

The
DARTER



JANUARY/FEBRUARY 2015

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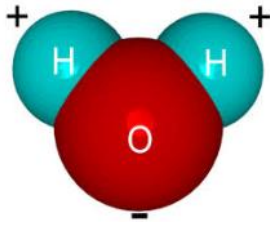
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Cover - *Amphilophus labiatus* Yaxya by Pat Tosie

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#FISHIESNOTFOOTBALL

By Mark England

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Membership

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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



2015 was a fantastic year for our club, The DARTER is truly a fantastic club magazine that would compete with the best in the country and on that note we are having a change. After a couple years, our Editor Mark England is stepping down because he and his wife are moving out of state to take advantage of a great job opportunity for them. Good luck to the England family on their new adventure and thank you for such a wonderful job with The DARTER. Mark is helping our soon to be New Editor, Chuck Bremer, to learn and keep The DARTER at the top! THANK YOU Mark for a job well done and THANK YOU

Chuck for agreeing to take on this task and be the face of our club.

2015 MASI Challenge ended with over \$2,000 that we will be sending to MASI Challenge the Amazon Research Center for Ornamental Fishes, this month and the council has voted for the 2016 MASI Challenge to be the Amazon Research Center for Ornamental Fishes for a second year! This is the first time we have repeated a worthy cause, so please help us support them and PLEASE keep bringing the donations to the monthly meetings, Auctions and Swap Meet and let's surpass what we did in 2015! With everyone's support, maybe

we can make \$3,000 this year!

Membership is strong with over 100 members, our monthly speakers have been second to none, the Annual Show is growing (and we have a great speaker line-up for the 2016 Show), the Swap Meet has jumped with leaps and bounds growing at a fantastic rate and our club workers and volunteers are working harder than ever to keep our club strong and successful. Be sure to participate in our monthly bowl show, the annual show, the swap meet and all of the auctions! MASI is great because of the members and you guys are super! I am happy as ever to be a part of this organization.

Mark, you will be greatly missed. Your work has brought our magazine to new levels. Chuck, you have some big shoes to fill and I know you are up to the challenge and I can't wait to see how you put your thumb print on it and make it your own. Thank you to all the workers for doing such a good job with your positions, it is because of you that people all around the country know about MASI.

Keep looking below water....

FROM THE EDITOR

Mark England



As Pat announced above, I am resigning as editor of The Darter and transitioning the job to Chuck Bremer.

Over the next few months, my family and I will be moving to Nashville. My wife has already begun work there and I'm in the market for a new job, too.

I sincerely hope I can find fish friends in Nashville as good as I found in St. Louis. To my

knowledge, Nashville does not have an aquarium club, although I understand there is a cichlid group and a reef keeping group.

Those of you who have been members of MASI for years may not realize how special MASI is. There is a wealth of knowledge in the club and a willingness to share that's not found everywhere.

It is my sincere hope that MASI members will continue to volunteer their time and knowledge to keep MASI strong, to keep MASI an inclusive club where aquarists of all levels of experience and wide ranging interests

can find a welcoming community.

I hope you'll give support to Chuck Bremer as your new editor. Chuck is not only an accomplished fish keeper, but he understands *The Darter's* mission to inform, teach, and entertain.

I've enjoyed my time as editor. I've tried to publish a broad selection of topics in the hope that each member can find something in each issue that they enjoy. For every issue, I've tried to have something for the cichlid nuts, something for the catfish lovers, plant and aquascaping articles, a piece for

beginners, a little opinion, and a little bit of humor.

Each of us needs to think about the future of aquarium keeping and do their part as conscientious aquarists to promote ethical fish keeping and educate those who are the future of the hobby.

Our society is increasingly disconnected from the natural world. More and more we experience the world second hand through television, media, and apps. Let us each do our part to help others in the hobby as we have been helped.

Keep your hands wet!

JANUARY 21— GARY LANGE “ASK THE EXPERTS”

By Gary Lange

I'll be doing an "Ask the Experts" sort of a review of all of the things we need to think about and do if we want to be successful aquarist for the long term. I'm hoping I can get some help from our long time fishkeepers to chime in with their expertise and points of view too. You'll get some advice on what works and things that really don't work in keeping and raising freshwater tropical fish.

FEBRUARY 18—TBA

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



WINTER AUCTION

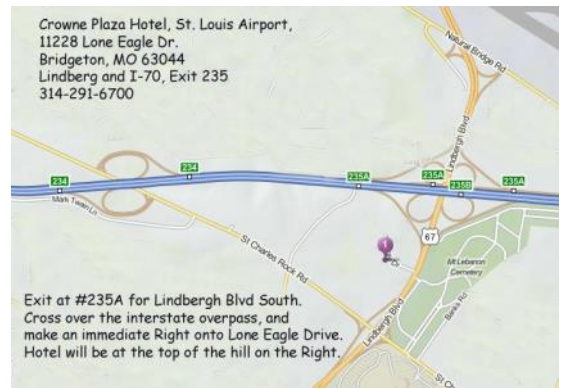
Sunday – January 31, 2016 open at 11

Information & Seller Registration: auction@missouriaquariumsociety.com

Rules, Seller's Sheets and Labels: [http://inkmkr.com/Fish/AuctionRules\(2-12\).html](http://inkmkr.com/Fish/AuctionRules(2-12).html)

RAFFLE!

75 gallon tank, top and light
4:00 pm drawing—MUST be present to win.
Donated by Tropical World Pets on Watson Rd



BIGGEST AUCTION OF THE YEAR! 800+ LOTS

Locally Raised

- Cichlids
- Angels
- Livebearers
- Killies
- Fancy guppies
- Community fish
- Catfish

- Plecos
- Freshwater shrimp and invertebrates
- Locally raised amphibians (axolotls, newts and frogs)
- Goldfish
- Aquarium and pond plants
- Aquarium and pond sup-

plies

- Books and magazines
- Aquarium and Pond Equipment
- Tanks, stands, decorations
- Live Foods
- And MORE!

SHOW ME FISH 2016

FOOLIN WITH FISH

Speakers : TED JUDY RUSTY WESSEL CHUCK DAVIS
VENDORS, PRIZES, FISH SHOWING CONTEST, AND A HUGE AUCTION

Date : April 1-3 2016
Location: Crowne Plaza Hotel St. Louis Airport
11228 Lone Eagle Dr. St. Louis MO, 63044
COME OUT AND ENJOY A FISH FUN FILLED WEEKEND HOSTED BY MASI

2016 SHOW CLASSES

MAJOR AWARDS

- Best Fish in Show
 Judge's Award
 Best Junior Entry (under age 16)
 Reet Thomas Livebearer Award
 Ralph Wilhelm Catfish Award
 Class Awards: 1st prize \$10, 2nd prize \$5, 3rd prize \$3
 Fancy betta award \$10, sponsored by Kathy Deutsch
 Minimum of 5 entries per class.
 Fewer than 5 entries go into "ALL OTHER FISH" class and are judged as such.
1. Aquascaping-free entry—Any tank with an entry will also be considered for the Aquascaping award.
 2. Best School/Family or Biotope Entry has a group of one species of fish, a breeding pair/group with fry, or a collection of species that occur together in nature.
 3. All Other Fish—any fish that does not fall into any

- other category.
4. Old World Cichlid
 5. New World Cichlid
 6. Killifish / Rainbowfish
 7. Livebearers - wild type
 8. Livebearers - fancy aquarium type
 9. Egglayers: Cyprinids: Barbs, Danios, Rasboras, Minnows and Characins-Tetras and relatives
 10. Anabantoids and fancy Betta splendens
 11. Catfish—Corydoras, Scleromystax and relatives
 12. Catfish—All other
 13. Photography—print on photo paper. Photographic image must have been made by entrant from 2012 onward. Must be ready to display on a table.
 14. Art/Craft item must be made by the entrant from 2012 forward. Must be ready to display on a table.

2016 SHOW RULES

ENTRIES: Open to all.

Entry fees:

- \$3 first entry
- \$1 each additional entry.
- All you can enter for \$10

FREE ticket into the fish sale with first entry.

FREE ENTRY: Aquascaping
 Each tank will automatically be judged for Aquascaping.

Tanks with multiple entries:
It is up to the entrant to clearly state on the entry form which fish should be judged. Multiple entries in one tank from different classes are OK as long as they are compatible.

As a matter of ethics, all entries must be the property of the entrant for at least 60 days before show. No deformed, dis-

eased, artificially colored (painted, dyed, or injected) or illegal fish may be shown. Illegal fish are listed at the end of these rules.

The judges and show chairmen reserve the right to pull any entry they deem injured, ill or abused by tank mates.

DISPLAY: All fish are to be entered in flat-sided bowls or tanks a minimum of ½ gallon or larger up to 30 gallons. If an entrant wants to set up a tank larger than 30 gallons, he must get prior approval from the fish show chairman and provide his own stand.

Bare tank entries are allowed in all fish classes, though this is not preferred. Consider using gravel or sand, for the comfort of the fish. We encourage the use

of a background for the comfort of the fish and the effectiveness of the display. Consider covering the sides and back of tank with opaque material (black paint, black contact paper, etc.)

All entries must be neatly covered to prevent fish jumping out.

There are a limited number of flat sided drum bowls or flat sided "kriiter keepers" that can be borrowed if an entrant does not have a bowl. Please contact the show committee early to reserve one.

Lighted entries are encouraged. After the banquet we will have the traditional "tank glow" where the room lights are turned off and just the tanks are lit.

Live plants are encouraged.

Filtration and aeration are optional, but strongly recommended for the health of the entry.

Air and electrical outlets will be supplied.

Guppies, Killies, and Betta splendens may all be entered singly or in pairs in covered bare bowls or tanks of ½ to 1 gallon in size.

Naturalistic artificial decorations are allowed in all entries, and a flowerpot or PVC pipe may be used if needed for the comfort of the fish.

For the Photography class—single picture entries must be printed for viewing.

JUDGING All entries will be sight judged based on appropriate standards for the fish being judged. Decision of Judges and/or Show Chairmen is final. Show Chairmen may disqualify any entry for any reason at any time. For complete rules and a list of banned species, see www.missouriaquariumsociety.com.

CLUB HOPPING

By Steve Edie

Check with the individual clubs for more details.

