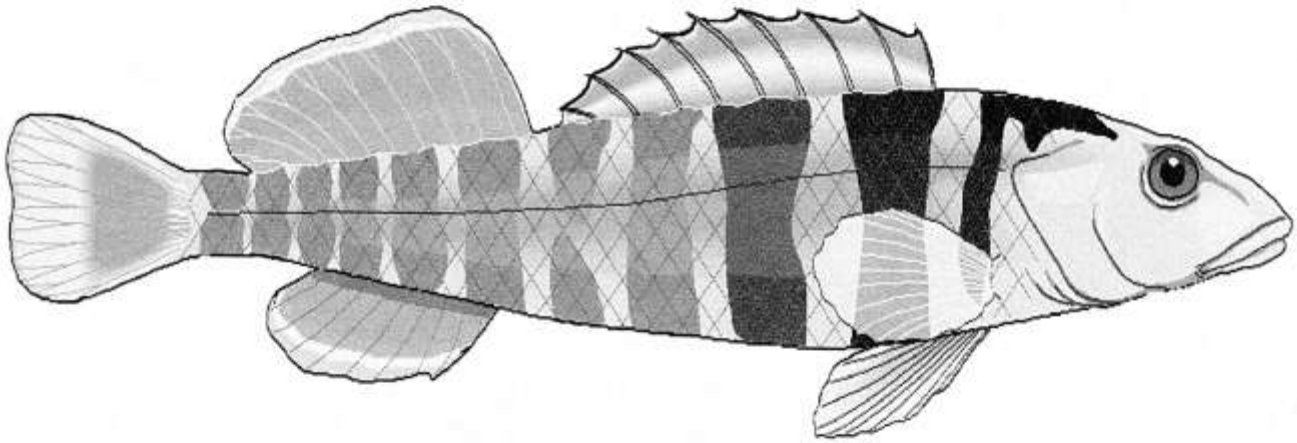
The Darter

March - April 2012



Missouri Aquarium Society, Inc
St. Louis, Missouri

2011-2012 MASI OFFICIALS

PRESIDENT:
Steve Edie
5 Green Ridge Ct.
St. Peters, MO 63376
636-922-4232
sredie@charter.net

VICE PRESIDENT:
Pat Tosie
1813 Locks Mill Dr
Fenton, MO 63026
314-616-4316
pattosie@yahoo.com

TREASURER:
Andy Walker
1037 Jackson St.
St. Charles, MO 63301
636-443-1440
awalker02@sbcglobal.net

SECRETARY:
Cory Koch
22 Briarcastle Ct.
O'Fallon, MO 63366
636-278-0736
sithlid@gmail.com

EXECUTIVE COUNCIL:

Kathy Daly	kmdaly@netzero.net	314-962-5260
Charles Harrison	csharrison@inkmaker.net	314-894-9761
Mike Hellweg	mhellweg511@charter.net	636-240-2443
Kathy Deutsch	kathy@skdeu.com	314-741-0474
John Van Asch	johnsfishy@att.net	618-277-6165
Mark Theby	markrehabber@yahoo.com	314-428-3536

COMMITTEES:

Advertising & Promotions	Mark Theby	314-428-3536
Auction Chairman	Marlon Felman	636-536-4809
Breeders' Award Program	Steve Edie	636-922-4232
Corresponding Secretary	Patrick A. Tosie, Sr.	314-616-4316
Editor	Steve Deutsch	314-741-0474
editor@missouriaquariumsociety.com	9 Old Jamestown Ct.	Florissant, MO 63034
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Join the all-new MASI FishHeads Forum. See web page for instructions.

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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 March 17, 2012
Executive Council, 7:30 PM, Hosted by Marlon Felman

April 13-15, 2012
Annual Workshop Weekend and Auction

THURSDAY April 19, 2012
General Meeting, 7:30 PM @ Dorsett Village Baptist Church

SATURDAY May 5, 2012
Executive Council, 7:30 PM, Hosted by Kathy Daly

THURSDAY May 17, 2012
General Meeting, 7:30 PM @ Dorsett Village Baptist Church

SATURDAY June 2, 2012
Executive Council, 7:30 PM, Hosted by John Van Asch

THURSDAY June 21, 2012
General Meeting, 7:30 PM @ Dorsett Village Baptist Church

SUNDAY August 12, 2012
Auction, Gardenville Masonic Hall

SATURDAY October 6, 2012
Swap Meet, 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.

