBER, “THE FISH OF MADRE DE DIOS, PERU AND GOWILDPERU”

Michael Barber’s parents gave him a 5 gal. metal frame, slate bottom tank when he was a youngster. He was set in the hobby when allowed to be late to school to watch his guppy have babies. 50+ years later, he has a dedicated fish room. Favorites are Calichthyidae and Apistogrammas. At one time he had over fifty species of Corydoras, Bro-

chis and Aspidoras in the fish room with successful breeding of nearly all. The fish room includes a few other choice species from collecting trips in the Amazon. Just a few of note are Rio Nanay Angels, Mesonauta festivus, Otos, Ancistrus, and many charicins.

Michael is a co-leader, with Devon Graham, of MT Amazon Expeditions. In 2014, with the collabo-

ration of a few friends in the DC area, he began the transshipping of collected fish. In 2015, in partnership with Ian Fuller, they established a new fish collectig venture, GoW-ildPeru, in Puerto Maldonado, Madre de Dios, Peru.

Michael is Treasurer and a past President of Pioneer Valley Aquarium Society.



# SEPTEMBER 27 MASI SWAP MEET

Huge selection of rare fish plus a large assortment of live plants, aquarium equipment, and more!

## Crown Plaza Hotel

Sunday, September 27

11 AM—3 PM

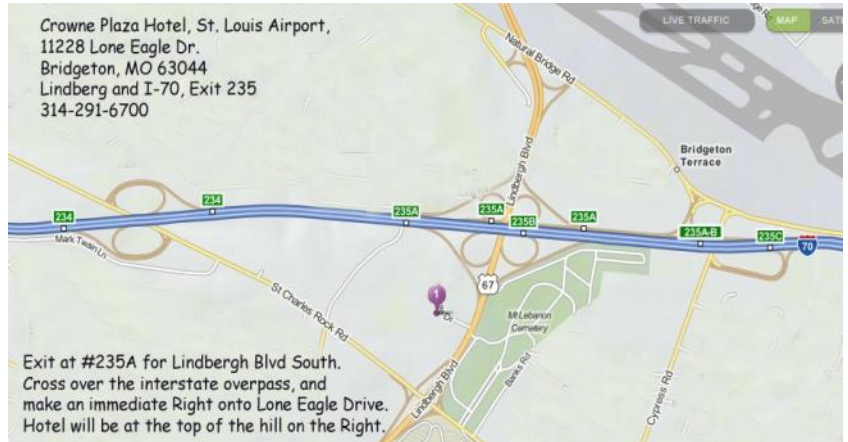
### Admission

Early bird 11 am—12 pm \$5

Regular admission \$2

Kids under 10 FREE!

More info at [hcaaquatics@yahoo.com](mailto:hcaaquatics@yahoo.com)



We have a great line up of vendors, from all over the Mid-West, including Chicago, Indiana, Ohio, Wisconsin, and Arkansas. We also have several MASI members and other locals selling as well. You really will not want to miss this Swap, so come on out, and tell your friends!

There will be a 75 gallon tank, top and light, from Tropical World Pets raffled off as well .

Don't forget to bring in some donations for the MASI table. Find myself or Scott Bush to make your donation! Some well-known vendors include;

- Mark Huffman, Mark Of Excellence Aquatics
- Mike Hellweg, Mini fins
- Tony Pavese, Windy City Cichlids
- Ryan Feldman, Aquarium Additions
- John Arthur, Arthur Aquatics
- Bob Borger , Captain Bob's Fishtales
- Kevin Wise, HCA Aquatics

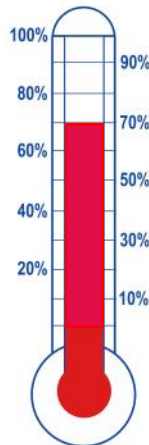
About every aquatic category is covered from cichlids, to livebearers, to nano fish, to foods, to plants, and everything in between, included tanks and equipment! Hope to see you at Early Bird, as that is when there is the best selection!

Holly @ HCA75 Aquatics <http://hcaaquatics.weebly.com/>

# MASI Challenge



a 501(c)(3) organization



Our Goal  
**\$2500**

Thank You!

# NOVEMBER 1 MASI FALL AUCTION

## Crown Plaza Hotel

Viewing 10 AM

Auction 11 AM

500+ Lots





## AUCTION CHAIRMAN'S MESSAGE BY MIKE HELLWEG

The Annual Summer Auction for 2015 is now history. It was another great auction, with a great assortment of fish, plants and other goodies. More than half of all MASI members were in attendance, and we had a great turnout from the general public, along with several new members joining. Welcome to our new members, and welcome back to those of you who are just coming back after a few years away.

Over the past few years we've been concentrating on getting sellers and items for the auctions. We've got tons of great

fish, plants, equipment, foods, etc. at each auction for both beginners and advanced hobbyists. Even after all my year in the hobby, and attending more than a dozen auctions a year all around the country, not one auction goes by that I don't see something I've never seen before. That's just amazing! Come by and check out the next auction and let's see if we can get closer to 100 percent of our members showing up – and bring a friend along! We've got plenty of room.

Thanks to the local shops that helped pass out auction fliers!

Thanks to all of you who helped out, came by and bid, and who bought raffle tickets. Donation items to the MASI Challenge and the Annual Banquet tickets continue to come in strong, and if things continue, quite a few folks will have their Annual Banquet tickets almost fully paid by the time the show weekend comes around next April.

Oh, and don't forget to thank Chuck and Mark down at Tropical World Pets for helping us out once again with a 75 gallon tank, top and light for the Summer auction raffle. It's rare to find a shop that's able to be this



generous in today's economy, so be sure to not only thank them, but support them!

I hope we see you all at the Annual Fall Auction, November 1, 2015!

And for now, 'nuff said

Mike

[auction@missouriaquariumsociety.com](mailto:auction@missouriaquariumsociety.com)



## SHOW REPORT SEPTEMBER 2015

BY KATHY DEUTSCH & HOLLY PAONI-WISE

October 2015 at the general meeting: **SUPERBOWL!**

This is a preview to our Annual show, and a fun challenge with cash prizes. It's a giant bowl show with the largest "bowl" being a 10 gallon tank! No need for gravel or airline, just bring a fish, with water in a bowl and enter. Free entry. \$20 gift certificates to Tropical World Pet to: Best Fish in Show, People's Choice, and Best Junior (entrant under 16 years old)

New this year: LIVE judging of class. Mike Hellweg has agreed to "live judge" a class. Meaning

we will pull a class from the field, line them up and Mike will talk through his thought process as he looks them over. This is a great way to observe and understand how a judge thinks.

The classes, an entry form "walk through" and rules are listed here in the Darter, also on Facebook, and on our website.

I will also have entry forms available at Superbowl for you to fill out onsite.

### MASI 2016 ANNUAL SHOW

"SHOW ME FISH 2016 Foolin' with fish" APRIL 1-3 2016

Show tee shirts will be available at the January 2016 meeting. Limited quantity.

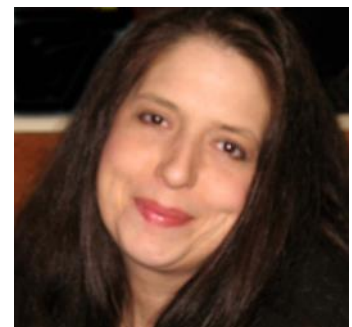
**NEW THIS YEAR:** Fish breeding contest-this one is in the works, watch the website and Facebook for announcements.

Heritage class-I am taking a couple pages from an old Beldts catalog and will have them available. You can enter any fish on that page. Since this is my idea I am sponsoring this class and donating the award: \$20 gift certificate to Tropical World Pets.

**SPEAKERS:** more to come!

- Ted Judy
- Rusty Wessel
- Chuck Davis

**VOLUNTEERS:** I need someone to put the program book together. This job will be start-



ing mid March. I send you all the art, info, etc. You make a program book and send it back to me. I proofread it and get it copied. There are some guidelines, but it is not a tough job. Let me know if you want to try it.

Show weekend we need people to get the water barrel, air lines, pumps, etc. to the show site. We need people to get the water going (dechlor and test), set up air lines, etc. I will mark the tables for tank placement.

THANKS!

FREE ENTRY

# SUPERBOWL

FREE ENTRY



2015

October 15  
During the  
monthly meeting

## Rules

There will be 10 categories, plus Best in Show, People's Choice and Best Junior. Junior and novice entries will be indicated by a J or N on judging form and tank label. Juniors and novices compete against regular entrants. (Junior is under age 16, Novice is defined by the MASI on-line membership book)

### Rules:

- You MUST turn in an entry form BEFORE you put your fish in the Superbowl. We will have blank entry forms as well.
- You MUST label your bowls before placing in judging area (show chair will give you the correct labels once you turn in the entry form)
- One flat sided drum bowl or small tank (up to 10 gal) per entry
- No heaters, pumps or filters allowed
- A lid or tank cover is preferred (Saran wrap and a rubber band works)
- The fish must fit the tank properly or may be disqualified
- Any fish displaying excessive stress will be pulled from the show

**Judging:** 3 Judges will observe each fish. Judges' decision is final

Any judging paperwork is confidential and will be destroyed after the show. Judges do not need to defend their actions

**Live Judging:** New this year, one class will be "live judged". The show chair and judge will pull a class and the judge will talk through how he chose to judge the fish.

**Entry form:** Correct common name on entry form, as provided by entrant to the show chairman. Correct Latin name is better.

(Correct Latin name may be from older books and commonly accepted nomenclature. No need to have the up-to-the second name. "*Corydoras barbatus*" is ok as is "*Scleromystax barbatus*")

**People's Choice:** We are asking all who attend to look over the fish and vote for their favorite.

**Best in Show:** As determined by the judges

**Best Junior:** Best single fish by a Junior entrant. Entry label on tank MUST have a "J" designation.

## Categories and prizes

(The Judges have the final decision if a fish has been properly placed in a category and under the correct name)

**Certificates:** Junior Exhibitor (under age 16) any species entry indicated by "J" (First, Second, Third)

**Cash Awards** (\$3 first, \$2 second, \$1 third) to:

1. **Old World Cichlid** (First, Second, Third)
2. **New World Cichlid** (First, Second, Third)
3. **Rainbowfish** (First, Second, Third)
4. **Killifish** (First, Second, Third)
5. **Livebearer: Fancy Finnage** (First, Second, Third)
6. **Livebearer: Normal or Wild-type Finnage** (First, Second, Third)
7. **Egglayers:** Cyprinids: Barbs, Danios, Rasboras, Minnows, Goldfish Characins: Tetras, Pencilfish, Piranhas, Pacu, Silver Dollars, etc. (First, Second, Third)
8. **Egglayers:** Any other type (First, Second, Third)
9. **Catfish:** Corydoras, Aspidoras, Brochis, Scleromystax and relatives (First, Second, Third)
10. **Catfish:** All other (First, Second, Third)

**\$20 Gift Certificate to Tropical World Pets:**

- Best in Show
- People's Choice
- Best Junior Entry

### DAY OF SUPERBOWL

Entrant comes to Superbowl with the entry form correctly filled out and with fish. There will be blank entry forms at the show site as well. Show chairman looks at form and the fish. Chairman keeps form. Show chairman gives accurate tank number labels to the entrant. Entrant places tank number labels on the upper right corner of each tank. Entrant places fish in judging area.

# SUPERBOWL 2015 ENTRY FORM

ENTRANT NAME: \_\_\_\_\_

JUNIOR (UNDER AGE 16?) \_\_\_\_\_

NOVICE \_\_\_\_\_

ENTRY (leave blank)	CLASS	NAME OF FISH (COMMON) (Latin is appreciated)

---

I, the undersigned, agree that these are my fish, kept and cared for by me. I have had them for a minimum of 60 days prior to the Superbowl date.

## CLUB HOPPING

By Steve Edie

Check with the individual clubs for more details.

