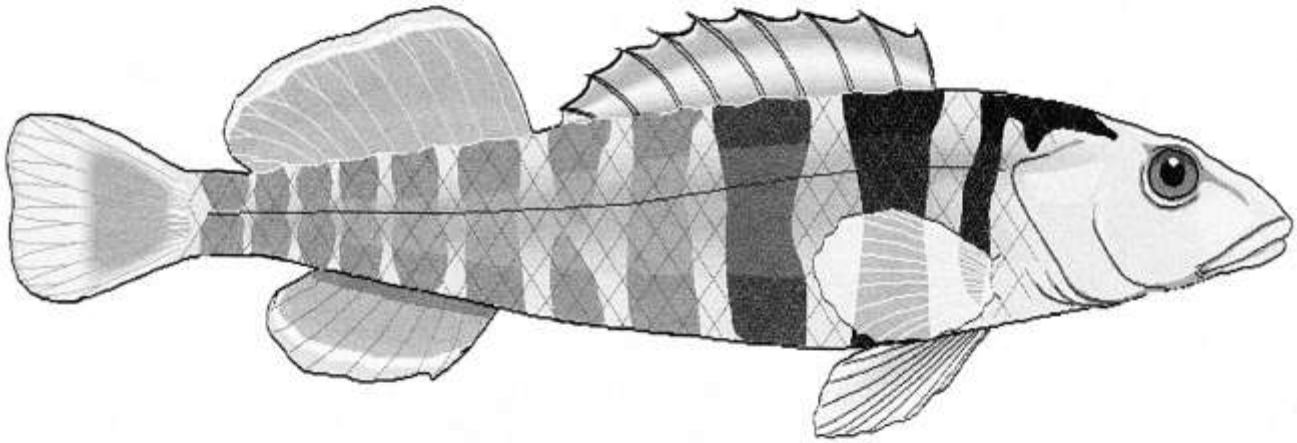
The Darter

May - June 2011



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St. Louis, Missouri

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MASI's official web page: www.missouriaquariumsociety.com

Join the all-new MASI FishHeads Forum. See web page for instructions.

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EXCHANGE AND REPRINT POLICY

The Missouri Aquarium Society will exchange their publication, THE DARTER, with other aquarium societies. Failure to receive three consecutive issues of a society's publication will be considered as a termination of our exchange with that society, unless advised to the contrary.

Please send exchange publications to: MASI Exchange
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Places to Be / Things to See

SATURDAY June 4, 2011
Executive Council, 7:30 PM hosted by Steve Edie

THURSDAY June 15, 2011
General Meeting, 7:30 PM @ Dorsett Village Baptist Church

SATURDAY June 18, 2011
MASI Picnic at the Jokerst's
Executive Council, 7:30 PM after the picnic

THURSDAY July 21, 2011
General Meeting, 7:30 PM @ Dorsett Village Baptist Church

THURSDAY August 18, 2011
General Meeting, 7:30 PM @ Dorsett Village Baptist Church

SUNDAY August 14, 2011
Auction @ Gardenville Masonic Hall

THURSDAY September 15, 2011
General Meeting, 7:30 PM @ Dorsett Village Baptist Church

SUNDAY November 13, 2011
Auction @ Gardenville Masonic Hall

Membership

Yearly membership in the Missouri Aquarium Society, Inc. is $20 per calendar year. Membership includes the Darter subscription for the year, which is currently 6 issues. New memberships and renewals can be submitted at club functions such as meetings and auctions, or by contacting Ron Huck, our membership chair.

Editor's Notes

Steve Deutsch

Congratulations to our latest Ralph Wilhelm Writer's Award winner, Kurt Zahringer. Kurt won for his article on Keeping and Breeding Lamprichthys tanganyicus; The Tanganyikan Killifish. He joins Lawrence Kent (2006 and 2009),Steve Edie (2007 and 2008), and Tony McMillan (2010) as recipients of this award. There are many excellent articles every year for our judge to pick from, thanks to all of you who contribute.

This issue we have articles from Joe Gephart and Kurt, and several exchange articles. I think I misplaced Joe's first submittal, for which I am sorry. I am losing my organization a bit as I get busier, so if I have omitted anything anyone else has sent me, please remind me and re-send. It was not intentional. This is the club's publication, and I print anything a member submits that is in good taste. An article does not need to be well written to have something interesting to say, and I can help with the presentation if needed. So please, think about what you would like to share with your fellow hobbyists. I try to print photos when available; the choice between color and black and white is based on club finances and not trying to overwork Charles with too complicated of a layout.

It bears repeating that this is only possible through many members contributions – all of you for writing, Charles for printing (the biggest job), the members who collate at the meetings, and Gary for mailing. As in all things, your participation makes the club what it is.

We now have four official communication vehicles. We use the O-Fish-L to email reminders and announcements. If you don't receive it, you should, and see Pat Tosie. We use the web site for general information, and to reach the public outside the club. Content is provided by all the chairpersons and published by Charles Harrison. Our forum is used for member-to-member communication on a variety of topics, and reaches beyond the club into the community at large. It also is made available through Charles' effort to create it, and the moderators' effort to keep it more civil than most of the internet. And of course the Darter is our publication for articles, reports, and whatever else you want to see in it enough to submit. Each serves a purpose, and we attempt to keep them focused. Any constructive feedback on club communications can be presented to any member of the Executive Council for consideration.

MISSOURI AQUARIUM SOCIETY

An expanded line of MASI Logo merchandise is now available from Café Press. Derek Walker has picked up management of the site and added many new items. Pick from T-shirts, jerseys, caps, tote bags, coffee cups, and more.

Go to www.cafepress.com/MissouriAquariumSociety to view and order the merchandise.

Zucchini Crackers

By Joe Gephart

I recently moved to a place where I could put in a crop of sweet corn and a salsa (ingredient) garden. "What the heck" I thought to myself. I have plenty of room. I'll put in a zucchini plant for my fish. I know I'll only use a couple slices a week – but I can give the rest of them away to friends, family, and fellow workers. With a quick trip to Wal-Mart I picked up my seedlings including my zucchini starters. In case one died, I reasoned, I better get two. When I got them home, one pot had two zucchini starter plants. So I actually ended up with three starter plants. Like I said to myself – I'll give extras away…. They were very straggly (scrawny) little seedlings and I know they might not make it out in the hot sun so I protected them with a milk gallon jug over them with the bottom cut out. This acts as a mini greenhouse and turns them into a bushy strong plant in about two weeks if you leave the screw lid off and pour a little water down each day. We have over an acre of trees and we were devastated in the December ice storm. So I used the future garden spot to burn what seemed like tons of broken limbs. All that ash really sweetened the soil. You may have guessed what I am building up to…? I had tons of zucchini that I could not give away. Huge plants that just kept producing even through the drought season we had. I had zucchini bread coming out of my operculums. Nobody would take any more and they just kept coming in huge! O. K. – I admit it right here in front of witnesses, on this very print page! The spoken word, plain English, in front of God and everybody! I am thee "el cheapo"-- that title and person that John Van Asch (Missouri Aquarium Society Inc. Auctioneer) mockingly calls someone when you start the bid at a dollar for a bag of breeder (group) Tropheus dubosi or a beautiful Tangerine Discus (you get the point!). John pulls the microphone ever so close to his lips, leans over the podium, and points directly at you and tells the whole room "Mr. 'el cheapo' here wants to start the bidding on this lovely bag of L40 Zebra plecos at one dollar!" Okay, so I feel 'that' small when I can not just throw extra zucchinis into the trash. I was raised in a family of ten kids on a sometimes out of work carpenter salary. We were so poor many times we could not afford wood for the fireplace, which was ok, 'cause we could not afford matches to start the fire (ba-daah – weak rim shot). It is not in my nature to pitch things when somebody can make some use of it.

