

The

DARTER



*Melanotaenia
ericrobertsi*



*Melanotaenia
rubrivittata*

*Melanotaenia
garylangei*



JULY/AUGUST 2015

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Cover photo by Gary Lange



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Membership

Annual membership in the Missouri Aquarium Society, Inc. is \$15 and includes an electronic subscription to *The Darter*. A membership with a printed subscription is \$20. *The Darter* is published six times per year. You can join or renew your membership at any meeting, most club events, or by contacting Ron Huck, membership chair, at 314-481-2915.

MASI STUFF!

An expanded line of MASI Logo merchandise is now available from Café Press. Pick from T-shirts, jerseys, caps, tote bags, coffee cups, and more. Go to www.cafepress.com/MissouriAquariumSociety.



FROM THE PRESIDENT

Pat Tosie



Welcome to our newly elected officers and council members:

- President: Pat Tosie
- Vice-President: Gary Lange
- Secretary: Kevin Wise
- Treasurer: Daniell Kinder

Council Members:

- Larry Allbright
- Charles Harrison
- Leroy McCreary
- Robby Simmons

- Mark Theby
- John VanAsch

We want to thank retiring officers Marlon Felman and Debbie Sultan, and thank Kevin Wise from moving up from council member to secretary plus a big thank you to our newest officer Daniell Kinder who is our new treasurer. Thank you all for working to guide our club.

Last month, at our meeting, we had a wonderful auction of fish from the Amazon Research Center for Ornamental Fishes, for

the MASI Challenge. Including the money from the donated fish, we now have raised over \$1,500! Let's finish out the year strong and see if we can make it to \$2,500! With everyone's support, we can do it!!!

Our next major event is the swap meet! Holly and Kevin are working hard to make it bigger and better than ever. Please contact Holly and reserve your table today.

Keep looking below water....



FROM THE EDITOR

Mark England



Hope you're having a great summer and enjoy this issue of *The Darter*. It wouldn't be possible without our writers. Our thanks to Holly Paoni-Wise, Tony McMillan, Gary Lange, Pat Tosie, Kathy Deutsch, Steve Edie, Mike Hellweg, Heather Moulton-Meissner, and Sudeep Mandal.

We've got a lot going on over the next couple of months—a great lineup of meeting speakers, our summer auction, and the swap meet promise fun in the

club.

I recently discovered several Facebook groups that may interest you, all local. One is St. Louis Planted Tanks, dedicated to the aquatic 'gardeners' in town. There are several MASI members in the group and if you like planted tanks, check it out. People are exchanging advice and plant specimens and it's all local.

Another Facebook group is St. Louis Aquarium Club. It's a general interest group with lots of members who are not active in MASI.

You may like the St. Louis Cichlids group. It has 750 members

and includes Old World, New World, African, angels, discus, and oddballs. Even discussion of cichlid-compatible catfish is welcome.

And, of course, there's the public MASI Facebook page where you'll find club news and events and discussion of all things fishy.

Actually, there is a second MASI Facebook page that's a closed group. That doesn't mean you have to belong to MASI, but you do have to join the Facebook group to participate. There are over 1000 members.

There is even the St. Louis Area Fish Store Deals group. This is a page where store owners and chain store employees can post their current sales and deals.

Hobbyists can also post deals they have found.

Take some time to check out these pages.

One of the many, many perks of volunteering as editor is that I receive many newsletters from other clubs. It's interesting to see what other clubs are doing. If you would like to receive the exchange newsletters, send an email to Gary L a n g e a t gwlange@sbcglobal.net . Gary has volunteered to forward the newsletters to anyone who is interested. You'll get all of them as they come in. It's all or nothing and electronic copies only.

**JULY 16—JONATHAN STRAZINSKY
“HISTORY OF THE WORLD PART I- THE JONATHAN STRAZINSKY STORY ”**



Jonathan Strazinsky, aka The Fish Guy, has been keeping and breeding fish for nearly 30 years. Jonathan’s fish room boasts between 2200 and 3400 gallons, depending on whether his showpiece DIY 1200-gallon tank is running. He keeps mainly Central and South American cichlids and Odd-balls, and breeds many rare and difficult species. He and his wife also keep koi in outdoor ponds, 2 dogs, four leopard geckos, and two ball pythons. He is an OCA board member

and Cub Scout den leader. His talk, “History of the World Part I- The Jonathan Strazinsky Story” starts at age 11 with his first tank and fish (convicts) and includes his days at Monster Fish Rescue, ideas for building large tanks and housing monster fish, and fish-room tips, tricks, and anecdotes.

Email: jjstraz@hotmail.com

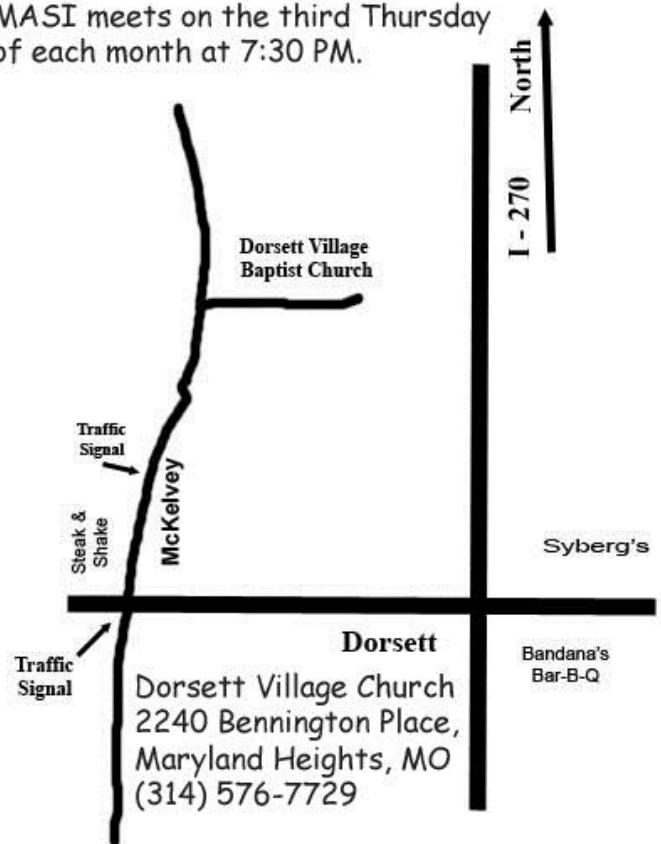
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**SEPT 17 — DUSTIN WUNDERLICH
“PLANTED TANKS”**

Electronic Issue In Full Color

The Darter is available electronically in full color. Get your Darter sooner, save a tree, and save the club printing and postage expenses. Email me at editor@missouriaquariumsociety.com.

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



**AUG 20 — PAT TOSIE
“2015 MASI CHALLENGE”**

President Pat Tosie will speak on the 2015 MASI challenge. Funds raised will go to the Amazon Research Center For Ornamental Fishes. The facility will be devoted to research on sustainable breeding, diseases, ecology, and conservation of ornamental fishes. It will be the first research center dedicated solely to ornamental fish. Led by Dr. Anthony Mazeroll, Carlos Chuquipiondo and Fernando Carlos Ramos, the center will be located on 2 acres



of land outside Iquitos, Peru.

Peru is home to over 900 species of fish with 30% found only in Peru. 85% of all Peruvian species are found within the Amazon basin.

CLUB HOPPING

By Steve Edie

Check with the individual clubs for more details.

Jul 11	Urbana, IL	Champaign Area Fish Exchange	Summer Auction	www.champaignfish.com
Jul 30-Aug 2	Springfield, MA	American Cichlid Association	Annual Convention	www.acaconvention2015.com
Aug 9	St Louis	MASI	Summer Auction	www.missouriaquariumsociety.com
Sep 27	St. Louis	MASI	Swap Meet	www.missouriaquariumsociety.com
Oct 3-4	Schoolcraft, MI	Southwestern Michigan Aquarium Society	Workshop	www.swmas.org
Oct 24	Peoria, IL	Tri-County Tropical Fish Society	Fall Auction	peoriafishclub.com
Nov 1	St Louis	MASI	Fall Auction	www.missouriaquariumsociety.com
Nov 15	Indianapolis	Circle City Aquarium Club	Auction	www.circlecityaqclub.org
Nov 20-22	Cleveland	Ohio Cichlid Association	Extravaganza	www.ohiocichlid.com

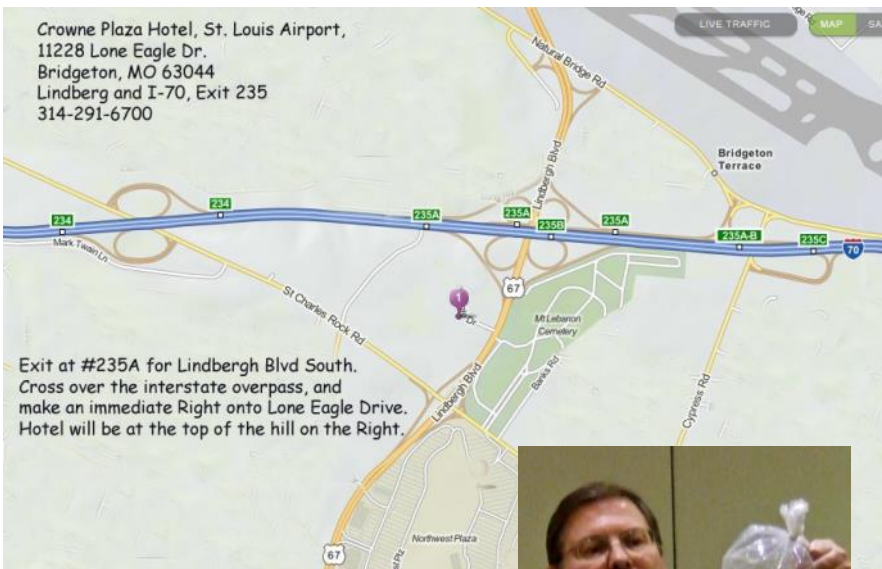
MASI PICNIC—JULY 18

Rick & Pam Jokersts, 305 Wyndmoor Terr. Ct., Town & Country, MO 63141

All members & family are invited!