Product Review: Marina Hang-on-Tank Breeder Boxes

By Mike Hellweg

Last fall I was in the Petland Store out in Lake St. Louis. In their marine department there was an odd contraption hanging on the front of one of the tanks with some shrimp in it. It reminded me of the old air driven hang on tank filters that I used to use as a kid (I wish I still had a few of those!). I asked the clerk and he told me that it was a new product they were trying out. They didn't have them in stock yet, but they would be in early the next week. When I got home and went online, I discovered that no one else had them yet, either.

I returned to Petland a week later and bought one. When I got home, I set it up right away and moved some young *Psammochromis* into it. It worked perfectly. A few weeks later after the *Psammochromis* had been moved to a larger tank for further grow-out, I moved it to another tank and added a male *Betta raja* that was holding. He spit his eggs, but when he settled down, he went around, picked them up and continued to hold for the rest of their term, releasing nearly 100 perfect youngsters a week or so later. I then added a divider to separate him from the fry, fed him for a couple days, and then moved him back to the main tank and raised up the youngsters for the first couple of weeks in this little tank. Male *Betta albimarginata, B. edithae*, and most recently *B. macrostoma* followed.

These breeder boxes hang on the front or side of the tank on the outside. They are air driven, so I was able to just run another line to the breeder box. It comes with an air valve so you can fine tune the flow of air. The air driven intake brings water up into the box on one side. You can either direct water flow across the surface or at any angle downward into the tank, depending on the size of the fry inside. The overflow that returns to the tank on the opposite side of the breeder box comes with a couple of different sized screens so you can change them depending on the size of the fry. The top clips on so you don't accidentally knock it off, and has a feeding hole in the center to run a drip line for tiny fry (no worries of overflow!), or to add a squirt of brine shrimp or microworms for slightly larger fry. They are made of clear plastic so you can see everything that's going on in the breeder box and in the tank behind them. Light from the tank easily lights the box so you can keep plants like Java moss or Najas alive and well. Unless the room is really cold, the flow of water from the tank is enough to keep the breeder box at the same temperature as the tank. Unlike breeder boxes that can be used in the tank, since this breeder box is mounted on the outside it doesn't take up room inside the tank or create little nooks where small fish can become trapped. Finally, circulation flows from one side to the other so there are no dead spaces created. It comes with dividers so you can separate larger fry from smaller ones, or an adult that has finished holding for a day or two to allow them time to recover but keep them separate from their progeny.

I liked it so much I have now bought and am constantly using several of them in my fishroom. They're great for holding mouthbrooding *Bettas*, smaller mouthbrooding cichlids (I've moved young mouthbrooding Mbuna directly from an egg tumbler to one of these), livebearer fry, and I've even now used it as an incubator box for a clutch of Ancistrus eggs, and for grow out with *Sturisoma* fry with no worries of adding too much food to their tank – maybe this time I'll be able to get them to 60 days! The breeder boxes work well to isolate a fish and allow it to recover from being bullied without the added stress of moving them to different water in another tank. I have also used them when conditioning smaller species of fish like tetras, rasboras, barbs and danios to separate sexes for a week or so before spawning. They work great as both fish can be kept in one tank with no way for them to get together before you want to put them together, unlike using a divider where they can and sometimes do somehow get over or around it. They can see and smell each other, but not actually spawn. I also use them to

hold fish for auction or shipping. This way I can catch the fish a few days before packing and give them a one or two day purge while still keeping them in their same water on a filtered tank, cutting down on stress. Do a water change on the tank and you've also done one on the breeder box with no extra work!

The Marina Hang-on-Tank Breeder boxes have worked very well for all of these varied uses in my fishroom over the past several months and I can highly recommend them. They come in small, medium, and large. In my opinion, the small is too small to have any practical use (it could maybe be used to hold a male betta), but the medium and large are perfect sizes for most of the fish that I work with. I wish these gizmos had been around during the TFH Breeder's Challenge a couple years ago! They would have really simplified my daily work, though I would have likely wound up with more of them than I could possibly use outside of the Challenge!

Little Known South American Cichlids

By Ed Millinger

In his book South American Eartheaters Thomas Weidner devotes the last chapter to the genus Guianacara. He describes six species in this circa 2000 book (no longer in print). In the January/February 2012 issue of the magazine Amazonas, Weidner describes three additional new species.