Someone else in my (aquarium keeping) past had this same problem (way too many zucchinis). So I said I'd take a few. This turned out to be way too many all summer long. So I tried canning, vacuum-packing and freezing. I ended up with something so close to mush that I did not want to put it in my tanks. So-- how to make use of all this garden plenty?

I did not have the equipment or the knowledge of how they stamp out those spirulina wafers, but I did have a drying convection oven and a hot sun on my porch. And I do have a food processor that I use for frozen beefheart mix and salsa.

I grabbed up the big surplus zucchinis and cut the ends off and sliced them up and removed the seeds. I reasoned that plecos and their allies would come to the zucchini naturally, but I wanted to draw in the omnivores that occasionally eat the greens, so I used additives that would not go bad if I dried my mix out in the sun a couple days. I added some flake food fines left over from a small tub I bought from brine shrimp direct. I used some algae mats that grow in my "kiddie pools" that I use for grow-out ponds in the summer. To help as an appetite stimulant I threw in some cyclop-eze and to help out with color and health I added in some astaxanthin and vitamins.

Add your ingredients to the processor 'til you have a "soupy muck!" If you have large chunks you have to work them down with a rubber spatula or something until you have nothing but mush. Take a 17"x11 ½" pan with sides (jelly roll pan) and go over it with hardware cloth (extremely fine sandpaper) to make it really smooth. You "cannot" use oil or butter to keep your fish food from sticking. You have added your ingredients, processed for several minutes, and knocked down any chunks stuck up away from the blades…now you are set to pour.

Spread the zucchini mix roughly on the pan. Take your rolling pin and work out any air bubbles and remove any solids that won't roll down. Use your rolling pin to get a smooth even distribution. The depth should be as close to the top rim of the cookie sheet as you can get it. If you use too little it will be paper thin and you'll have trouble getting it out and it may not sink well with the reduced mass.

If you choose to use a convection oven set it at approximately 170° F and dry for more than 8 hours or until dried through. If you are drying naturally in the sun, keep them in direct sunlight for 2 days (bring it in at night), maybe three. It will vary depending on your beginning per cent moisture, relative humidity, dew point, and other natural factors. The more dry ingredients you add the shorter drying time you will have. While drying I check to see how tacky it is. When it is no longer sticks to me when I touch it (and before it is dry) that is when I cut it into rectangular crackers. I use a rolling pizza blade, but you can use a knife. You don't have to cut all the way through just leaving an indentation to snap when it has dried enough.

The crackers are dry when you push your fingernail in and it can't leave a mark (same consistency as a commercial spiralina disk). I use a thin semi-flexible stainless steel cake spatula to get underneath them. If they are pre-cut or scored they come up as neat little (tough) fibrous crackers. Do not try to use them unless they are completely dry. The dried interlocked plant fibers keep it together until the fish scrapes or tears it apart and swallows. If the cracker has not dried enough it will start going back into solution – in your tank!!!!! Not fully dried can be a mess, I know by trial and error. You can experiment and change around ingredients – remember not to add any more moisture than necessary (ingredients are suggestions and amounts are approximated):

2 – Large Zucchinis, ends trimmed, seeded, sectioned
¼ cup flake food crumbles
4 spinach or lettuce leaves (optional)
1 can drained and deseeded green beans
1 clump/mat pond algae (optional)
½ cup duckweed (optional)
4 teaspoons cyclops-eze (optional)
1 teaspoon astaxanthin (optional)
1 vitamin capsule
3 garlic clove very finely minced

I store by vacuum sealing and freezing until I am ready to feed my little omnivores, but you could just throw them in a jar to keep them out of the humidity.

GOOD LUCK AND GO CRACKERS!!!

GO FOR IT !

By Vinny Kreyling

Reprinted from the March 2011 Paradise Press of the Long Island Aquarium Society

This is a revised version of an article I wrote a few years back. I think it bears repeating, especially since I have the opportunity to reach out and touch more people now that we are mailing the Paradise Press to other clubs and people around the country.

It was early morning, around 5 AM, I was awakened by my wife who proceeded to inform me that there was something wrong. Just what you need to hear on a morning you have to go to work. " It's too quiet downstairs, better get up and see what's wrong." So up I get and proceed downstairs thinking clearly. Yeah Right!

Anyway there is no sound from the pump that supplies water movement and therefore filtration and life-giving oxygen to my aquarium. Must be a circuit breaker. Go to the panel in the garage to the one marked fish tank. Yeah Right! Try them all , one doesn't feel kosher, there is still no juice for the pump. Have to get to work, try the pump in the outlet by the TV, NG. I figure they are on the same circuit.

Pull out the extension cord, plug it into the laundry room and the water starts flowing again. Upstairs to have breakfast and go to work. On the way home I purchase a new circuit breaker. After installing the new breaker the darn pump still doesn't work. Check the panel again, all OK. Return scratching my head. Turn on the TV, works fine.

Since I was using a power strip because like all of us there are just too many wires when you have a fish tank, I again plugged the strip into the receptacle by the TV, Snap! Off goes the TV and on goes the light in my head. I have a short!

Years back, when I first set up my aquarium I had an unsettling premonition that I was electrocuted while working on the tank. Not wishing to tempt fate and wanting a long life, I installed Ground Fault Interrupters behind the tank and by the TV since it was right next to the tank. I reset the GFI and proceeded to check each item on the strip. The heater was the culprit. Reset the GFI behind the tank and buy a new heater.

Not enough of a short for a 15 AMP circuit breaker to trip, but a short never the less. How many times do we all stick our hands in the fish tank for maintenance or to catch a fish? I know I do it all the time. Do we ever think about turning the power off? YEAH RIGHT!

We need the lights to see what we are doing. I have even been told of one who went after the lights that went for a dip. It's called a reflex action, second nature to all humans and very costly. Death is not something we think about even when we know water and electricity do not mix. How many times do we see it in print on the equipment we buy ,the magazines we read, and the appliances we use daily?

The newer homes here on Long Island have GFI outlets in kitchens and bathrooms. How many of us live in the older homes? If you do not know how to install one get an electrician. Too expensive you say? Not nearly as expensive as the alternative.

GROUND FAULT INTERRUPTERS---- GO FOR IT!

A Method for Handling Excess Numbers of White Worms (Enchytraeus albidus)

by Wayne Cole

Reprinted from the April 2011 Aqua Antics of the Sarnia Aquarium Society

At a Sarnia Aquarium Society club meeting about one year ago, I was introduced to the idea of culturing live foods for my fish. Our speaker Brian Glazier brought with him a number of live cultures including white worms (Enchytraeus albidus). He explained how he maintained them at his home, and indicated how easy they were to culture. I decided to take one of the cultures of white worms home to give them a try. There was an unused blue plastic container that I had purchased from my local hardware store.