Jan 31	St. Louis	MASI	Winter Auction	www.missouriaquariumsociety.com
Jan 31	Chicago	Greater Chicago Cichlid Association	Swap Meet	www.gcca.net
Mar 6	Chicago	Greater Chicago Cichlid Association	Swap Meet	www.gcca.net
Mar 19	Kansas City	Heart of America Aquarium Society	Auction	www.kcfishclub.org
Apr 1-3	St. Louis	MASI	Annual Show	www.missouriaquariumsociety.com
Apr 29-May 2	South Bend, IN	American Livebearers Association	Convention	www.livebearers.org
May 27-29	Chicago	Greater Chicago Cichlid Association	Cichlid Classic	www.gcca.net
May 27-29	Denver	American Killifish Association	Convention	www.aka.org
Jul 16	Urbana, IL	Champaign Area Fish Exchange	Summer Auction	www.champaignfish.com
Jul 16	Kansas City	Heart of America Aquarium Society	Swap Meet	www.kcfishclub.org



The 2016 ACA Convention "Born to Be Wild" - July 7-10, 2016 at the Marriot Cincinnati at River Center
 10 W Rivercenter Blvd, Covington, KY 41011 www.acaconvention2016.com



April 8-10

Sheraton Hartford South

100 Capital Blvd

Rocky Hill, CT 06067

<http://northeastcouncil.org/NewNEC/index.php/all-about-the-convention>

Speakers:

- Joseph Ferdenzi
- Lawrence Kent
- Dr. Paul V. Loiselle
- Steve Lundblad
- Dr. John Lyons

Friday dinner with keynote speaker

Sunday auction

Fish Show

AUCTION CHAIRMAN'S MESSAGE BY MIKE HELLWEG

Our first auction of 2016 is just a few weeks away. This is our annual Winter Auction, and is always the biggest of the year in terms of just about everything. If you want it, chances are you'll find it at this auction! I hope you will come by and bid on a few things, and bring a friend.

In the past we've always stressed getting good items. Now we have so many of them, what we really need are buyers. Invite your friends, co workers, folks from church, etc. It's al-

ways fun to talk fish. Talk to folks at the local pet store or big box store. Just last night I met a new "fishy" person at my local Petco. Turns out he's really into oddballs and has several tanks. He's going to be coming to our show as he had seen some of Holly's promos about it. He might even be able to make the auction. And the best thing is he's letting his customers know about us, too.

Chuck Bremer has a great article for sellers about how to

approach this massive auction in this issue. Be sure to read it for some great pointers.

As I always remind you, 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 fall 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 Winter Auction, January 31, 2016!

The next auction will be during our Annual Spring Weekend on April 3, the Summer Auction is August 14, and the Fall Auction is October 30.

And for now, 'nuff said



USING AUCTIONS TO YOUR ADVANTAGE BY CHUCK BREMER

Plan ahead for the upcoming MASI Auction! We usually have four auctions per year: Jan/Feb, Apr/May, Jul/Aug and Nov/Dec. If you plan to sell items be sure and make the fish, plants and the buyer's experience as good as possible. Holly Paoni-Wise has written very good articles on "Packing Plants" in the Mar/Apr 2015 Darter and "Bagging Fish the Right Way" in the Jul/Aug 2015 Darters, plus there is a great video on the MASI website about how to bag fish the right way.

The early winter auction in Janu-

ary or February is usually the biggest both in number of items and buyers producing both the highest prices of the year and also most of the lowest ones.

If you're a seller there are plenty of buyers at the early part of this auction that are itching to fill their tanks with a first buying spree after the Holidays. Take advantage of this and bring your items that are the most in-demand and likely to sell for high prices. Cull your offerings heavily and only bring difficult to get species, adult or near adult fish, well grown and difficult to

attain plants or hard to get equipment likely to appeal to this group.

Major buyers at this auction also want to spend a minimal amount of time so will move up heavily if they want an item. It is not uncommon at this auction to have nearly everything that is sold before 3:00 be a move up. After this time many of the bigger spenders leave and prices drop drastically for the remainder of the auction.

The Jan/Feb auction is also normally the one with the greatest



number of items to be sold. It is the first auction of the year and hobbyists have spent the winter growing out the last spawns of the previous year so have tanks full of small to medium sized fish and also usually an abundance of common plants by this time. An

USING AUCTIONS TO YOUR ADVANTAGE

an auction can sell about 100 items per hour so a large auction may last extremely long and high price buyers leave early. Since they moved up the in-demand items these will still sell well but more common or less desirable items will, by default, get pushed to the end of the auction after many active buyers have left and prices fall.

Recent auctions with more than 1000 items have lasted till after 7:00 PM! Remaining buyers are opportunity buyers that will pick things up at the cheapest price available -often \$1 per item. Dollar items are considered donations to the club and net the seller nothing.

My recommendation is to cull your items critically, leave the



common stuff or immature stuff at home for the next auction where it is likely to sell earlier in the day and bring higher prices. If everyone does this the number of items to be sold at the end of the day will decrease and more buyers will remain at the end of an earlier completed auction. As a fellow hobbyist I also recommend if you are one of those left in the room near the end of the auction bid \$2 instead of \$1 so the seller at least gets something. We want

to make the hobby enjoyable and support our fellow hobbyists as well as supporting other establishments in the area.

If you must bring more items, take advantage of the tools the club offers to help you manage them. MASI seller sheets consist of items 1 through 20 to limit the number of items sold. Item numbers can be skipped by the buyer.

MASI is one of the few clubs that offers the opportunity to sell at silent auction. All item numbers 15, 16, 17 or 18 must be sold at silent auction concurrently with other items being sold before 3:00 PM. This means silent auction items 15-18 are forced to sell before the main group of buyers leaves the venue and do not contribute to the length of the auction!

Often bored buyers will get up and see what is selling just for something to do, so they do get offered to a large number of buyers. Interested buyers also know in advance what time these items will be sold so know when to bid. The silent auction items are the only items a minimum bid may be specified. Those not receiving this bid will be returned to the seller or when the bid time expires will be placed with remaining items to be sold unless the seller makes other arrangements beforehand.

If you are a hobbyist and a member of the Missouri Aquarium Society, Inc., be sure to use item numbers 19 and 20. These are reserved for contribution to the annual MASI Spring Seminar and Show Awards Banquet. Non-members do not get a chance to use these numbers for income.

MASI forgoes commission on anything sold on 19 or 20 and credits in full to the Banquet, so even \$1 items have value to the



seller here.

A strategy to get the most for all buyers at the auction is to put high demand items in items 1-14, fill numbers 15-18 with other items to be sold concurrently that might bring less if left to the end of the auction and use items 19 and 20 as your Banquet donations. If you're only wanting to get rid of items, selling only 6 items as numbers 15 through 20 will give the best chance for income while helping maintain prices for everyone. Leave additional, likely low demand items till the next auctions.

MASI does what it can to keep the buyers in the room as late as possible. The Silent Auctions help but MASI is also providing a 75 gallon tank, top and light

supplied by Tropical World Pets. You must be present to win. Talk this raffle item up whenever you get the chance and don't

forget to buy some tickets yourself to keep it interesting.

Bring your friends!! Data from past auctions indicate that each additional buyer in the room adds about a nickel to the average price for all items sold. Those in charge of publicity do all they can to spread the word about MASI Auctions. Help by inviting anyone you know who might have an interest. Get as many buyers as possible. We have a venue that is accessible, easy to find and highly conducive to a good experience. Tell your friends and people you meet of an activity they will enjoy. Who knows, they may get caught up in the excitement and make an impulse buy!! At the very least they will find a group of Hobbyists with which they can identify!

MEET ED MILLINGER

I have been keeping fish for over 40 years.

The first fish I can remember keeping were some black mollies. The female dropped her babies and they fell into formation behind her and the contrast with the red gravel made quite an impression on me, yes folks red gravel!

I currently maintain a total of nineteen aquariums, from 10 to 125 gallons.

My favorite fish of all time was *Geophagus altifrons*, I had them for about six years. The large size, color and streamers were the best I have ever seen in one of my tanks.

My dream fish would be stingrays. Unfortunately I no longer have a 200 gallon aquarium (the minimum size) suggested for them.

My dream tank (where cost isn't a factor) would be a 2000 gallon South American biotype. My dream tank that I could afford would be a large concrete vat with a glass front in my basement.

My latest accomplishment was the breeding of the *Geophagus mirabilis*. It was described less than a year ago.

My current goal is to breed some wild Oscars that I bought from Jeff Rapps that hail from the Orinoco region in Venezuela.

I have a male cat named Nutella who sits on my lap as I travel around my fish room on my mechanics creeper to feed the fish. He enjoys eating an occasional fish pellet as a treat.



Mark England photos

Back To Basics by Daniell Kinder

Quarantine!

Quarantining new acquisitions is an important yet often overlooked item in fishkeeping best practices. Everybody wants a nice tank with pretty fish and they want it, like, yesterday. The problem is this kind of scenario is unrealistic for a number of reasons and is potentially lethal for the fish and invertebrates involved. Quarantine is a period of isolation and observation. It is most often used for new fish, but can also be extremely helpful for fish stressed out by harassment from tank mates, for isolation in the event of injury or illness, for fattening up wild caught fish that have done a lot of fasting and traveling, or it can be used as a timeout box for exceptionally difficult individuals from the display tank. Quarantine procedures will prevent potential infections and parasites from infecting the fish and tanks you already have as well as allowing you to monitor your new additions for overall health and behavior. My own experience and knowledge base is centered on freshwater only; I have no experience with saltwater or brackish species, but the same principles still apply.

So what's needed to make your own quarantine tank? Not all that much, actually. The bare bones basics of a quarantine tank involve a container, a filter, aera-

tion, and a dependable heater. The last item can be considered superfluous for species that don't require a heated tank, such as goldfish, but a good heater can be a tool to help treat parasites and illnesses depending on your school of thought on the process. Gravel, sand, or other substrate are not needed and, in fact, can hinder the quarantine process by granting ich and other 'ooglies' places to hide where they won't get sucked out during water changes. Lids are helpful both for holding in heat and for keeping jumpers inside the tank. While lights are often helpful to have, they aren't all that necessary unless you're putting plants or corals through quarantine. A flashlight or penlight can be used to do observations

Some people don't adhere to quarantine practices for plants and, admittedly, there are ways to treat some plant species for certain kinds of pathogens prior to adding them to your display tank – often using things like bleach, peroxide, or a copper-based solution – but the chemicals and processes involved aren't always successful and can sometimes cause your plants to die off unnecessarily so, yes, in my opinion, it is worthwhile to quarantine plants as well as fish and invertebrates.