It is a beautiful back yard and one of the best pond settings in St Louis. Bring your swim suit!

AUGUST 9 MASI SUMMER AUCTION



Viewing 10 AM
Auction 11 AM



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!

Vendor Spots Still Available \$25

More info at hcaaquatics@yahoo.com



ACA 2015 Annual Convention



The Sheraton Hotel - Springfield, Massachusetts
July 30 – August 2, 2015



Vendor Room Show Competition Hospitality Suite Kids' Tank Decorating
Boston Day Trip Old Sturbridge Village Banquet Giant Sunday Cichlid Auction

Speakers:

Wayne Leibel Laif DeMason Oliver Lucanus Ad Konings Dr. Paul Loiselle
Rusty Wessel Al Sabetta Jaap-Jan de Greef Charley Grimes Dr. Hubert Kuerzinger

Register at: ACAconvention2015.com



THE MIDWEST'S PREMIER CATFISH CONVENTION

OCTOBER 16, 17 & 18, 2015

Howard Johnson Madison

3841 E. Washington Avenue

Madison, WI 53704

608-244-2481

The logo for "Aquatic Experience Chicago", featuring a circular design with a fish and the text "Aquatic Experience CHICAGO".

EVERYTHING AQUATIC
UNDER ONE ROOF

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

SHOW REPORT JULY 2015

By Kathy Deutsch

The 2015 Show Me Fish has come and gone. Thank you all for the help and support.

I will have info on the website about the 2015 Superbowl fish show, in October. The rules and entry form will be up by the end of July. The Superbowl is a fish show on a bigger scale than our monthly shows. It is held during the monthly general meeting. Start prepping your fish!

Later in the summer I will be having a sit-down where we can talk about the 2015 AND 2016 shows. This is the time to bring suggestions, complaints and compliments. More on that soon. It will be advertised in the Darter and online.

Finally, 2016 will be my last (in the near future) as fish show chairman. Only the President can appoint the next show chairman. However, if you think you might like to learn the show, and/or help me out with the 2016 show, please let me know.

FISH RESCUE

By Kathy Deutsch

The left side of the MASI website home page lists what the club does. Included is a clickable email link for FISH RESCUE.

Our club has a commitment to the health and welfare of the aquatic beings in our care. We educate as much as we can, about the care of fish and their tankmates. But sometimes a fish gets too big for his home, and that is where the fish rescue squad comes in. There are 6 of us and when notified, we take the fish and rehome it in a bigger tank.

Fish rescue is available to anyone who has one fish or a tankful. You do not need to be a MASI member. All we ask is that the person giving away the fish sign a release form. We don't want to take fish that are not ours to take.

If you have a fish that needs a new home, let us know. It's a good deed for the humans and the fish.

MASI INSULATED FISH BAG

Transport your fish in style!

Insulated, rolls up for easy transport, expandable, fits in luggage, carry your fish anywhere and keep them safe from temperature changes while displaying your pride in your club!

22" x 16" x 12" - holds several fish bags
Made of 100% recycled materials

Just \$10.00

Get yours today, before they're gone! Available at each monthly meeting while they last!



DEBBIE SULTAN-WRITER OF YEAR

Debbie Sultan received the Ralph Wilhelm Memorial Writers' Award at the May meeting. The award is made annually in honor of Ralph Wilhelm. Ralph served 20 consecutive terms on the Executive Council and held most positions in the club at one time or another. In addition to serving as President, Vice-President, Secretary, Treasurer, Show Chairman, Librarian, Exchange Editor and several other positions, Ralph was Auction Chairman for many years.

Debbie received a plaque and \$100 for her story "Breeding The Flag Cichlid, Mesonauta Festivus." that told of her trials and success breeding this fish and raising their fry. It was published in the September-October, 2014 issue of *The Darter*.

Past winners include Lawrence Kent and Steve Edie.

Back To Basics by Mark England

Filtration Made Easy

Clean water makes for happy fish. Getting clean water and keeping it clean is easy if you understand the basics of how filters work.

Waste is produced in the aquarium from uneaten fish food (feed only what fish can eat in a few minutes), fish wastes (urine and feces), and fish respiration (breathing). Decomposing wastes create ammonia and nitrite, both of which are toxic to fish in high amounts.

Fortunately, modern filters do a great job. They work in three ways. First is mechanical filtration, that is, trapping waste particles in filter floss or a sponge. This helps clear the water, but

the trapped waste continues to break down and produce toxic ammonia and nitrite. Regular replacement of floss or cleaning of the sponge removes the waste before toxins accumulate.

The second type of filtration is biological. Bacteria inhabit all the surface areas of your aquarium—the glass, gravel, décor, and the floss or sponge in your filter. Beneficial bacteria feed on waste creating first ammonia and then nitrite. A second kind of bacteria then converts the nitrite to nitrate which is pretty much non-toxic. These bacteria occur naturally in the aquarium. Nitrates are removed by regular partial

water changes and are used as food by live plants.

This nitrogen cycle is why it's recommended to add fish to a new tank slowly over a period of weeks. Slowly increasing the biological waste load give the bacteria time to multiply enough to handle more fish. Adding all the fish at once will cause a sharp increase in toxic ammonia levels and stress your fish, possibly causing disease or death.

The third type of filtration is chemical filtration, performed by activated carbon in your filter. Activated carbon removes traces of toxins not handled by the bacteria and contributes to clear water. It should be replaced about once a month.

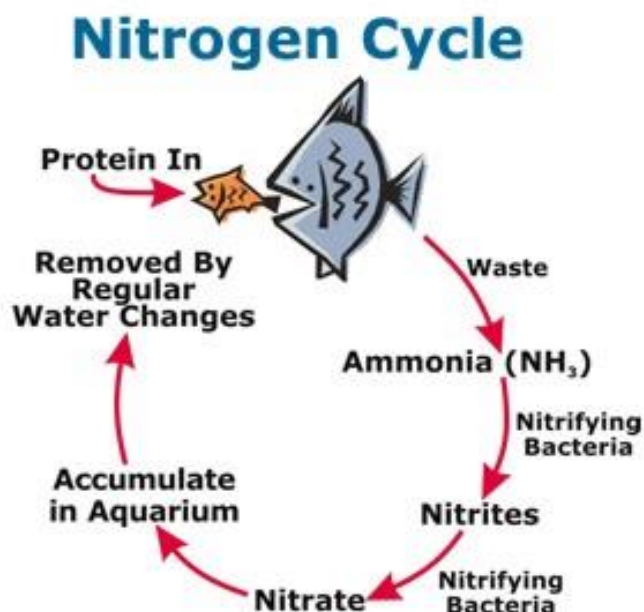
Most filters whether powered by air from an air pump or with a water pump utilize all three types of filtration and will keep your tank clean and healthy if regularly maintained. You should clean your filter no less than once a month. If you have a disposable floss cartridge, simply replace it. If you have a sponge for mechanical filtration, rinse it thoroughly in water from your tank. Tap water with chlorine compounds will kill the beneficial bacteria in your sponge that are doing the biological filtration.



Replace the carbon monthly. It may be part of a disposable filter cartridge or be separate. Carbon prices vary with quality and the more expensive brands are, in my opinion, worth the extra money.

Finally, clean the filter and its parts inside and outside with brushes to remove algae and accumulated debris.

Understanding the nitrogen cycle and how it is managed by your filter will help you keep your water clean and your fish happy.



MY RAINBOWFISH OBSESSION OR “THREE NEWLY DESCRIBED RAINBOWFISH FOR THE US HOBBYIST”

Text and Photos
By Gary Lange

*I'm always dreaming
about the next new
stream and wonder-
ing “what's in there”?*

When you're driving and you pass over a river or a creek, do you sneak a peek, wondering “what's in there”? I do. It's been a good/bad habit for me since actually before I could drive. I learned early on how to stalk bass, especially small-mouth bass in the crystal clear streams of the Missouri Ozarks. Passing over a creek in the car, I would always look for a nice deep hole and wonder “what's in there”? Later on, after native fish collecting with my SLAKA and MASI friends, I would look at those streams much differently, wondering if it was a good place to catch shiners or darters. After listening to some of the speakers we had at the MASI meetings, I wondered how cool it would be to go collecting in

those exotic locations like they had done.

Then the rainbowfish bug hit me after I was introduced to them through our local BAP (Breeder's Award Program). Before long I was calling up the editor of TFH (at the time Ed Taylor) because he had some new yellow (*Melanotaenia herbertaxelrodi*) rainbowfish available. Soon I was writing (pre-email days) letters to Australia and getting wonderful egg packages from Australia, home for many of my wonderful rainbowfish. I not only got Australian rainbowfish eggs, but also a few from the island of New Guinea. I eagerly read every single article in TFH by Dr. Gerry Allen and Heiko Bleher on their adventures in finding and collecting rain-

bowfish from Australia and New Guinea. Oh, if I could only go there myself, dip a net, and see “what's in there”!

Finally, in 2005 I got a once in a lifetime chance to go to Papua, the western half of the island of New Guinea. That first trip was a real eye-opener to me about third-world countries. I also got to dip my own net into exotic waters and see for myself “what's in there”? I've now made a total of four trips to Papua and on every trip have managed to bring back a new species of rainbowfish.