The first described species in the book is gaeyi, also known as the bandit cichlid. This is because of a vertical black stripe that runs through their eye. Also in order he presents oelemariensis, owroewefi, sphenozona, "Rio Caroni" and "Red Cheek". In the magazine article Weidner points out that in 2006 Lopez-Fernandez, Taphorn, and Kullander described Guianacara cuyuhii, and Guianacara stergiosi. He mentions now that Arbour and Lopez-Fernandez have described Guianacara dacrya.

I currently have Guianacra gaeyi, "Rio Caroni" and sphenozona. Tropical World on Watson Road found the gaeyi and sphenozona for me and I purchased the "Rio Caroni" at one of our monthly meeting from guest speaker Brian from Brians Tropicals in Columbus, Ohio.

These fish are not picky about food or water quality. I feed a variety of flake food in the morning followed by a few live black worms. In the evening I feed frozen bloodworms, plankton and mysis shrimp. Water changes of 25-30% every Sunday keep them in good health. They have spawned in water with a total dissolved solids of 213 and also as low as 78.

In order to spawn these fish it is best to have a large flower pot on its side in your aquarium. Tiny brown eggs are deposited on the ceiling at the back of the flower pot. I had success leaving the eggs with the female of "Rio Caroni" but not with gaeyi. I tried to leave the eggs with the gaeyi but they always disappeared. I gave them three opportunities thinking it was immaturity on their part but the eggs never were left alone.

I kept a traditional trio (one male and two females) of both species. One group in a 75 with gravel and the other in a 55 with brown pool sand. I floated both hornwort and water sprite. After spawning it is best to remove the fish and leave the eggs alone. I lost very few eggs to fungus, and considering they lay over 100 eggs there are plenty left over. It takes four days to hatch at which time the fry begin to wiggle and bounce around on their egg sacs. It is incredible how far they can move without being able to fully swim. You would swear that you had spawned mud skippers. The second day after hatching the fry could propel themselves up three or four inches. At this time I decided to start feeding them. They were very tiny so I started off with micro worms. I ran my finger along the container of worms and then inserted it in the water. I then used a baster to send the food down to where the fry were. This worked well and within a few more days they were able to swim to the top of the aquarium. At this time I started feeding live baby brine shrimp. In addition to this I installed the Hatch

N' Feeder. It is a great invention that allows you to feed your fry without even being there. It sits inside your tank attached to the side wall by suction cup. You fill one chamber with salt (that will not enter your tank) and after that all you have to do is add brine shrimp eggs. The eggs hatch and work there way up the darkened tube to the light that is allowed through the exit point that is not darkened. The reason this is an asset is that you can have someone else add eggs and twenty four hours later the fry are fed. I go to bed early in the evening but my wife who stays up later can add eggs every night and the fry will then receive an extra feeding that I would not have been able to provide. It's quite a sight to see fry hovering close to the opening eating the brine shrimp as soon as it leaves the hatcher.

Two weeks after hatching they became aware of me and would retreat as I approached the aquarium only to return when they realized they were being fed. If you have a chance to they keeping these peaceful cichlids by all means give them a try.

References: South American Eartheaters, Thomas Weidner- Chichlid Press 2000
Amazonas magazine Jan/Feb 2012, New Guianacara described, page 10, Thomas Weidner

HAP Report January – February 2012

Mike Hellweg

Member	Species	Common	Rep	Pts	Total
James H. Miller	Hygrophila difformis	Water Wisteria	V	5	315
James H. Miller	Najas guadalupensis	Najas Grass	V	5	320
James H. Miller	Nymphaea stellata	Dwarf Aquarium Lily	V	20	340
Pat Tosie	Anubias barteri barteri	Common Anubias	V	15	285
Pat Tosie	Egeria densa	Anacharis	V	5	290
Pat Tosie	Echinodoras sp. Kleiner Bar	Kleiner Bar Sword	V	15	305
Pat Tosie	Pistia stratiotes	Water Lettuce	V	5	310

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

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.

Keeping & Breeding *Pachypanchax sakaramyi*, The Sakaramy Killifish

- By Kurt A. Zahringer –

The island of Madagascar has long been a place of intense interest for naturalists. There are several entire taxa unique to the island, and the vast majority of plants and animals are found nowhere else on earth. Unfortunately, countless species, including the ichthyofauna, are severely threatened in their natural habitat, with many being already extinct.