You'll notice that I didn't say tank in the required materials list. That's because it really doesn't have to be an actual tank. I use Rubbermaid tubs, personally. An actual tank or other clear container makes observation from the side very easy, but I think that it isn't necessary, especially when you're dealing with fish that are in reasonably good health already as I've found most MASI members' auction items and breeder program submissions to be. A tank, however, does make figuring water volume and dosing medications easier and a 5 or 10 gallon tank will usually suffice for most fish. A larger container will, of course, be necessary if you are into bigger fish. I would not use my spare 10 gallon tank to isolate or treat, for example, our baseball sized fancy goldfish since he only just has space to turn around in a tank that size and his bioload, even with scant feedings, is more than the filter can accommodate. I have instead a Rubbermaid container that is approximately 20 gallons in which I would treat this particular fish for any disease or injury. An important item to remember when using Rubbermaid or other such containers for quarantine is to choose containers that have not been treated with anti-microbial or anti-mildew chemicals; those



are known to kill fish and especially invertebrates.

The filter and aeration for your quarantine tank don't need to be fancy. A sponge filter or a hang on back filter will work equally well. It just needs to be something that will filter out particulates and provide surface area for nitrifying bacteria. I've seen some ingenious contraptions made of plastic water bottles, polyester pillow stuffing, and an airstone; it truly does not need to be fancy. It does, however, need to have a mature population of beneficial bacteria (accomplished by keeping it running on a disease-free mature aquarium when not needed or by removing media from an established filter) or contain an ammonia absorbing substance such as zeolite.

We all know ammonia buildup is toxic and you don't want an already stressed fish to have to

QUARANTINE!

deal ammonia on top of illness or injury.

An air-driven filter will usually accomplish both filtration and aeration tasks, but sometimes an extra airstone – putting out bubbles and surface agitation, and therefore extra gas exchange – can be helpful. Keep in mind that we're generally dealing with fish that have been through some stress or are sick so anything we can do to make their basic life functions easier to accomplish will make their recovery faster and this includes encouraging better gas exchange through airstones and surface agitation.

Make sure your filter insert does not contain carbon, especially if you're using any medication treatments; carbon will effectively neutralize medications in short order. Carbon can be essential for removing medications, because it works to eliminate them so quickly, in the event of overdosing the tank or a medication causing undue stress to a fish as well as for getting it all out of the system at the end of treatment.

Quarantine for new arrivals can last anywhere from two weeks to two months or longer depending on the parasites or other conditions being treated for. Two weeks is generally long enough for parasites or infections to show up before transfer to a display tank, but some things that might show up, such as internal bacterial infections, could require a lengthier treatment schedule. A cold water quarantine can take longer yet because the life cycle of parasites is considerably slowed in an unheated environment. This is why a heater is still recommend-

ed even for cold water species. It significantly shortens the time required for quarantine.

Many people will treat their new fish and plants with a copper-based solution such as copper sulfate to kill off parasites as a general preventative. Organisms such as oodinium flagellates cannot be seen without a microscope. They can annihilate entire spawns with little evidence of the cause, yet leave the carrier adults seemingly in perfect health. I doubt this kind of treatment is necessary if you have no intention of breeding your fish and copper-based treatments are most definitely not something you would do with invertebrates or scaleless fish. Personally, I treat all incoming fish, inverts, and plants with a product called PraziPro as a general fluke and parasite preventative because it does not affect the beneficial bacteria and is safe to use on inverts and other sensitive critters. It doesn't work for flagellates and the like, but I'm not overly concerned about that.

Your fish will be in this container for at least a couple of weeks so it's important to feed them. Feeding complicates things in quarantine because it means there's more poop and more poop means more ammonia. So feed sparingly and either make sure that all of the food is eaten or remove the excess manually so ammonia doesn't build up.

Sometimes fish that are new, have been through shipping, or have otherwise undergone stressful events won't eat for a couple of days or so. This is normal and is not necessarily indicative of an issue, but should be monitored for other signs of

stress or ill health.

Along the same vein is doing water changes. Most of us wouldn't leave our tanks for two weeks or more without doing a couple of water changes and quarantine tanks need water changes, too. They're generally a smaller container and toxic things can build up really fast if the nitrogen cycle hasn't been fully established prior to adding fish. Small water changes every other day or so should keep your water parameters in check and your fish on the road to health and a long life, but having a liquid test kit and actually using it is also an important part of keeping tabs on the water conditions during quarantine.

Let's say that you've just successfully quarantined and treated some new fish and they are now readily establishing themselves in your display tank. Excellent! You've ensured the health and well-being of your previous aquarium inhabitants and successfully added some new life to the mix. Well done! But now what do you do with the quarantine tank? There seem to be two schools of thought on this. The first one is to tear it all down, sanitize it, and store it for later use; the second is to sanitize everything but then leave it set up and running in case its needed in a hurry. The route you choose is completely up to you, but I think there are some advantages to the former. You will need to take things apart for cleaning anyway in order to sanitize and inspect your equipment, which you will definitely want to do if any diseases or parasites ended up needing treatment.

Some people empty their tanks

and wipe them down with straight bleach while soaking the submersible bits in a bucket of 9-1 bleach solution (nine parts water to one part bleach). I'm not such a huge fan of this approach because, first of all, I'm allergic to bleach and have no desire to handle it that closely, but also because I have a small child in my house and a bucket of bleach solution within reach is asking for trouble. I do still use it for the sanitizing process, however, because I think it's the most effective substance for the job. If I didn't end up needing to treat anything, I pull the filter and stick it back on the display tank so the beneficial bacteria can stay intact for the next time I need to quarantine new fish or treat sick ones. I do not do this if I needed to treat the quarantine tank with something other than PraziPro. In that case, I go buy the cheapest gallon of plain, unscented, non-thickened bleach I can find, dump the whole thing into the tank, and leave it overnight. A lot of the chlorine will off-gas overnight and a good glug out of the gallon of dechlor solution I use to treat the tap water for water changes will take care of the rest the next day. After that, I tear it all down, rinse it off really well, and dry out the filter before sticking it back in the display tank to be recolonized with nitrifying bacteria. (The drying out step has nothing to do with anything based on science or experience; it's just a thing I do.) Then I pack up everything else in the quarantine container and stash it in a closet or cabinet until I need it again.

And that's it. Ta-daa, quarantine; hooray!

DANGERS OF DIHYDROGEN MONOXIDE

By Mark England

“kills thousands each year...”

Heavy rains during early January created tremendous accumulations and releases of dihydrogen monoxide in the Mississippi River watershed. In Illinois and Missouri alone the compound was responsible for at least 24 deaths. Dihydrogen monoxide rendered hundreds of homes in the area uninhabitable and caused millions in damages.

Dihydrogen monoxide kills thousands each year, principally from inhalation. Even inhaling small amounts of the liquid form can prove fatal. In the gaseous state, it can cause severe burns and prolonged contact with the solid form will cause extensive tissue damage. Dihydrogen monoxide is colorless, tasteless, and odorless. If ingested the victim may have symptoms of sweating or frequent urination or a bloated feeling. In severe cases, nausea, vomiting, and electrolytic imbalance can occur.

Dihydrogen monoxide, also known as hydric acid, is the principal component of acid rain and is widely used as an industrial

solvent. It contributes to soil erosion and causes billions of losses annually due to its corrosive effect on many metals. It can also cause electrical short circuits and damage to electronic components. It has even been found in cancerous tumors of the terminally ill.

The chemical does have beneficial uses to industry. It is widely used as a fire retardant and food ingredient, especially in beer. It is employed as a coolant to keep nuclear power plants safe. Farmers depend on dihydrogen monoxide to distribute fertilizers, pesticides, and herbicides in crop lands. Unfortunately, traces remain on foods even after repeated washings.

Dihydrogen monoxide contributes to the greenhouse effect and is now found in every watershed and aquifer in the US. It has even been found deep in Antarctic ice.

As a result, dihydrogen monoxide is ubiquitous in the aquarium. No filter medium will remove it and even massive water changes will not free your aquarium of it. Fortunately, since it is so widespread in nature, ornamental fish have adapted to its presence and can tolerate quite large concentrations of it in the aquarium. In fact, the adaptation is so complete that most fish now require some level of dihydrogen monoxide to thrive.

As concerned aquarists, what can we do? First, even though you can't rid your tank of it, make



sure dihydrogen monoxide cannot come in contact with electrical equipment. The result could be fatal. Make sure your tank is protected by a ground fault interrupter.

Second, learn more about the threat of dihydrogen monoxide. The best information comes from the privately funded Dihydrogen Monoxide Research Division (www.dhmo.org) dedicated to creating greater awareness of this dangerous chemical compound.

Finally, contact your government representatives to let them know your concern. While Missouri Gov. Jay Nixon and Illinois Gov. Bruce Rauner toured the areas contaminated by dihydrogen monoxide and called on President Obama to declare a state of emergency. Obama did so for the state of Missouri, where 15 deaths occurred, and permitting federal funds to be used to aid victims of the disaster. FEMA will be coordinating relief efforts. Let your officials know you stand against the dangers of dihydrogen monoxide!



OSCAR AND OLIVE

Text and photos by
Pat Tosie



*“...I reached in
and the female ...
bit my hand!”*

The Oscar, *Astronotus ocellatus*, is a popular aquarium cichlid from the Amazon drainage and the rivers of the Guianas in South America. Oscars were first described in 1839 and can get just a little over twelve inches in length in the wild, though some aquarium specimens have been known to get up to fourteen inches in length. Currently there is only one other described species, *Astronotus crassipinnis*, and it has rarely been seen in the aquarium hobby. They are the most popular of the large cichlids, mainly due to their outgoing personality plus their striking markings. Juveniles are duplicates of the adults and are frequently offered in pet shops and you can

train them to eat from your hand!