Melanotaenia ericrobertsi¹

For that first trip I managed to bring out a few rainbowfish and one that was given to me by a local missionary pilot name Eric Roberts. I joke in that I love/



Melanotaenia ericrobertsi

MY RAINBOWFISH OBSESSION

Melanotaenia rubrivittata



hate Eric because he gets to fly into all of these wonderful tiny villages in the middle of nowhere. While they are loading up his tiny plane, he goes down to the river and collects a few more rainbowfish. While I was at his house on that first trip, he gave me one of the fish he collected in Suswa Village, from the “Bird’s Head” region of Papua. The “Bird’s Head” is the far western region of Papua that actually looks like a birds head, if you imagine that the island kind of looks like their native brush turkey! That fish turned out to be a unique species after Dr. Peter Unmack compared its DNA with several other similar species. Dr. Allen had collected this fish many years prior to this, but assumed that they were *Melanotaenia irianjaya* as they had similar fin counts. When the DNA examinations made it clear that they were different, he decided to describe the fish. He asked if I could provide him with some live fish photographs for the article and I gladly obliged. I reminded him that

our friend Eric Roberts was the reason that we had these in the hobby and suggested it might be a good name for them, if he didn’t have one picked out. He thought it was a great idea and thus we now have *Melanotaenia ericrobertsi*. We had formerly been calling this fish *Melanotaenia* species “Suswa Village”, so if you have them, know that they now have a true scientific name.

Melanotaenia ericrobertsi, like most rainbowfish is easy to raise, breed and grow. They get to about 4 inches in total length. Like all bows they appreciate 40-50% weekly water changes. The males show bright violet and orange colors early in the morning, but fade as the afternoon wears on. There are other related rainbowfish from the Bird’s Head Region that do the same thing - I don’t know why. I do know that you can also enjoy these wonderful colors in the evening too. Just have the timer turn off the lights on your aquarium during dinner for an hour or so. Turn them back on and it’s morning all over again and you

can see the wonderful colors as the males challenge each other or breed with the females. Since rainbowfish breed each and every day, this is something you can witness every time your lights turn on.

***Melanotaenia rubrivittata*²**

Before it was officially named, we called it *Melanotaenia* species “Wapoga Red Laser” – We collected this fish on our fourth trip to Papua in 2012. Going over the ocean in an outrigger for 8 hours and then the next day, up the Wapoga River and its tributaries for another 7 hours was all it took to collect these fish. All of that just to ask “what’s in there”? Oh yeah, and then the river level dropped while we were in the jungle collecting and the captain took off with the boat. Actually, it was so we wouldn’t be stuck there for maybe even weeks, but it is a shock to the system when you are in the middle of nowhere and your ride vanishes! No worries - a five and a half hour walk downstream and we

reconnected with the boat. Piece of cake, right? I’m too old and too out of shape for that sort of adventure! Ten years before we caught this fish and brought it back to the world, Dr. Allen had collected them (pickling them all) just a few kilometers north of our collecting spot. At the time there was a jungle airfield so he could just hop out of the plane, collect his fishes and get back on the plane. Again, he thought the meristics (the science of counting fish scales) suggested it was just a striped *Melanotaenia praecox*. When Peter compared the DNA between the two species, it was obvious that they were different species. Without our supply of DNA from this new collection, this fish would have remained unknown for years. Dr. Allen wrote up the description on this fish just a few months ago and again, I was lucky enough to be able to provide him with live fish photos for his article.

Melanotaenia rubrivittata – So far, in our hands, it has remained

MY RAINBOWFISH OBSESSION

smaller than *Mel. praecox* and is way more active. It's always less than two inches in total length. We also recollected *Melanotaenia praecox* in 2008 because the commercial production of this fish had essentially destroyed it. The fish farmers' version barely looked like the original! So we were able to directly observe the behavioral differences between the two wild type specimens. Perhaps it's the laser red "racing stripes" through the body of the fish that gives it "the need for speed". This small bow is always flying around the aquarium flashing at other males and females. Like many bows they flash, which means they get a bright stripe of light from the tip of their nose to their first dorsal fin. They turn this on and off, flashing it at the other fish. This fish grows quickly and is sexually mature at three months of age. Because of its small size this fish will work well in a ten gallon nano tank or perhaps

even something a bit smaller. It's probably the most exciting rainbowfish to be offered in the hobby in the last twenty years.

Melanotaenia garylangei³

Before it was officially named we called it "The Golden Rainbowfish" or *Melanotaenia* species "Dekai" – We collected this fish in the village of Dekai in 2010. Dekai is a relatively new village/city that was being carved out in the middle of the jungle. Our pilot friend, Eric Roberts, told us that the grid for the village was expanding rapidly east and west and they were starting to build bridges over many tannin colored streams. It's always the tannin color streams that hold the most interesting fish, you know! This was going to be a virgin collecting area so we just had to go and see "what's in there?" It was the first time that we collected in the southern part of Papua. A large mountain range

runs down the backbone of New Guinea and the rainbowfish on the Southern side are very different than those on the Northern side. When we pulled this fish from the net for the first time, we knew we had something unique. The first ones we caught were only 1.25 inches total length, so we thought we had ourselves a new "mini-rainbowfish". They grew quite a bit after that though, and became more *Melanotaenia maccullochi* size, about 3 inches maximum. The meristics really suggested that this was a new species and the DNA analysis also agreed. In the latest *Fishes of Sahul* magazine Johannes Graf, et al, has written the description and named this fish for me.

Like most rainbowfish, *Melanotaenia garylangei* are easy to grow, breed, and raise. Their bright golden colors and red stripes make them a very colorful addition to the aquarium.

Feed them high quality foods, like frozen bloodworms, frozen brine shrimp, and live blackworms. Six of these in a 20 high make for a perfect group. Put them in a planted tank and really watch them shine.

In the very near future Dr. Allen will be describing two other fish that we collected that were also new species. That will put us about half-way to describing the new species that we've brought back. So my rainbowfish obsession continues and I'm always dreaming about the next new stream and wondering "what's in there"?

References

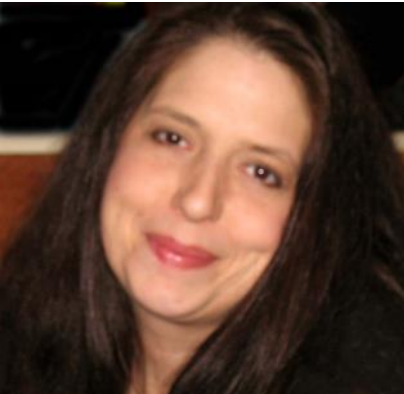
¹ Allen, G. R., Hadiaty, R. K. & Unmack, P.J. 2014. Three new species of rainbowfishes (*Melanotaeniidae*) from the Birds Head Peninsula, West Papua Province, Indonesia. *aqua, Journal of Ichthyology and Aquatic Biology* 20 (3): 139-158.

² Allen, G.R., Unmack, P.J. & Hadiaty, R.K. 2015. MELANOTAENIA RUBRIVITTATA, A NEW SPECIES OF RAINBOWFISH (MELANOTAENIIDAE) FROM NORTHWESTERN PAPUA PROVINCE, INDONESIA. *Fishes of Sahul* 29 (1): 846-859.

³Graf, J.A., Herder, F, & Hadiaty, R.K. 2015. A new species of rainbowfish, *Melanotaenia garylangei*. *Fishes of Sahul* 29 (2) 870-881.



BAGGING FISH THE RIGHT WAY



By Holly Paoni-Wise

- *Fast your fish*
- *Use the right size*
- *1/3 water, 2/3 air*

The vast majority of fish making their way to auction are prepped well. A lot of you do a fantastic job, but this keeps coming up. Yes, it seems there are some improperly fasted or bagged fish, but those are coming from a just a handful of folks. MASI has been running 600-800 items through an auction on average the past couple years. We have 25-30 bags needing to be rebagged. This is way too many, as we all love our fishes. But the percentage is actually really small. Overall, you all do a great job!

For those wanting to see a video demonstration, there is one posted on Facebook. If you can't find it, or are not on Facebook, shoot me an email at hcaaquatics@yahoo.com and I'll make sure to get it to you. If you would like to talk about it, or see how to in person, grab me at a meeting or event, and I am more than happy to show you and get you comfortable. Just ask me. Even if I'm busy, I will make the time.

For those unsure, or who want a refresher, then this is the written version of the video. This is the K.I.S.S (keep it silly simple) version for those that haven't ever done this before !! If you'd like more in depth info, get with me.

The biggest thing is you want to fast those fish leading up to the auction. Don't feed them for a few days prior, do an extra water change, to get them in the cleanest water possible, and remove all possi-

ble food sources so they can't graze on what's in the tank. Grazing includes algae, driftwood/cholla, the gunk that builds up on sponges and other tank equipment, as all those things contain micro food sources that hungry fish will pick at.

As we know fish waste produces ammonia. In a cycled healthy tank that waste is taken care of. But in a bag, the water quality can go downhill fast with -fasted fish.

Fasting can be done several ways. The easiest for me, is to move the fish out of their normal tank, into a bare tank, or container with an air stone, and just keep that water changed. A bare tank, a 1-5 gal bucket (fishes size appropriate), a Sterilite drawer, or even a tub/tote would work for this. Not everyone can do that, and that's okay. If you have a bare tank, just stop feeding; give the tank a good cleaning and a water change. Smaller fish can be moved to breeding traps, which removes them from a food source, but the main tank will keep aeration and such going, depending on the trap's design.

How long should you fast a fish? That depends on the species and its size. This is not all inclusive, but a rough guide. Small fish such as an adult guppy, 2 days is fine. Medium sized fish, such as 50 cent to 2 inch Angel fish, 4 days. A 12 inch or larger common Pleco- closer to a week would

be best. Use this as a guide. There are way too many fish species to list, and way too many possible sizes to list.

Okay, fish are fasting. You have done an extra water change or two to get the water they are in **really clean**.... Now what???? Get some **clean** bagging water ready: an empty tank, a couple buckets.... whatever you have, get some fresh water ready and de-chlorinated, and treated just like the fish are used to, and have it ready to bag up those fish you're bringing. Tank water will always have some nitrates, or something in it. You want the cleanest water possible for the fish being bagged.

You want the bag size to fit the number of fish, and their size going into the bag. Six 3-5 inch Tropheus need a lot more room than a 6 inch to 10 inch wide bag. Split that group up into 2-3 bigger bags, and then tape those bags together to make one item. A pair of cichlids or any fish for that matter where one may pester its mate in a confined space should be bagged in the same way. Bag each separately, and then tape the 2 bags together, to make one auction item.