Sep 13	Chicago	Greater Chicago Cichlid Association	Swap Meet	<a href="http://www.gcca.net">www.gcca.net</a>
Sep 27	St. Louis	MASI	Swap Meet	<a href="http://www.missouriaquariumsociety.com">www.missouriaquariumsociety.com</a>
Oct 3-4	Schoolcraft, MI	Southwestern Michigan Aquarium Society	Workshop	<a href="http://www.swmas.org">www.swmas.org</a>
Oct 16-18	Madison, WI	Madison Area Aquatic Hobbyist Catfish	Convention	<a href="http://www.madisonaquatichobby.com">http://www.madisonaquatichobby.com</a>
Oct 24	Peoria, IL	Tri-County Tropical Fish Society	Fall Auction	<a href="http://peoriafishclub.com">peoriafishclub.com</a>
Nov 1	St. Louis	MASI	Fall Auction	<a href="http://www.missouriaquariumsociety.com">www.missouriaquariumsociety.com</a>
Nov 15	Indianapolis	Circle City Aquarium Club	Auction	<a href="http://www.circlecityaqclub.org">www.circlecityaqclub.org</a>
Nov 16	Chicago	Greater Chicago Cichlid Association	Swap Meet	<a href="http://www.gcca.net">www.gcca.net</a>
Nov 20-22	Cleveland	Ohio Cichlid Association	Extravaganza	<a href="http://www.ohiocichlid.com">www.ohiocichlid.com</a>
Jan 16	Urbana, IL	Champaign Area Fish Exchange	Auction	<a href="http://www.champaignfish.com">www.champaignfish.com</a>
Jan 31	St. Louis	MASI	Winter Auction	<a href="http://www.missouriaquariumsociety.com">www.missouriaquariumsociety.com</a>
Jan 31	Chicago	Greater Chicago Cichlid Association	Swap Meet	<a href="http://www.gcca.net">www.gcca.net</a>



## THE MIDWEST'S PREMIER CATFISH CONVENTION

OCTOBER 16, 17 & 18, 2015

Howard Johnson Madison

3841 E. Washington Avenue

Madison, WI 53704

608-244-2481

**EVERYTHING AQUATIC  
UNDER ONE ROOF**

**Aquatic Experience  
CHICAGO**

NOVEMBER 6-8, 2015 | CHICAGO, IL  
Schaumburg Convention Center



## MASI Mourns Tony McMillan

With great sadness we report the death of Anthony "Tony" McMillan, 47, of Millstadt, IL. Tony passed away Saturday, August 15 at St. Anthony's hospital in St. Louis. The funeral was held August 21 and Tony was buried in Oak Hill Cemetery in Cuba, MO. Memorials may be made to the National Kidney Foundation.

Tony was a member of the club for many years and served as an auctioneer over the last two years. He volunteered in many areas, wherever needed, and was a two time winner of the Wilhelm Writer's Award. Following is his 2009 winning article.

Tony will be missed. Rest in peace, Tony.



## FISH STORIES... HOW MUCH IS THAT CHANNEL CAT (OR SYNODONTIS HAUGI) IN THE WINDOW?

By Tony McMillan

2009 Ralph Wilhelm  
Writers Award Winner

After more than 20 years of involvement in the tropical fish hobby (Geez... has it been that long?) It is often fun to reminisce and reflect on our most memorable and best-loved tropical fish - the ones that stood out from the rest of the denizens of your fish tanks. Maybe that particular fish had a certain personality or temperament that set it apart from all the others. Maybe that fish won an award at one of the past shows, or there was something unusual about the way you acquired it, or it was particularly long-lived. When I remember all the past fish I've kept, none

stands out like my *Synodontis haugi*.

This is ironic considering the fact that *Synodontis haugi* is a drab colored fish from central Africa. It usually a uniformly dull light brown or light gray in color. No spots, stripes, polka-dots, fancy fins or other bells and whistles that mark so many other species of the genus. No cuckoo, mouth-brooding cichlid egg-eating fancy breeding behavior. It rarely even swims upside down like the other namesakes of the genus. But after you hear the story of how I acquired it, you will appreciate just how much my favorite catfish stood out.

The story begins in late 1989 or early 1990. I was stuck in a dead-end minimum wage job at the

local Wal-Mart. The store had just completed an expansion and was receiving its first live pets department. Management was having beginners' problems with the fish tanks so I was asked to take over. I had begun to right the ship and was even allowed to order the livestock.

One particular Tuesday (that's when we received our pet shipments) the Petco rep, who knew of my involvement in the hobby, pulled me aside to show me a "special" list of rare and unusual fish his company just received. A half-dozen or so *Synodontis* species jumped out at me from the list - stuff that is rarer and harder to get than usual. Some of the names on the list were *angelicus*, *decorous*, *flavintenus*, *multipunctatus*, *petricola*,

and *schoutedeni*. Eagerly I checked off orders for all the above. I even checked off the one I never heard of, *Synodontis haugi*.

Next Tuesday the shipment came. Much to my dismay, the Petco rep explained there had been a problem with the shipment. I would only be receiving one of the special order *Synodontis* cats I asked for. And that would consist of two 2-inch long specimens, the *Haugi*. As a hobbyist, I could appreciate the subtle beauty of the species. As a retail pet dept manager, I knew they would never sell, especially at a retail price of \$14.99 each.

I placed the fish in one of the larger display tanks. But as they battled relentlessly for domi-

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nance I could see they were way too aggressive for the average community fish. So I moved them to a display tank containing more aggressive rift lake cichlids and Buffalo-head cichlids, *Steatocranus casuarius*. It was there one of them achieved dominance and quickly grew to a length of 6 inches while the other stayed relatively small.

To understand the problem I

He's gonna outgrow that tank! How much ya want for 'em?"

To which I would reply "That's not a Channel catfish. It is a species of catfish from Africa called *Synodontis haugi*. It's kind of rare."

At which point the customer sees the \$14.99 price label and exclaim "\$14.99?! I ain't paying fifteen bucks for no catfish I can

fish anatomy. Sure, I could've said "The Channel catfish, *Ictalurus punctatus*, has 24 rays on its anal fin. That fish has 10 at the most. And the adipose fin on that *Synodontis* is huge, whereas the Channel cat only has the suggestion of an adipose fin. And don't even get me started on those maxillary barbels!" Instead I kept my peace.

And so that's how the conversa-

And then in Sept of '91, for reasons to be discussed in another article, I had enough of Wal-Mart and put in my two weeks notice. Unbeknownst to me, a going away party was being planned by my fellow Wal-Mart associates. That's when Sue, the dept manager directly over me, came to me one day while I was working.

"Tony," she asked, "if there was one fish in any of these tanks that you would buy, which would it be?"

"I don't really know" I replied. "I guess that fifteen dollar *Synodontis*. Since he's been here for over a year, I feel like I already own him."

"Hmm. Okay.", Sue replied, and away she walked. I was oblivious to what was being planned.

Then the last day had finally arrived. After four years of my life I was through with Wal-Mart and moving on with the next chapter of my life. Filled with apprehension and with butterflies in my stomach, I arrived at work two hours before the store opened. I noticed all the employees sneaking in back to the break room. I had been there long enough that I knew the drill. They were preparing my going away party. I was then paged over the intercom go to the break room.

"Surprise!" everyone shouted as I entered the break room. Surprise it wasn't, because I had witnessed this many times before. The surprise was that I was handed not one, but two going-away cards. The first was filled



had moving these two catfish one has to understand the clientele of a rural, small town Wal-Mart. I don't mean to offend anyone who shops at Wal-Mart, but the phrase "uneducated redneck Hoosier" comes to mind. A typical conversation would ensue like this:

Upon seeing the size of the dominant one, the customer would exclaim "Wow!!!! Look at that size of that Channel Cat!

catch down at the farm pond. Phooey!"

Okay, so no one actually said "phooey". But now you understand how the conversation generally went. If it wasn't a Channel cat it was a Bullhead, mad tom, or mudcat of some sort. Nonetheless I would stand my ground and refused to mark down such a gem of a creature. It was utterly futile to get into a debate about taxonomy or cat-

tions went for almost a year and a half. I would love to have him, but the fifteen buck price tag was too much for my minimum wage salary. Besides, being stuck at home with Mom and Dad, I just didn't have room. I had 2 ten gallon community tanks in my bedroom, and that was all mom said I could have. Then I got busted hiding my 29 gal community tank in my walk in closet! Phooey!

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with approximately 150 signatures of everyone who worked at the store. I opened the second and it contained \$15 with the note "Here's some money so you can buy that catfish!" They had taken a collection so I could purchase the catfish!

It was such an emotionally charged moment. I fought back tears as I told them how in the four years we all worked together they had given me more than Sam Walton, who was at the time the wealthiest man in the world, could ever possibly give me. I threw in a comparison to the old widow in the gospels who tithes her last shekel at the temple, and how Christ exclaims she was actually giving more than everyone else. A few more heartfelt goodbyes and it was time to go to work. At the end of my shift I took the \$15 tithed to me, bagged up the *Synodontis haugi*, paid for it and home I went.

Like I said earlier, I didn't really have room for him at home. But I wouldn't let a small detail like that stop me. I placed him in the 29 gal in my walk in closet. To no one's surprise the juvenile Silver Mollies (*Poecilia latipinna*) I had been raising started to disappear. I moved the survivors to one of my 10 gal tanks. None of the fish left in the 29 gal was small enough for him to eat. Or so I thought.

Besides the Haugi, to my recollection the tank was overstocked with two Bristlenose plecos (*Ancistrus* sp.), two clown plecos (*Peckolita vittata*), A lace cat *Synodontis leopardi-*

*nus*, A *Synodontis nigrita*, two Australian rainbows *Melanotania splendida*, and a couple of swordtails, *Xiphophorus helleri*. To round out the collection in my 29 gal were a trio of quarter-size Von Rio or Flame Tetras, *Hyphessobrycon flameus*, I was keeping for the 1991 fish raising contest. Like I said, the tank was overstocked, so don't try this at home. How the filtration didn't crash from such a heavy bio-load I'll never know.

Late one night I came home from a night of carousing and

The only alternative to discovering new ways he could kill every fish in the tank was to buy a tank divider, which is exactly what I did. I put the divider in the tank, giving the haugi approximately a third, or roughly 10 to 11 gallons of the tank to call his own. He eventually topped out under my care at about 8 inches. Then it was time for MASI's 27th annual show.

I had been a member of MASI for three or four years, but I had never entered the annual show. So even though technically I was not a novice, it was still a very

The 27th annual show was held on the weekend of April 25th, 1992 at the Holiday Inn Westport. I would have three entries in the show. In the category of Barbs, Danios, and Rasboras I entered my male Cherry Barb, *Copeta titteya*. I housed a female in the tank with him to keep him company and so he would display his breeding colors. In the category of Catfish under 3½ inches I entered my peppered catfish, *Corydoras paleatus*. And my final entry, in the category of Catfish over 3½ inches, I entered my *Synodontis*



debauchery and turned on the lights to my aquariums. To my horror I discovered the Haugi had one of the quarter-sized Von Rio Tetras in his mouth. He had it by the abdomen, and since it was too big to swallow, he was just squeezing and applying pressure. This, in turn, caused several inches of the Tetras intestine to protrude from its own anus. Oh well, I guess I won't be winning the fish-raising contest this year.

new experience for me. I must admit it was a somewhat intimidating experience at that. Many MASI members have fish rooms in their homes that contain anywhere from 20, 30, or even to as many as 80 aquariums. Some of these are show tanks, which means the fish are raised into magnificent specimens with plenty of space and feeding. I had only three overstocked aquariums in my room and even then I was way over my quota.

haugi. He would be housed in a spare 10 gallon tank I had at home.

I didn't have the time or money for any fancy decorations, nor did I have any extra rocks or driftwood at home. With only three aquariums my selection of plants was quite limited. The substrate I used in the display tanks was very loud neon blue and green left over from when I first entered the hobby to make

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my aquariums look like they would if I was a kid again. For decoration I had one piece of slate and some Java moss, *Taxiphyllum barbieri*. In other words, my show tanks would not be very showy and attractive at all. I packed all of this equipment in my '88 Ford Escort and off to the show I went.

When I arrived at the Holiday Inn, I started to unload my car and made my way through the lobby to the showroom. I found the spaces allotted for me, put down my stuff and returned to my car for more equipment. Apparently the hotel staff was unhappy with some of us tracking water through the lobby. We were then told to park in the back and use the back entrance. So I parked in back and grabbed some more stuff.

I took several steps through the back entrance of the showroom and was in for the surprise of my life. The aquariums and the fish show had disappeared. Instead I was surrounded by a bunch of canine enthusiasts and their dogs. And not just any dog. It was the breed of *Canis familiaris* that had a face only a mother could love, the Sharpei. Realizing I was not in an episode of *The Twilight Zone* and I had simply used the wrong door, I exited and soon found the right showroom.