My pair of Oscars are in a 110 gallon, four foot long tank, they were sharing the tank with one other Oscar and three Red Devils. Temperature was between 78 and 82 degrees, it has a couple sponge filters and a Marineland Emperor power filter. Lights are left on most the time, however, there is not a direct light on the tank. The fish are fed several types of Cobalt flake and pellet food, along with live black worms and frozen shrimp. The first time they spawned I did not realize what they did and I thought there was something in the bottom of the tank, so I reached in and the

female (Olive) bit my hand! She bite it hard enough to break the skin and surprise the ?i@x%z* out of me! The item I thought was something in the bottom of the tank was a mass of fry. After that first encounter, they were spawning regularly and did a good job guarding the fry, but once the fry were free swimming, they didn't last very long. The Red Devils also were spawning and they did a better job at protecting their fry. I removed all the adults except for the pair of Oscars so that I could spawn and raise the Oscar fry, however, there was a glitch in my plan. The Red Devil fry were growing up in the tank with the pair of Oscars and the Oscars did not give them

OSCAR AND OLIVE

a second look. Every time they would spawn, the Red Devil fry would slowly eat the eggs and the parents did nothing about it! This kept on for a few months until the Red Devil fry got to a size of three inches.

It took a while, but I slowly was able to catch all the red Devils out of the tank, leaving just the pair of Oscars, I call them Oscar and Olive. Once the Red Devil fry were all removed, Oscar and Olive had the tank all to themselves and were free to spawn and raise the fry (at least that is what I hoped for). One morning when I went into my fishroom, Olive was lying on the floor!

Somehow she knocked the lid off and jumped (or was chased) out of the tank. She did not look like she was breathing and was just a little damp to the touch. There were no water spots on the floor so it was obvious that she has been there awhile. I quickly picked her up and put her in a seventy-five gallon tank and moved her back and forth to get some water in her, to my surprise she started breathing! Olive was still alive!! I left Oscar and Olive apart for three months before she was reintroduced back into the 110 with Oscar. Gills flared for a little while but soon they were happy again.

It wasn't long before they started laying eggs. Oscar and Olive would lay the eggs on a large flat rock and both would fan over the eggs. Gravel was cleared away around the rock and the parents would also dig a couple pits around the tank for moving the fry. Eggs laid would number in the three to four hundred and most would hatch. In October, the pair laid eggs 3 times! I want the parents to raise the fry, but after one to two weeks of free swimming, they eat the fry and within a few days lay eggs again. I siphoned fifty or so fry and moved them to a ten gallon tank so I could have some to turn in for

our BAP program, but I am continuing to try and get the parents to raise the fry up.

When the fry start swimming, they tend to stay on the sides of the parents, almost like hanging on them similar to what Discus fry do and during that time the parents are very nervous. Free swimming fry get newly hatched brine shrimp and micro worms as food, as well as finely crushed Cobalt flake foods.

If you can get a pair that will get along with each other, these are a very rewarding fish to keep and watch.



BREEDING THE RED LIZARD WHIPTAIL CATFISH (RINELORICARIA SP LI0A)

OR WHY I TRAVEL FAR AND WIDE FOR A TROPICAL FISH AUCTION

Text and photos by
Barbara Romeo

Reprinted from *Gills 'N Gossip*, Danbury Area Aquarium Society, Fourth Quarter, 2015.

I attended the Central New York Aquarium Society (CNYAS) auction in East Syracuse, New York in the spring of 2014. The auction typically is held on a Saturday, which is fortuitous for me since I can drive up early the day of the auction and rent a hotel room if I stay until the auction's end. If I stay the night, I go to dinner with friends from the auction and also go on a shop hop before the drive back home on Sunday. Basically it's a whole weekend of tropical fish and friends!

In regards to the type of fish at the auction, I never know what will be seen and there are usually a couple of fish that I try to obtain. It was my lucky day when I noticed 5 bags of 4 Red Lizard Whiptail Catfish among the auc-

tion bags scattered throughout the various tables. I have never seen this fish before and was quite intrigued. Some were very red while others were rusty brown, but they were all odd yet beautiful fish. I knew nothing about them and conducted a quick Google search on my iPhone before they were auctioned to see if I could maintain them in my soft water.

I learned the following...

- The origin of the species is controversial. Some believe they are collected from the wild while others believe they were created in the hobby.
- Favor soft water with a pH range of 6.0-7.5

- Favor well-planted tanks
- Are peaceful fish
- Are paternal cave spawners

I quickly realized I could easily maintain these fish and wanted to try to breed them. So I decided to try to obtain 2 bags to increase the chances of at least 1 pair. I had a bidding war with some hobbyists at the auction but since I counted 5 bags, I was victorious and won the bags for a total of 8 fish.

I then had to figure out where to keep them and quickly decided to dedicate one of my planted 55 gallon tanks to these fish. Therefore I had to move quite a few fish from the 55 gallon into other tanks when I got home.



BREEDING THE RED LIZARD WHIPTAIL CATFISH (RINELORICARIA SP L10A)

I learned the L10A whiptail is a very peaceful and docile fish only most of the day. So I am glad I moved the other fish from the tank. The L10A usually hangs on the Amazon Sword plants and one of the taller varieties of Anubias plants in the tank. They are omnivores and do “nibble” on the plants but this tank was so packed with mature specimens that it did not cause detrimental damage to the plants. I suspect these fish would harm new growth so that daughter Amazon plants (offshoots from the mother plant) should be moved into another tank to give them a chance to establish themselves.

I mainly fed them a lot of flake food. I made a mixture of different varieties of Ken's flakes foods and added them all together to create a variety of foods at each feeding. I then add the food near the bubbles at the sponge filter or near the power filter so that it gets into the current and makes its way throughout the tank. I realized these fish need this type of food movement or they will allow the food to sink to the tank floor and fungus on the substrate. When they see the flake swirling around the tank, they get excited and begin to feed.

I have tried to feed them live black worm a couple of times but be prepared to “lose” some of the black worm to the substrate. The whiptail so slowly feed that they allow some of the black worms to bury themselves in the Eco-Complete substrate before the whiptails can get to them. The worms began to thrive and have become part of the habitat in the tank. I figured this was fine since the adults can feast on them as they come across some in the

tank.

When I purchased these whiptails I expected to wait at least a year for them to get accustomed to their environment and to fully mature before I would see mating behavior. I was very wrong. They did not want to wait and in four months time, I saw fry. There were a variety of caves in the tank but the male chose to make his den under a piece of driftwood which had a large Anubias tied to it. This driftwood resided in the back of the tank so I could not see the male when he was lying on eggs. I realized after the second spawn that the only time I could tell he was on eggs is when I did not see him at feeding time. Also we had a very stormy cou-

ple of days at the end of July/early August and along with a 50% water change, I surmised one of these triggered the very first spawn.

The fry varied in colors from beautiful reds, to rusty browns, and a couple of greyish-browns. I presume one will get more reds if you breed two very red L10A but I have not attempted this. The fry in my opinion are “stupid”. They hang on the tank glass and I believe did not realize they needed to feed. I counted at least 20 fry but only 8 survived after 7 weeks. The ones that survived learned to move around the tank, hang on the plants and look for food. I did try to move the second spawn of ~ 25 and intended to place them

in a small enclosure so that they cannot miss the food but I was having great difficulty catching them and gave up. I ultimately decided to let them be with the adults as was done with the first spawn. The strongest will and did survive but it was a small group.

I entered a group of 5 after the second spawn to the DAAS Breeders Award Program but kept the rest of the fry to grow out. If you would like to learn more about whiptails, I recommend Norman Behr's articles in the Jan/Feb 2015 issue of Amazonas magazine.

2014 ended up being one of my best years finding novel fish at local fish auctions. I hope 2016 will be even greater!



BETTA CHANNOIDES “SNAKEHEAD BETTA”

For the background on this fish species we spin the globe and stop it on Asia. *Betta channoides* are native to the Mahakam river basin in the province of Kalimantan Timur, the eastern Kalimantan side of the island Borneo, Indonesia. The snakehead betta inhabits brownish, acidic, black water forest streams entering Mahakam River on the northern

to start on my Anabantids Class I purchased a Betta that was a mouth brooder. Also the fact that it is one of the best looking Bettas out there made my decision to try to purchase a pair even easier.

I took the pair home and placed them in a 10-gallon tank in my fish room. The tank sits on my top row of tanks and is painted

in the tank. The photo below is of the female in the breeding colors. The black and dark grey stripes can almost be black and white when she is really ready. The red on the female stays only on her fins. I have read that the white seams on the edge of *Betta channoides* fins only happen to males and it's a sign to be able to pair fish. This, in my experience,

Text and photos by
Roberto Pratt

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The snakehead betta got its name because of the shape and markings on its face that resembles the snakehead fish.



side near Mujub. They are collected in shallow water among plant roots and leaf litter. The snakehead betta got its name because of the shape and markings on its face that resembles the snakehead fish named Channa.

As many of you know I got my start in this hobby breeding mouth brooding African cichlids from Lake Malawi. So it only makes sense that when I wanted

black on all sides but the one end of the tank that faces the front of my rack. In the tank I sunk 3 inches worth of oak leaves and a sponge filter in the middle. The temperature was kept in the mid 70's. My tap water is around 7.0 when I filled the tank and didn't do a single water change in 2 months other than top off the tank when it was needed. The pH dropped down to 6.0 in that time and you needed a flashlight to see

is not true as you can see this female has the white seam around her fins and she is a true female. The male in breeding colors gets much more pronounced reddish wine colored than he usually is.

The pair was fed mostly live foods such as white worms, black worms, mosquito larva, and adult baby brine that were gut loaded. They did occasionally eat frozen bloodworms, glass worms and

BETTA CHANNOIDES “SNAKEHEAD BETTA”

daphnia. They were fed once a day and usually twice on weekends when I have more time.

This pair was not too aggressive with one another when breeding. The actual breeding was never seen but this is how it would go. The female initiates spawning by showing off her breeding coloration. Eggs and sperm are released during a typical labyrinth fish position, where the male wraps his body around the female. After the male fertilizes the eggs, the male catches the eggs that the

day or two and not move. So one day I went into the tank and moved the leaves under her and for sure there was the male with a mouthful of eggs. This continued on each time they spawned. It was amazing to me with that many leaves in the tank and how dark in the tank she knew exactly what leaf he was directly under. From what I read online and what people told me, males would spit the fry and then protect them. In my experience this was not true because the first 3

but in my head I was either going to keep watching the male swallow or spit and eat the fry or risk injuring the male and getting my hands on some fry. Since the first time stripping the male took a bit longer the males head by the gills was a bit bruised due to me handling him so much. So I ended up putting him in a breeder box and getting him back to health before I put him back in the tank with a female ready to go. Another note as the male sat in the floating breeder box the female would sit

turity in 4 months of age. I did notice some grew bigger faster and would predate on the smaller ones. The fry are also jumpers because I would find a few on the floor from time to time even with the lid on the tank. I think the light would spook them and they would just jump out or if they were being bullied around they may have gotten scared and jumped out.