One 4 inch, medium body sized fish, does well alone in a 6 inch x 20 inch bag, alone. That same bag could hold 2 trios of adult guppies. You want the fish to be comfortable while in the bag.

BAGGING FISH THE RIGHT WAY

How much water to how much air space in the bag??? You want 1/3 water volume, to 2/3 air volume. When the opposite happens, simply put, the fish run out of available oxygen, as there isn't any real surface area left in the auction bag. This is why a 4 inch fish alone, like the above example, is all I would put in a 6 in bag. With 1/3 water volume the fish is still covered by water, but it has a lot of surface area and it can still be comfortable. In the video I did, I used an adult Paradise fish for demonstration.

To double bag, or not to double bag? It depends on the species. Guppies, shrimp, and other small fish, are fine single bagged for auction. The bottom corners can be taped inward, to prevent small fish from getting trapped.

Cories and bristle nose, and similarly sized catfish, need double bagged, as the fins can pop the bag walls. The larger the fish, the thicker the bags need to be. This also holds true for cichlids. I've had 50 cent sized angels pop through 2 mil bags in a blink.

When you start looking at some of the show tank sized colored up African cichlids... or larger cats, like suncats, bigger plecos and so on, they are honestly better off in a bucket of some kind.

With buckets and jars, remember, you STILL need surface area. Leave a decent gap between the lid and the water's surface. If you take off the lid and water might splash out, then there is not enough surface area.

Especially with Cichlids, if you have 2-3 males, and several females in one container, they may have existed peacefully in a

large tank, chances are they will not in a large bucket. I male with the gals, is usually fine. But please separate the extra males to smaller containers or separate bags. These can be tied or taped together to keep the group together. or you can split them into smaller sized groups like a single trio per bucket.

Again, this is just a rough guide as there are too many circumstances and fish species to write about them all. But to give your fish the best chance for another owner to enjoy, and get a decent price at auction.

Remember –

- Fast your fish.
- Use the right size bag.

- One third water, two thirds air.

Don't forget the comfort and safety of your fish. Being netted, bagged up and moved is stressful enough on the fish; don't add any more to an already stressful day.

As always, if you have any questions, just let me know. I'll help you to the best of my ability, and if it's a fish I have no idea on, I'll know who to send you to.

Holly @ HCA75 Aquatics

WEBSITE <http://hcaaquatics.weebly.com/>

BREATHER BAGS

Breather bags offer a superior means to transport fish. They are made with a special plastic film that exchanges air in the bag with outside air. In other words, carbon dioxide rich air inside the bag can be replaced by fresh air from outside the bag via the gas permeable plastic film.

Kordon is the most well known brand. Breather bags are available through various outlets on the internet, such as Amazon and eBay.

- Ed.



KEEPING AND BREEDING LEPTOLUCANIA OMMATA - THE PYGMY KILLIFISH

By Tony McMillan

There come many times in our lives when drama or other personal difficulties interfere with our involvement with the tropical fish hobby. I've had several of these instances, mostly health related, that have hampered my ability to breed certain fish and raise their fry. These issues also get in the way of maintaining proper water chemistry. And that can end up being catastrophic.

This time around the trouble was more financial in nature. Various other problems snowballed leading to delinquency in property taxes, etc. Liens were placed, and a settlement was being negotiated so I had to vacate my home. And many miles away, in rural Monroe County Illinois, sat my outdoor tub that housed the Pygmy Killifish, *Leptolucania ommata*. So

this article is a subset of the forthcoming Outdoor Tub Diaries 2014. Since this is my first 20 point BAP entry, it deserves its own article.

Leptolucania ommata is native to North America and ranges from Georgia south to central Florida and west along the panhandle to Alabama with some populations recorded in Mississippi. It has the common names Pygmy or Lemon Killie. Pygmy and Lemon are appropriate common names. This Killie maxes out at one inch in length. It is the smallest egg laying fish in the United States. The male Pygmy Killie is indeed a lemon-yellow color with a greenish hue. And a highlighted yellow lateral line that ends in a black spot on the caudal peduncle. The female, as with most fish species, is less colorful than the male. Attractive in her own

right, the female Pygmy Killie is light brown with a light underbelly. A white stripe follows the lateral line to a black spot on the caudal peduncle that is highlighted.

Wanting to get a jump on the Outdoor Tub season, I searched Aquabid under native fishes and purchased 9 fish from fwusnative and they arrived by May 1st. I placed the pairs in my 75 gal Outdoor tub with a large bunch of Hornwort. I frequently checked the tub for the pairs and any fry by flashlight. Only occasionally did I spy an adult. About two weeks later I introduced more plants. Using a planting box I introduced ludwigia to the tub. The top of the box was about 2 inches shy of the surface, allowing the ludwigia to grow both emersed and submersed.

“It is the smallest egg laying fish in the United States.”



Tony McMillan photo

KEEPING AND BREEDING LEPTOLUCANIA OMMATA - THE PYGMY KILLIFISH

After doing this I immediately noticed fry. Adults also loved hovering among the ludwigia near the surface of the tub. Most of my research said that Pygmy Killies prefer living in the bottom third of the tank and are not surface dwelling fish unlike most of their kin. I believe the accurate view would be to say that Pygmy Killies prefer living in and are more active in shallow water. So in other words the Pygmy Killie enjoys living at the water's surface while living at the bottom of say, a 29 gal aquarium. It just prefers for the surface and the bottom to be compressed and shallow.

The fry, like their parents, live up to their Pygmy namesake. Remember searching your tank and straining your eyes the first time you spawned Zebra Danios to spot the fry? Leptolucania fry are that much smaller - perhaps one-fourth to one-eighth the size of Danio fry. Several times weekly I searched the ludwigia by flashlight and would spot Leptolucania of various sizes and stages of development from newly hatched to about 8mm in length. Pygmy Killies spawn continuously, the females dropping a single egg every few days for the male to fertilize.

As I was undergoing my trials - meetings with my lawyer, real estate agent, avoiding process servers, etc., the Pygmy Killies in my outdoor tub were undergoing trials of their own. Over the course of late spring and summer, several Green Frogs - *Lithobates clamitans* had decided to set up residence in the tub. I decided to take action and collect some of the fry to raise on my own. So I brought along a



Baby Brine Shrimp net and started collecting newly hatched Pygmy Killies. I resisted setting up an actual tank being I might have to move at any moment. But eventually I ended up with several 5 gal buckets filled with Hornwort strewn about my empty living room. The first challenge to raising the fry was feeding them. To my surprise pet retailers no longer carried Wardley's Liquid Fry Food which was my old standby for raising fry. I was in a bind with nothing to feed these minuscule Killie fry. Charles Harrison came to the rescue and gave me an Infusoria culture at the next MASI meeting. I regularly changed the water in the Infusoria culture and moved it into a larger 2 gal container. As the Killie fry grew I also fed some powdered flake food. One of the reasons there were so many different size Killie fry is the single eggs the female lays will take up to two weeks to hatch. Unfortunately the fry become very predatory as they grow. So as I would check my various buckets I would go from having 8 various sized fry one week to about just three of the larger half-centimeter fry. And as more

eggs (which were trapped in the Hornwort) would hatch the newly hatched fry would be eaten by the larger fry. As time went on I would play musical buckets transferring different sized fry to friendlier buckets to avoid predation.

So the deadline for me to sign over my house was August 14th. I had to have everything out of my house on August 25th. The monthly MASI meeting was smack dab in the middle on August 21st. In the midst of all this chaos I would have to turn in some fry for BAP. My last collection of fry and Hornwort from the tub was Thursday, August 7th. On August 21st I gathered what fry I could from the 5 gal buckets and took them to the MASI meeting. Mike Hellweg purchased them. So on Sept. 18th, the date of the next monthly MASI meeting, I broke down the outdoor tub. I took all plants, shrimp, and remaining Pygmy Killies to the meeting. Of the original 9 adult Killies put in the tub in May there were only 4 left - 3 males and 1 female. The other adults and all the juveniles I left in the tub had been eaten by the Green Frogs. With so much attention from 3

males the female was in poor shape physically. So if you keep these Killies in a tank make sure the females outnumber the males.

At the meeting Mike informed me Killie fry he purchased at the August meeting had a new addition. In the bag was a single strand of hornwort. And attached to this hornwort was a single Killie egg that hatched the next day. So an egg that was laid and fertilized before August the 7th survived transport, predation, being in the buckets in my living room and all sorts of chaos to hatch in Mike Hellweg's fish room on August 22nd. As the mathematician in Jurassic Park says life "breaks through barriers" and Nature "finds a way". So I went through my own personal chaos simultaneously while my Pygmy Killies underwent their own. Like it's relatives around the world, through the process of Natural Selection the unique Pygmy Killies continue to find their way through its own hardships.

Special thanks to Charles Harrison for giving me the infusoria culture that made raising these Killies and their tiny fry possible.

HOW TO SETUP A LOW-TECH PLANTED TANK: PLANTED AQUARIUM GUIDE

By Sudeep Mandal

Reprinted from <http://www.sudeepmandal.com/hobbies/planted-aquarium/low-tech-planted-tank-guide/>

Setting up a planted tank for the first time can be a daunting task. There is a lot of information out there on the net but there aren't any great "All you need to know" guides with all the information put together in one place. In addition, while there are some great forums on planted tanks out there, you will invariably find a lot of conflicting information being fed to you which makes it even more confusing for a planted tank newbie. While there are some great books for planted tank enthusiasts, the average person looking

to setup a planted tank does not have the time to read entire books before they setup their aquariums. This was the motivation for me to put this guide together.