As I began to set up my tanks I was making good progress when a large man muscled his way next to my *Synodontis* display. I don't remember his name but I remembered he was muttering under his breath about my "junk" being in his way. I do

remember he was in law enforcement, a deputy sheriff or something akin to that. Like I said, your first MASI show can be intimidating.

Anyhow, his tank display had beautiful Java fern, *Microsorium pteropus*, anchored by a large piece of driftwood over natural looking creek gravel. I could only identify his fish as some sort of native catfish species—either a Stonecat or some sort of mad tom about 10 inches long. How could I even compete with a display like this? I just hoped the judges were smarter than the average Wal-Mart customer and would be able to tell our two fish apart!

The show setup was on Thursday or Friday and the actual judging took place on Saturday morning. There was a banquet Saturday night where the awards would be handed out which I was unable to attend as I couldn't afford the \$25 price tag. You see, even though I had left Wal-Mart I was stuck in another dead-end minimum wage job, this time at Dollar General.

I stopped by the show site to check on my fish that Saturday afternoon. I was amazed at all the other displays, and thought how inadequate mine appeared next to them, when I was interrupted by the club president. All I remember is his first name was Bob and he owned a lingerie store. For some reason he was trying to persuade me to go to the banquet. Like I should really, really, really attend. I had already made other plans and told him I couldn't make it.

I then pulled out my camera and proceeded to take some pictures of the amazing displays. I was then told by a very nice gentleman named Gary that because of the flash reflecting off the glass, I was only taking pictures of myself. He suggested I stand at a 45° angle to each aquarium as I photographed. The suggestion worked and the pictures actually turned out pretty good.

Sunday, the day of the auction and show tear down, was upon me. And since I was unable to attend the banquet it would be the day I would discover the results of the show. Would I win anything at all? Would I even place in any category? Would my fish even survive the weekend? Nervously I packed some items I wanted to sell at the auction and headed to the show site.

As I entered the showroom I was greeted with congratulations from the occasional passerby. I checked my three displays and was startled to discover each had a red ribbon taped to them! My Peppered Cory, my Cherry Barb, and my *Synodontis* had all placed second in their respective categories! Bob came up to congratulate me on my success and handed me three impressive looking plaques. Another of the judges told me how impressed he was with the *Synodontis haugi*.

Now I know what some of you are thinking. They used to make Tee shirts that said "Second Place Is First Place Loser." Not as far as I was concerned that day. I might as well have won

the Publishers Clearing House Sweepstakes. In a fitting conclusion to the weekend's events I noticed the native stonecat in the display next to my *Synodontis* was floating upside down. As the Monty Python troupe would say, it "was no more" and "ceased to be". Take that, Wal-Mart shoppers!

Not much eventful happened with the *Haugi* after that. In '95 I finally got a real job at Chrysler and a place of my own. I was working so much overtime I lost touch with MASI. When I moved he inherited half of a 29 gallon aquarium I had purchased. On the other side of the tank divider was a Striped Raphael Catfish, *Platydoras costatus*, that I was given by a friend. In '99 my *Haugi* started to get bloated from some intestinal ailment. I increased the vegetables in its diet which seemed to help, but the bloat would always return. In late '99 or early 2000 he passed on. I gave him a burial fit for a beloved pet I had spent the entire decade with. Besides, if had tried to flush him he would have clogged up the toilet.

Now some of you are probably thinking to yourself: "Why didn't Tony ever name this large, personable, pet catfish that he kept for ten years?" If I would have ever named it, its name would have probably been *Hawg*, short for *Haugi*, because he did have the temperament of a Harley-riding Hells Angel. That's one of the secrets of the tropical fish hobby though. It's said to be bad luck to name your pet charges, because if you do, they usually die within 90 days.



## Back To Basics by Mark England

# Feed 'Em Right!

Feeding your aquarium's inhabitants seems like the simplest part of keeping fish. Certainly, it is one of the most enjoyable tasks. But for many aquarists, it is a source of trouble in the tank. Too often we find ourselves feeding the wrong foods or the wrong amount. Fortunately, most fish adapt easily to the diets we give them. They survive, but good feeding is a key to fish that thrive.

Different species need different diets. Almost all of our common aquarium fish are predators and most are prey, too. Small community fish, such as tetras, barbs, livebearers, and the like, eat insects in the wild. They like small aquatic animals like daphnia, zooplankton, worms, or fry of many different sorts. Larger fish, like cichlids and catfish, eat larger sizes of the aquatic invertebrates plus the small community fish.

There are relatively few vegetarians among the fish we keep. Yes, sucker mouthed catfish will eat a lot of algae and most fish get some vegetable matter in the course of eating small prey, but few are exclusively vegetarian.

The same is true of most fish we think of as scavengers. It's true that many catfish can subsist on leftovers, but that is not what they typically eat in the wild. Most catfish are predators, cap-

turing the small animals that inhabit the substrate. Catfish will also take small fish and fry when they can.

Part of learning about fish is learning their natural foods so we can better replicate them in captivity. There are fish that need specialized diets, especially marine species, but most of the fish available to hobbyists will happily accept many foods.

**The key to a good diet is a variety of foods similar to fishes' natural diet.**

Flake food is the most popular food for fish and is often referred to as staple food. While it may be a staple in the diet, it should not be the only food you feed your fish. Manufacturers attempt to formulate a balanced diet. Avoid brands that have high cereal contents, such as wheat.

There are many varieties of flake food, color enhancing carnivores, etc., but these are, IMO, marketing tools. I do however use spirulina flakes for fish that like a little more vegetable matter.

Flake foods float and are suitable for most small fish that are not bottom dwellers.

Pellet foods are made of the same ingredients as flake food, but are merely a different form. Sinking pellets are good for cat-

fish and some cichlids. Floating pellets are good for larger fish that tend to make a mess with flake foods.

Frozen and freeze-dried foods are generally a single food animal. You can choose from brine shrimp, tubifex worms, blood worms, daphnia, and others. Freeze-dried is convenient and shelf stable, but I prefer frozen based on a questionable assumption. I think my frozen foods taste better than dried and are more nutritious, so I believe frozen fish foods are better for fish, too.

Live foods can be purchased, cultured, or collected. Many foods are seasonal unless you maintain cultures. Live foods are great for fish and breeders use them extensively for conditioning adults and raising fry. For culturing live food, I refer you to Mike Hellweg's book, "Culturing Live Foods: A Step-by-Step Guide for Culturing One's Own Food for the Home Aquarium" available from Amazon.

How much to feed is often a problem for aquarists. A good rule of thumb is twice a day, no more than can be consumed in 5 minutes. Sit down and watch your fish, feed them a little at a time, and stop feeding before they lose interest. They should act like they're starving, but in



reality, fish don't require a lot of food. You want to feed just enough so all the fish get enough with no leftovers. Uneaten food rots in your tank even after being captured by your filter and causes water quality problems.

Make sure bottom feeders get fed, too. Give them some sinking pellets or make sure frozen foods get to them. Don't let territorial fish monopolize the food supply leaving less dominant feeders hungry. If you take the time to watch them eat, you'll know you're feeding 'em right.



## THE PEACOCK GUDGEON (TATEURNDINA OCELLICAUDA) REVISITED

By Gary Lange



*“...mother nature was on acid when she came up with their color scheme!”*

Here I was in 2014 bidding on some peacock gudgeons—oh how they can bring back memories!

It was at one of our MASI auctions that a small group of these fish came up for bid. The bidding wasn't going very high, so I decided to bid them up and ended up with them. I put them into a “20 long” grow-out tank that also held juvenile *Melanotaenia rubrivittata* the latest and greatest rainbowfish. I added a few pieces of PVC pipe, about 5 inches in length, ½ inch diameter and added a slip cap to one end for each of them. The gudgeons took over the tubes right away. They were fed flake food, frozen brine shrimp as well as live baby brine shrimp. Sometimes they got a treat of chopped live black worms.

Females are easy to tell apart from the males because they have a nice black stripe on their anal fin. Unfortunately, there are some peacocks out there that no longer have this black stripe and, in my opinion, really should be avoided, especially when you can find fish that still look like the real deal. Males are just a riot of reds, yellows, and blues. It's like Picasso threw up on them or mother nature was on acid when she came up with their color scheme! There is so much color in such a tiny fish, perhaps 1.5 inches maximum size.

Before long I could see the male coloring up and that he was guarding a clutch of eggs in the tube. Many years ago when I first got them, I realized the best thing to do was to let

the male fan the eggs for a few days and then take them away from him. It seemed like they would be great parents for 3-4 days and then lose interest and eat the eggs. I would take the tube and scare away the male so that I could remove the eggs. I would use a small food container to remove the tube so that the eggs would always be in water. You can use the water from the spawning tank or just a portion of it, but make sure the temperatures in both tanks are the same. A 2.5 -5 gallon BARE tank is perfect for this.

I gently remove the end cap and then hook a “heater suction cup holder” onto the PVC pipe, holding it now vertical in the hatching tank. You might have to put the heater holder under hot water and then

# THE PEACOCK GUDGEON (TATEURNADINA OCELLICAUDA) REVISITED

“mold” the edges to fit tightly over another piece of 1/2” PVC tube to get it right. Place a rigid airline tubing just below the end of the tube below the eggs and have just a few bubbles every 3-4 seconds go through the tube to mimick the father’s fanning motion. This trick has also worked quite well for Desert Goby and Goo Obo gudgeon eggs. If you put too many bubbles through the tube, you’ll disrupt the eggs and they’ll fall to the bottom of the tank. Not a problem if you have a bare tank but I find it better to keep them attached in the tube so I get more viable fry. They’ll start hatching and can eat micro-worms and live baby brine shrimp rather quickly. They take a long time to grow but they are certainly worth the wait, the colors are unbelievable.

But back to the “way back machine”. I remember in 1985 making the journey to the Detroit’s Motor City Aquarium Society’s Winter Wonderland convention. I had just gotten a new Camry and I was picking up my chain-smoking friend (the late) Al Anderson in Indiana. Al knew the deal was no smoking in the new car but if you have the addiction you know how rough even 3-4 hours can be without the drug. We survived the trip without the new car being ruined and were still good friends long afterwards. But there was a point when Al was walking alongside of the car puffing away when we got caught in Michigan University football traffic. Oh, if I had a video camera back then, it was a pretty funny sight. And how dare football get in the way of a

fish convention?

We got there a little late but just in time to hear Liz Hutchings give a Notho killifish talk. Although I had quite a few killifish at the time I was kind of falling under the “rainbowfish spell” even then. Her husband, Jim was of more interest to me as he had just written a FAMA article on one of the new “exotic” rainbowfishes to hit the US market, *Glossolepis incisus*. We traded notes and techniques but I think he went back to the dark side with cichlids after that. Al, a few years later showed me how to develop my own slides, which was an amazing feat. Black bags and tall canisters of smelly chemicals shaken at just the right temperature to miraculously produce a developed slide! A few years later, with my photographic skills and his ability to develop slides we produced

the very first slide show of winning fish at the 1988 ACA convention.

But I digress... My REAL reason to be in Detroit was to go to Wet Thumb Aquatics and see Dewey and Delores Schehr. Delores was starting to breed a lot of rainbowfish and, like me, was starting to get some eggs sent to her from Australia. But what really had me taking this long drive was to pick up some Peacock gudgeons from her and to see her fantastic fishroom. She was just starting to breed them and they were still a very new fish in the US so it was very exciting for a newbie like myself to be getting some of these. She had fish tanks wall to wall in the entire basement stacked three perhaps 4 tanks high. The racks were so close together that you had to bend down sideways in the aisle to see the lower tanks.

Yes, my kind of crazy! I got some of those peacocks, took them home, bred them and then got them out to a lot of MASI members. Unfortunately last year Delores had to shut down her business due to poor health. I and many other hobbyists will miss her warm smile and her fishy knowledge. It was through her breeding efforts that this wonderful fish got to so many people around the country.

But back to 2015. When looking over my BAP list of fish that I turned in, I realized that I had neglected to turn in the peacock gudgeon. So now, some 30 years later, I finally submitted them at the last meeting. They’ve been around for quite a while but still look great and are hard to beat especially for the tanks that are now all the rage – nanotanks. Give these fish a try and you won’t go wrong.