I attempted a few times to get a photo of the male with a mouthful of eggs but the water was way too dark to try to hold a flashlight and camera steady to take a shot worthy of me to use. So I had to get this male out of the tank and into a photo tank and even then he wasn't much of a photo guy. So that's why you see my hands in the background to keep him close to the front of the glass.

These fish are rare in shops but because of their stunning adult coloration they are highly desired among breeders. This fish is very similar to *Betta albimarginata*, the only differences are that the *B. channoides* are smaller and have a rounded caudal fin. The fishes also have different number of spines in their fins. Breeding these fish was pretty easy once you gave them the right foods and water conditions. They may take a few attempts if they are a new, young pair but they will figure it out. These are awesome Betta's to start off with if you can get your hands on them. These fish have sparked my interest in Bettas a bit more than I had in the past and I will get a few more species that get larger and that are also mouth brooders.



female drops on his anal fin. The female then collects the eggs in her mouth and spits them to the male and he catches them as before they sink to the bottom. Snakehead betta males are notorious for swallowing eggs after a few days, so it is better not to disturb the male during the incubation. The male will incubate the eggs for usually 12 days, and when ready he will release the small fry from his mouth. The female would come to eat and then hover about an inch or two above a specific leaf. At first I didn't understand until I wanted to see what was going on with that. She would be there for a

times he held eggs I never saw fry and if he did spit some fry he ate them or swallowed the eggs altogether. Since my patience was wearing thin I attempted to do something that most people wouldn't - I attempted to strip the male as I would with a female Malawian cichlid. The male was only an inch and a half and so when I grabbed him to strip, all you could hold on to was its head and it was very difficult to keep trying to open his mouth. I eventually got him to spit and there were fully developed black fry were about 1cm that were swimming on their own. I don't know if this has ever been done before

underneath the floating breeder waiting on the male or directly next to the same side he was on in the net. The male does not eat during the incubation period so feeding the male up after stripping is a good thing because if you put the male right back in with the female she will stress him to spawn again and he will be too skinny and probably die.

The first spawn the male was carrying 30 fry when I stripped him. The fry were big enough to eat all that was moving such as baby brine and micro worms. They did not go for powder foods or flake. The fry grew pretty fast and will reach sexual ma-

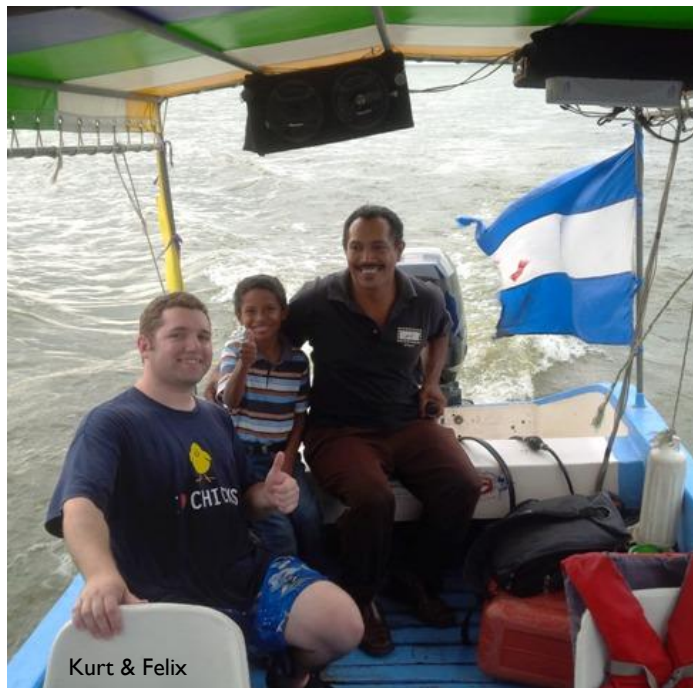
COLLECTING IN NICARAGUA

When last we left the hero of our story, his chances of collecting fish during the final days of his trip seemed all but lost. Then, at the eleventh hour, Edgardo and Benjamin, owners of Acuario Arrecife, saved the seemingly doomed collecting trip.

I first contacted Benjamin via Facebook some months prior to the trip, after hearing about his shop online. His store, Acuario Arrecife (which translates to “Reef Aquariums”), is the only specialty aquarium shop in Managua. I corresponded with him occasionally before the trip, but when my original guide abandoned me, I turned to him as my only other fish-related contact in the country. I had difficulty contacting him at first, but fortunately his business partner Edgardo finally returned my call on the last evening of my work week.

Benjamin had never actually been fish-collecting in Nicaragua before, but he said he’d be happy to furnish his vehicle and try collecting with me. He suggested visiting the Laguna Xilola, a small volcanic lake and popular weekend leisure area for locals, nestled in a crook of nearby Lake Managua. It sounded great so I made arrangements for a cab the next morning to meet Benjamin at the US embassy.

Outfitted with my collecting backpack, I met Benjamin the next morning and rode with him to the Laguna Xilola. It was less than 30 minutes outside of Managua, where we quickly left the litter-strewn urban sprawl and



entered the beautiful landscape of the Nicaraguan countryside. This area was mostly savannah-type land, with intermittent volcanic mountains. The lagoon itself was a breathtaking sight: a clear sandy lake at the base of a towering volcano.

Immediately, I noticed several large brick structures, about 2 ft tall, built in the shallows on the beach. I inquired about these and Benjamin told me that this lake actually exhibits substantial waves, high enough to surf, and that these structures were wavebreakers. I glanced into the brick frames and saw several small fish, so I enthusiastically grabbed my PVC pipe scoop-net. I quickly found that most of the small fish were livebearers of some sort, too small to ID. Even though, seeing my first wild fish caught from tropical waters was an in-

credible moment.

We unwrapped the seine and dragged it through the wavebreaks, which yielded quite a few fish. The vast majority of fish were the same poeciliids of varying sizes, with a few small cichlids as well (which were not nearly as easy to catch). One wave-break also contained a large number of what appeared to be some species of goby. These were especially intriguing, given that we were in an isolated freshwater lake, so I took multiple photos of these and kept a few specimens.

We could see a few larger fish in the lake itself, so we positioned our seine between the wakebreaks and swept forward to the shore. These fish appeared to be adults of the poeciliids we’d been seeing. They weren’t terribly colorful nor were they dull: a

Text and photos by
Kurt A. Zahringer

“I can say with fair certainty that this is a yet-to-be-described species.”

COLLECTING IN NICARAGUA



Laguna Xiloa

black-spotted dorsal fin, orange anal-fin, and sparkling blue on the sides. I assumed they were the common *Poecilia mexicana*, so I didn't give them much attention, however I did photograph the adults and keep a few of the mid-sized juveniles.

I had read that this lake is well-known for its many endemic species of cichlids. However, the lake is quite deep and mostly featureless around the bank, so we weren't liable to see many of these without advanced fishing equipment like cast or trawl nets. However, we did find a few small juvenile cichlids around the shal-

lows and in the wave-breaks, which at first glance appeared to be some convict-type species.

After adequately mucking up the shallows, and finding nothing new for several sweeps of the seine, I sorted the fish in the double-wash basin. I'd like to emphasize again how useful this item was, and I'll surely include one on any future trip. Afterwards, we took a little time to enjoy the scenery, swim in the lake, and have a soda at a small bar set up on the beach.

Later that afternoon, after returning to my host's house, I began researching the species I'd

collected. Upon further inspection, I had at least 3 different species of cichlids, which I had initially assumed were all convicts. These later proved to be *Parachromis managuensis* (whose specific epithet refers to the area of Managua), true convict cichlids, and some other *Amphilophus* species that I was never able to identify.

The goby was truly perplexing me, as I couldn't find any species that resembled what we had.

– what if these were the juveniles of something far larger? I went back to google images and began searching specifically for shots of juveniles of all the goby species. Amazingly, my concern turned out to be precisely correct, and I finally identified the fish as juveniles of *Gobiomorus dormitory*, the Bigmouth Sleeper. This is a ferocious predatory species, and popular game fish, that can attain lengths of nearly 3 feet long! Needless to say, I did not keep



Gobies

After going through all goby and sleeper species native to Nicaragua without finding anything, a twinge of fear crept through me

any of these little monsters.

Lastly, I began viewing photos of Mollies from Nicaragua, and was surprised to see that the ones I had caught and photographed were definitely not *Poecilia mexicana*. After extensive research and consulting experts, I can say with fair certainty that this is a yet-to-be-described species. This is still surprising to me, given that this lake is neither remote nor inaccessible, but I suspect it's due to the incredible cichlid diversity there. With so many endemic species of cichlids, most ichthyologists that have ventured there were less concerned with the Mollies. In retrospect, I wish I had taken some adults and preserved them in alcohol, to attempt to describe the species, but I never considered that it



Undescribed mollie species

COLLECTING IN NICARAGUA

might be undescribed. In the future, if there are adequate numbers of fish, I'll try to do this, even if I'm confident of their identity.

and, with its crystal-clear water, is popular with scuba divers. We found a lakeside resort that had very reasonable kayak rental fees and beach access, and headed

native to the Laguna Apoyo. They were introduced there, presumably as baitfish sometime within the past ten years. Obviously I had not been to this lake in the past, so I can't compare my observations to prior fauna, but I fear that the introduction of this species may have disastrous effects. Given its predatory nature, and how many juveniles we saw around the shore, I fear it may have outcompeted native species.

After lunch at the resort, Guillermo and I headed for Lago de Nicaragua, the great lake of Central America. This enormous lake is roughly 100 miles across, and infamous for its freshwater

zarre and amusing, they put me with a boatman who was especially knowledgeable about all the fine points of the lake. We set off, hugging the shore, and eventually coming to a small bay with water roughly 3 feet deep. With the help of the boatman and his young son, Guillermo and I seined around the bay, catching a wide variety of species. These included other Mollies, tetras, silversides, several cichlids, and large shrimp.

The Mollies were among the largest I'd ever seen, and were subtly different from the ones I'd caught the day before. The tetras were rather unremarkable,



Laguna Apoyo

In the latter part of the day, I contacted Guillermo, who had driven my work group to the zip-line tour of the volcano the day before. He was very reliable and knowledgeable of the area, and agreed to drive me around for a reasonable rate. He was totally inexperienced in all things fish-related, but said he knew of a few lakes within driving distance.