Into the container I added a bag of sterilized potting soil. To the soil I added enough water so that I could form a ball when the soil was compressed in the palm of my hand. In the lid of the container, I drilled six ½ inch holes. Each of the holes was then plugged with some filter material. I dumped the pill vial culture of worms onto the surface of the soil. Initially, I fed the worms moistened bread breaking the slice into pieces and burying them under the top layer of soil. More recently I have gotten lazy and now lay the bread on the surface. I also have used moist cat and dog foods. All foods seem to have been accepted by the worms. Since my wife did not like the thoughts of creepy things in the house, I was forced to house them in the workshop area of my garage. This has actually worked out better since the garage workshop is well insulated and has baseboard heaters. I can keep the temperature at 60 degrees Fahrenheit in the winter and a little higher in the summer.

The results have been overwhelming, so much so that I now have an overabundance of white worms. They are far in excess of what I can feed to my fish. On one recent day, there were enough worms collected to fill a litre-sized jar. Rather than throw the excess worms out, and having already farmed out as many as I could to my fishy friends, I decided to try a different approach. I had recently purchased a number of 2 by 4 foot plastic egg crate panels, used to cover light fixtures in dropped ceilings. I used cut portions to fit over my aquariums to stop jumpers and yet provide easy access to the tanks for feeding. As in most things cut to fit, there is always a leftover part. Instead of throwing them in the recycle bin, I decided to use them as a template form into which I could add the live worms. To prevent escape, I cut an equal or slightly larger cardboard backing which I secured to the plastic egg crate by an elastic band. Using a flat spatula, I distributed the worms into the small squares. Once I had filled most of the squares, I them placed another piece of cardboard over the top to prevent the worms from escaping. A second piece of similarly-sized cardboard was placed over the plastic and secured by two elastics. I then immediately placed them in a sealed bag and transferred them into the freezer. The first time I did this, I wasn't sure if the worms would escape on me. The rapid temperature change seemed to immobilize the worms and maintain them in pristine condition. I had some fears that the worms would be mushy.

My next step was to see how difficult it was to remove the worms from the plastic grid. To my surprise it was relatively easy. I simply removed the cardboard covers and poked my finger into each plastic square. The contents were expelled into a cup, and thawed in water. The remaining unused plastic grids were recovered in cardboard and returned to the plastic bag and then placed into the freezer. I have made a few modifications to simplify things. I now trim the plastic egg crates to a size that will go into a sealer bag. Once the worms are frozen, I remove the cardboard and save to reuse on the next batch. Only the plastic egg crate goes into the sealed bag. This method has ensured that I don't have to waste any of the white worms produced. It also means that I can reduce the white worm colony during summer when I tend to be away from my fish a little more and still can feed them to my fish.

Keeping & Breeding *Tetraodon suvattii*, The Arrowhead Puffer

By Kurt A. Zahringer

A Long Time Ago…

Several years ago, my local pet store received in their usual shipment a new species of fish. It was labeled as "Pig-Nose Puffer" and completely strange to me. The store owner had placed it in their brackish tank alongside the scats and monos, assuming that all "freshwater" puffers were actually brackish fish (a common, erroneous assumption that arose in reaction to the prior erroneous labeling of the Green-Spotted and Figure-Eight puffers as being freshwater fish).

I immediately fell in love with this fish and visited him frequently. There wasn't much to watch, as he mostly sat on the bottom in one corner of the tank. I've always had an affinity for the obscure and ugly fish, so I decided that I had to have him. Unfortunately, he had a suspicious lump on one side. I did extensive research on this and read that it could be anything from a scar, to a tumor, to a parasite. So, I read, the best course of action would be to quarantine him.

So, when I had finally saved up enough to purchase the fish (at $18, it was rather pricey fish for a mere middle-school student), I put him in a small quarantine tank, as I had read. I did more research and identified him to be *Tetraodon suvattii*. I also found that this was indeed a true freshwater species. I gradually acclimated him back to freshwater in his small tank and fed him feeder guppies, which he sucked down greedily.

After a few weeks, the lump had disappeared so I prepared to move him to my main tank. I was so proud of myself for carrying out a proper quarantine for the first time and thought this was a big step in my fish-keeping career. However, as I netted him to be transferred to the main tank, he flopped out of the net and hit the floor. I frantically scooped him up and put him into the tank, and while he appeared okay for the moment, but must have suffered some internal injuries, as he died overnight.

It's hard to relay how much I hated myself that day. I asked the pet store if they could get another one, but they never became available again. I looked all over for another one, but to no avail. Sadly, it would be another 10 long years until I would see one again…

Species Info

Puffers have and always will be my favorite fish, I believe. Their intelligence is simply amazing and I love how they cruise along with their fluttering fins. They also have the most adorable little faces. Well… in most cases…

One notable exception would have to be *Tetraodon suvattii*, which has a face only a mother (or perhaps an eccentric aquarist) could love. This species goes by several common names, including the Arrowhead, Mekong, or Pig-Nose Puffer. I prefer to use "Arrowhead Puffer", as it's a bit more dignified than "Pig-Nose", plus the "arrow" is significant (more on that later).

T. suvattii is native to the Mekong River basin in Southeast Asia, making it a completely freshwater species throughout its life. This is a relatively newer species of puffer, being described in 1989, named after Dr. Chote Suvatti, a Fisheries Professor of the University of Kasetsart in Thailand. The original specimens were taken from Northern Thailand; though this species is believed to have a much wider range including Laos and Cambodia [1].

Unlike other more familiar puffers, this species is an ambush predator that sits on the bottom, often buried up to its eyes, waiting for unwary prey to pass by. While most puffers eagerly prey upon snails, this species preys mostly upon fish and shrimp and will usually not consume snails. However,

they still possess a set of powerful teeth: these puffers will often bite a prey fish in its middle, fold it in half, and then suck it in, often scattering scales and innards in the process.

This is a freshwater puffer, reaching a maximum length of 5 – 6 inches. Their skin is mostly grayish-brown with various dark spots and a conspicuous black "arrow" situated between their eyes. Purportedly, specimens ranging from cream, to nearly black, or red have been found [1]. Their large caudal fin is usually folded shut, sometimes with the caudal peduncle curled to one side. These fish propel themselves in the usual fashion of puffers with fluttering movements of their pectoral fins. However, they are capable of fast bursts of speed when alarmed.

Husbandry

Being such a ravenous predator, the only real option for keeping this species is a specimen tank. I would not trust them with any other fish, except conspecifics. They do seem to tolerate their own kind rather well, so long as the tank is spacious enough so that each individual can retire to its own area without being able to see the others. Since this species will not harm plants (as long as they are well-rooted or attached to wood), a planted tank will suit them well. So they feel secure, they'll require either hiding places, in the form of caves or overhangs, or a smooth sand bottom where they can bury themselves. Eventually, these fish will learn to recognize their keeper and start begging for food (constantly) when he or she appears.

When a quarrel occurs between two individuals, one will tilt its head down, flatten its body, and then charge the opponent. The other puffer will then roll backwards, exposing it's underside in submission. This will usually defuse the incident, though they will occasionally bite, leaving a circular cut. Usually this is only superficial and will heal easily with good water quality.

Being a puffer, and a scale-less fish, this species is especially sensitive to water quality. Considering their very messy feeding behaviors, regular large water changes are necessary for long-term health. One way to minimize the mess is to offer small food items that can be swallowed whole. While some people enjoy watching these fish devour another fish as big as they are (which they can and will do), this will quickly fowl the water and make maintenance even more of a chore. These fish spend most of their time at rest, so they don't require lots of swimming space. A 10-gallon tank would be the minimum for a single specimen, or a 20-long for a pair, though a larger tank will make it easier to maintain good water quality. As they spend most of their time on the bottom, a larger base area is more important than height.