I was a planted tank newbie not too long ago and I spent many months scouring internet forums, books and other resources to make sense of it all. I wrote this article to collect my thoughts and everything that I had learned and also to help other people like me...those who were just beginning to dabble in the fascinating world of

planted aquariums. This article should give you all the information you need to understand the science of planted tanks and to allow you to start setting up your own low tech planted tank while keeping algae at bay. The article has grown significantly in size so I have added a table of contents for your benefit.

I. Introduction

Low tech tanks primarily refer to planted tanks which are not actively infused with Carbon dioxide (CO₂) and hence do not require all the complicated



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equipment/paraphernalia/hassle that comes along with using CO2 in your tanks. These tanks use lower light levels than “Hi-tech” tanks and plant growth in general is slower (5 to 10 times) than that seen in CO2 infused Hi-Tech tanks. Whether you choose to go with a low-tech or hi-tech planted tank setup depends on a combination of factors such as your primary motivation/goal for a planted tank as well as the amount of time, effort and resources you are able to spend on your tank. Each method has it's pro's and con's.

The article below describes all you will need to know to setup a low tech planted tank and also compares this method with high tech tanks.

1.1 Advantages of Low tech Planted Tanks

- 1) No testing and no water changes required (Read: Hassle free! It means that you can leave your tank alone for a week or two and it will still be in great shape)
- 2) Much lower pruning frequency due to slower growth
- 3) Very low fertilizer dosing, and only occasionally
- 4) No risk of overdosing CO2 and asphyxiating your fish
- 5) If any imbalance occurs in the tank (nutrients, traces, sudden ammonia spike, decaying plants/food), algae growth is much slower than in hi-tech tanks allowing much more time to correct the system for this imbalance.

1.2 Disadvantages of Low Tech Planted Tanks

- 1) Slower plant growth can be

boring for some planted tank owners. If you're the kind of person who likes pruning and rescaping/replanting very often then you might not enjoy this method as much.

- 2) It can be harder to grow some types of plants which are very dependent on high CO2 levels for plant growth. However a majority of plants can be grown in these types of tanks, including a lot of the so called “High-light” plants like glossostigma and HC.

If you prefer this hassle free technique for growing aquatic plants and have the patience to wait it out a little longer to achieve your end goals with regards to your aquascaping then read on! If however, you'd prefer a middle-road between low-tech and hi-tech, read my post on Non CO2, Excel tanks.

2. Basic Science of Planted Tanks

Before we get into how to go about setting up your tank using this technique, I'll briefly mention the logic behind this method. I should mention right away that most of this article is based on Tom Barr's excellent work (www.barrreport.com) with planted tanks. I have linked to a couple of relevant threads on his site in the Acknowledgments section at the end of this article.

The lack of CO2 augmentation in a low-tech tank essentially means that the rate of plant growth in such tanks is lower than in hi-tech tanks. Due to the lower growth rates, the rate of nutrient uptake by the plants is also correspondingly lowered. As a result, as in the case of Walstad like tanks, the plants

can sometimes even survive purely on the nutrition provided from fish waste and decaying food. The drawback with relying purely on fishwaste and fishfood for nutrients is that the ratio of N,P,K (Nitrogen, Phosphorous and Potassium) in these are skewed out of proportion and can cause a nutrient imbalance in the long run. This can lead to stunted growth in some plants and can also make it very hard to grow certain types of plants which are specifically sensitive to one or more of these limited nutrients.

To overcome this, what we can do instead is dose N, P, K and traces in very small amounts and occasionally (once a week or once in 2 weeks). To prevent any buildup of these nutrients, we can skip the dosing once every couple of months so that the plants use up any excess nutrients in the water column. In this manner we can pretty reliably maintain a non-limiting amount of nutrients in the tank allowing all the plants to grow without any nutrient related inhibition.

It is important to note that high levels of N,P,K, Fe and traces DO NOT lead to algae. Tom has tested this out extensively and has shown that this is simply not true. On the other hand even small amounts of Ammonia (causes could be a mini cycle, decaying plants, fish overloading, insufficient plant mass) as well as fluctuating CO2 levels (fluctuating CO2 levels are thought to signal to the algae spores to start growing) can trigger algae growth. Also In these low-tech tanks the plants and algae are both limited by

low CO2 levels. At low light levels and non limiting nutrients, plants can adapt better to these conditions than algae. It is important to have high plant biomass in the tank so that the plants can quickly cycle any Ammonia introduced into the system from decaying food/fish waste.

3. Things To Be Wary Of

Do not increase your lighting! Higher light levels along with low CO2 levels make conditions much easier for algae to adapt to. Plants find it harder to adapt to high-light low CO2 conditions while algae can do much better in such situations. It is for the same reason that many-a-times people are able to fix their algae problems in the early stages by simply lowering their light intensity or photoperiod.

Also make sure that you DO NOT perform any water changes at all! The reason for this is that tap water will have a different amount of dissolved CO2 as compared to what is in your tank. If you perform regular water changes you are effectively causing fluctuations in the CO2 levels in your tank which provides a perfect environment for algae to start thriving in. Only perform top offs for evaporated water. (Warning: This no water change rule should only be used for tanks with high plant density. If you have a tank which is lightly planted and you don't plan on having more than a few plants in it, then stick to doing at least 25% water changes every week. The no water change rule only works if you have enough plants in your tank so that they

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alone can help cycle the tank and maintain water quality. The same goes for overstocked tanks. While you might risk a little algae from the water changes, fish health is top priority and the lack of decent plant mass might cause a rise in ammonia/nitrite levels which could hurt your fish.) Perform large (60-70%) water changes after any major rescaping where you pull out plants from the substrate and move things around. This is to remove any toxins/ammonia that you might have released from the substrate with all the uprooting. Also do not perform such types of rescaping/uprooting any more frequently than once every 3-6 months.

4. How to Setup a Non CO₂, Low Tech, Planted Tank

4.1 Substrate

Setting up your substrate correctly is very important. In general any type of porous substrate with a high CEC (Cation exchange capacity) such as Flourite, Eco-complete, Onyx-sand, etc. should be great for this technique. It is usually recommended to add a light dusting of peat at the bottom of the tank. Even better, you could use Leonardite (Diamond Black is one brand) at the base in place of peat. It is supposed to be much more stable than peat and doesn't cause as much of a pH drop as peat can cause if it comes in direct contact with your water column (say when you uproot plants and pull out the lower substrate). Also if possible, definitely introduce mulm from an established tank and filter squeezings from a

cycled tank into this newly setup substrate. It will help establish bacteria in your soil much faster.

While some people prefer using soil substrates, and it is certainly a viable option, one has to be wary of some of the risks involved in using soil based substrates. The main problem is that it is hard to know what is in the soil that you are using for your tank. You risk introducing toxins or parasites if the soil is contaminated with them. Also a lot of times soils can keep leaching large amounts of ammonia into the water and this can lead to algae disasters as well as be harmful to your fish. While they are nutrients rich, over time they will lose the nutrients in them, so it is wise to supplement your tank with some additional fertilizers. All-in-all using soil as a component of your substrate is definitely a viable option, but make sure to research carefully and take the opinion of more experienced planted tank enthusiasts before finalizing your soil substrate. Most importantly be aware of the risks and take the necessary precautions to prevent any harm to your tank/fish.

Note – If you wish to use Aquasoil (AS) Amazonia by ADA, then you need to first cycle the soil beforehand and leach out the ammonia before you can use it for this technique. This is because the constant water changes required for aquasoil could potentially cause algae problems. For more info on how to pre-cycle Aquasoil check this link: <http://www.theshrimpfarm.com/blog/archives/28>

AS is amazing stuff and is definitely the best and most nutrient rich commercial substrate available. Since it is packed with nutrients you could probably get away with no fertilization at all in a Low-Tech Non CO₂ technique, save for the occasional dose of traces. However over time as the nutrients in the substrate get used up you will probably need to start dosing some macros again.

4.2 Lighting

Lights play an extremely important role in any planted tank. It is the driving force behind photosynthesis in plants. In the case of low-tech, non CO₂ tanks, you need to make sure that you do not go overboard with your lights. Don't make the mistake of assuming that more lights, kept on for longer periods will make your plants grow better or faster. You will most likely be encouraging algae growth and doing nothing else. Although the Watts per gallon rule is a very general one, it still works well as a basic guideline. For this technique make sure to never go above 2 Watts per gallon, 1.5 WPG being an ideal target. Also remember that we are talking about Wattage of fluorescent bulbs (do not use incandescents...ever! And do not use the "Effective" wattage of fluorescent bulbs for this calculation). Remember that Spiral CFLs are more inefficient so you could lean towards the 2-2.5 WPG regime in their case. On the other hand T5 tubes can be extremely efficient and intense and you should definitely stick to 1-1.2 WPG with T5 tubes. For planted tanks, you should ideally look to have bulbs

that are rated between 5500K-8000K. 6500K is a very popular choice.

It is usually advised that when you first setup your tank you should have a photoperiod of only around 6 hours. After a couple of weeks you can bump it up to around 8-9 hours. You probably shouldn't push it any higher than that. It's a good idea to buy an automatic light timer (6-7 bucks in walmart) to make sure that your plants are getting the same duration of lighting every day. If you go 10 hours on some days and 6 on others then it could lead to algae issues and also throw the plants off of their "routine".

4.3 Planting

This is very important - You have to make sure that you plant very very heavily right from the get go. Very heavy means that when you look at your substrate from above, you shouldn't be able to see more than 10-15% of the substrate. The rest of it should be entirely covered with plants. It can be a little expensive to do this, but it is well worth the hassle. Buy lots of cheap, fast growing stem plants and just stick them into your tank. Try to ensure that atleast 50% of your starting plants are the fast growing type. They will help soak up the nutrients in your tank and help cycle the tank by rapidly using up any ammonia from fish waste and decaying matter. Once all the plants get established and are growing well, you can slowly phase out the fast growing plants for other plants that you wish to keep. Always make sure to have a high plant biomass

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which is healthy. Drastic pruning/replanting can lead to algae outbreaks due to a sudden change in the amount of healthy plant biomass in the tank. Following these guidelines will go a long way in ensuring an algae free tank.