The next morning, he picked me up and we set out into the region of Tipitapa, east of Managua. Our first stop was the Laguna Apoyo, another beautiful volcanic lake with six endemic cichlid species. This lake is much larger and deeper than Laguna Xiloa,

down to the water.

Unfortunately, this stop turned out to be a complete bust, except for the gorgeous scenery. After a couple hours of seining, as well as pole-fishing in the middle of the lake on my kayak, we caught nothing. There were large numbers of tiny fish around the shore, but all these turned out to be more of the juvenile *Gobiomorus*. We didn't observe any other species there.

As an aside, this is particularly concerning, because I later read that, while these sleepers are common in many other lakes around Nicaragua, they were not



Tetra species

population of bullsharks. Originally thought to be an endemic subspecies, it was recently found that these sharks can and do traverse the San Juan River to the Caribbean Sea, and tolerate the dynamics in salinity. Unfortunately, or perhaps fortunately, we did not observe any sharks that day.

When we arrived, we located a boat rental service. Guillermo explained to them that I was searching for small fish in the shallows to catch with a net. While they found this quite bi-

nearly impossible to identify, and we caught too few to make it worth keeping any. The silversides were very abundant, and closely resembled the silversides we have here in Missouri; and like our native species, these mostly died immediately after being pulled from the water. The cichlids were of varying shapes and sizes, and later proved to be most likely juveniles of *Archocentrus centrarchus*, the Flier Cichlid, as well as *Parachromis dovii*, the notorious Wolf Cichlid, or "Guapote" as the locals call it



Parachromis dovii, the notorious Wolf Cichlid

COLLECTING IN NICARAGUA

(meaning handsome!)

We also seined around another bay that was covered by a veritable field of water hyacinth. This bay held considerably large cichlids, including adults of the Fliers, as well as other that I wasn't able to ID as of yet. I did keep some of the juvenile Fliers, which now reside with a friend of mine, growing up hopefully to be positively identified soon.

After seining to my heart's content, we headed out into deeper waters to do some pole fishing. At the boatman's suggestion, I utilized my small orange crankbait. We stopped around a rocky outcropping, and set to casting between the rocks. After only a few minutes, my lure had a tremendous hit! After a serious battle, I finally landed the fish, which turned out to be a rather large Guapote! I instinctively went for his bottom jaw, as I typically do with bass, but stopped at the last second when I saw his frightening teeth. I attempted to grasp him from behind and remove the hook from his lip. In doing so, he thrashed at the right moment and drove the other end of the treble hook into my thumb!

With the fish still thrashing, now



Cichlid species

attached to my thumb, I yelled in pain, and the boatman rushed to grab the fish, and worked him off the hook. My thumb was dripping blood, with the hook all the way in. Unfortunately, I had neglected to bring any pliers or hemostats with me, which I usually have for fishing, so there I sat, in the middle of Lake Nicaragua, with a skewered thumb,

Dismissing Guillermo's suggestion to go to a hospital, the boatman took us to one of the larger islands where people lived. I said

that I need wire cutters or pliers, which the resident luckily had; albeit old, rusty ones. The hook was not going to be pulled out, so I had to push it forward. Bracing myself, I pushed the hook through my thumb, out the other side. With the boatman holding the barbed tip, I cut off the hook at the base, and pulled it out through my thumb.

The boatman and island resident laughed and patted me on the back, saying they were impressed. Fortunately, contrary to my anxiety,

it healed up fine without any sign of infection. I've always said that I'm not terribly fond of large, Central American cichlids, and this unpleasant experience has only strengthened my disdain. However, the boatman took

the fish home and ate him for dinner, so I feel vindicated.

As the sun began to set, we made our way home from my first collecting trip abroad. Even though it didn't go as well as originally planned, it was still a thrilling adventure, and will hopefully form the foundation for many trips yet to come. Now that I have some contacts there, and have a better familiarity with the area, I can travel there again and perform much better fish collecting. In closing, I want to express my sincerest thanks to Benjamin and Guillermo for making the trip possible and fulfilling one of my lifelong desires. These are excellent examples of the general good-nature of the Nicaraguan people that I encountered there. Considering the profound, rugged beauty of country, I'm thankful to have experienced it in a way most people do not, and will surely travel there again.



Cichlid species

CHRONICLES OF THE CRINUM CALAMISTRATUM

By Wayne Toven

Reprinted from
Tank Topics, Nov/
Dec, 2014, The
Greater Akron
Aquarium Society

This is a tale about a branch of the family tree of Amaryllidaceae, a rather large tree containing 85 genera with around 860 known species. A couple of the most well-known species in this family are of course the Amaryllis, and the Narcissus commonly known as the daffodil. Pond aficionados may also know a few species, the three I have propagated and flowered are: *Crinum americanum* (Southern swamp lily), *Hymenocallis calathina* (Spider lily), and *Leucojum aestivum* (water snowflake). The first two I have also sexually re-produced; had them flower, pollinated the flowers, produced seeds, sprouted seeds, and grew plants, the third I have seeds from but have not yet had them sprout and grow.

Plants in the *Crinum* genus grow in rivers, so they are used to some water movement, they grow from an onion like bulb that is usually about half buried, have a short stalk, and a large number of ribbon like leaves that can be flat, channeled, undulate, or have a



crispate margin. Now I will get to the aquarium varieties that I know of: *Crinum natans*, *Crinum calamistratum*, and *Crinum thaianum*. *Crinum thaianum* as the name suggests comes from southern Thailand, it is a medium growth true aquatic plant. The plant's bulb can be up to almost 3 inches in diameter, the leaves vary a little, they can be ribbon like similar to *Vallisneria*, or be curled, and the plant only requires moderate lighting. *Crinum natans* comes from another continent completely, growing in the tropics of New Guinea, Cameroon and south to Zaire in western Africa. It is slow growing but is the largest plant of the three species, but the bulb only grows to approximately 5cm (2 inches) in diameter, the leaves are dark green, strap shaped and undulate (wavy), and can grow up to 5 cm wide and 140 cm long,

for us Americans that's 2 inches wide 56 inches long. *Crinum natans* is not a commonly kept plant due to its lack of availability and to the large size it can attain, if it is kept eventually a large tank would be a necessity.

On to the subject of this article *Crinum calamistratum*, another true aquatic plant, but it is also slower growing than *C. thaianum*, it comes from the tropics in rivers near Kumba in Cameroon in western Africa. Being much more readily available, it is more suited to being kept in the aquarium, as its leaves do not get as wide or as long as *C. natans*. *C. calamistratum* grows from a bulb that can be from 1–3 cm in diameter and up to 10 cm long. What makes this a very desirable plant is the unique leaf structure; they are dark green, strap like, with a distinct mid rib, a very crispate



CHRONICLES OF THE CRINUM CALAMISTRATUM

margin, usually less than 2.5 cm (½ inch) wide, and I have seen a plant with leaves 4 feet long, in a display tank at Aquarium Adventure down in Columbus, Oh. So, with age it can also require a large aquarium, but being slow growing that could take a while.

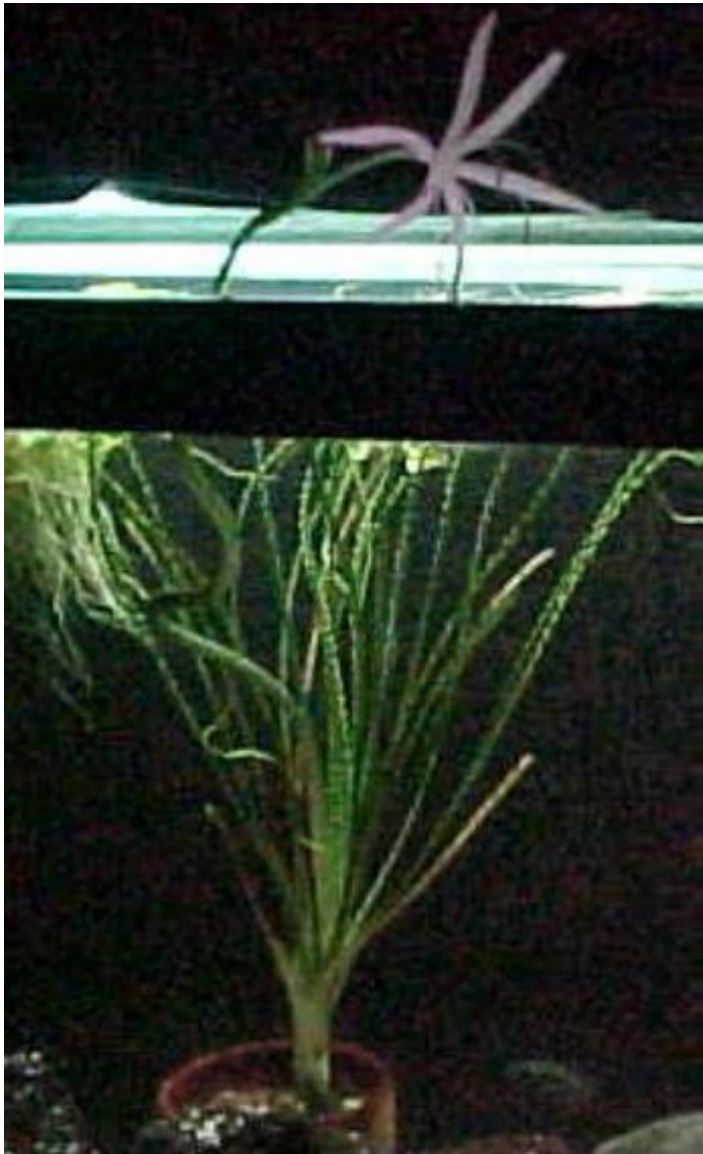
that water movement causes the growing plant to be sturdier, both make sense to me. If planted in a substrate in the aquarium, it should approximately 4 inches deep and be a mix of fine gravel with added loam, and to provide nutrients a liquid plant fertilizer

where from 70° - 86° F. However mine were kept in a tank directly on the concrete floor of my laundry room, and during the winter the temperatures must have been in the low to mid 60°s F. So the temperature range must be greater than the books said, as this is where the plant propagated or multiplied. Lighting needs to be a little more intense, it was provided by two 3 foot full spectrum fluorescent lights for 12 hours a day. Propagation is by bulbils, the book also said that only a healthy plant will produce bulbils, which are small versions of the adult plant that grow off of the bulb of the mother plant, so both of my plants must be in good condition. One of my plants had two baby plants (twins); these can be separated from the mother plant when they get enough roots to be planted on their own. Transplanting stresses the plants and since I did not want to stress the plants by doing so, I am writing this article to satisfy the HAP rules and keep our club's Tank Topics editor happy. They will live in their 4 inch clay pot for a while until they need to be moved to a larger pot, and then I might think about separating them.