These fish are very greedy eaters, and if given the chance, I believe they would eat themselves sick. So, I limit the amount of food for my adults to about 3 krill, or 1 large silverside, about every third day. Although newly imported specimens may be reluctant to feed at first, I've had no problems enticing them to take frozen food in time. I've fed mine a varied diet of frozen krill, silversides, mussels and squid, which seems to have kept them in fine health.

Reproduction

I first found that this species could be spawned in captivity while reading the Aqualog book "The Puffers of Fresh and Brackish Waters" by Dr. Klaus Ebert, which I highly recommend. I saw that the entry on *T. suvattii* was primarily devoted to a very detailed account of breeding the species. Although the original aquarist mistakenly identified his as *Tetraodon miurus* (a very similar species from the Congo), this first captive breeding occurred in 1974. The author ended the entry with "it should be easily possible to breed this species commercially[2]."

This inspired me and rekindled my interest in the species. My prior failure still haunted me, and I decided that I had to successfully keep and spawn this species. After several months of waiting, the puffers finally became available to my local pet store again. They ordered 3, which we inspected closely in the bag upon arrival. Although the limited literature on this species says there's no way to

distinguish the genders, the owner noticed a slight difference in shape in one individual's vent, so I took that one and one other (more on that later).

I set each puffer up in its own 10-gal, side by side, while I set up a 50-gal planted tank in the meantime (hopefully, their future honeymoon suite). I slowly introduced the two puffers to each other after several weeks, and fortunately they largely ignored each other. After a couple months, when the plants in the larger tank were well-established, I added the puffers. They took up residence underneath a large piece of driftwood, coming out only to beg for food.

A few more months went by, and the tank developed a bad case of green-water. To alleviate this, I started doing daily ~60% water changes. After 3 days of this, I came home to find the puffers out from their usual retreat, circling each other in the mid-water. Puzzled at their behavior, I stood and watch them for several minutes. Finally, it dawned on me; they must be doing some type of courting dance!

The pair was circling each above a flat portion of the driftwood. During this period, one's color changed significantly, with the base color becoming light tan and its "arrow" turning white. The pair circled each other with caudal fins flared, intermittently puffing up and rubbing against each other. Occasionally, one would turn down toward the selected site, inflate, then blast the site with a jet of water, apparently to clean it. This foreplay continued for three days, day and night. During this time, they ignored food. Finally, the female (which turned out to be the one whose color had changes) laid a huge clutch of eggs (300+) on the prepared site, which were clear and colorless, approx. 3mm in diameter.

The male immediately chased away the female and began to guard the eggs ferociously. He hovered just above the eggs, slowly rotating in place, and charged toward anything that came near. Once the pair has begun courting, it's imperative to check them as often as possible and remove the female immediately once the eggs are laid, as the male can inflict serious damage. I would advise that there be an accessible hiding place, out of view from the spawning site, where the female can retreat after spawning.

During incubation, the male will occasionally inspect the eggs and remove any that have been infected with fungus. It's amazing to watch this fish, whose jaws could easily remove one's finger, pluck out a single tiny egg, while leaving the others unharmed. Incubation seems varies with temperature, though I have found 70^{O} F to promote the best development of the fry. At this temperature, incubation lasts about 16 days, after which the eggs hatch explosively, with the fry frantically swimming away. After this, the male offers no further parental care. The fry are immediately ready to eat and are completely formed miniatures of their parents, already bearing the arrow on their forehead. At warmer temperatures, the eggs hatch sooner and the smaller fry retain their yolk sacks for a few days.

Live baby brine shrimp make a suitable first food for the fry for the first few weeks of their life. These little babies are simply a black hole of stomach, and keeping them well-fed is the primary challenge in raising them successfully. My first two spawns had abysmal success-rates, which I later found was due to not feeding them enough. Their stomachs are extremely distensible, even at this size, and can expand to nearly the size of the rest of their body. During my third spawn, I would literally flood their tank with brine shrimp twice daily, which yielded better results.

Once the fry reach about 3/8" in length, I began adding live mosquito larvae to their diet, which they consumed eagerly as well. When well fed, growth is fairly quick, as they reached approx. 1" at 60 days of age. At this point, I added live blackworms to their diet, as well as frozen bloodworms. These are suitable foods until they are large enough to each the normal fare of the adult fish.

At around 90 days of age, I found several juveniles disemboweled in the grow-out tank. At this point, they apparently take on their adult behaviors and start to become less tolerant of each other. I then separated them into more tanks and offered more hiding places, which averted future fatalities.

The Lesson Learned

At first, I was so proud of my accomplishment and reveled in having a few hundred of these little puffers. However, it soon became obvious that I couldn't possibly keep them all well fed, and could never have enough tank space for them when they reached this size. I finally was forced to cull out the majority of the fry, which allowed the remaining fry to grow more quickly and healthily. So, I'd recommend culling down to about 50 of the fry after the initial hatching. Admittedly, it was very difficult to bring myself to do this, but it's better to raise a handful of healthy fish than to try to raise hundreds of puny ones, who later rip each other apart.

After they'd spawned several times, I photographed my fishes' undersides in hopes of finding some indicator of their gender. I did find that the skin around the vent of the female folds around convexly, while that of the male is concave. Obviously I can't say this is a definitive trait with a sample size of 2, but I'm hopeful that, as more people keep and breed this species, my observations may be confirmed.

In conclusion, this species is very rewarding to keep, as both a single "pet" fish, and as a new breeding project for the ambitious aquarist. All they require are certain accommodations for their special needs, and a little extra effort. It goes to show that, even if it hasn't been done yet, it's not necessarily impossible.

Referrences:

[1] Sontirat, Suebsin. "Four New Species of Freshwater Fishes from Thailand." Kasetsart Journal: Natural Sciences. Vol 23: 98 – 109. 1989.

[2] Ebert, Klaus. "Aqualog: The Puffers of Fresh and Brackish Waters." Hollywood Import & Export, Inc. May 31, 2001.

Puffers Spawning

Female Vent

Male Vent

Puffer and Eggs

Puffer Babies

Puffers Spawning

Puffer Buried

The Ultimate "Little Gray Ditch Fish" Phalloptychus januarius

By Dave Williamson

Reprinted from the April/May 2011 Tank Topics of the Greater Akron Aquarium Society

There has been a joke amongst livebearer keepers for years that so many of the rare and sought-after species are not really all that appealing to look at compared to what most people think of when dealing with tropical fish, hence the description you see above in the title. OK, so maybe this one is silver rather than gray, but you still get the point. What it does have going for it is rarity. You can be the first on your block to have a chance at killing off a really rare fish (yeah, they're kind of delicate too). It's everything that the true "fish geek" wants!

Seriously, these little guys (and I mean little, maximum size for males is about an inch, females about a half inch larger) hail from the vicinity of Rio de Janero in Brazil and adjacent parts of Bolivia & Paraguay making them some of the most Southerly poeciliid livebearers. This is also where they get their species name as Rio de Janero translates from Portugese as "January River." The genus name refers to the bent gonopodiums of the males and this trait is the main thing that separates this genus from close relatives Cnestrodon and Phalloceros.