Gary Lange

## LOW-TECH EXCEL BASED PLANTED AQUARIUMS: A GUIDE

By Sudeep Mandal

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[www.sudeepmandal.com/hobbies/planted-aquarium/guide-low-tech-excel-planted-tank](http://www.sudeepmandal.com/hobbies/planted-aquarium/guide-low-tech-excel-planted-tank)

“Faster plant growth compared to non-CO2.”

Before reading this article, I would highly recommend that you read the article on Low-tech, Non CO2 tanks. (*Published in the last issue—Ed.*) That article introduces the concept of low-tech tanks and explains in detail the science of low-tech, non CO2 tanks along with some guidelines for maintaining such tanks successfully. One of the drawbacks of this low-tech method is that plant growth can be fairly slow compared to growth rates seen in CO2 enriched tanks. On the other hand, tanks with pressurized CO2 require you to invest a fair bit of time and money to keep them in shape. The balance between lighting, nutrients and CO2 in these tanks is much more delicate and there is a lot less room for error. Any imbalances in the

tank can quickly lead to a massive algae bloom. This article details a middle ground between these two methods wherein Seachem's Excel is used as a source of carbon in the tank.

### What is Excel and what does it do?

The active ingredient in Seachem Excel is Polycycloglutacetal. **It is a clear liquid which is quite toxic.** Be careful when handling it and make sure to avoid skin/eye contact. Essentially it is a Carbon compound which is assimilated by the plants and used by them during photosynthesis. In this manner it acts as a carbon source and a replacement for CO2 in planted tanks. However the uptake of Excel is not as much as dissolved CO2 in tank water. In laymans

terms, it takes "more work" for plants to use Excel as a carbon source than it does to use dissolved CO2 directly from the water. As a result, while Excel does boost plant growth in comparison to Non CO2/Non Excel methods, the growth rates will still be slower than in CO2 enriched tanks. Also note that Excel has a half life of 11-12 hours so it is not active in your tank beyond 24 hours. This is why daily doses are recommended. Also make sure to dose it before your light come on in the tank. Excel is light sensitive so make sure to store it in a dark bottle if you plan to pour it out of the regular bottle.

### Advantages of Excel:

1. Faster plant growth as compared to Non CO2,



# LOW-TECH EXCEL BASED PLANTED AQUARIUMS: A GUIDE

non Excel, low-tech tanks.

2. Excel is known to act as an algaecide. Many people dose excel in their tanks when they are battling algae and have had great success. What this means is that the daily dosing of Excel will act as a deterrent to algae. This is great news for anyone starting out with their first planted tank.
3. Much easier to use in comparison to setting up a CO2 system.

## Disadvantages of Excel:

1. Excel works great for smaller tanks but it can get pretty costly for larger tanks.
2. Some plants which do not have stomatas cannot be grown with Excel. This includes plants such as riccia, vallisneria, egeris densa, hydrilla and liverworts.
3. Excel is toxic. Be careful when handling!
4. Fertilizing is a must for a healthy tank.

## What changes when you use Excel in your tank?

Here I'm going to talk about what you need to do differently in comparison to Low-tech, Non CO2, Non Excel tanks as described here. The main effect of adding Excel is that you boost plant growth rates. As a result it also causes a larger demand for nutrients by the plants. The availability of a carbon source allows us to increase the lighting levels by a bit in comparison to non excel tanks. I will list the changes that need to be made in comparison to the guidelines for

non excel tanks.

**Lighting:** Lighting can be pushed up to 2.5 watts per gallon (wpg) at max. You probably don't want to go any higher than this. As before, in the case of spiral CFLs you could probably go up to 3 wpg due to their inherent inefficiency. With T5 tubes you should probably stick to 1.5-1.75 wpg. If at any point you see signs of algae (assuming you are dosing ferts normally), then you should immediately lower your light levels/lower the length of photoperiod or do both. Remember that playing it safe with slightly lower lighting is always a wise choice as you will have less trouble with algae on the whole. Also remember that for tanks smaller than 10 gallons, the wpg rule breaks down. You'd probably need 5-6 wpg for tanks that are 5 gallons or smaller.

## Dosing fertilizers and Excel:

A 20 gallon tank using excel should get:

- 1/8 tsp of KNO3, 1-2x/wk
- 1/16 tsp of KH2PO4, 1-2x/wk
- 2mls of Seachem Flourish, 2x/wk
- SeaChem Equilibrium 1/8th once a week (Immediately after weekly water change)
- 50% weekly water change
- Dose 1-1.5x the recommended dose for Excel (1 ml for every 10 gallons on a daily basis and 5ml for every 10 gallon after 40% or more water changes).

As you can see the fertilizer amounts are higher than in Non



Excel tanks. Also, now it is recommended to perform 50% weekly water changes. The reason for this is that over time the excess nutrients in the water will start to build up. As a result, we need to use the weekly water change to "reset" the system and bring down the nutrient levels in the water. It also helps maintain the water quality in the tank. Once your tank is well established you can try doing water changes maybe once every two weeks. Also, if you are dosing leaner than recommended (with no visible signs of nutrient deficiency in the plants) then you could even try doing water changes once every month. However make sure to at least do them once a month if not more regularly.

## Maintenance:

1. Dosing ferts as recommended above
2. Occasional pruning to ensure good circulation in the tank
3. Gentle gravel vacuuming on occasion to get rid of excess detritus (never do a deep gravel vac)
4. Feed fish every day
5. Do a major (60-70%) water change after any major

pruning/rearrangement which involves uprooting plants and moving the substrate around.

As you can see, we do not skip dosing ferts once a month as recommended with non-excel tanks. This is because we are now doing weekly 50% water changes to keep the nutrient levels in check.

All the other things mentioned in the non-Excel tank post regarding Fish, Substrate and Planting remains the same for Excel based tanks. That is pretty much it. So what are you waiting for? Get started on your aquascaping, you planted tank fiend!

**Acknowledgments:** Most of this article is based on all the useful information I have gleaned from scouring through the forums at Tom Barr's site, [www.barrreport.com](http://www.barrreport.com). He deserves credit for a lot of the content in this article. I've just put it all together in one place and added some more stuff to make this more accessible to the planted tank newbie. The original thread related to this technique can be found here : <http://www.barrreport.com/estimative-index...o2-methods.html>.

# SERENDIPITY AND THE BANJO CATFISH

By Mike Hellweg



Mike Hellweg

“...a ‘happy accident’.”

Serendipity is best defined as a “happy accident”. Over the past nearly five decades of keeping and four decades of breeding fish, I’ve learned to embrace serendipity. Create the right conditions, give your fish good food, plenty of water changes, live plants and let nature take its course. Sometimes it takes a while – it took me nearly 4 years to get a successful spawn from *Betta strohi*, over a decade to get a successful spawn of *Carinotetraodon travancoricus* (this was pre-internet when there was no info on them and many folks thought they were just young green puffers!), and quite a few attempts to successfully raise young pipefish. We all brag about our successes, and rightfully so, but few of us share

how many unsuccessful attempts we made before we had that success. Here is a quick look at how I took advantage of serendipity when working with an interesting catfish.

Some of you might remember a few years ago when TFH magazine columnist Ted Judy challenged me to a breeding contest, the results of which were published each month throughout 2010 in TFH magazine. We had a lot of fun, but it was also a LOT of work. One of the down sides to the contest was that I was so busy I missed a lot of things that went on in my fishroom. Some fish spawned, and the only way I knew it was when I found fry or even juvenile fish later on. I had no idea how they

had spawned as I was so busy raising fry, doing water changes, feeding and keeping up with the breeders. I set up over 275 species to spawn over the course of that year, with just under two-thirds actually succeeding. Some of the others became long-term projects, and others still have not spawned for me. One of the fish I was really hoping might do something, though it was a long shot, was the banjo catfish – *Bunocephalus coracoideus*. I’m not 100 percent sure that the fish I have is *B. coracoideus*, but I’m pretty sure since this species is the most common in the trade, pictures look exactly like them, and several die-hard hobbyists have reported spawns over the last 40 years that were not too

# SERENDIPITY AND THE BANJO CATFISH

different from my experiences. There are only about a dozen known species in the genus, and this does seem to be the best fit.

I started out with several adults of a couple of different banjo cat species. Eventually I was able to narrow them down to two pairs of the common banjo catfish, *Bunocephalus coracoideus*. The fish were full grown adults that

the two pairs into a 30 gallon breeder tank with a layer of about 1" of sand on the bottom covered with a thick mat of Java moss and a pile of oak leaves about 4 inches thick to simulate their habitat in the wild, where they like to hide in leaf litter, hunting for invertebrates that make up the bulk of their diet. As always, I started off with my local tap water, and this time I

to about 60 ppm. The tank I kept them in was not heated individually, but was on the bottom rack in my fishroom so it remained in the low to mid 70s Fahrenheit year 'round.

The tank was filtered with two large Hydrosponge V filters powered by airstones. I changed about half the water every week, but left the bottom

in the area where I added the food, though I rarely actually saw the fish. Every once in a while I would run my hand through the muck and pick up the fish to make sure they were okay. They don't seem to mind handling, though they do this interesting thing where they curl up sideways and flip over in the palm of your hand (see picture – note the yellow color is an artifact of the flash, actually they are a creamy whitish color on the belly).

The females were usually full of eggs, or so they appeared. I would sometimes find them much thinner than they had been the time before, but the next time I would see them they were once again nice and fat. Occasionally I would see an area cleared out in a circle where I could see all the way to the sand bottom. Each time it was right next to one of the sponge filters and one of the fish (the male?) could be seen under the sponge filter itself, with another fish (the female?) hanging out close by. I couldn't really tell which fish it was as just the snout would be poking out. The cleared areas were always about 6 inches in diameter – about the same diameter as the males were long. The first few times I got excited, but after not finding eggs or fry, I just wrote it off as some strange behavior that I just didn't understand. Fish do things we don't quite understand all the time.

The contest ran its course and the evil Ted Judy was soundly defeated by the forces of good (relax – Ted and I are good friends). I left the banjo cats in the tank, and many folks that



Mike Hellweg

came to me from another hobbyist. In spite of what I've read that sexes are difficult to determine, when they are fully mature they are actually very easy to sex. Females are very thick with a heavy abdomen. Males have a more triangular appearance from above, with a much smaller, more gracile appearance even for fish of the same length, and they have longer, thicker pectoral fins with a much longer and thicker first ray.

At the start of the contest I put

never got around to modifying it. I'm sure as the leaf litter began to decay it created a microhabitat similar to what the fish encounter in the wild, and that might have been the key to my success. Or not. My water has a pH that fluctuates throughout the year from about 6.8 to 7.2 as it settles out over 24 hours after coming out of the faucet. Total hardness is about 125 ppm, and carbonate hardness fluctuates from near zero

of the tank alone. Water was run in via hose and overflowed out to the sewer via a bulkhead fitting. It didn't change the water completely, but did give them a good flush every week. I imagine some of that water near the bottom remained unchanged, which may have helped. I fed them every day with red worms, blackworms, chunks of frozen mysis and bloodworms, and pellet foods. I could tell the fish were feeding as I could see the bottom roiling

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visited my fishroom over the next several years commented on that empty, dirty tank. I would pull a couple fish out to show them that there were actually fish in there and that there was a method to my madness. About two years ago, I noticed that at least one of the fish I removed during these periodic inspections was quite a bit smaller than I remembered, but I didn't really think any more about it. Over the next year or so I noted this again a few more times.

This past spring I finally decided to start up again on a project I'd been wanting to do for a while now – put in a water changing system. I also decided to rearrange my tanks a bit – okay, I decided to completely gut and redo the fishroom! That required me to take down all of my tanks including the banjo catfish tank. Over the past winter I think my adult banjo catfish reached the end of their natural lifespan. They had lived with me for 7 or 8 years and were fully adult when I got them, so I had no idea how old they actually were. But one by one over several months I found first one male, then the other and finally one of my females floating. That meant I had one female left in the tank, and my dreams of breeding the banjo catfish were over for now, or so I thought. When moving day came, I drained down the tank and started netting out the muck. Let me warn you that digging through six year's worth of decaying leaf matter is not for the faint of heart! I recommend doing it when no one else is home and you can open a few

windows. There is no other way to put it - it stinks! As I sorted through the leafy, mossy muck I found an adult banjo cat – but it wasn't the big female. It was a male! Soon I found another, smaller banjo cat about 3 inches long. Then another, and another and another! All told I found 3 more nearly full grown adults plus the big female, and 7 smaller fish all about 2 – 3 inches long. 11 fish when there should have been just one...so there wasn't just one spawn, but a couple, over a period of months or even years. And I missed it all! Judging by the growth of the smaller fish since I found them, I'd guess they were probably about 10 months to a year old when I found them.