Madagascan fish rarely find their way into the aquaria of hobbyists, with the exception of a few species. The Madagascan rainbowfish, Bedotia geayi, is commonly commercially available, followed by the occasionally-seen cichlid, Paratilapia polleni. Most other Madagascan cichlids, rainbowfish, or other species that make their way out of the country are brought by personal collecting of individual hobbyists.

This is the case with the Madagascan killifishes, the Pachypanchax. The Pachypanchax are rather primitive killifish, native to the island of Madagascar and surrounding islands. There are currently 7 species of Pachypanchax recognized, with at least 4 more new species yet to be described, and more may exist. Together with the Aplocheilus of Asia, these killifish make up the small family of Aplocheilidae. Fish in this family are characterized by a top-dwelling body shape and superior mouth.

Pachypanchax sakaramyi, is typical of the genus, reaching approx. 3 inches in length. This species is named for the Sakaramy River in Northern Madagascar, where it is endemic. Admittedly, these along with all Pachypanchax are not nearly as beautiful as many other commonly-kept killies, though the males are still rather attractive. Their bodies have an orange base-color, with a green to purple sheen, depending on their mood and the lighting. One peculiarity which is worth mentioning is that the scales of this and other Pachypanchax will curl away from the body as the fish matures. This gives the outward appearance that the fish are suffering from dropsy, though this is completely natural and normal.

The best thing about the Pachypanchax is that they are great aquarium fish and very easy to maintain and breed. Unlike most killies, these will readily accept flake or pellet food, though frozen or live foods are advantageous for conditioning. These killies are bold and will do just fine in a community setting with comparably-sized tank-mates. They can even be a bit scrappy, so it would be wise to avoid very small or shy tank-mates. They can be somewhat aggressive with each other, but will coexist in groups given ample space and hiding places. These fish are not particular about their water parameters either and thrive anywhere with good water quality. Their colors seem to be brought out best with a dark substrate and more yellowish lighting. Be sure to cover the tank well, as they are avid jumpers.

Spawning them in almost effortless: once they mature, they spawn consistently, even in the absence of spawning mops. I first noticed a single small fry in the tank, which contained only rocks and gravel, which I removed to a rearing tank. Upon using the gravel-vac, I found dozens of eggs in the substrate, most of which were already eyed-up. One by one, more fry continued to appear in the parents' tank, which I would remove, until they became too numerous! I had plenty in the rearing tank, so left the new fry alone, only to find that the parents completely ignore their fry. To not be overrun with them, I moved the parents to a tank with some Corydoras, (though I would still occasionally find some fry there too!). The fry are rather large at hatching and can easily take baby brine shrimp as their first food.

Being so prolific, it's hard to imagine how these are going extinct in the wild, but that is the sad reality. Unfortunately, fecundity counts for nothing when one's habitat is being destroyed. Currently this species is listed as "critically endangered" by the IUCN, though it may be extirpated already. This is the case with all Pachypanchax species (except P. playfairii, native to the Seychelles), which are all considered at least threatened. Deforestation is rampant in Madagascar, and extensive mining has left only a fraction of the original landscape intact. These are another case in which the very existence of the species will largely depend upon us, the dedicated aquarists, so they'll be around for future generations to appreciate.

BAP Report

Steve Edie

Member	Species	Common	Pts	Total
Nov 2011				
Marlon Felman	*Poecilia wingei*	Endler's Livebearer	5	80
Marlon Felman	*Xenotoca eiseni* **#@**	Red Tailed Goodeid	15	95
Charles Harrison	*Limia melanogaster*	Black Belly Limia	5	2465
Mike Hellweg	*Mesonauta egregius* "Rio Meta" *****		15	4639
Mike Hellweg	*Pssamochromis riponianus* **@**	Ripon Falls Snail Eater	20	4659
Jerry Jost	*Hyphessobrycon heliacus*	Kitty Tetra	15	1350
Cory Koch	*Astatotilapia aeneocolor* **#@**	Yellow Belly Albert	10	2067
Cory Koch	*Ataeniobus toweri* **@**	Blue Tailed Goodeid	30	2097
Cory Koch	*Geophagus altifrons*		15	2112
Cory Koch	*Heterandria formosa*	Dwarf Livebearer	5	2117
Cory Koch	*Pundamilia* sp. "Blue Bar" **@**		20	2137
Cory Koch	*Rivulus cylindraceus* "Al Castro"		5	2142
Cory Koch	*Stomatepia mariae* **#@**		15	2157
Gary Lange	*Melanotaenia* sp. "Pianfon Creek" (GL-'10) *****		15	1639