4.4 Filter

Make sure that you have a good filter with adequate flow (Atleast 10-15 times the tank volume per hour) and also make sure that the output of the filter that flows back into the tank is allowed to flow unrestricted so as to create good circulation in the tank. This helps disperse nutrients uniformly amongst the plants and prevents stagnant areas where plants do not receive nutrients and hence begin to die off giving rise to algae. Also, note that a lot of planted tank folks do not use activated charcoal in their filters as it might pull out some of the nutrients from the tank water. If possible, try getting your filter foam/bio-media pre-cycled by using it in an established tank for a couple of weeks prior to setting it up in the new tank.

4.5 Fish

After setting up your tank give it a week or two to see how it is behaving and if the plants have settled down and have started growing. Also make sure that your water parameters are fine. If this is the case and ONLY if you have also planted very heavily, then you can go ahead and add a couple of algae eaters into your tank. Algae eaters go a long way in keeping your tank spotless and algae free, more-so in such a tank where algae growth, if any, will be very slow and the

fish will be able to keep up with it. Otos are regarded as one of the best algae eating fish out there although there are other fish/inverts you could pick too (eg: SAE, shrimps). Some might balk at the idea of adding fish to an "uncycled" tank, but the truth of the matter is that if you have a heavily planted tank in which the plants are healthy and growing, the plants will effectively cycle the tank by immediately consuming any ammonia that is introduced into the system. After 2-3 more weeks if everything is going well and your plants are growing and look healthy you can go ahead and add the rest of your fish. It would be a good idea to add in small numbers over a couple of weeks although many folks have added the entire bioload in one go and haven't had any trouble.

4.6 Dosing Fertilizers

As per Tom's recommendations, dose the following once a week or once in two weeks for a 20 gallon tank. If you have a different sized tank, calculate the required fert dose accordingly.

1/4 Teaspoon of Seachem Equilibrium (for traces and Calcium + Magnesium). (1.42 ppm Ca, 0.42 ppm Mg, 3.43 ppm K and 0.02 ppm Fe)

1 / 8 Teaspoon of KNO3 (Potassium Nitrate) (5.27 ppm NO3 and 3.32 ppm K)

1 / 3 2 Teaspoon of KH2PO4 (Potassium Mono Phosphate) (1.61 ppm PO4 and 0.66 ppm K)

You can use Seachem Flourish, CSM+B or TMG for traces instead of Equilibrium although you would need to calculate the

corresponding dosage. (For CSM+B, make a stock solution of 1 tbsp or 3 tsp in 250ml. This is roughly equivalent to a Seachem Flourish bottle. 2mls of CSM+B trace solution, 1x a week for a 10 gallon tank should be fine for a low-tech non excel setup) Basically the above solution is roughly equivalent to regular Seachem Flourish. If you choose to use them in place of Equilibrium, keep in mind that you will then need to add Calcium and Magnesium to your tank by some other means. In addition if you wish to use Seachem Potassium, Nitrogen and Phosphorous, then you can use [www.aquaticplantcentral.com / forum apc / fertilator.php](http://www.aquaticplantcentral.com/forum/apc/fertilator.php) (Registration required) to calculate what dose of your fertilizer of choice you need for your tank size so as to match the ppm levels of the ferts listed above. (<http://www.fishfriend.com/fertfriend.html>, http://www.csd.net/~cgadd/aqua/art_plant_dosage_calc.htm are some other fertilizer dose calculators)

It is important to note that since you are not going to be performing water changes it is always better to underestimate the required dosage to prevent a buildup of nutrients in the system over time. If you underestimate and notice any signs of deficiency in your plants you can always increase the dose by a small amount. Also make sure to skip a fert dose once a month or two. This will allow the plants to take up any excess nutrients that might have built up over this time (since we are only

approximating how much nutrients the plants need) and effectively reset the system in terms of nutrient levels.

Also remember that as you gain more experience with low tech planted tanks, you can always try to experiment and tailor your dosing to suit your tank's nutrient needs. You could start experimenting by dosing leaner and leaner till you see visible signs of nutrient deficiency. Once you achieve this, up the dosing amount by a bit and then you should be balancing the nutrient needs of your plants perfectly.

A Note on Purchasing Fertilizers:

I would very strongly recommend that you purchase dry fertilizers such as Potassium Nitrate (KNO3) and Potassium Mono Phosphate (KH2PO4) instead of using commercial products such as the Seachem Potassium/Phosphate line. You will save a ton of money by buying the dry fertilizers and 10-20\$ of fertilizers can last you almost a lifetime! The only commercial product I would suggest getting is Seachem Equilibrium for traces + Calcium +Magnesium. It is easier than dosing 2-3 separate dry fertilizers for each component of the traces. You can order fertilizers from the following sites:

<http://www.aquariumfertilizer.com/>
<http://www.bestaquariumregulator.com/index.htm>

To dose the fertilizers just buy a cheap set of measuring spoons (I have a set for 1/64, 1/32, 1/16, 1/8 and 1/4 teaspoons) and dose the fertilizers directly into the

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tank (dry). Also don't dose both Macro fertilizers (like N, P and K) and Micro (Traces) at the same time/day as they can react and precipitate out in the tank. It is best to dose them on separate days. If you're really lazy like me, you can try dosing them both at the same time but in opposite ends of the tanks.

4.7 Maintenance

Maintenance for low tech planted tanks is fairly undemanding. It involves:

- 1) Dosing ferts once a week or once every two weeks
- 2) Occasionally skipping the dosing to reset nutrient levels in the system
- 3) Occasional pruning to ensure good circulation in the tank
- 4) Gentle gravel vacuuming on occasion to get rid of excess detritus (never do a deep gravel vac)
- 5) Feed fish every day
- 6) Do a major (60-70%) water change after any major pruning/rearrangement which involves uprooting plants and moving the substrate around.

Well, that is pretty much it. As

you can see from the picture in the beginning of this post, you can create amazing aquascapes using a low-tech technique if you have the patience for it. Additionally it is a lot less hassle and requires a lot less time and effort from your end. Hopefully this article will help you maintain a beautiful hassle-free tank with minimal issues. Good luck with your planted tank endeavors!

If you are looking for inspiration, check out my low-tech 10 gallon planted tank below.

5. 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. He deserves all the credit for the content of 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>

MY LOW-TECH TANK BY MARK ENGLAND

Photo above

Volume	55 gal
Lighting	2 TMC Grow Beam 500, 24 w. LED, 6500 K, 12 hours per day
Substrate	1" potting soil topped with 1" building sand
Filtration	Marineland C220 canister, 220 gph
Heater	ETH 200 w in-line
Flora	Anubias barteri nana Anubias coffeefolia Echinodorus tenellus Echinodorus kleiner prinz Cryptocoryne wendetti Amazon Sword "India Red" Hygrophila polysperma Hygrophila difformis
Fauna	3 Irithierinia wenerii, threadfin rainbow 6 Melanotaenia praecox, dwarf neon rainbow 4 Corydoras elegans, elegant cory 3 Clea Helena, assassin snails 10 Caridina multidentata, Amano shrimp
Fertilizers	Osmocote without copper in substrate as needed or about every 3 months. No CO2.
Water changes	25-30% once per week

TREATMENT OF ADVANCED HOLE IN HEAD DISEASE IN A SEVERUM

By Heather Moulton-Meissner

Reprinted from *Fish Talk*, June 2015, the Atlanta Area Aquarium Association newsletter

This is a description of the three week long care and treatment of a pretty serious case of Hole in Head. I describe the treatment course for this particular fish, and I try to give more general advice for others who may need to do the same for their fish -- hopefully you can catch this in time, and not go through as extreme of a treatment regimen as I'm about to describe. This story has a happy ending, but I do want to warn readers that I included some pictures of the fish that might be considered graphic.

In late January 2013, I took on a 6 inch (standard length) male gold severum with advanced hole in head disease as a charity case. Based on what I could learn about the fish, it had previ-

ously lived in poor water quality and had been declining for at least a month before I acquired him. He was peaked, and had a sunken belly, so he had not been eating for a while. The hole in head lesions were pretty terrible -- bloody on the edges from secondary infections, and flesh stripped to the skull in a few areas. I isolated him in 20 gallon quarantine tank (QT) which had a bare bottom with heater and bubbler. I set the heater to maintain temperature at what the fish normally lives in.

To start the treatment, I added metronidazole at twice the manufacturer's recommended dose and 1 tablespoon Epsom salt (magnesium sulfate) per five gallons (4 tbsp. total for this 20 gallon). I did a bath once daily by removing 2 gallons of the quarantine tank water to a 5 gallon bucket, placing the bubbler in the bucket, adding 1 tbsp. Epsom salt per gallon (2 tbsp. total), and soaking the fish for 30 minutes, while watching for any signs of distress (rolling over). This never happened during the treatment of this particular severum, but if a fish were to do this, it would need to be returned immediately to its QT. The bath water was discarded, and the QT topped off, replacing the Epsom salt that was removed at the same 1 tbsp. per 5 gallons ratio I described earlier. I would completely replace the water in his QT every week, with fresh doses of metronidazole and Epsom salts.

After two days of the baths, the lesions on the severum's head had improved somewhat, appearing less bloody and having a thin translucent skin over them. Progress! However, this was still going to be a losing proposition because this fella wasn't eating, in spite of the very tempting foods presented to him. Treating this disease where the protozoa are their most concentrated, in the gut, is key. It was time to pursue force feeding, which was an unnerving proposition for me since I had never done it before. First I prepared the food -- for the severum, I wanted some vegetable matter, so I added peas, and also some chopped earthworms since they are so nutrient and vitamin rich. These were ground together into a paste with metronidazole (1/2 teaspoon per quarter pound of food) and a solution of 3% Epsom salts (magnesium sulfate, made by dissolving 1 teaspoon in 1 ounce distilled water), and dispensed into a leftover frozen food tray to make small cubes for each of his daily feedings. I cut the end off a plastic dropper to make the end blunt, and then drew up the thawed mash. Force feeding can be done for any reasonably sized fish, but does require a bit of special handling. First, I laid out a wet towel on the area you'll be working on. It needs to be wet to minimize the amount of slime coat the fish loses during handling. I squeezed out any excess air from the tip of the pipette, inserted it into the fish's mouth,



Our subject, on Day 0:

TREATMENT OF ADVANCED HOLE IN HEAD DISEASE IN A SEVERUM

pressed the tip down into the fish's esophagus (a bit past its gill covers), and squeezed the food into his stomach. I suggest doing this before the fish's daily bath, since any food spat out or leaving its gills will foul the QT water. You should see very little of the food leaving the fish -- be patient, as this will take a few tries to get right.