The banjo catfish is often overlooked as it tends to like to hide during the day. I moved my fish to a 75 gallon community tank where they proceeded to bury themselves in the gravel, coming out at night, and pretty much just hiding the rest of the time, so I had to feed the tank about

an hour after lights out to make sure the banjos got enough food. I've seen them for sale pretty often, but most folks who purchase them buy a single fish as an "odddity". If you get a chance to purchase them, buy more than one! Actually, if you want to take advantage of serendipity as I did, buy a couple of pairs or a half dozen or so and be prepared to wait.

So what can we take away from all of this? First of all, pay close attention to your fish! If you watch them closely you might catch something you otherwise might miss. Second, don't give up. Some fish won't spawn in just a few weeks or months after we get them – sometimes it takes years for them to reach maturity, and sometimes we just miss it altogether! Third, don't keep your breeding tanks too clean. Some articles say that banjo cats can lay several thousand eggs – and usually eat them all. I got lucky and a few fish survived. There was plenty of food for the fry. Java moss is

covered with critters as is the decaying leaf matter. Sponge filters are also covered with microscopic food for newly hatched fish to eat. Some sources say banjo fry eat rotifers for their first few meals. If so, this habitat was ready for them, at least for a few of them, as rotifers love sponge filters. The two Hydrosponge Vs I had in the tank have a huge surface area perfect for rotifers and other microscopic critters to colonize without you having to do too much work to culture them. There was likely a good culture of rotifers, but not a huge one. It was enough to raise a few banjo cats, but not a lot. But what would I have done with a thousand little banjo cats anyway? On the other hand, if I had kept the tank cleaner I might not have had any luck at all. Who knows? Maybe serendipity will strike again with some of the other fish that have been keeping me on my toes for several years like my 9 or 10 year old pair of *Agamyxis pectinifrons*?





## CHALLENGES IN SPAWNING AND REARING JENYNSIA LINEATA, THE ONE SIDED LIVEBEARER

By Chuck Bremer

“...*J. lineata* is found in cooler water than species imported from the Amazon”

South American livebearers in the family Anablepidae are not often seen in the hobby. This family is probably best known for the *Anableps anableps*, called Four Eyes because of paired eye chambers above and below the water surface. All species in the family are livebearers.

The species spawning described here is *Jenynsia lineata*. *Jenynsia* is one of four genera in the family with fourteen currently recognized species. The *Jenynsia* most resemble the *Poeciliids* as the males have a gonopodium-like copulatory organ. At one time it was thought that this organ only swings one way and for fertilization to take place, right-handed males must mate with left-handed females, or vice versa. This gave rise to the name “one sided livebearer”, but most no longer consider this restriction on pairs to be valid.

Both adequate feeding and prevention of fry predation are keys to successful spawning of this species.

This is a very active species with an apparent high metabolism in most fish rooms. My initial purchase came from two sources and one of them was affected with persistent external gill parasites that debilitated the fish and caused rapid respiration, further raising their metabolism and causing them to waste away rapidly. This resulted in only about two spawns per female before they would perish from the stress. Males had greater longevity. To reduce the parasite the tank was treated frequently with 2% formalin at the rate of 10 ml per 40 gallons to help bring the external parasites under control. Although this did not completely eliminate the parasites, it did reduce the apparent stress they were causing.

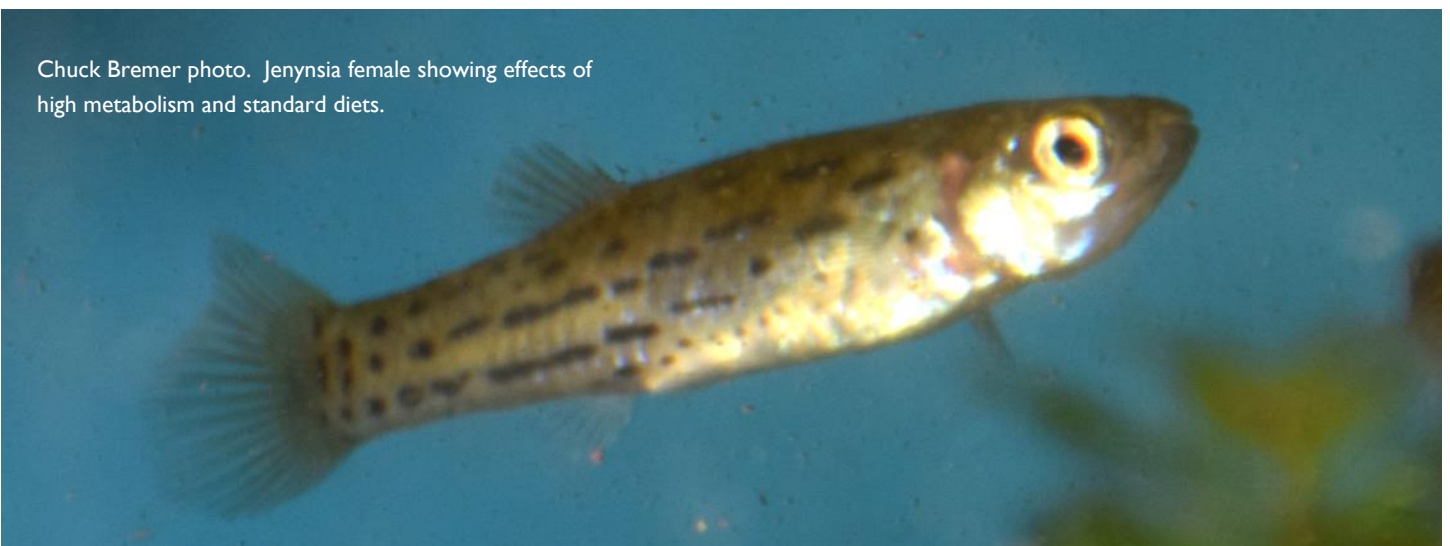
A generally observed increase in metabolism may also be partly because *J. lineata* is native to Uruguay which lies 33 to 35 degrees south latitude. This latitude is temperate, not tropical, and similar to Northern Alabama. Therefore *J. lineata* is found in cooler water than spe-

cies imported from the Amazon basin. When kept at higher temperatures, the fish burn calories at a faster rate. With most fish foods, unless fed often, they waste away because they burn calories at a faster rate than they can take them in.

There are several livebearers in my fish room, including many of the Mexican High Plains Goodeids which also require cooler temperatures. So the room is kept from 68-70° in the winter and 75-77° in the summer, temperatures more normal for these species. However, the fish are fed fewer times per day than would be ideal for this species and this provides some challenges. To address these, several changes were made.

My observations of *J. lineata* are that they are an active fish, but not aggressive feeders of flake nor live foods. To prevent the metabolic wasting and put them into breeding condition they needed a food with high protein and calories. They were fed most days with live black worms

Chuck Bremer photo. *Jenynsia* female showing effects of high metabolism and standard diets.



# CHALLENGES IN SPAWNING AND REARING JENYNYSIA LINEATA, THE ONE SIDED LIVEBEARER



and ground freeze-dried mealworms. Both are high in protein and fats. Proteins are nearly neutral in energy, but fats contain about 2.25 times the calories as carbohydrates for the same weight ingested. TetraMin tropical flake food, which I use heavily, is 47% protein and 10%

fat, however, mealworms are similar in protein and 25% fat and therefore provide about 50% more calories for the amount eaten. Using these foods a once per day feeding schedule could be maintained. One should be careful feeding high fat diets to fish as fats can

be hard to digest in large amounts and may lead to liver problems.

Early observations indicated *J. lineata* would become ready fry eaters if meals were missed. This meant recovering the fry spawned with the parents was a

challenge. Fry left with the parents also became infested with the external parasites. The fry appear adapted to predation because they display an explosive burst of speed over the first 4-5" then swim at a more moderate pace. Initially the colony was kept in a 10 gallon tank which made the fry easier for the parents to catch, even though ample cover was provided. In a 10 gallon tank there was not enough room for this burst of speed to get them safely out of the parents' feeding range. To help reduce fry predation immediately after spawning they were moved to a 40 gallon breeder with ample hiding places in the form of floating hornwort.

Observations over the years indicate that fish have a tendency to chase the smallest fish present and will ignore others that are slightly larger even though still edible size. To provide some alternative fry for the chase, several pairs of *Girardinus falcata* were introduced to the



Chuck Bremer

*J. lineata* and *G. falcata*

# CHALLENGES IN SPAWNING AND REARING JENYNSIA LINEATA, THE ONE SIDED LIVEBEARER

tank. *Girardinus falcata* adults are about the same size as *J. lineata*, are very prolific and produce fry slightly smaller than *J. lineata* fry, so provided alternate fry to chase in preference to the *lineata* fry. The *G. falcata* were excellent decoys and also provided a bit of food when caught at the expense of the *falcata* fry. By using the 40 gallon tank and decoy fish *J. lineata* fry were able to survive past spawning in the colony tank.



To further combat the parasites the fry were removed from the tank to a separate rearing tank as soon as they were found after spawning. This eliminated infection of the fry and subsequent generations appear to be parasite free.

Lessons learned by spawning *Jenynsia lineata*?

- Begin with healthy fish - it may not always be apparent upon initial purchase, but try to find disease and parasite-free parents.
- Match the environment to their native habitat when possible. This means keep-

ing tropical fish at tropical temperatures and temperate fish at temperate temperatures. At times temperatures may be more important than other water parameters.

- Feed accordingly to the fish needs. If a fish has a high metabolism and is used to eating insects in the wild, compensating by feeding the closest thing is best,

even if it is outside “normal” parameters. Different species are able to digest different sources of food. Some can digest energy from grain based carbohydrates and some need a more concentrated form of energy.

- For reduced fry predation, provide a dither or decoy species in the tank. Maintain heavy cover and pro-

vide ample escape space for the fry. For heavy predators, it may still be necessary to remove the fry when possible.

- Keep trying, I needed to maintain these fish for over a year of observations while I tweaked their environment and other parameters to consistently spawn and raise the fry. It was a rewarding experience.

Relative sizes of fry - *J. lineata* at 1/2-5/8” on left and *G. falcata* at 1/4”



Chuck Bremer

## KEEPING AND BREEDING SEWELLIA LINEOLATA, THE RETICULATED HILLSTREAM LOACH

By Holly Paoni-Wise

*“I had done nothing to induce spawning, except to attempt to provide a suitable and natural environment”*

*Sewellia lineolata* comes from shallow, fast moving mountain streams in southern Asia. These waters are well oxygenated, and have a deep sand base with piles of river rock. Hillstream loaches feed on biofilm, diatom and soft green algae and other micro foods. When I brought my 6 unsexed juveniles home, my goal was to come as close to these conditions as I could in a glass box.

I have a 20 gallon tank, that no matter what I did grew diatom algae in abundance, as it sits between 2 shop lights. The tank is very low light, one of the triggers of getting a diatom algae outbreak. I couldn't think of a better place to put the loaches! It already had a thin layer of play sand substrate, was cycled, and had a seasoned sponge filter. I had just moved the previous occupants to another tank the day before. Everything I had read about these loaches said they needed an established tank, with a great deal of naturally micro-foods. This tank was perfect for that. I gave the soon to be hillstream tank a good water change, added a few piles of smooth and sort of flat river rocks. These ranged from nickel to quarter size, roughly. I then tossed in a piece of driftwood that consistently grows soft green algae. I also moved over another piece of driftwood that had just water logged, and had a nice fuzz of biofilm growing. The driftwood already had some



ferns and anubias on them for a splash of color, more for me than the loaches.

I added some hardwood leaves, a couple of handfuls of mainly oak and a few maple. As leaves break down they produce more biofilm, which will in turn provide the hillstreams with more foods. I added another seasoned sponge filter to the opposite end of the tank, and cranked up the airflow. All that was left to do, was release the loaches from acclimating.

In about 2 weeks, the algae covered tank was sparkling clean, except the water spots and a few scratches in the old glass tank, even though I was feeding them a variety of dry foods regularly. These included spirulina powder and crisps, vegetable flakes, algae wafers, earthworm sticks, micro worms, and frozen blood worms. About 75% of what I was giving them was a vegetable based diet, and about 25% proteins. My reasoning for this was they graze and while grazing small insects are

most likely consumed.