Jim Miller	*Ancistrus* sp. "Calico"		10	2589
Jim Miller	*Benitochromis nigrodorsalis* **@**		30	2619
Jim Miller	*Girardinus falcatus*		5	2624
Jim Miller	*Pterophyllum scalare* **#**		0	2624
Jim Miller	*Steatocranus irvinei*		15	2639
Nick Scarlatis	*Ancistrus* sp. "Bristlenose"		10	105
Nick Scarlatis	*Sciaenochromis fryeri* *****		15	120
Pat Tosie	*Aphyosemion celiae*		15	3730
Pat Tosie	*Girardinus falcatus*		5	3735
Derek Walker	*Chapalichthys encaustus* **@**		30	2239
Derek Walker	*Goodea gracilis* "Rio San Juan Del Rio, Queretaro" **@**		30	2269
Derek Walker	*Xystichromis phytophagus* **#@**		10	2279
Derek Walker	*Xystichromis* sp. "Dayglow" **#@**		10	2289

Dec 2011

Mike Hellweg	*Badis* sp. "Buxar" *****	Buxar Badis	20	4679
Mike Hellweg	*Betta edithae* "Palankaraya" *****	Pearl Spot Betta	20	4699
Jerry Jost	*Ameca splendens* **@**	Butterfly Goodeid	30	1380
Jerry Jost	*Aphyosemion bivittatum* "funge"	Two Striped Killie	15	1395
Jerry Jost	*Corydoras pygmaeus*	Pygmy Cory	10	1405
Jerry Jost	*Xenotaenia resolanae* **@**	Leopard Splitfin	30	1435
Pat Tosie	*Ameca Splendens* "Rio Teuchitlan" **#@**		15	3750
Pat Tosie	*Chapalichthys peraticus* sp. "La Mintzita" **@**		30	3780
Pat Tosie	*Characadon* sp. "Los Barros"		15	3795
Pat Tosie	*Zoogoneticus quitzeoensis* **@**		30	3825
Kurt Zahringer	*Danio tinwini* *****	Gold Ring Danio	20	415

Jan 2012

Mike Hellweg	Barbus fasciolatus "bariloides" *	African Ember Barb	25	4724
Mike Hellweg	Betta raja *	Royal Betta	20	4744
Mike Hellweg	Characodon sp. "27 de Noviembre" *		20	4764
Mike Hellweg	Cryptoheros cutteri	Cutter's Cichlid	10	4774
Mike Hellweg	Elassoma zonatum *	Banded Pygmy Sunfish	25	4799
Mike Hellweg	Gambusia myersi "San Pedro de las Colonias" *		10	4809
Mike Hellweg	Metriaclima esterae	Red Zebra	10	4819
Gary Lange	Glossolepis dorityi "Lake Nenggwambu" *@ Zig Zag Rainbow		25	1664
Gary Lange	Melanotaenia sexlineata "Tabubil" * Lipstick Rainbow		15	1679
Gary Lange	Melanotaenia utcheensis	Utchee Creek Rainbow	10	1689

Gary Lange	Melanotaenia sp. “Blue Hole, Sentani, Papua” (GL-05) *		15	1704
Justin Lehman	Tanichthys albonubes	Long Fin White Cloud	10	55
Jim Miller	Hypsophrys nematopus	Neet	15	2654
Jim Miller	Thayeria boehikei	Penguin Tetra	15	2669
Jim Miller	Zoogoneticus tequila @		30	2699
Pat Tosie	Hemichromis letourneuxi		10	3835
Kurt Zahringer	Telmatherina bonti “Nuha” **	Sulawesi Rainbow	25	440