The response was rapid. Within 24 hours, his color had improved, and he was no longer leaning against the glass in the corner of the tank, giving me hope that this horrific procedure had merit! After a week of the force feeding treatment in addition to his baths and treated QT, the severum's weight loss halted, and he started having more energy. He began to resist me when I was netting him out for his treatment, and most of the redness had left his wounds. He began pooping again, although it was still stringy. I began trying out a few pieces of food on him, just to see if he would eat on his own yet. No luck. By this time, the upset from being caught and manhandled on a daily basis would cause him to panic and try to swim away whenever a person entered the room. I would leave him in quiet for a few hours, come back, and remove the food if it was uneaten.

At about the third day of trying to offer food (we are at the approximately 12 day mark here), the food was gone when I returned. He was eating on his own again!! This meant that I could stop force feeding him. I continued to offer the metronidazole and Epsom salt treated mash that I had made for him

(he really likes earthworms and peas). I decided to stop his daily baths, since he was improving so much, and I didn't want to continue stressing him out from any unnecessary handling. In hindsight, I should have stopped the baths as soon as he started getting force fed, since the Epsom salts are being delivered directly to his gut. By now, his feces were starting to look normal, indicating that his gut was less irritated.



Day 21, looking much improved:

So ends a three week odyssey that consisted of a lot of time, energy, and supplies into a single, but large and pretty fish. I kept him in the QT for another week, at which point he had pretty much returned to normal. He just needed to continue to heal up, which he did alone for another two weeks in a 55 gallon tank.

The boss of a 55-gallon tank, for

all of two weeks while recovering:

I was nearly in tears the first time he took nori (roasted seaweed) from my hand after he had recovered. He has a name (Butterscotch!) now, cruises around in my show tank, and has grown to about 9 inches standard length (nearly the size of a dinner plate), with some lovely streamers on his dorsal and anal fins.

Fish disease can be very chal-

lenging for hobbyists to cope with, and at times the directions for care of certain symptoms can seem almost superstitious. I want to dispel some of the mystery related to this particular disease, so here are a few more comments about its ecology, pathology, and prevention that I wanted to share.

Metronidazole is the generic

name for the drug used to treat HITH. It is available under the following brand names (this is just a sample, there are many manufacturers and products out there!) Aquarium Solutions Metro+, API General Cure, Tetra Parasite Guard, Thomas Laboratories Fish Zole.

PREVENTION of this disease, caused by the two protozoal parasites Hexamita and Spiro-nucleus, is key! Overcrowding and poor water quality are risk factors for your fish getting this disease and others. The reservoir for these protozoa is typically internal, in the fish's intestine. The transmission from fish to fish is through the fecal-oral route, which consists of the consumption of feces or by picking up food off the ground. There is disagreement about how wide-spread Hexamita and Spiro-nucleus are, but there are reasonable arguments that all tropical ornamental fish are carrying some numbers of these organisms at all times. Stress from poor water conditions, bullying, and other conditions where the fish's immune system is compromised starts the disease process. Thus, overcrowding increases the likelihood of oral exposure and sensitivity to the infection from stress.

Inflammation caused by increased numbers of the protozoa irritates the gut, which will lead to decreased appetite in the early stages of the disease. White or stringy, clear feces will be frequently seen, since the fish's intestine is shedding its mucous membrane from the irritation. Microscope slide preparations of this fecal material, once smeared and stained,

TREATMENT OF ADVANCED HOLE IN HEAD DISEASE IN A SEVERUM



will show narrow, grainy egg-shaped cells.

HITH and HLE are advanced manifestations of this disease, where it has become a systemic infection. Enough protozoa have migrated to the fish's sensory pores that the tissue necrotizes, the lesions exuding a white material that leaves the fish vulnerable to secondary bacterial infections. If you do come across a fish in your tanks that has HITH or HLE, protect your other fish! These parasitic protozoa can live outside of host fish, and have been observed in organic debris that has had contact with fish feces. Check to see if your substrate needs to be vacuumed,

and perform a large water change before adding any Epsom salt or metronidazole treatment to your tank. The improved water quality will help your other fish, and also reduces the frequency and degree of their exposure to any parasites in the substrate.

I found the following references useful while I was treating *Butterscotch*: http://www.extension.org/sites/default/files/w/0/02/Management_of_hexamita_in_ornamental_cichlids.pdf

http://siamb.org.il/uploads/57_2_Ogut.pdf

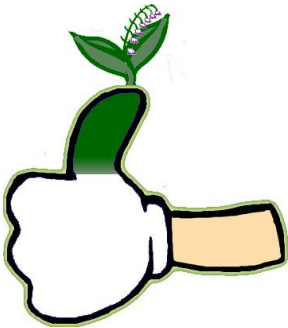
May/June Horticulture Award Program by Mike Hellweg

Aquarist	Species	Common Name	Key	Points	Total	Note
Mike Hellweg	<i>Hygrophila lancea</i>	Lance Leaf Hygro	V	10	3485	
	<i>Potamogeton gayi</i>	Narrow Leaf Pond Weed	V	10		
	<i>Staurogyne</i> sp. Bihar		V	20		
Holly Paoni Wise/Kevin Wise	<i>Anubias barteri nana</i> "Narrow Leaf"	Narrow Leaf Dwarf Anubias	IB	20	1185	
	<i>Aponogeton madagascariensis</i>	Madagascar Lace Plant	IB	10		
Mike Huber	<i>Acorus calamus</i>	Sweet Flag	V	10	2140	
	<i>Ammania senegalensis</i>	Giant Ammania	V	20		
	<i>Anubias barteri coffeefolia</i>	Coffee Leaf Anubias	V	15		
	<i>Anubias barteri glabra</i>	Wide Leaf Anubias	V	15		
	<i>Anubias barteri nana</i> "Narrow Leaf"	Narrow Leaf Dwarf Anubias	V	15		
	<i>Azolla caroliniana</i>	Fairy Moss	V	5		
	<i>Bacopa monnieri</i>	Water Hyssop	V	10		
	<i>Bolbitis heudelotii</i>	African Water Fern	V	10		
	<i>Ceratopteris silaquosa</i>	Indian Water Fern	V	5		
	<i>Colocasia antiquorum</i> Black Magic	Black Magic Taro	V	15		
	<i>Colocasia antiquorum</i> illustris	Imperial Taro	V	15		
	<i>Cryptocoryne pontederifolia</i>		V	15		
	<i>Cryptocoryne retrospiralis</i>	Retro Crypt	V	15		
	<i>Cryptocoryne usteriana</i>		V	15		
	<i>Cryptocoryne wendtii</i> Mi Oya	Mi Oya River Crypt	V	15		
	<i>Echinodorus bleheri</i>	Bleher's Amazon Sword	IB	20		
<i>Echinodorus parviflorus</i>	Black Sword	V	15			

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

May/June Horticulture Award Program by Mike Hellweg

Aquarist	Species	Common Name	Key	Points	Total	Note
Mike Huber	<i>Eleocharis montevidensis</i>	Giant Hairgrass	V	10		
	<i>Equesetum hyemale</i>	Horsetail Rush	V	10		
	<i>Glossostigma elatinoides</i>		V	15		
	<i>Helianthium tenellum</i>		V	15		
	<i>Heteranthera zosterifolia</i>	Stargrass	V	15		
	<i>Hygrophila corymbosa</i> Kompacta	Kompact Hygro	V	5		
	<i>Hygrophila corymbosa</i>		V	5		
	<i>Hygrophila pinnatifida</i>	Feather Leaf Hygro	V	20		
	<i>Juncus effusus</i> spiralis	Soft Corkscrew Rush	V	10		
	<i>Juncus effusus</i>	Common Rush	V	10		
	<i>Lomariopsis lineata</i>	Susswassertang	V	5		
	<i>Ludwigia sediodes</i>	Mosaic Tile Plant	V	5		
	<i>Marsilea quadrifolia</i>	4 Leaf Clover	V	15		
	<i>Microsorium pteropus</i> tropica	Tropica Java Fern	V	10		
	<i>Neptunia oleracea</i>	Water Sensitive Plant	V	15		
	<i>Pogostemon erectus</i>		V	15		
	<i>Sagittaria subulata</i>		V	5		
	<i>Spirodela polyrhiza</i>	Giant Duckweed	V	5		
	<i>Bacopa myriophylloides</i>	Needle Leaf Bacopa	V	10		
	<i>Bacopa myriophylloides</i>	Needle Leaf Bacopa	OB	10		
	<i>Houttuynia cordata</i> variegata	Chameleon Plant	V	10		
	<i>Ludwigia species</i> x. lacustris		V	10		
	<i>Oenanthe javanicum</i> Flamingo	Flamingo Water Parsley	V	10		
	<i>Phyllanthus fluitans</i>	Red Root Floater	V	5		
	<i>Utricularia gibba</i>	Dwarf Bladderwort	V	5		
	<i>Cryptocoryne parva</i>		V	15		
	<i>Echinodorus osiris</i>	Red Melon Sword	V	15		
	<i>Echinodorus paniculatus</i>	Graceful Sword	V	15		
	<i>Echinodorus</i> sp. rose	Red Rose Swordplant	V	15		
	<i>Echinodorus</i> sp. Kleiner Bar	Kleiner Bar Sword	S	20		
	<i>Echinodorus</i> sp. Oriental	Oriental Sword	V	15		
	<i>Lemna minor</i>	Dwarf Duckweed	V	5		
	<i>Lindernia rotundifolia</i>	Watermelon Plant	V	10		
	<i>Ludwigia glandulosa</i> peruensis	Red Star Ludwigia	V	10		
	<i>Myriophyllum heterophyllum</i>	Red Foxtail	V	10		
<i>Rotala macrandra</i> narrow leaf		V	15			
<i>Rotala wallichii</i>		V	15			