You might at this point wonder how and why did I end up with this fish? Well it all boils down to the fact that the American Livebearer Convention will be hosted by The Greater Akron Aquarium Society this Spring. Every year some rare fish are either donated by or purchased from labs that are studying them. And that is where these guys came from. The good or bad news, depending on how you look at it was they were shipped well in advance (like about 8 months!) of the event and needed to be housed somewhere. Just so happened I had some empty tank space and I'm always up for trying something new. (Yeah, I know I'm a BAP slut!)

So, armed with the information they're rare, delicate and they like some salt in their water, I was given a bag of roughly a dozen little silver fish of various sizes and ages and told "go for it" and to bring back what I had to the convention next April. Well almost immediately the adults started to drop one or two a week and I began to think "here we go, I'm going to kill off the rarest fish in the world and everyone will think my fishroom has turned into a black hole of doom!" Thankfully, a few weeks into it I noticed a few fry darting around the leaves of a floating piece of Anubius so I just kept up maintenance I had been doing which consisted of small feedings of crushed flake food, frozen adult brine shrimp and live baby brine shrimp alternated once or twice a day, that combined with a 30% weekly water change and the addition of a tablespoon of Instant Ocean salt to a ten gallon tank. By New Years all of the original adults were gone but the juveniles had grown up and were producing fry regularly. You never saw a lot at a time, 2 to 4 new little guys would turn up every couple of weeks, but they were steadily increasing in numbers. I can see where they got the common name of "Barred Millionsfish" because like guppies, they are prolific when there is a colony of them and they are definitely into togetherness.

Then as luck would have it, I talked to some of the other aquarists that this group of fish had been distributed to and found out that most everyone else had similar results to mine with the adult fish dropping off. Only time will tell if that was caused by this species not being long lived or if is one of those fish that doesn't take well to being moved to different conditions.

When all is said and done, I feel I've done my part. I'll be bringing more individuals to the convention than I started with, and on top of that by writing this article I even get my BAP points for a fish that I don't really "own". I couldn't ask for anything better!

References:
Livebearing Fishes: a Guide to Their Aquarium Care, Biology, and Classification: John Dawes
Aqualog of All Livebearers and Half Beaks: Michael Kemkes & Dipl. Biol. Frank Schafer
Atlas of Livebearers of the World: Lothar Wischnath

Easy Lyretails

By Jack Guida

Reprinted from the January 2011 Paradise Press of the Long Island Aquarium Society

Aphyosemion austral, or the commonly named "lyre tail," is without a doubt one of the most popular species within the killifish world. The more popular "gold" variety was developed in 1953 but non-gold varieties, including the "chocolate" variety, were known in Germany around World War One. There is a more recent variety of gold austral called "spotless." It has no body pattern but has long white fin extensions. It is not as robust appearing as the normal gold variety. I have always found the chocolate variety more adaptable and the fry stronger than the gold. Although known as the ideal beginner's killie, there are other species such as A. striatum and those of the gardneri group that have larger eggs and fry and are thus easier to keep.

My method is simply a variant of the so-called "natural" spawning method used by more and more killi breeders. This usually means putting a pair or more in a tank with sand, gravel, coco fiber, peat, a bunch of plants or mops, let the adults spawn and pick out fry as they are seen. This creates a mess if you need to do water changes so I modified this to meet my own needs.

Take a 5 ½ gallon tank (for the breeders) and fill it with ½ fresh and ½ aged water from an established tank. At the same time start a 2.5 or 3 gallon tank for the fry, again with 50/50 aged and fresh water. In each tank will be a small sponge filter. In the 5 ½ only, and lacking a full 5 ½ gallon under gravel filter, I used an under gravel drum bowl filter (2 ½ gallon size) and covered the entire 5 gallon with about one inch of gravel. Add some top and bottom mops, a clump of plants like java moss, and let both tanks sit for five to seven days. Temperature should be anywhere from 72 to 78 degrees with neutral pH. Some breeders add salt, otherwise forget it.

After a week add a well conditioned pair of lyre tails. Use one pair only. If more than one pair is used, the non-breeding fish will make a meal of the eggs of the breeding pair. The pair will have been fed all the good foods such as a variety of flake foods, frozen brine shrimp and bloodworms, and tubifex and occasionally Blackworms. I occasionally feed adult austral baby brine shrimp which they seem to relish. You should see some breeding activity shortly. Some pairs will choose the bottom mops, some the plants and some breed in the gravel. Each pair is different; some will scatter their eggs everywhere. Once set up I feed a flake food in the morning and one of the meatier foods at night. I don't do any water changes in the breeder tank for a few weeks, just topping off as the water evaporates. The water can become quite acid in time but with austral I don't worry about it. After about 10 to 14 days, begin to look for fry. There will be only one or two at first; look for them at the water line where they can be scooped up with a cup. Ad the cup and the fry and its water to the smaller (2 ½ gallon) tank. Some fry

will be hiding in the gravel where they can be sucked up with a turkey baster. This is a good time to start adding baby brine shrimp to the parent's tank to feed the fry that will be hiding. I would also add some small snails to the fry tank for cleanup duty.

I would combine fish that are no more than seven days apart in age. As with a lot of killie species, the biggest threat to fry is their larger siblings. At 3/8" to ½" long the fry can be moved to a 5 or 10 gallon tank with at least 25% weekly water changes. Once established you will have a steady stream of fry due to all the infusoria living in this set-up. About every 8 to 12 months I wash out the gravel and UG filter and re-establish the tank.

Fry that are hatched in a natural set up such as this are invariably stronger and grow faster due to the numerous infusoria surrounding them. This system also rids you of picking eggs and all the cups, trays, and time spent when using the artificial method. If you don't want to permanently keep this natural method in use, you could set up the parents for two weeks only, remove the parents to a community tank or elsewhere, and when you see the first babies feed them crushed flake, microworms, and baby brine shrimp to raise them in the parents tank. Add snails and change about 25% of the water weekly.

Tips for Fish Breeding

By Joe Graffagnino

Reprinted from Dec 2004 Modern Aquarium Of the Greater City Aquarium Society

Sexing Fish

Determining the sex of a fish can be very easy, or very difficult, depending on the size and type of fish. In the majority of cases, the male has the most color and appears more vibrant than the female. Size is a factor, in that the female of many species are larger and more robust in the mid-section than the male. Anal and dorsal fins are generally more pointed in a male and more rounded in females. Genitalia on some fish are visible on males, and appear as an out belly button on females.

But for some other fish, you can't determine sex unless the fish are "probed," and with some species even then you cannot be sure. This is why people usually start with a group of six to eight fish, and let the fish choose their mates. A group like this will allow for accidents and premature deaths, and still have the odds in their favor that different sexes will be present. Is there such a thing as gay fish? Yes, there is.

Condition the Parent Fish

You need to feed the adults to bring them into top spawning condition. Approximately two weeks prior to the date you would like the fish to spawn (and after you have the spawning tank ready with plants, lighting, and the correct water temperature and pH), feed the adult fish heavily with high protein food (such as live brine shrimp, live black worms, live daphnia, and live microworms). If live foods cannot be obtained, then use high quality frozen brine shrimp, mysis shrimp, bloodworms, and daphnia. You will encounter a higher number of fry, better growth ratio, less fry dying, and more frequent spawns.