Feb 2012

Mike Hellweg	Characodon sp. “Abraham Gonzales” *		20	4839
Jerry Jost	Hyphessobrycon nigricinctus		15	1450
Cory Koch	Aulonocranus dewindti **		25	2182
Cory Koch	Hypsophrys nicaraguensis	Nic	15	2197
Cory Koch	Ophthalmotilapia ventralis “Mpimbwe” *		20	2217
Jim Miller	Betta edithae		15	2714
Jim Miller	Betta raja		15	2729
Jim Miller	Macropodus erythropterus		10	2739
Jim Miller	Melanotaenia affinis #		0	2739
Rick Tinklenberg	Girardinus microdactylus “Pina del Rio (’10) *		10	2235
Rick Tinklenberg	Hemichromis sp. “Moanda”		10	2245
Rick Tinklenberg	Phallichthys quadripunctatus “Punta Pena, Panama” *@		15	2260
Rick Tinklenberg	Xiphophorus cortezi “Vinasco” *		10	2270
Pat Tosie	Chapalichthys peraticus sp. “La Mintzita” #@		15	3850
Pat Tosie	Cnesterodon decemmaculatus	10 Spot Livebearer	10	3860
Pat Tosie	Neolamprologus olivaceous		10	3870
Pat Tosie	Xenophorus captivus “Santa Maria” *@		35	3905
Pat Tosie	Xenotoca eiseni “Rio Tamazula” #@		15	3920
Derek Walker	“Harpagochromis” sp. “Golden Duck” **@	30	2319	
Derek Walker	Ilyodon lennoni “Rio Chacambero” @		30	2349
Derek Walker	Mogurnda mogurnda		15	2364
Derek Walker	Xiphophorus helleri “Rio Otapa” *		10	2374
Derek Walker	Zoogoneticus purhepechus		15	2389

* = 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

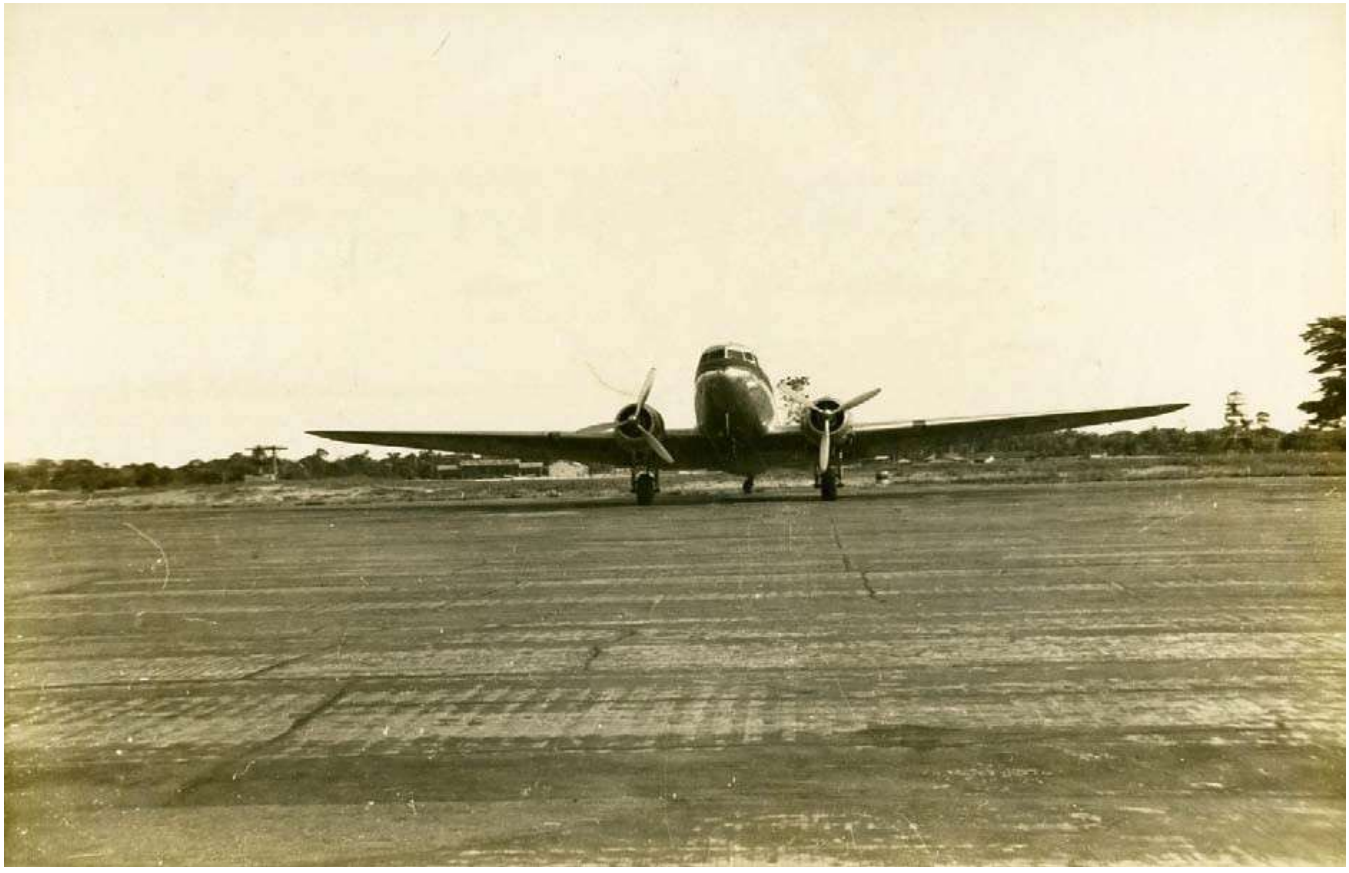
Sources:
Cal Academy - http://research.calacademy.org
CARES - http://www.carespreservation.com