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

Breeders Award Program by Steve Edie

May	Species	Common Name	Points	Bonus	CARES	Total
Chuck Bremer	Xiphophorus helleri	Melanistic Southern Swordtail	5			297
Mike Hellweg	Neolamprologus meeli "Kipili" *		10	5		6449
Mike Huber	Girardinus microdactylus	Cuban Small Finger Top Minnow	5			413
	Haplochromis sp. "Ruby Green"		10			423
	Limia perugiae		5			428
	Xiphophorus sp. "Domestic Platy"	Blue Moon	5			433
	Xiphophorus sp. "Domestic Platy" ^	Mickey Mouse Moon	0	1		434
	Stomatepia mariae @		15		15	464
Jerry Jost	Ancistrus sp. "Calico"	Calico Bristlenose	10			2227
	Corydoras septentrionalis *	Northern Longnose Cory	10	5		2242
Gary Lange	Taturndina ocellicauda	Peacock Gudgeon	15			1764
Jim Miller	Rineloricaria lanceolata *	Whiptail	20	5		2974
	Rineloricaria sp. "Red"	Red Lizard Cat	20			2994
Holly Paoni	Characodon lateralis "Los Berros" @	Rainbow Goodeid	15		15	619
& Kevin Wise	Cnesterodon decemmaculatus	Ten Spot Livebearer	10			629
	Corydoras paleatus	Longfin Pepper Cory	10			639
	Pethia conchonius	Rosy Barb	10			649
	Protomelas taeniolatus	Super Red Empress	10			659
	Puntius ologolepis	Checker Barb	10			669
	Sewellia lineolata	Hillstream Loach	20			689
Nick Scarlatis	Lethrinops sp. "Red Cap" *		15	5		810
	Rocio octofasciata	Jack Dempsey	5			815
Pat Tosie	Apistogramma sp. "Kelleri, Type B" *		15	5		4770
	Paralabidochromis sp. "Fire Red Uganda" #@		0		10	4780
	Xystichromis sp. "Kyoga Flameback" @		10		10	4800
	Nandopsis hatiensis "Lake Maragoane" *		15	5		4820
	Paraneotroplus malanurus "Petén" *		15	5		4840
June	Species	Common Name	Points	Bonus	CARES	Total
Chuck Bremer	Neolamprologus brichardi		10			307
Jerry Jost	Corydoras simulatus *	Olga Cory	10	5		2257
	Scleromystax kronei *		15	5		2277
Cory Koch	Herichthys bartoni *@		10	5	10	3939
Jim Miller	Rineloricaria eigenmanni *		20	5		3019
	Uaru amphiacanthoides		20			3039
Ed Millinger	Mikrogeophagus ramirezi	German Blue Ram	15			815
Holly Paoni	Brachydanio albolineatus	Pearl Danio	5			694
& Kevin Wise	Girardinus falcatus	Gold Belly Top Minnow	5			699
Debbie Sultan &	Aulonocara stuartgranti "Maleri Island" *	Sunshine Peacock	10	5		495
Tom Corradini	Tropheus duboisi "Maswa"		15			510
Pat Tosie	Haplochromis lividus "Murchison Bay" @		10		10	4860
	Hemichromis elongatus "Mbode, Cameroon" *		10	5		4875

* = 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. =

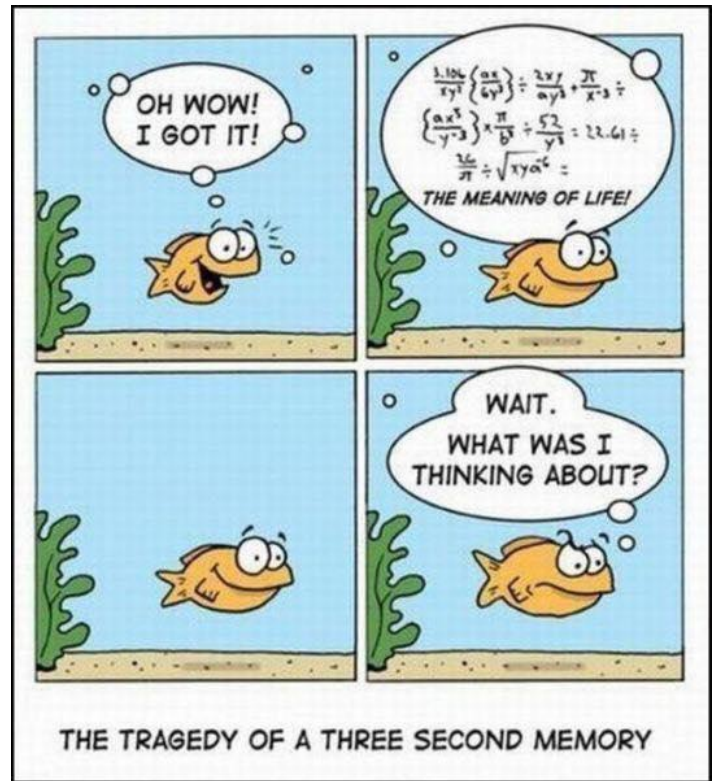
base point bonus

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

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

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

LET'S GO TO THE GEORGIA AQUARIUM



GOLDFISH WHO CAN'T SWIM UPRIGHT GETS A WHEELCHAIR

By Max Knoblauch

After a 16 second high-risk, non-invasive surgery involving what appears to be a t-shirt tag and a piece of cork, we can report that this goldfish is swimming normally.

On May 28, Redditor leability uploaded this image of a quick fix for a goldfish who had trouble swimming upright.

As a few Redditors pointed out in the post, the fish is likely suffering from an infected swim bladder — the result of the high-protein diet owners typically feed their fish.

A more permanent fix for the ailment is to feed your goldfish skinned, chopped green peas. The nutrients in the peas and the vegetable's density should right your pet's diet in a few days.

From <http://mashable.com/2015/05/28/goldfish-wheelchair/>

See something fishy that makes you laugh? Send it to editor@missouriaquariumsociety.com

FISHES AS DISHES

PATRICK A. TOSIE, SR.

Tilapia Foil Packets

Ingredients:

Four 6-ounce tilapia fillets
4 tablespoons olive oil
4 cloves garlic, minced
4 plum tomatoes, chopped
2 small shallot, minced
4 teaspoons chopped fresh thyme
Kosher salt and freshly ground black pepper

Directions:

Preheat the oven to 450 degrees F.

Lay each fillet out on its own piece of foil. The foil should be a few inches longer than the fillet. Drizzle each fillet with the olive oil.

Combine the garlic, tomatoes, shallots, thyme and some salt and pepper in a small bowl. Top each fillet with the tomato mixture. Fold over the fillet and roll up the edges to create a seal. Place on a baking sheet and bake for 15 to 20 minutes. Serve removed from the foil with veggies on the top and any sauce drizzled over the fish.

Prep time: 10 minutes, Cook time 20 minutes, Yield: 4 servings

EAT MORE



FISH



Grilled Asparagus

2 pounds asparagus, trimmed
1 tablespoon chopped garlic
Salt and freshly ground black pepper
Extra-virgin olive oil

Directions:

Set up grill for direct cooking over medium heat and oil the grates. Place the trimmed asparagus on a baking sheet. Add the chopped garlic and season with salt and pepper. Drizzle with extra-virgin olive oil and toss to coat. Place on the grill directly or in a grill basket. Grill until just tender and lightly charred, about 5 minutes.



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		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

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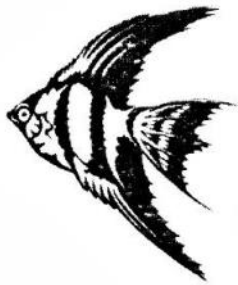
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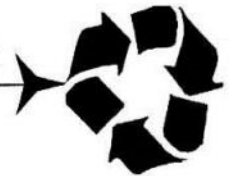
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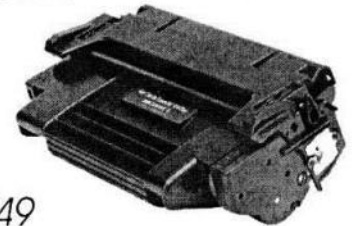


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Cichlid Press	www.cichlidpress.com
Cobalt International	cobaltaquatics.com/cobaltaquatics/
Coralife	www.coralifeproducts.com
Drs. Foster & Smith, Inc.	www.drsfostersmith.com
Eastern Aquatic Blackworms	shop.easternaquatics.com/Live-Black-Worms-1.htm
Exotic Aquatics	www.minifins.com
The Fish Factory	www.thefishfactoryonline.com
Florida Aquatic Nurseries	www.floridaaquatic.com
HCA Aquatics	hcaaquatics.weebly.com/
Hikari Sales	www.hikariusa.com
Imperial Tropicals	www.imperialtropicals.com
Kingfish Services	www.kingfishservices.net
Mars Fishcare	http://www.apifishcare.com/
Omega Sea	www.omegasea.net
OSI (Ocean Star International)	www.oceanstarinternational.com
Petsway	www.petsway.com
San Francisco Bay Brand/Ocean Nutrition	www.sfb.com
SeaChem Laboratories	www.seachem.com
Swiss Tropicals	www.swisstropicals.com
TonyOrsoUSA	-
Tropical Fish Hobbyist	www.tfhmagazine.com
Tropical World Pets	www.twpstl.com
United Pet Group	www.unitedpetgroup.com
ZooMed	www.zoomed.com/

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