C. calamistratum will flower in the aquarium given enough time and with no other special conditions, as Dave Williamson found out when his *C. calamistratum* flowered in his 125 gallon aquarium. The round flower stalk grows to about 32 inches up out of the water and if necessary through a gap in the glass tops, and can have from 1 – 3 strongly scented flowers. There will be six narrow white recurved petals, 5 -

6 stamens, (the pollen producing male part of the flower) and in the center one pistil (the female pollen receiving part) with a small ball like structure on the end, where the pollen needs to be deposited. If the flowers get pollinated and produce seeds, propagation can also be done sexually. I'm guessing they are pollinated the same way as I did my *Crinum americanum*, when it flowered indoors, I just used my fingers to collect the pollen (there was lots of it) and then carefully wiped it onto the pistil making sure it made contact with the very end, *C. americanum* does not have the ball like structure on the end like *C. calamistratum* does, but it worked so I must have done it properly. Dave was not so successful in pollination so he will have to try again next time it flowers. If it forms seeds like the *C. americanum*, they are not really seed pods; they are more like a fairly large oddly shaped bulb. After they matured and fell off of the flower stalk, they floated around for most of a year, and then one day roots started to grow from where they were attached to the flower stalk, when the roots got to be about 1 ½ inches long a stalk started growing also, that is when I planted them and got more plants. Hopefully Dave will be successful next time, and then he can write an article about it because that is a requirement to get credit for a sexual propagation for our club's Horticultural Award Program.

References: Aquarium Plants by Christel Kasselmann. My observations by Wayne Toven



The plants I have must be fairly young as their leaves are only 18 inches long. I have read that water movement helps to enhance or stimulate growth, possibly because water movement brings more nutrients to the plant, or

or fertilizer spikes should be used. *C. calamistratum* is a rather undemanding plant when it comes to maintaining water parameters, soft to medium hard water at a neutral Ph works well, temperatures can range any-

TOO TOUGH TO KILL— THE UNDULATED TRIGGER, *BALISTAPUS UNDULATES*

Color! That's why we keep marine aquariums; we want color. Personality! Everyone wants to interact with their fish. *B. undulatus* triggers combine both of these qualities. The *B. undulatus* trigger is my #3 choice as the hardest beginner fish. However, *B. undulatus* requires some "special" management which I will address later in this column.

For now, let's start with the basics. *B. undulatus* comes from the Pacific Ocean; usually they are exported from Indonesia. They can grow to about a foot long, but usually stay much smaller. *B. undulatus* are beautiful! The body is lime green with psychedelic glow-in-the-dark orange stripes all over its body. The tail is bright orange or yellow. All the fin rays are usually yellow too. It has a kind of bulky stocky shape, but don't let that fool you; this fish can move fast. In motion, it undulates its fins and hovers around. This fish is constantly active, exploring its home. It is always front and center showing off. When it moves, its tail fin is usually folded.

Trigger fish are called that because the dorsal fin has a locking spine; in nature, at night triggers lock this spine into a coral crevice to keep them secure in their cave. *B. undulatus* triggers easily survive cycling a new tank. Their preferred water parameters are pH 8.0, salinity 1.020 - 1.023 and temperature range of 72° - 80°F. They need at least a 55 gallon aquarium. *B. undulatus* eat any "meaty" foods, chunks of shrimp,



pellets, freeze dried krill, etc. Any trigger that refuses to eat is ill. Not the cheapest fish to buy, but *undulatus* are hardy. All triggers have teeth and they know how to use them!

Here is where the "special" management comes in. *B. undulatus* are best kept alone, or with other big tough fish like lions, groupers, tangs and puffers. Never put an *undulatus* with any small fish or any invertebrates. They will be eaten. *B. undulatus* are very aggressive fish. *B. undulatus* love to chew on anything in the aquarium. They can easily shatter glass heater tubes, make Swiss cheese of filter intakes, and destroy thermometers and hydrometers. Keep these items (except for the filter intake) in your sump or external filter. Expect to replace your filter intakes often.

B. undulatus like to decorate their home. No matter how you place corals, they will move them to their own liking. It's amazing how much weight they can lift and drag around. If you upset your *undulatus*, it will not hesi-

tate to bite you. Always watch where an *undulatus* is before putting your hands and fingers in his tank. That being said, an *undulatus* is a real "pet" fish. They recognize their owners and see you coming. They bubble at the top of the aquarium to tell you they want to be fed. I once had an *undulatus* in a 55 gallon tank next to my easy chair and it was bubbling, but I ignored it and it used its tail to throw water out of the open top on me to get my attention. Needless to say, I bought a glass cover for the tank. I've also had them throw small stones at the glass to get my attention! They swim excitedly around every time they see their owner and are always begging for food! This is a true "pet" fish. If you can handle *B. undulatus*' "special" "management needs, keeping an *undulatus* is tough to beat. It's my #3 choice for toughness and beautiful color.

By Anthony P. Kroeger

Reprinted from *Aquatica*,
Vol. 29, No. 1. The
Brooklyn Aquarium Society,
Sep-Oct, 2015

*"This is a true
'pet' fish."*

#FISHIESNOTFOOTBALL



By Mark England

With the Rams headed to the West Coast, it looks like St. Louis has an option play for the valuable stretch of land between the Arch and the new Musial Bridge. There is talk of a public aquarium for the space instead of the billion dollar stadium the Rams wanted.

“I want magnificence, not mediocrity, for our city.” - Autumn Wiggins

Autumn Wiggins, organizer of the Strange Folk Festival, floated the idea in December via a web page at glampclubstl.com where she makes a good economic case for her idea. The dialog is cross

platform with posts on her Facebook page and Twitter at [#fishiesnotfootball](https://twitter.com/fishiesnotfootball).

Wiggins cites the examples of Chattanooga and Atlanta. She says Chattanooga invested “\$75 million in 1982. It averages 700,000 visitors a year and is the #1 attributed factor to \$1 billion in annual tourism revenue. It’s direct annual economic impact is over \$100 million.” Her sources are the aquarium itself and the Chattanooga Area Convention & Visitors Bureau, so take a grain of salt.

Atlanta spent \$300 million on its facility, the largest public aquarium in the western world, and attracts over 2 million visitors

annually. Wiggins writes “Georgia Aquarium created \$4 billion in investments in an under-developed part of Atlanta.” Her source is The Bridgespan Group, providers of strategic consulting and philanthropy advising. They and Bernie Marcus, co-founder of Home Depot, were behind the project.

Whether St. Louis can or should make that happen is the focus of the discussion. I don’t know if an aquarium makes sense, but we know the dollars the Rams brought to the city are leaving. To keep even investment is needed. As a long time aquarium hobbyist, I would love for an aquarium to be the answer.

ODDBALLS

See something fishy that makes you laugh?
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FISHES AS DISHES

PATRICK A. TOSIE, SR.

Smoked Salmon Pizza

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!

Ingredients:

1 (12-inch) prepared thin crust pizza shell, recommended: Boboli brand
1/2 cup sour cream
1/2 lemon, juiced
2 tablespoons fresh dill leaves, chopped or snipped
1/3 pound Nova Scotia smoked salmon, thinly sliced

Toppings:

1/4 English cucumber, thinly sliced
1/4 red onion, finely chopped
3 tablespoons capers, drained

Directions:

Preheat oven to 400 degrees F.

Crisp pizza crust 5 minutes on perforated pizza pan or on oven rack.

While pizza crust is in oven, mix sour cream with lemon juice and dill in a small bowl.

Remove pizza shell from oven and let stand until cool to the touch. You have a pocket of time here to work on other recipes.

On cool, crisp pizza shell, spread the sour cream-dill sauce in an even layer. Evenly distribute sliced smoked salmon, working all the way to the edges.

Top pizza with sliced cucumber, red onion, and capers.

Total Time: 10 minutes

Preparation: 5 minutes

Cook: 5 minutes

Yields 4 servings

EAT MORE



FISH



Nov/Dec Horticulture Award Program by Mike Hellweg

Aquarist	Species	Common Name	Key	Points	Total	Note
Chuck Bremer	Leptodictyum riparium	Stringy Moss	V	5	505	
	Anubias heterophylla		V	15		
	Cryptocoryne aponogetafolia		V	15		
	Cryptocoryne pontederifolia		V	15		
	Cryptocoryne wendtii rubra	Giant Red Crypt	V	15		
	Hygrophila lancea	Lance Leaf Hygro	V	10		
	Ludwigia species x. lacustris		V	10		
	Myriophyllum heterophyllum	Red Foxtail	V	10		
	Potamogeton gayi	Narrow Leaf Pond Weed	V	10		
Chris Mohrle	Anubias barteri nana	Dwarf Anubias	V	15	140	
	Ceratophyllum demersum	Hornwort	V	5		
	Cryptocoryne retrospiralis	Retro Crypt	V	15		
	Cryptocoryne wendtii rubra	Giant Red Crypt	V	15		
	Hygrophila lancea	Lance Leaf Hygro	V	10		
	Lemna minor	Dwarf Duckweed	V	5		
	Lysimachia nummularia aurea	Goldilocks Moneywort	V	10		
	Microsorium pteropus	Java Fern	V	10		
	Microsorium sp. narrow leaf	Narrow Leaf Java fern	V	10		
	Microsorium sp. trident	Trident Leaf Java fern	V	10		
	Najas guadalupensis	Guppy Grass	V	5		
	Sagittaria subulata	Common Sag	V	5		
	Spirodela polyrhiza	Giant Duckweed	V	5		
	Holly Paoni Wise/ Kevin Wise	Echinodoras martii	Ruffle Sword	IB		20
Echinodoras martii		Ruffle Sword	S	15		
Mike Huber	Anubias sp. Mutengene	Mutengene African Sword	V	15	4285	
	Anubias sp. nangi		V	15		
	Anubias heterophylla		V	15		
	Aponogeton longiplumulosus		V	15		
	Bucephalandra sp. Dark Kapuas Hulu		V	20		
	Cryptocoryne affinis haerteliana		V	15		
	Cryptocoryne crispatula		V	15		
	Cryptocoryne moehlmanni	Moehlmann's Crypt	V	15		
	Cyperus papyrus King Tut	King Tut Papyrus	V	10		