All known previous spawns (some dating back to the 70's) have now been incorporated into the master list. This caused a few changes in "First MASI Spawns" and associated bonus points. Get over it.

How World War II Contributed to the Golden Decade of the Aquarium Hobby, the 1950s

by Alan Mark Fletcher

reprinted from the November / December 2011 Youngstown Aquarist of the Youngstown Area Tropical Fish Society
originally posted on the website of the Aquarium Hobby Historical Society



This DC-3 has flown millions of fish. Looks like Atkinson Field, British Guiana
From Alan M. Fletcher

First of all, it is important to point out that WWII was all-consuming for Americans, in a way that had not been seen before and will never be seen again. Every aspect of our lives was in some way directed toward the war effort. We were told what we could eat (food rationing), where we could travel (fuel rationing), what we could say, and what we could wear; and we willingly complied. We gave up most of our civil rights, confident that they would be returned to us after the war. My father, who was a

Presbyterian minister, and in poor health, went to work in a New Jersey defense factory. My mother worked as a secretary in a government office. My older brother enlisted in the Navy halfway through his college education and served as a quartermaster (steers the ship) on a small gunboat that went in with the landing troops to provide cover fire, in several of the later Pacific invasions. As a teenager I was a warden, trained to search for enemy planes (which never came!) and to watch at night for homes that might be violating the blackout regulations. I was in ninth grade in Dec. 7, 1941. The Pearl Harbor attack took place on a Sunday. On Monday morning the junior high principal called us all into the school auditorium to hear President Roosevelt give his famous "Day of Infamy" speech, live.

We were only a typical family. Everyone worked in some way to win the war. Even members of pacifist religious groups went to work in hospitals and other essential non-military services.

Just this morning I received a query from Steve Hinshaw, in Alaska, asking why the cover of his 1942 copy of **Exotic Aquarium Fishes** looks so different from the other editions. It was the war. Everyone had to make do with what they were able to get their hands on—even printers. I suspect that those wartime Exotics might be worth more than others.

Al Klee has correctly pointed out that the aquarium hobby and industry benefited mightily from the U.S. economic boom that followed the war. People had money to indulge in hobbies, and entrepreneurs had the confidence to take a gamble on new products. We even had sufficient wealth that we were able to fund the rebuilding of our for-mer enemies, and the other European and Asian nations that had been devastated by the war. Even the Green Revolution of the 1960s and 70s, which made food available to poor countries all around the world, grew out of that post- war prosperity. Some cynics have called it geopolitics and U.S. hegemony, but I believe American generosity, pure and simple.

The aquarium hobby benefited from the war before it ever became worldwide, however. Many Germans came to the U.S. in the 1930"s because they did not like what was happening in their country, many of them being Jewish feared for their lives. The aquarium hobby will owe an eternal debt to some of them, and in particular to Hugo Schnelle and Fred Cochu, brothers-in-law (photo opposite) who left Aquarium Hamburg and founded Paramount Aquarium in New York City. Paramount had a virtual monopoly on fish imports to the U.S in the 1950"s.

Hugo Schenelle and Fred Cochu. Partners in Paramount Aquarium. Cochu was married to Schenelle's sister. From Alan M. Fletcher

Fred Cochu and his pilot, Captain Doc Moor, one of several great pilots employed by Paramount. From Alan M. Fletcher

Awaiting transportation home. Lagos Nigeria. Photo by Alan M. Fletcher.

WWII was the first big war in which aircraft played a dominant role. Even the first unpaved airstrips in remote places like Letecia, Columbia were built for security reasons. But most important, ultimately, for the aquarium trade, there was a huge demand for all kinds of aircraft built in America, but needed for the war effort in Europe and Asia. Thousands of aircraft were ferried from the U.S. to the war theaters. Thousands of Air Force pilots did nothing but fly new planes across the oceans. They delivered their planes to where they were needed, and then hitched a ride back to the U.S. to transport another plane.