You can even make your own food. To do so, first look for ingredients that are highest in protein and then fats. Next, look for high vitamin and mineral content, along with color enhancers (such as beta-carotene or Vitamin A). Select ingredients with small percentages of fillers (for example, ash, fiber, or moisture).

Provide Proper Fry Nutrition

Fry require growth foods, and should be fed two to three times each day. Feed fry live microworms, live baby brine shrimp (rinsed in cold tap water), white worms, Grindal worms, and/or infusoria. Other foods for fry would include Liquid SmallFry®, cyclops, decapsulated brine shrimp eggs, micropellets, crushed flakes, or flake food specialized for baby fish.

Experiment on what you feed your newborn fry. Be careful what you feed, and how much you feed. Not all fry can have the same type foods. Some catfish fry cannot take brine shrimp because it cuts their stomach lining. Many fish that are plankton feeders can only have a high quality flake food and not "live" baby food until they are several months old.

The differences between adult fish foods and fry foods are that fry food should have the highest percentages in protein, and at least 10% more in fats than adult food. While fry food should be high in mineral and vitamin content, there is no need for Beta Carotene or other color enhancers.

For both adults and fry, each feeding should be small, and not more than all the fish can eat in a few minutes. One trick I learned from Tom Miglio is to make a "fish food sandwich." A fish sandwich consists of giving the fish (adult or fry) a pellet or flake food in a small amount. After consumption, feed a portion of high protein food such as live black worms, brine shrimp, or frozen food. Then, follow it up with another dose of pellet or flake food. (Again, feed in small amounts.) The reason for this is that foods high in protein can pass through a fish very quickly, and the fish receives little value out of that expensive food. By providing pellet or flake food, the high protein food comes in and is packed between flakes or pellets which take longer to be digested, thus providing the maximum benefit to the fish who now gets all the protein with none wasted.

Use Grow-Out Tanks

Baby fish (especially cichlids) require a lot of space to grow. For fish that provide parental care to the fry, I recommend leaving the fry with their mother (if possible) for 10 days. In this time frame, the mother imparts correct behavior and the traits to become a good parent. Breeding traps can be used to keep baby fish in the parents' tank so that you can feed them high quality food without the fry wasting energy searching for the food.

If the fish is an egglayer, the parents generally take care of the eggs until hatching and, in some species, for a preset time thereafter (10 days to 4 months). If the aquarist wants to hatch the eggs artificially, a bucket must be used to transport the eggs. The eggs should be moved along with the rock, plant, or cave on which they were laid. The eggs must not be allowed to be exposed to the air. They should be moved to a smaller tank that contains the same water the same temperature) as the parents' tank. Use Methylene blue or Acriflavine as an anti fungus medicine. Airstones should be placed under the rock, plant, or cave to provide adequate aeration for the eggs. Adjust the airflow so that it is not enough to cause the eggs to be dislodged or injured. The aquarist should remove any fungused eggs immediately with a small siphon tube; otherwise good eggs will get fungused and die. Once the eggs hatch, do not feed the fry until the yolk sac is gone, or you will pollute the tank. The fry will not eat while they are feeding off their egg sacs.

Once the fry have hatched and the yolk sac disappears, move them to a "grow out" tank. Use water from the parent tank, maintaining the same temperature. Wrap airline tubing around the heater to protect the fry from getting burned. In the filter, add whatever special requirements the fry may need (such as dolomite for African cichlids, or a bag of peat for soft water fish).

One way to add these special items is to use a nylon stocking that contains activated charcoal, ammonia pellets, and either dolomite or peat, etc. Place an airstone in the center of the nylon stocking and use a rubber band to tie it to the nylon to prevent the ingredients from escaping. Have the airstone attached to a gang valve to regulate the water flow in the fry tank. If a sponge filter is being used, you can cram the nylon stocking into the sponge opening or rubber band it to the stem of the airline tubing as it exits the

sponge. If a box filter is used, place a piece of air conditioner filter over the top of the box filter so the small fry cannot enter the filter. Tie the filter down with rubber bands.

An alternative to a separate grow out tank is to float a worm holder box in the adult tank and affix small pieces of styrofoam to the sides of the worm holder. You can also use a plastic shoebox with nylon affixed to an airstone. The shoebox floats inside the main tank. A siphon tube can be used to refresh the water into the box from the main tank. Use a siphon tube with a bulb on top, and nylon over the exit portion (the nylon will prevent any fry from entering the main tank when the water is being replaced).

For fish with extremely small fry (such as paradisefish, Bettas, and tetras), use airline tubing with the airstone attached to do water changes. Start the siphon as usual, and as the water is removed, the airstone prevents the fry from being sucked in.

Routine Tank Maintenance

All fry need frequent water changes to remove decaying food and to promote rapid growth. Remove 10% of the water daily, replacing it with aged or dechlorinated water.

Get a good water test kit, and use it regularly. In addition to being able to test for potentially toxic chemicals (such as ammonia, nitrites, and nitrates), a good kit should be able to test for pH (that is, whether the water is acidic, neutral, or alkaline) and general hardness (the measure of dissolved calcium (Ca++) and magnesium (Mg++) ion concentrations in water).

Water is acidic if it has a pH between 4.5 and 6.9, neutral if it has a pH of 7.0, and is alkaline if it has a pH between 7.1 and 9.0. Very hard water (11 - 22 degrees of hardness) has a GH (General Hardness) between 200 and 400 parts per million ("ppm") of dissolved minerals. Hard water has a GH of 200 ppm. Soft water has a GH between 50 and 100 ppm. Very soft water has a GH between 0 and 50 ppm.

Adjust Water Parameters

Once you have used your test kit, learn the water parameters suitable for the fish you are trying to spawn, and adjust the water accordingly. Keep testing the water to be sure that the chemistry has not changed. Here are some examples of fish requirements in pH and water hardness:
South American cichlids (generally) require a pH of 5.5 - 7.0, and soft water.
African cichlids (generally) require a pH of 7.2 - 8.5, and hard water.
Hoplosternum and *Tatia* catfish of South America require a pH of 6.6 - 7.0, and soft water.
Synodontis petricola and *Synodontis multipunctatus* of Lake Tanganyika require a pH of 7.4 - 8.5, and hard to very hard water.
Synodontis schoutedeni and *Synodontis angelicus* are from the Congo/ Zaire river basins, require a pH of 6.6 - 7.0, and soft water.

Understand that your tank's substrate, such as natural gravel, dolomite, crushed coral, leaves, sand, bare bottom, or glass gravel (which should be avoided with catfish and loaches), can affect the hardness and pH of the aquarium water. Live plants make the water softer, because they take up the minerals in the water for their growth and propagation. Sand, crushed coral, or dolomite will raise the water hardness.

To increase water hardness, add kosher salt and/or Epsom salt to the water (clamshells and certain gravel types such as sand or dolomite also increase water hardness).

To reduce water hardness, you can do water changes, and add tap water conditioners and aquarium water softeners. Reducing water hardness means to deionize the water. Deionized water is free of all minerals and pollutants, including calcium, magnesium, carbonate, nitrate, phosphate, ammonia, chlorine and chloramine.

Filtration

Sponge filters are great for fry tanks. However, use a platform to raise the sponge off the bottom of the tank. A pizza pie plastic three-legged separator (used to keep the pie from the cover of the box) is great for this purpose — simply use aquarium silicone to glue it to the plastic center of the sponge device. In this way, the fry don't get trapped under the sponge, and decayed food is not trapped there to pollute the tank.