I did my routine tank maintenance, which is usually 50% water changes weekly. So once a week, or thereabouts, they received the normal water change, but I left the leaf litter alone. I'd swirl the water, to stir things up, but then kept the siphon about 3-4 inches above the leaf litter, so I didn't take away the natural food source. When I found soft green algae growing on the underside of my glass tops, I'd scrape it off into their tank as well.

As the leaves broke down, I added more, and as driftwood pieces got really clean, I swapped them out for others that had a decent coating of natural foods growing on them. Even though the tank glass looked clean, I could always find one or two, cleaning away at that glass- the diatoms weren't gone, just under control. The loaches had full bellies, and were growing well. I had tried replicating their natural environment as much as possible in a roughly

# KEEPING AND BREEDING SEWELLIA LINEOLATA, THE RETICULATED HILLSTREAM LOACH



2 foot glass box. It seemed to paying off.

A couple more months went by with no change in care and we notice a juvenile loach about half the size of the originals on the front glass..... They had spawned ! So I went poking around.... they didn't spawn once, they didn't spawn twice, they had spawned at least 3 times. There were 3 distinct sizes, 1/4 inch apart in size, The 3/4 inch juveniles were out and about, on the driftwood, glass, filters, and larger leaves. The 1/2 inch and 1/4 inch fry, were hiding in the rock piles and leaf litter!

I had done nothing to induce spawning, except to attempt to provide a suitable and natural environment, that would give them multiple natural food sources, on top of prepared dry food. The rock piles, driftwood, and leaf litter, gave the loaches spawning sites, and hiding places for the fry, along with foods.

As for water chemistry, honestly, I don't check it unless there is a problem. How do I know if there is a problem? I can just see something is off, and/or smell it. If you're in your tanks enough, you know what I mean. So usually the only time I do check, is when someone buying fish from me and asks for those conditions. Since I don't check the

water, I have no idea what the pH, GH, KH, etc. was when they spawned. I haven't tested that water since the hillstreams have been in that tank. That's been almost a year now.

I do occasionally check my tap; aged and fresh from the faucet. I want to know what I am putting in my tanks. My tap ranges from 6.6 to 7.2 ph. The GH and KH

both run between 60- 90 ppm. So neutral water, a tad on the soft side.

To see what happened, I removed one of the two sponge filters. They have spawned twice since. All are growing, full, and doing just fine, without the extra current. The temperature of the tank has ranged from 66 to 82, from fall to heat of summer. I heat the room in winter, let it naturally cool down in spring and fall, and then it heats up in the summer. The temperature variation, doesn't seem to bother them at all, eating and spawning habits are pretty much the same.

Overall, the reticulated hillstream loach are an entertaining fish to watch. They keep the tank sparkling clean- even my algae ridden one. Its quite satisfying to consistently watch new juveniles come out to join the rest of the colony. They have been fairly easy to keep and breed. Why not give them a try?



# TOO TOUGH TO KILL— TOMATO CLOWN, AMPHIPRION FRENATUS

By Anthony P. Kroeger

Reprinted from *Aquatica*, Vol. 28, no. 4, Brooklyn Aquarium Society, Mar-Apr, 2015



*“...the toughest marine fish is the Tomato Clown...”*

Number one in my book as the toughest marine fish is the Tomato Clown, *Amphiprion frenatus*. I use them these fish to cycle new tanks. Yes, I do use some Damsel species, but not the ones usually suggested. These fish will be covered in future columns. Tomato Clowns come from the Pacific Ocean and grow to about 3” inches. They are a beautiful Tomato red color with a white vertical stripe behind the eye. As they grow, their color deepens. Many are imported from the Philippines or Indonesia and they are very hardy. Tank raised specimens are commonly seen for sale. These fish are bullet proof. Tomato Clowns eat any food offered. Temperature from 72° -

80°F, pH 8.0 and ideally no ammonia or nitrate. Salinity 1.020 - 1.022. But in cycling tanks, that is not always the case.

I have had Tomatos survive lethal levels of ammonia and nitrite. They are great indicator fish for the health of your aquarium and its water quality. A stressed Tomato Clown turns black and will lay on the bottom (sometimes sideways) and breathe slowly, if your ammonia or nitrite is too high. If this happens during cycling, do a partial (20%) of the water and the Tomato will recover. Tomatos are relatively cheap to buy. I have had Tomatos arrive from overseas in pH 6.2 and 49°F water and still survive.

Tomatos can be quarrelsome; if you want to keep two together, choose a large one (usually a female) and a small one (usually a male) so they will live together peaceably. Tomatos breed like cichlids. Tomato clowns love Anemones, but Anemones are not beginners’ animals and Tomatos do just fine without one.

Tomatos are easy to acclimate. Float the bag to equalize the temperature, add some of the tank’s water to equalize salinity, and then pour them into your tank. That’s it! Bring on the Clowns! In my opinion, the Tomato Clown is the best beginner’s fish there is. Start your tank with one and welcome to the marine hobby.

# TOO TOUGH TO KILL— TOMATO CLOWN, AMPHIPRION FRENATUS

## Species Profile By John Todaro

**Scientific Name:** *Amphiprion frenatus*.

**Common Name:** Tomato Clown, Red Clown,

Fire Clown, One bar anemonefish.

**Family:** Pomacentrida.

**Distribution:** Western Pacific.

**pH Range:** 8 - 8.4.

**Temperature Range:** 72°F - 80°F.

**Specific Gravity:** 1.020 - 1.024.

**Life Span:** 6 to 18 years in captivity.

**Size:** Up to 5". Females are larger than males.

**Temperament:** Peaceful but may become aggressive if other fish approach its space.

**Diet:** Eats algae, zooplankton and small aquatic crustaceans.

**Sexing:** Female is larger than the male.

**Breeding:** They have been bred in captivity, but it is usually better to buy a tank raised fish because it will adapt better in the home aquarium. A pair of tomato clownfish will mate for life. However, if one partner leaves, then the other will find a replacement for its lost mate. All fish are born male. The sexual metamorphosis occurs when the female of a group leaves. This will trigger the largest male to switch sexes, the largest juvenile will become a mature male.

**Fry:** Beginning as an egg, tomato clownfish will take about 1 week to hatch and become larvae. After hatching, larvae will drift for about 16 days in plankton-rich waters. At the end of this, it will look for an anemone of its own to inhabit.

**Note:** Avoid mixing various clown species; they will fight.

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- [fishlore.com/profiles\\_tomato\\_clownfish.htm](http://fishlore.com/profiles_tomato_clownfish.htm)

# ST. LOUIS' WORLD AQUARIUM CLOSES

The World Aquarium located in the City Museum closed its doors September 7. Fox 2 reported president Leonard Sonneschein as saying the aquarium back.

"Oh yeah, coming back bigger, better, stronger...except instead of being in an old building with old exhibits with this adaptive reuse, we're going to make it modern. It's going to be steel and glass, really an amazing structure...blood sweat and tears have gone into this. That's my investment, besides a lot of money. If I had to live it all over again, I'd do it just the same way... we've had a lot of people come in and cry; a very, very, emotional day today," he said.

The World Aquarium had struggled with several problems since Cassily's death. They complained about visitors being



charged City Museum admission in addition to the aquarium's fee. Lack of promotion by the City Museum was another issue. The museum complained about late rent payments and asked the aquarium to vacate by September.

In February the World Aquarium was cited by a USDA inspec-

tion with 12 violations. Inspector Amanda Owens cited "numerous empty food bowls, contaminated water receptacles, apparent failure to spot clean, filled litter boxes, and general lack of cleaning". A previous inspection in November found no violations and the February problems were corrected.

A post from World Aquarium on their Facebook site says "We fully believe the future is bright for the STL region and in particular the Riverfront. The building will be brand new, built to our specifications and have plenty of room for the orphaned animals that we rescue. We will never house any animals that are taken from the wild or any types of "larger" animals that you would think of at "Seaworld". We are an educational facility and we will stay that way while still providing entertainment for everyone. We will also have a dedicated Virtual Reality room utilizing the HTC Vive which will allow folks of all ages to enjoy swimming with the Whales and Orcas without the need of taking them from their environment which no Aquarium should do."

# TAKASHI AMANO, AQUASCAPING PIONEER, DIES



Takashi Amano changed the way people think about aquariums with his Nature Aquarium school of design. He passed away of pneumonia at his home, aged 61.

Amano's first career was as a professional racing cyclist, earning \$1.6 M in 16 years of competition.

Next he turned his hand to nature photography specializing in large format film studies of wilderness areas. His work has been exhibited around the world and was featured at the 2008 G8 political summit.

We know him best as a pioneer in freshwater aquascaping. Amano brought techniques from Japanese gardening and bonsai to aquariums. He developed the Iwagumi style aquarium featuring rocks placed according to esthetic principles and low growing carpets of plants. Amano's aquariums employ the influence of Zen and Wabi-sabi, the Japanese esthetic emphasizing transi-

ence and imperfection.

Amano did much to popularize high tech aquariums based on high light levels, CO2 injection, and a regime of fertilizers. His favored plants required it and

many of them, such as *Glossostigma* and *Hemianthus*, have risen from obscurity to popularity around the world.

Amano developed tools and equipment that support his techniques and started his company, Aqua Design Amano, to market them. He developed a line of tanks, aquascaping soils, fertilizers, CO2 systems, and aquascaping tools.

Takashi Amano is also known for popularizing shrimp for the aquarium. He found a shrimp, now known as Amano shrimp, that served his purpose as an algae eater and has become popular around the world.

Amano authored many books to share his esthetic approach and the techniques used to realize his concepts. Best known is his series, "Nature Aquarium World", published in 3 volumes. He was a regular contributor to the leading aquarium publications.

In 2001 Amano started the International Aquatic Plants Layout Contest (IAPLC). It is the largest aquascaping competition for Nature style aquariums and attracted over 2300 entries last year from around the world. Top prize is over \$8000.

An artist and innovator whose vision inspired countless followers—RIP Takashi Amano.





# WORLD'S LARGEST PLANTED AQUARIUM OPENS IN LISBON

40 meters long, 160,000 liters, and designed by the renowned Takashi Amano, this incredible aquarium opened to public viewing earlier this year.

The exhibit houses 40 freshwater species of fish and 46 types of aquatic plants. It's decorated with 78 pieces of driftwood, 25 tons of rock, and 12,000 kg. of substrate.

The Lisbon Oceanarium is Europe's largest indoor aquarium with over 450 species of fish, marine mammals, and birds. Every major ocean is represented, with an Arctic exhibit, an Atlantic Ocean tank, a tropical Indian Ocean habitat, and Pacific's temperate water tanks.



## Oceanário de Lisboa "Forests Underwater" by Takashi Amano



# MASI 3RD PLACE IN ACA BREEDER OF THE YEAR

Our club placed third in the American Cichlid Association's Breeder of the Year award for 2014-2015 with 119 spawns. First and second places went to the Ohio Cichlid Assoc. (218) and the Greater Chicago Cichlid

Assoc. (199).

Individual breeders were prolific as well. Cory Koch placed third with 32 spawns. In 8th place with 14 spawns were Debbie and Conrad Sultan. We're not

sure who Conrad is, but he may be related to Tom Corradini. Nick Scarlatis was 9th with 13 spawns.

Entry is open to any North American club and is based on

BAP results for the year. This year 9 clubs representing 158 breeders participated.

Congratulations to all who took part!