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

Nov/Dec Horticulture Award Program by Mike Hellweg

Aquarist	Species	Common Name	Key	Points	Total	Note
Mike Huber	Echinodorus sp. St. Elmo's Fire	St. Elmo's Fire Sword	V	15		
	Elodea canadensis	American Pondweed	V	5		
	Floscopa scandens		V	10		
	Glyceria striata	Fowl Manna Grass	V	10		
	Hymenocallis caribea variegata	Variegated Spider Lily	V	10		
	Lilaeopsis mauritiana		V	10		
	Littorella uniflora	American Shore Weed	V	5		
	Ludwigia peploides glabracens	Creeping Water Primrose	V	10		
	Micranthemum tweediei Monte Carlo	Giant Baby Tears	V	15		
	Microsorium sp. Rooster Tail	Rooster Tail Java fern	V	10		
	Najas guadalupensis	Guppy Grass	V	5		
	Pistia stratiotes Rosette	Rosette Water Lettuce	V	5		
	Pontederia cordata Singapore Pink	Singapore Pink Pickerel Rush	V	10		
	Riccia fluitans	Crystalwort	V	10		
	Sagittaria graminea	Lace Leaf Arrowhead	V	5		
	Sagittaria japonica	Japanese Double Arrowhead	V	5		
	Sagittaria latifolia variegata	Variegated Duck Potato	V	5		
	Salvinia minima	Dwarf Salvinia	V	5		
	Vesicularia montagnei	Christmas Moss	V	10		
	Zephyranthes candida	Dwarf Onion Plant	V	20		
	"Hygrophila" sp. Araguaia		V	10		
	Ammannia crassicaulis		V	20		
	Aponogeton capuronii		V	15		
	Bucephalandra catherineae		V	20		
	Bucephalandra pygmaea Brownie Firebird		V	20		
	Bucephalandra pygmaea Brownie Phantom		V	20		
	Bucephalandra pygmaea Brownie Red		V	20		
	Bucephalandra sp. Green Kapuas Hulu		IB	20		
	Bucephalandra sp. Belindae		V	20		
	Bucephalandra sp. Brownie Amanda		V	20		
	Bucephalandra sp. Brownie Helena		V	20		
	Bucephalandra sp. Brownie Ruby		V	20		
	Bucephalandra sp. Melawi Biblis		V	20		

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

Nov/Dec Horticulture Award Program by Mike Hellweg

Aquarist	Species	Common Name	Key	Points	Total	Note
Mike Huber	Bucephalandra sp. Mini Micro		V	20		
	Bucephalandra sp. Red Biblis		V	20		
	Bucephalandra sp.	Skeleton King	V	20		
	Cabomba furcata	Brazilian Fanwort	V	10		
	Cryptocoryne willisii		V	15		
	Echinodoras opacus		V	15		
	Echinodoras sp. barthii	Red Melon Sword	V	15		
	Echinodoras sp. Franz Stoffels		V	15		
	Hydrocotyle sibthorpioides	Lawn Marshpennywort	V	10		
	Leptodictyum riparium	Stringy Moss	V	5		
	Marsilea crenata	Dwarf Water Clover	V	15		
	Mycromeria brownei	Creeping Charlie	V	5		
	Nymphaea rubra	Miniature Water Lily	V	20		
	Ophiopogon japonicus Kyoto Dwarf	Kyoto Dwarf Mundo Grass	V	10		
	Rotala macrandra		V	15		

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

2015 HAP Year End Totals

412 entries from 14 entrants represent 323 different species from 60 different families
 19 Outdoor Blooms
 20 Indoor Blooms
 7 Seed Reproductions

366 Vegetative Reproductions

The most widely propagated species in 2015 was Anubias barteri - with 16 submissions from 6 different variants.

The most frequently submitted genus in 2015 was Echinodoras - with 40 submissions from 30 different species/variants.

Participant	2015 Points	2015 Entries	Lifetime	2015 Species	Indoor Bloom	Outdoor Bloom	Seed	Rank (*to be presented)	Notes
Bruce Mayhew	35	2	225	24	2	2	0	Senior*	
Chris Mohrle	120	13	140	14	1			General, Advanced*	
Chuck Bremer	320	29	505	51	2	2	0	Senior*	
Daniell Kinder	85	7	85	4	2	1	0	Novice*	
Gary Lange	195	15	1805	139	11	13	2	Grand Master	
Holly Paoni Wise/Kevin Wise	105	6	1220	98	5	0	1	Master*	
John Van Asch	1	5	785	67	5	24	6	Grand Master	
Maureen Green	1	5	1315	83	1	29	9	Advanced Grand Master	
Mike Hellweg	90	7	3500	258	38	16	15	Illustrious Grand Master*	
Mike Huber	3955	325	4260	323	10	16	6	Master*	Needs 10 Articles for Ultimate Grand Master
Pat Tosie	5	1	385	41	2	7	0	Senior	Needs 1 seed for Master
Steve & Kathy Deutsch	10	1	80	10	0	0	0	General	

Nov/Dec Breeders Award Program by Steve Edie

Nov 2015	Species	Common Name	Points	Bonus	CARES	Total
Chuck Bremer	Heterandria formosa	Least Killie	5			447
Mike Hellweg	Apistogramma cruzi "Rio Madre de Dios" *	Cruze's Apisto	15	5		6564
	Herichthys tamasopoensis	Tamasopo Cichlid	10			6574
Mike Huber	Amphilophus labiatus	Red Devil	15			564
	Melanochromis auratus		10			574
	Metriaclima lundoense *		10	5		589
	Rocio octofasciata		5			594
Jerry Jost	Corydoras coriatae *		10	5		2292
Cory Koch	Mogurnda cingulata		15			4124
Chris Mohrle	Ancistrus sp. "Pucallpa"		10			10
	Julidochromis marlieri		10			20
	Labidochromis caeruleus	Yellow Lab	10			30
	Xystichromis phytophagus @	Xmas Fulu	10		10	50
Todd Powers	Ancistrus sp. "Calico Bristlenose"		10			132
Rick Tinklenberg	Andinoacara pulcher	Electric Blue Acara	5			2650
	Altalamprologus compressiceps "Nangu" *		15	5		2670
	Pelmatochromis buettikoferi #		0			2670
	Pseudotropheus saulosi @		10		10	2690
	Xiphophorus evelynae "Rio Necaxa"	Puebla Platy	5	5		2700
	Xiphophorus sp. "Domestic Platy"	Red Platy	5			2705
Pat Tosie	Astatoreochromis alluaudi		10			4935
	Astronotus ocellatus	Tiger Oscar	20			4955
Dec 2015	Species	Common Name	Points	Bonus	CARES	Total
Chuck Bremer	Girardinus metallicus	Black Chinned Livebearer	5			452
	Labidochromis caeruleus	Electric Yellow	10			462
	Poecilia latipinna	Sailfin Molly	5			467
	Pseudotropheus demasoni @	Demason's Cichlid	10		10	487
	Xenotoca eiseni "San Marcos" @	Red Tail Goodeid	15		15	517
	Xenotoca variata "Zaputa" *	Jeweled Splitfin	15	5		537
	Xiphophorus pygmaeus "Rio Axtla" *	Pygmy Swordtail	10	5		552
Charles Harrison	Aphyosemion primigenium (GBN 88/10) *		15	5		2865
Mike Huber	Buccochromis * nototaenia *		15	10		619
	Girardinus falcatus	Goldbelly Topminnow	5			624
	Herichthys tamasopoensis		10			634
Bruce Mayhew	Ancistrus sp. "Green Dragon" *		10	5		380
Pat Tosie	Chromidotilapia guntheri guntheri		10			4965
	Neolamprologus meeli "Kipili"		10			4975
Kurt Zahringer	Cyprinodon veronicae *@	Charco Palma Pupfish	15	5	15	640

* = 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>

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.

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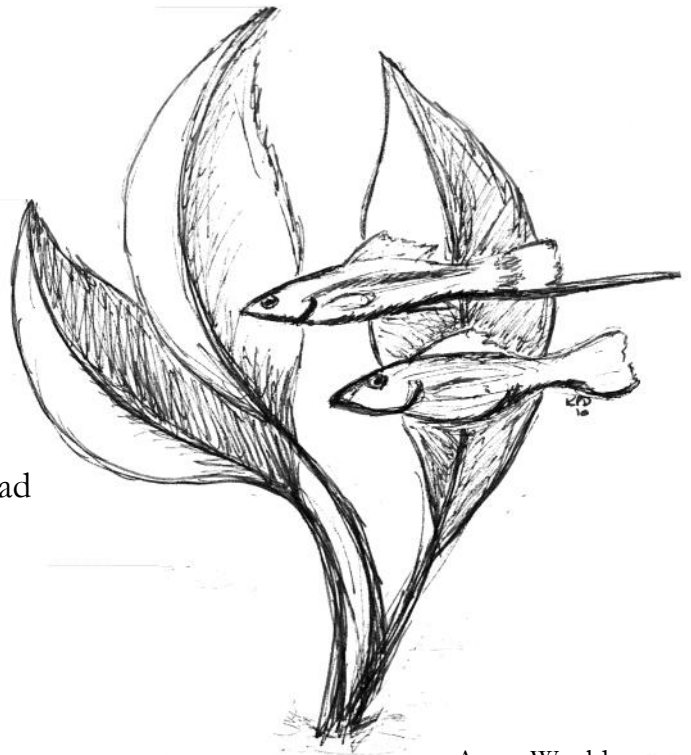
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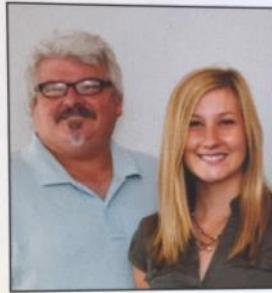
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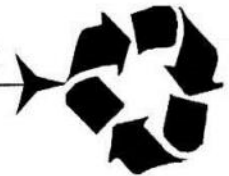
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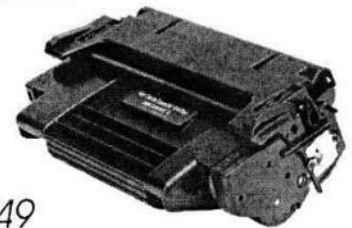


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