In addition to sponge filters, box, canister, overflow, undergravel, and wet/dry filters can be used. With box, canister, and overflow filters, water conditioners can be added to reduce or raise certain water chemistry. As an example, dolomite can be added to raise the pH and water hardness, while peat or a water softener can be used to reduce the water hardness or the pH.

Must-have ingredients (in all except sponge and undergravel filters) for breeding and fry raising tanks are charcoal and ammonia chips (good for 3 - 6 months).

Spawning Aids

- Live plants - *Paratilapia polleni* (Madagascar cichlid) uses the roots of live plants to lay their eggs. Some killifish require plants to lay eggs, and annual killifish require peat (or mud) to spawn in. Anabantoids such as certain Gourami and *Betta* species, along with *Hoplosternum* catfish require plant matter to solidify their bubblenests.
- Artificial plants or spawning mops are used for spawning of tetras, rainbowfish, and some killifish.
- Wood - *Pseudotropheus acei* requires wood in the aquarium. Certain *Plecostomus* catfish require wood in their diets, as do whiptail and driftwood catfish.
- Caves - Many cichlids and catfish use caves for spawning.
- Egg crate - This lighting material is used to protect small females from large males. It is used mostly with over-eager cichlids such as *buttikoferi*, *dovii*, and chocolate cichlids.

General Breeding Requirements

- Adequate aquarium tank size
- Good heater
- Good thermometer
- Good filtration
- Good food
- Regular cycle of water changes. Make water changes a habit, and change the same percentage of water each time. Always use a "tap water conditioner." Try to keep the replacement water the same temperature as the tank water (with some exceptions).
- Never overcrowd your tanks
- Fry require "grow out" tanks

How to Breed

Bettas (bubblenesting species)

Keep the tank covered to maintain high humidity. Fill with six to eight inches of water and plants. A sponge or box filter is the best, with very slow bubbles. Once the bubblenest is made, and spawning is over (indicated by the fact that the female is not expelling any more eggs), remove her from the tank. Allow the male to care for the fry. Once the fry are free swimming, remove the male. Once the yolk sac is gone, feed the fry.

Keep the tank covered with no aeration or filtration for two weeks until the labyrinth organs are developed. Surface air more than three degrees cooler than the water can cause the fry to die. Use plants instead of filtration.

Killifish (non-annuals) (lifespan: 1 - 3 years)

Use synthetic spawning mops. Eggs on mops appear to be little pearls. When they are ready to hatch, the eggs turn from a white or clear to a dark brown. Remove the mop and place it into a separate container, such as a plastic shoebox. Add a half-drop of Acriflavine, and more water. When eggs start hatching, perform water changes slowly to remove the Acriflavine.

Rainbowfish

Same as non-annual killifish (above).

Annual Killifish (lifespan: one year)

Use a jar or small vase inside the tank and fill the jar/vase halfway with peat moss. The killies will jump into the peat moss to lay their eggs. When the spawning season is over, or when they stop breeding, remove the jar/vase. Remove the peat moss and gently squeeze it out. Place it into a plastic bag and store it in a cool dark place.

When the species of killifish egg is ready to hatch, place the peat in a small plastic container having the required water conditions and temperature for hatching. Some killifish take 3 months, some 6 months, depending on the species. Find this out from the person you got the eggs or killies from.

Tetras. Danios and Barbs

Many species lay their eggs on leaves; others are egg scatterers. Fill the bottom of a 10-gallon species-specific tank with marbles and a box or sponge filter. The fish will zoom back and forth, either at dusk or early morning, depositing eggs, and on the way back they will try to eat as many as possible. The marbles will save the eggs. Another option is to have a cheesecloth, or small plastic knitting or sewing "grid," that you can lay over the tank bottom, supported by stones or bases from sponge filters. The holes are small enough to allow the eggs to fall through, which will prevent the adults from eating the eggs. You could build a trap with a bottom and four sides, and it can be inserted and removed from whatever size tank you're using it in. This way, the parent fish can go in and out very easily and this still protects the fry.

Goldfish

Keep the water very cool (40° to 50° F). In March or April, slowly start raising the water temperature. This will trigger spawning. Use synthetic mops. A box filter is best for this species. They can be kept in a small pond outside and brought indoors for spawning. When sexually mature, males get bumps on their head. The females throw eggs everywhere, and the males release milt everywhere. If you have several couples in a tank, it will appear that the tank becomes milky white. After spawning, remove the parents to another tank and raise the fry in the spawning tank.

Cichlids

Add water, a rock or a cave, give them enough time and, when they start spawning, future spawns will be on a regular timetable. With many cichlids of South and Central America, on the third spawn, the male usually tries to kill the female. After the second spawn, use the egg crate method for rock spawners.

Do not crossbreed killifish, rainbow or cichlids, as all the females are similar in appearance. Creating a crossbred fish will pollute the species. Crossbred or hybrid fish cannot be entered into any officially sanctioned fish show.

Catfish species

Because of the wide variance in the species and within the same grouping, it is necessary to research each species individually.

BAP Report

Steve Edie

Member	Species	Common	Pts	Total
Mar 2011				
Charles Harrison	*Aphyosemion bitaeniatum* "Lagos Red" *****		20	2360
Charles Harrison	*Aphyosemion labarrei* "Madimba" *****		20	2380
Charles Harrison	*Ilyodon furcidens*	Bass Goodeid	15	2395
Jerry Jost	*Chapalichthys peraticus* " La Mintzita" **@**		30	1045
Cory Koch	*Pelvicachromis taeniatus* "Moliwe"		15	1787
Cory Koch	*Pseudomugil gertrudae*		10	1797
Gary McIlvaine	*Geophagus steindachneri*		10	1231
Tony McMillan	*Amatitlania nigrofasciatus*	Convict Cichlid	5	129
Kurt Zahringer	*Hemirhamphodon kuekenthali* *****	Tri-Blue-Spot Halfbeak	15	250
Apr 2011				
Mike Hellweg	*Sundadanio* sp. "Red Blue" ******	Red Blue Squeaker Rasbora	25	4224
Jerry Jost	*Goodea gracilis* **@**	Black Finned Goodeid	30	1075
Jerry Jost	*Nothobranchius rubripinnis* "Mbezi River" (TAN 83/5) **@**		30	1105
Jim Miller	*Ancistrus* sp. "Albino"	Albino Bristlenose	10	2439
Jim Miller	*Boraras maculatus*	Coffee Bean Rasbora	20	2459
Jim Miller	*Characodon lateralis* "Los Berros" **@**		30	2489
Jim Miller	*Limia perugiae*		5	2494
Jim Miller	*Pelvicachromis taeniatus* "Bipindi"		15	2509
Jim Miller	*Xiphophorus montezumae*	Montezuma Swordtail	5	2514

* = 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

Congratulations to the following breeders, who were recognized at the annual awards banquet:

General Breeder (50): Marlon Felman

Advanced Breeder (100): Tony McMillan, John Stollhans

Senior Breeder (200): Kurt Zahringer

Advanced Grand Master Breeder (1000): Jerry Jost, Cory Koch, Pat Tosie, Derek Walker

Senior Grand Master Breeder (1500): Cory Koch, Derek Walker

Supreme Grand Master Breeder (2000): Jim Miller

Most Excellent Grand Master Breeder (4000): Mike Hellweg

Breeder of the Year (Most spawns): Mike Hellweg

CARES Breeder of the Year (Most CARES spawns): Derek Walker

HAP Report March – April 2011

Mike Hellweg

Member	Species	Common	Rep	Pts	Total
Mike Hellweg	Microsorum brassii needle leaf	Needle Leaf Java Fern	V	10	3060
Mike Hellweg	Microsorum sp. narrow leaf	Narrow Leaf Java fern	V	10	3070
Mike Hellweg	Ranunculus aquatilis	White Water Crowfoot	V	10	3080
Derek Walker	Caulerpa racemosa	Grape Caulerpa	V	10	3000
Derek Walker	Ulva sp.*		V	10	3010
Derek Walker	Echinodoras sp. Tanzende Feuerfeder*	Tanzende Feuerfeder Sword	IB	20	3030
Marc & Kathy Daly	Caulerpa racemosa	Grape Caulerpa	V	10	335

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

Member Classifieds

Turn your old Lionel and American Flyer trains into fish money. Call Marcus Daly 962-5260 or call Kathy Daly.