## Points Update by Ed Millinger

Name	Service	Show	Name	Service	Show	Name	Service	Show		
Allbright	Larry	53	Huck	Ron	55	Scarlatis	Nick	13		
Amsden	Jim	5	Hueneberg	Raplh	8	Shell	Randy	23		
Bellman	Shawn	5	1	Jost	Jerry	9	Simmons	Robbie	55	5
Bertich	Klaus	5	Kinder	Danielle	64	19	Slater	Mike	17	15
Bremer	Connie	12	5	Kling	Carl	7	Sonderman	Rose	21	
Bremer	Chuck	36	178	Koch	Cory	19	Sultan	Debbie	66	
Buckles	Bob	6	Lange	Gary	67	Theby	Mark	68		
Bush	Scott	13	Ludden	Dan	8	Tinklenberg	Rick	15		
Corradini	Tom	17	Mayhew	Bruce	10	Tosie	Pat	78	16	
Daly	Kathy	23	45	McCreary	Leroy	23	Troester	Jim	5	
Deutsch	Kathy	64	McMillian	Tony	27	Ulett	Jim	5		
Deutsch	Steve	61	Merkley	Al	5	Van Asch	John	44		
Edie	Steve	59	Miller	Jim	8	188	Walker	Derek	20	
England	Mark	57	Mohrle	Chris	12	4	Walker	Harold	5	
Felman	Marlon	86	Montgomery	Jerry	0	30	Watson	Bob	62	
Harrison	Charles	47	Mueller	Jim	4	55	Watson	Lora	63	
Harrison	Sue	6	Mueller	Kitty	4	70	Wise	Kevin	58	
Heller	Jack	7	30	Peters	Dwayne	6	Wise	Holly	92	
Hellweg	Angela	5	Powers	Todd	18	Wright	Norb	7		
Hellweg	Mike	122	Rios	Dan	5	Zahringer	Kurt	25		
Hoppe	Charles	5	Rose	Vikthor	18					
Huber	Mike	30	Rush	Dave	69					

## MASI HAP RULES UPDATES AND CLARIFICATIONS EFFECTIVE IMMEDIATELY

By Mike Hellweg

It's the end of MASI's fiscal year, and time for the annual review of our programs, including the HAP. We're making a couple of changes to bring the HAP rules more in line with BAP rules to avoid potential confusion, address some criticisms that we've had over the years, and make it more fair for everyone. The changes are minor, but may affect some of you. Everything is still on the honor system. The program is designed to reward your work with true aquatic plants. It's not always easy.

If you are unsure as to a plant's identity, do not turn the plant in that month. Send me a clear picture or two and I'll try to help you identify it for the next monthly meeting when you can turn it in with a good identification. Gary Lange, Derek Walker, Holly Paoni-Wise, and Andy Walker can all help, too. It's very hectic at the meeting and I just don't have time to look up a particular plant at the meeting. Help me out a bit and send a picture or two to me several days ahead of time. Close ups of the leaves, stems, the overall plant in the tank or pond, and the blooms, etc. will all help.

Please remember that just because you buy a plant from a shop or vendor as an aquatic plant does not mean that it actually is an aquatic plant. The big box stores are really getting bad at it – you can buy all kinds of

house plants and terrarium plants in little plastic tubes being sold as “aquarium plants”. That doesn't mean that they are!

### Hydroponically grown:

Plants sold in those little rock wool hydroponics pots should be removed from those pots and most of the rock wool removed before they are planted in your tank or pond. Turning them in with the pots still attached is not an acceptable method for credit. Those pots should be long gone, and the roots should be re-established and healthy before the plant is submitted for HAP. In the case of emerge-grown aquatic plants that are grown hydroponically and sold to shops or dealers in these rock wool pots, before they can be submitted, the leaves must be changed over to submerge leaves which can take several weeks to a month or more.

### Explaining the changes:

Basically, you need to grow the plant for 60 days before turning it in for HAP. No more turning in tiny week-old plants, a teaspoon of duckweed or susswas-sertang, or plants with limited root systems, etc. Folks who buy the plants should have a fair chance of getting them going. That's one of the points of the program.

To clarify a question that has come up several times with one particular genus, in order to vegetatively propagate an Aponogeton species, you must

divide the tuber and get two HEALTHY plants, both with leaves, tuber and roots. Growing the plant from a bulb is not a vegetative propagation. That's only step one. Vegetative propagation of Aponogetons is actually more challenging than getting them to bloom and getting seeds from that bloom!

All submissions must be made to the chairman along with your form. No more dumping them on the front table and just handing in the forms. I need to see and verify the propagation first or you won't get credit. I get to the meeting around 7:00, so you have plenty of time before the meeting to turn your plants in. If you're turning in a large number of plants, please have the plants laid out somewhere out of the way of traffic, such as along the back row of chairs, in order with the stack of forms, so we can verify them quickly and easily.

For blooms, you must own the plant for at least three weeks BEFORE it puts up a bloom stalk. This clarifies the intent of the rules. You can't buy a plant with a bloom stalk already on it and get credit for a bloom when a bud opens a few days later.

If you have any questions, please contact me. Changes are in bold:

### Old rule:

As a matter of ethics, plants must be OWNED and MAINTAINED by the entrant at the time of propagation. Any plant



submitted for the HAP **MUST BE PROPAGATED IN THE ENTRANT'S OWN TANK OR POND.**

### New rule:

As a matter of ethics, plants must be OWNED and MAINTAINED by the entrant **for at least 60 days** at the time of vegetative propagation. Any plant submitted for the HAP **MUST BE PROPAGATED IN THE ENTRANT'S OWN TANK OR POND. For blooms, the entrant must own the plant for at least three weeks before the plant begins to bloom. In the case where plants are purchased with blooms, fruits or seeds, those growths are ineligible for submission.**

### Old rule:

A completed HAP Report must be filled out and submitted at the time of verification for each submission.

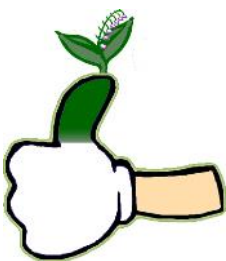
### New rule:

A completed HAP Report must be filled out **and both the plant (or photo in case of blooms) and the form submitted to the chairman for verification** at the time each submission is made.

...and for now, 'nuff said

# July/August Horticulture Award Program by Mike Hellweg

Aquarist	Species	Common Name	Key	Points	Total	Note
<b>Mike Hellweg</b>	<i>Zephyranthes candida</i>	Dwarf Onion Plant	V	20	3505	
<b>John Van Asch</b>	<i>Azolla caroliniana</i>	Fairy Moss	V	5	785	
<b>Chuck Bremer</b>	<i>Anubias barteri nana</i> "petite"	Petite Anubias	V	15	380	
	<i>Bacopa monnieri</i>	Water Hyssop	V	10		
	<i>Ceratopteris thalictroides</i>	Water Sprite	V	5		
	<i>Cryptocoryne wendtii</i> Florida Sunset	<i>Cryptocoryne wendtii</i> Florida Sunset	V	15		
	<i>Hydrocleys nymphoides</i>	Water Poppy	V	10		
	<i>Hydrocleys nymphoides</i>	Water Poppy	OB	10		
	<i>Iris pseudacorus</i>	Yellow Water Iris	V	10		
	<i>Iris pseudacorus</i>	Yellow Water Iris	OB	10		
	<i>Nymphoides hydrophylla</i> taiwan	Taiwan Lily	V	20		
	<i>Nymphaea</i> sp. Alaskan	Alaskan Water Lily	V	20		MASI First!
	<i>Pistia stratiotes</i>	Water Lettuce	V	5		
<b>Daniell Kinder</b>	<i>Anubias barteri coffeefolia</i>	Coffee Leaf Anubias	IB	20	70	
	<i>Anubias barteri coffeefolia</i>	Coffee Leaf Anubias	V	15		
	<i>Anubias barteri nana</i>	Dwarf Anubias	V	15		
	<i>Anubias barteri nana</i>	Dwarf Anubias	IB	15		
	<i>Pistia stratiotes</i>	Water Lettuce	V	5		
<b>Pat Tosie</b>	<i>Lomariopsis lineata</i>	Susswassertang	V	5	385	
<b>Maureen Green</b>	<i>Pistia stratiotes</i> ruffled	Ruffled Water Lettuce	V	5	1315	
<b>Mike Huber</b>	<i>Acorus gramineus</i> Ogon	Japanese Golden Sweet Flag	V	10	3215	
	<i>Aeschynomene fluitans</i>	Giant Water Sensitive Plant	IB	15		MASI First!
	<i>Aeschynomene fluitans</i>	Giant Water Sensitive Plant	V	10		
	<i>Alocasia amazonica</i> Hilo Beauty	Hilo Beauty Varigated Taro	V	15		
	<i>Bolbitis heteroclita</i> difformis	Dwarf Asian Fern	V	10		MASI First!
	<i>Crinum</i> sp. mnehune	Red Bog Lily	V	20		MASI First!
	<i>Cyperus haspan</i>	Dwarf Papyrus	V	10		
	<i>Cyperus percamenthus</i>	Dwarf Giant Papyrus	V	10		
	<i>Didplis diandra</i>	Caterpillar Plant	V	15		
	<i>Echinodorus</i> sp. pinwheel	Pin Wheel Sword	V	15		MASI First!
	<i>Echinodorus grisebachii</i> tropica	<i>Echinodorus grisebachii</i> tropica	V	15		
	<i>Echinodorus</i> sp. x Rose	Rose Sword	V	15		
	<i>Echinodorus uruguayensis</i>	Uruguayan Sword	V	15		
	<i>Echinodorus bleheri</i>	Amazon Sword	IB	20		
	<i>Echinodorus major</i> martii		V	15		
	<i>Echinodorus</i> sp Ozelot Red	Red Ozelot Sword	V	15		
	<i>Eleocharis montevidensis</i>	Giant Hairgrass	V	10		MASI First!
	<i>Equisetum scirpoides</i>	Dwarf Scouring Rush	V	10		MASI First!



Reproduction Key: V = Vegetative, OB = Outdoor Bloom, IB = Indoor Bloom, S = Seedling

# July/August Horticulture Award Program by Mike Hellweg

Aquarist	Species	Common Name	Key	Points	Total	Note
Mike Huber	<i>Helianthium bolivianum quadricostatus</i>	Broadleaf Chain Sword	V	15		
	<i>Hemianthus callitrichoides</i> Cuba	Cuban Baby's Tears	V	15		
	<i>Hemianthus glomeratus</i>	Amano Pearl Grass	V	15		
	<i>Hibiscus moscueutos</i>	Swamp Mallow	V	10		MASI First!
	<i>Hygrophila corymbosa siamensis</i>	Narrow Leaf Temple Plant	V	5		MASI First!
	<i>Hymenocallis liriome</i>	Spider Lily	V	10		MASI First!
	<i>Iris pseudacorus</i>	Yellow Water Iris	V	10		
	<i>Iris</i> sp. Professor Claude	Black Gamecock Water Iris	V	10		
	<i>Iris</i> sp. Sea Wisp	Sea Wisp Water Iris	V	10		MASI First!
	<i>Juncus effusus</i> Golden Spike	Gold Spike Rush	V	10		
	<i>Juncus inflexus</i> Afro	Blue Medusa Corkscrew Rush	V	10		MASI First!
	<i>Justicia americana</i>	Water Willow	V	5		
	<i>Justicia americana</i>	Water Willow	OB	5		
	<i>Lilaeopsis mauritius</i>		V	10		MASI First!
	<i>Limnophila heterophylla</i>	Purple Mudwort	V	10		MASI First!
	<i>Lobelia x speciosa</i> pink	Pink Cardinal Flower	OB	10		MASI First!
	<i>Lobelia x speciosa</i> Pink	Pink Cardinal Flower	V	10		
	<i>Ludwigia inclinata verticiliata</i> Cuba	Cuban Ludwigia	V	10		
	<i>Ludwigia arcuata</i>	Needle Leaf Ludwigia	V	10		
	<i>Mayaca fluviatilis</i>	Bottle Brush Plant	V	20		
	<i>Mentha aquatica</i>	Water Mint	V	15		
	<i>Microsorium</i> sp. trident	Trident Leaf Java fern	V	10		
	<i>Mimulus ringens</i>	Monkey Plant	OB	10		MASI First!
	<i>Mimulus ringens</i>	Monkey Plant	V	10		
	<i>Myriophyllum pinnatum</i>	Green Foxtail	V	10		
	<i>Nymphaea lotus</i>	Tiger Lotus	V	20		
	<i>Oenanthe javanicum</i> Flamingo	Variegated Water Celery	V	10		
	<i>Orontium aquaticum</i>	Golden Club	V	15		
	<i>Pontederia cordata</i>	Pickereel Weed	V	10		
	<i>Rotala</i> sp. Vietnam		V	15		
	<i>Ruellia brittoniana</i>	Blue Bell Compacata	OB	5		MASI First!
	<i>Ruellia brittoniana</i>	Blue Bell Compacata	V	5		
	<i>Rumex sanguineus</i>	Bloody Dock	V	10		MASI First!
	<i>Sagittaria graminea</i> Crushed Ice	Crushed Ice Arrowhead	V	5		
	<i>Saururus cernuus</i>	Lizard's Tail	V	5		
	<i>Schoenoplectus tabernaemontani</i>	Zebra Rush	V	10		
	<i>Scirpus lacustris albescens</i>	White Rush	V	10		MASI First!
	<i>Thalia dealbata</i>	Thalia	V	10		
	<i>Typha laxmannii</i>	Slender Cattail	V	5		

Reproduction Key: V = Vegetative, OB = Outdoor Bloom, IB = Indoor Bloom, S = Seedling

# July/August Horticulture Award Program by Mike Hellweg

Aquarist	Species	Common Name	Key	Points	Total	Note
Mike Huber	Vallisneria americana	Common Val	V	5		
	Wedelia trilobata	Water Zinnia	OB	10		MASI First!
	Wedelia trilobata	Water Zinnia	V	5		
	Butomus umbellatus	Flowering Rush	V	10		
	Butomus umbellatus	Flowering Rush	OB	10		
	Colocasia esculenta fontanesii	Violet Stem Taro	V	15		
	Colocasia esculenta	Green Taro	V	15		
	Crinum natans		V	20		
	Gymnocoronis spilanthoides	Water Snowball	V	10		MASI First!
	Gymnocoronis spilanthoides	Water Snowball	OB	10		
	Hygrophila corymbosa angustifolia	Willow Leaf Hygro	V	5		
	Iris ensata variegata	Japanese Water Iris	V	10		
	Iris sp. Black Gamecock	Black Gamecock Water Iris	V	10		
	Iris versicolor	Blue Water Iris	V	10		
	Limnophila indica		V	10		
	Lysimachia nummularia aurea	Goldilocks Moneywort	V	10		
	Lysimachia nummularia	Moneywort	V	10		
	Marsilea hirsuta	Dwarf 4 Leaf Clover	V	15		MASI First!
	Myriophyllum simulans	Fillagree Myrio	V	10		
	Nesaea pedicellata golden	Golden Nesea	V	15		
	Nesaea pedicellata		V	15		
	Nymphaea alba	White Water Lily	V	20		
	Nymphaea sp. Attraction	Attraction Water Lily	V	20		
	Nymphaea sp. James Brydon	James Brydon Water Lily	V	20		MASI First!
	Nymphaea sp. Sioux	Sioux Water Lily	V	20		
	Nymphoides indica	White Water Snowflake	OB	20		
	Nymphoides indica	White Water Snowflake	V	20		
	Pogostemon stellatus	Water Star	V	15		
	Potamogeton nodosus	Floating Leaf Pondweed	V	10		
	Proserpinaca palustris	Mermaid Weed	V	15		
	Rotala sp. Nanjenshan		V	15		
	Sagittaria latifolia	Duck Potato	V	5		
	Shinnersia rivularis	Mexican Oak Leaf	V	10		
	Taxiphyllum sp. Flame	Flame Moss	V	5		
	Typha minima	Dwarf Cattail	V	5		

Reproduction Key: V = Vegetative, OB = Outdoor Bloom, IB = Indoor Bloom, S = Seedling

# Breeders Award Program by Steve Edie

July	Species	Common Name	Points	Bonus	CARES	Total
<b>Chuck Bremer</b>	<i>Girardinus falcatus</i>	Sickle Girardinus	5			312
	<i>Jenynsia lineata</i>	One Sided Livebearer	20			332
	<i>Poecilia gilli</i>	Costa Rican Molly	5			337
	<i>Poecilia obscura</i>	Hidden Guppy	5			342
	<i>Poeciliopsis prolifica</i>	Black Stripe Livebearer	5			347
	<i>Skiffia bilineatus</i> @	Two Lined Skiffia	20		20	387
<b>Mike Hellweg</b>	<i>Cryptoheros myrnae</i> @		10		10	6469
<b>Mike Huber</b>	<i>Limia</i> sp. "Tiger"		5			469
<b>Ed Millinger</b>	<i>Pachypanchax sakaramyi</i> "Joffreville" @	Madagascar Panchax	10		10	835
<b>Debbie Sultan &amp; Conrad Corradini</b>	<i>Cichlasoma amazonarum</i>		10			520
<b>Derek Walker</b>	<i>Herichthys tamasopoensis</i> "rio Tamasopo"		10			3525
	<i>Ptychochromis grandidieri</i> "East Coast Gold" *@		15	5	15	3560
August	Species	Common Name	Points	Bonus	CARES	Total
<b>Chuck Bremer</b>	<i>Herotilapia multispinosa</i>	Rainbow Cichlid	5			392
<b>Mike Hellweg</b>	<i>Betta persephone</i> *@	Dwarf Betta	15	5	15	6504
	<i>Boraras merah</i> *	Phoenix Rasbora	20	5		6529
	<i>Danio</i> sp. "Hikari" *	Kikari Blue/Yellow Danio	10	5		6544
<b>Mike Huber</b>	<i>Pundamilia nyereri</i> "Python Island" @		10		10	489
<b>Cory Koch</b>	<i>Coptodon bythobates</i> #@	Bloody Deepwalker	0		15	3954
	<i>Cryptoheros myrnae</i> #@	Blue Eyed Cichlid	0		10	3964
	<i>Cryptoheros nanoluteus</i> #@		0		10	3974
	<i>Haplochromis lividus</i> "Murchison Bay" #@		0		10	3984
	<i>Haplochromis</i> sp. "Ruby" #@		0		10	3994
	<i>Paralabidochromis</i> sp. "Red Fin Piebald" #@		0		10	4004
	<i>Petrochromis polydon</i> "Kasanga" **		20	10		4034
	<i>Psammochromis riponianus</i> #@		0		10	4044
	<i>Pseudosimochromis curvifrons</i> "Isanga" **		15	10		4069
	<i>Pundamilia nyereri</i> "Python Island" #@		0		10	4079
	<i>Tropheops</i> sp. "Elongatus Boadzulu" *		15	5		4099
	<i>Xystichromis phytophagus</i> #@		0		10	4109
	<b>Gary Lange</b>	<i>Melanotaenia garylangei</i> *	Golden Rainbowfish	10	5	
<i>Melanotaenia rubrivittata</i> (GR Allen, 2015) *		Wapoga Red Laser Rainbowfish	10	5		1794
<b>Jim Miller</b>	<i>Hyphessobrycon callistus</i> *	Serpae Tetra	15	5		3059
<b>Ed Millinger</b>	<i>Geophagus mirabilis</i> *		15	5		855
<b>Debbie Sultan &amp; Conrad Corradini</b>	<i>Copadichromis virginalis</i> "Gold Crest" *@		10	5	10	545
	<i>Champsocromis caeruleus</i> *	Malawi Trout Cichlid	15	5		565
	<i>Hemitalpia oxyrhynchus</i> *		15	5		585
<b>Pat Tosie</b>	<i>Amatitlania siquia</i>	Platinum Honduran Red Point	10			4885
	<i>Parachromis loisellei</i> "Rio Dulce" *		15	5		4905
	<i>Phalloptychus januaris</i>		5			4910

\* = First MASI species spawn (5 point bonus)

\*\* = First MASI species and genus spawn (10 point bonus)

\*\*\* = First MASI species, genus and family spawn (15 point bonus)

@ = C.A.R.E.S Species at Risk (Double base points)

# = Species previously submitted = 0 points, except for C.A.R.E.S. =

base point bonus

^ = Species previously submitted, limited points for additional color varieties

Sources: Cal Academy - <http://research.calacademy.org>

CARES - <http://www.carespreservation.com>

## DINO PET?

The latest in the bizarre novelty aquariums is the Dino Pet, part toy, part pet, and part science project. It's home to bioluminescent plankton (dinoflagellates) that glow at night with a little shaking. This is the plankton that you can see glowing in surf under the right conditions. The critters absorb energy from the sun during the day and will release it at night as light.

Available for only \$59.99 from [www.vat19.com](http://www.vat19.com).



## 95 YEAR OLD LOBSTER SPARED DEATH SENTENCE



Steve Jordan, owner of Jordan Lobster Farms restaurant and market in Long Island, got a tip from the fisherman who caught the behemoth in the Bay of Fundy in Canada.

However, he wasn't quite ready for what was delivered to his business. "It was awesome," he said. "I looked into the crate and

it was a 23-pound lobster. I thought this is the biggest lobster we've had in 15 years."

Ordinarily, a one pound lobster is 7 years old. It usually gains a quarter pound a year, making this one almost a century old.

Jordan decided to spare the giant by donating it to the Long Island Aquarium.

## FUGITIVE GOLDFISH ON THE LAM 7 YEARS

A feeder goldfish put in the arapaima tank at Shima Marineland in Japan avoided a dinner invitation by escaping into a filtration tank where it survived undetected for seven years. It grew to 10" before being discovered.



See something fishy that makes you laugh?  
Send it to [editor@missouriaquariumsociety.com](mailto:editor@missouriaquariumsociety.com)



## FISHES AS DISHES

PATRICK A. TOSIE, SR.

# Blackened Tilapia

We all love our fish! This column will be dedicated to using our fish for something tasty to enjoy. Try it, you may like it. If you have leftovers, bring it to a monthly meeting for others to enjoy!

**Blackening Spice:**

3 tablespoons smoked paprika  
 1 teaspoon salt  
 1 tablespoon onion powder  
 1 teaspoon ground black pepper  
 1 teaspoon cayenne pepper  
 1 teaspoon dried ground thyme  
 1 teaspoon dried oregano  
 1/2 teaspoon garlic powder

**For Fish:**

4 tilapia fillets  
 2 tablespoons grapeseed oil  
 1/2 lemon, juiced

**Directions:**

In a small bowl combine all of the spices. Press a heaping tablespoon of the spice mix onto each fillet so that both sides are liberally coated. Allow the fish to sit for 15 minutes at room temperature prior to cooking.

In a large skillet, heat the oil over medium-high heat. Once the oil is almost smoking, add the fillets and cook for 2 to 3 minutes on each side. Sprinkle with lemon juice and transfer the fillets to serving platter.

Total Time: 30-35 minutes  
 (Preparation: 10 minutes, Inactive 15 minutes, Cook: 5-10 minutes) Yields 4 servings



## Classifieds

Buy/Sell	Member	Item	Bid/Asked	Contact
Sell	Jim Miller	Bloodworms and brine shrimp. Brine Shrimp eggs 16 oz. can.		314-638-1134
Sell	Charles Harrison	Thiosulfate crystals (Chlorine Remover) - pound	\$4.00	
		OTO double strength Chlorine/Chloramine test kits - 4 ounce	\$12.50	(314) 894-9761
		Flubendazole, 10% powder 25 grams	\$20.00	charles@inkmkr.com
		Lavamisole HCl Powder - 5 grams treats 100 gallons	\$10.00	
		Methylene Blue 5% solution (4 ounces)	\$12.75	
		Acriflavine Concentrate (4%) solution, 2 ounces	\$12.70	
		Bromthymol Blue pH test solution, 4 ounces	\$7.00	
Buy	Mike	Small Styro shipping boxes - 12 x 12 x 12 or a little bit smaller. If your company uses them and throws them away, save them! Bring to the meeting or I'll come pick them up	Free	636-240-2443

MASI Members can place a classified ad in the Darter for free. Ads may be up to 30 words in length. Send your ads to the editor. The ad will run for one issue unless you specify how long to run it, in which case it will run as requested.

# EASTERN AQUATICS

**717-898-7224 (leave message) [Easternaquatics@yahoo.com](mailto:Easternaquatics@yahoo.com)**

## LIVE CULTURED BLACKWORMS

\*\*\*Cultured blackworms are blackworms that are grown under completely controlled conditions. They are grown using clean, cold water and are fed a special ground grain feed which contains no animal products or any waste products. They are not raised in conjunction with any fish or other animals. The worms are free of parasites and pathogens (disease causing) bacteria. As an extra precaution, all worms are quarantined for 7-10 days after harvesting to assure best quality and packaged in bags with pure oxygen to reduce any shipping stress.

\*Please call or email with zip code for prices and shipping quotes.

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ELLISVILLE MISSOURI  
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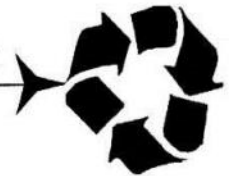
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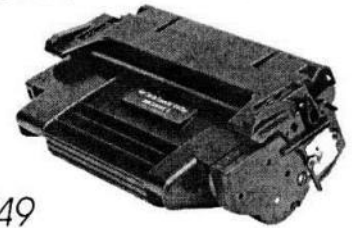


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