I have bloodworms and brine shrimp. Brine Shrimp eggs $32 for 16 oz. can. I am looking for a 200 gallon tank. Jim Miller, 314-638-1134.

Charles Harrison (314) 894-9761, csharrison@inkmaker.net -

Thiosulfate crystals (Chlorine Remover) ..... $3.00 a half pound
OTO double strength Chlorine/Chloroamine test kits - 4 ounce - $12.50
Flubendazole, 5% powder 10 grams ..... $5.00, 25 grams - $20.00
Lavamisole HCl Powder - 5 grams treats 100 gallons $10.00
Methylene Blue 5% solution (2 ounces) $12.75
Acriflavine Concentrate (4%) solution, 2 ounces $12.70
Bromthymol Blue pH test solution, 4 ounces ……..…….$7

Wanted: 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. Mike 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.

Club Hopping 2011

Steve Edie

May 20-22 – Chicago: Greater Chicago Cichlid Association – Cichlid Classic

May 27-30 – Baltimore: American Killifish Association – Annual Convention

June 18 – Indianapolis: Circle City Aquarium Club – Swap Meet

June 23-26 – San Francisco: International Betta Congress – Annual Convention

June 25-26 – St Louis: St Louis Water Gardening Society – Pond-O-Rama

July 16 - Urbana, IL: Champaign Area Fish Exchange – Auction

July 21-24 – Silver Springs, MD: American Cichlid Association – Annual Convention

Aug 14 - St Louis: Missouri Aquarium Society – Auction

Sept 25 – Indianapolis: Circle City Aquarium Club - Auction

Oct 2 - St Louis: Missouri Aquarium Society – Swap Meet

Nov 4-6 – San Antonio: Federation of Texas Aquarium Societies – Annual Convention

Nov 13 - St Louis: Missouri Aquarium Society - Auction

Nov 18-20 – Cleveland: Ohio Cichlid Association – Extravaganza

Jan 14, 2012 – Urbana, IL: Champaign Area Fish Exchange - Auction

July 14, 2012 - Urbana, IL: Champaign Area Fish Exchange – Auction

More dates will be added as clubs firm up their plans.

The Computer Page

Steve Deutsch

MASI's official web page: **www.missouriaquariumsociety.com**
MASI's email group: MASIFishHeads Yahoo Group - see web site for joining instructions

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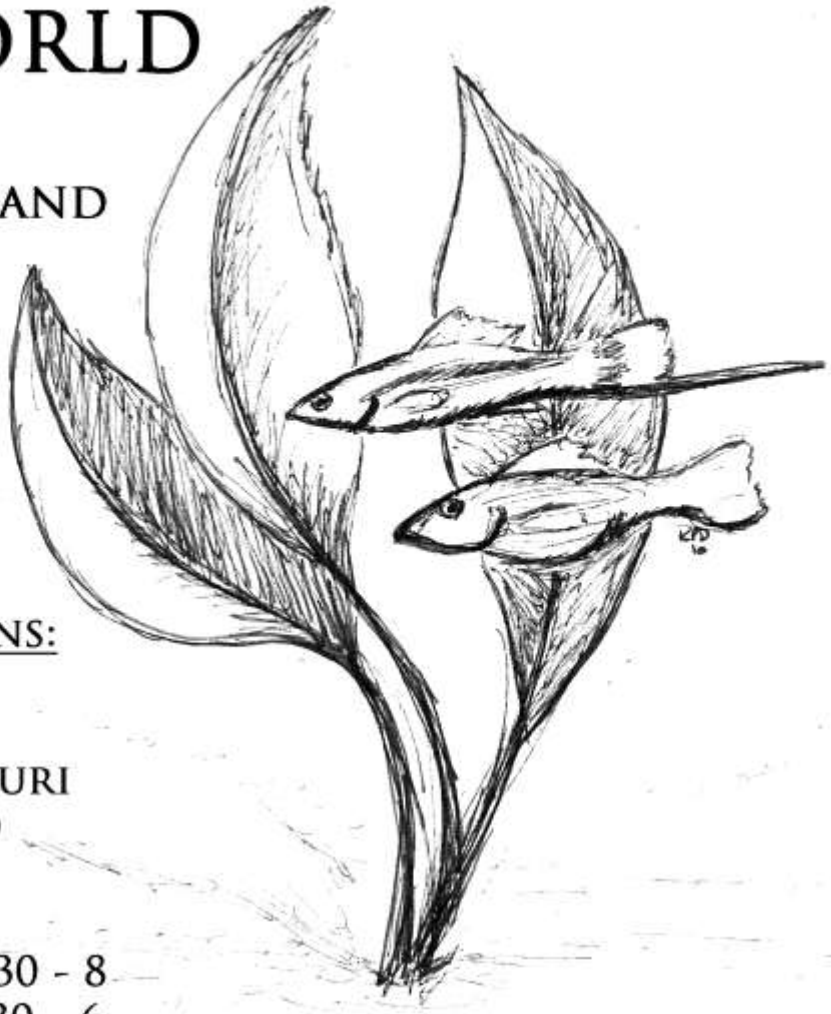

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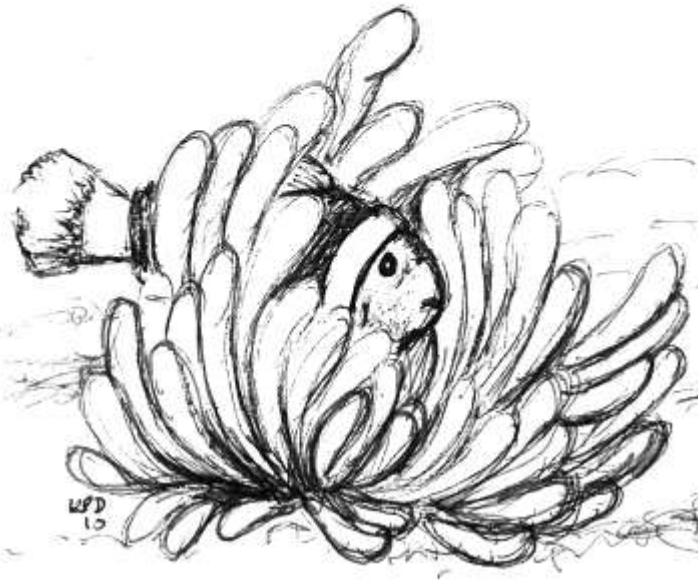

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