Paramount PBY amphibious plane on Yarina Cocha. To take off the plane had to run the length of the lake to get up on the step, then spin 180 degrees and race in the other direction to get up in the air. A frightening experience. Photo by Alan M. Fletcher

There were two main air routes between Europe and North America. Planes could fly to Newfoundland, to Greenland, to Iceland and finally to Great Britain. But that route was subject to frequent bad weather, and downed pilots stood no chance of surviving in the bitter cold water. The shortest distance across the Atlantic Ocean is actually from the east coast of Brazil to Senegal, West Africa. That became the main route. To make this passage from the new World to the Old possible U.S. Navy SeaBees constructed air-fields, most of them with concrete runways. They built airbases in Panama,

Paramount's chief pilot Richard E. "Nick" Nicholas (AOPA 278100) has been flying since 1935

Photos by the author

Paramount makes its aircraft pay by round trip use. Pilot Nicholas checks a load of day old chicks flown to Britisu Guiana. Each year the firm flies about 1,000,000 chicks to South America and brings tropical fish back. To carry delicate living cargo like chicks and tropical fish, an aircraft must have an efficient heating system. Note heating ducts and insulation

Paramount Aquarium's DC-3 being unpacked at Miami International Airport. When the cartons of fish are sorted, some are immediately sent on to customers by commercial lines, the rest are flown to the Paramount plant at Vero Beach, Fla. This load came from British Guiana and Trinidad.

Trinidad, British Guiana, Surinam, near Belem at the eastern hump of Brazil, and northern Venezuela. (A raunchy but very popular WWII song was about the airbase at Point Cumana, Venezuela. It was called "Working for the Yankee Dolluh". But enough. You can figure out the rest of it). Many thousands of aircraft of all types hopped between these bases finally ending up at the Brazil base, where they took on every drop of fuel they could and went across the Atlantic, nearly on the Equator.

After the war these bases became major transportation sites for Paramount Aquarium and a few fringe exporters/importers. On my first trip to British Guiana (now Guyana) we stayed in an abandoned military barracks at Atkinson Field south of Georgetown. On subsequent trips we stayed with Louis Chung, who was the principal collector of Guianese fishes in the 1950"s.

It should be noted here that during World War II Paramount Aquarium had a secret contract with the United States government to collect and import electric eels for use in top secret government research. To my knowledge the nature of this research has never been revealed. But the important point is that even during the War Paramount Aquarium had its own aircraft and was able to fly them thru any or all of the U.S. bases in South America. When the war ended, they already had a mechanism in place for the transport of all aquarium fishes. No other company had that advantage. I have always wondered how they carried those big metal cans loaded with high-voltage electric eels. It must have been a great relief to been able to

shift over to carrying Neon Tetras! Immediately after the war ended thousands of nearly new airplanes of all kinds were sold off by the government at a fraction of their true value or scrapped. Paramount Aquarium was able to take advantage of this surfeit of aircraft. During The 1950's they owned a Lockheed Lodestar, a Navy PBY flying boat, a Curtis C-46 cargo plane, a converted Boeing B-17 Flying Fortress bomber, a very fast twin engine light bomber whose designation I cannot recall, and several Douglas DC-3s (C-47 military). I made at least one trip in most of them. The DC-3s had the best cost ratios of any planes Paramount ever owned. They were slow but they were real workhorses. Some DC-3s are still in service around the world after 60 years. I would not be surprised if some were still being used to fly aquarium fishes from remote airstrips in South America and Africa.

Paramount Aquarium's converted B-17 bomber. Shortly after Paramount sold this ship, it was lost in Venezuela under mysterious circumstances *Photo by Bob Palmer*

Spare parts for most former military aircraft were abundant, easily available, and inexpensive. On one trip to Leticia in a DC-3, an engine blew out on landing. A new engine was flown in from Miami in a few days, and it was installed by Paramount‟s co-pilot, who was a certified A&E mechanic. We had intended to be home for Easter, but the delay enabled Fred and me to celebrate the Easter holiday with an Indian Baptist congregation. That was a memorable experience.

I have previously mentioned how this air travel, com-bined with tightly sealed inflated plastic bags in styrofoam-lined cartons made it possible to fly millions of staple and new fishes to the U.S. in hours instead of a couple of weeks, and they ar-rived in excellent condition. With such quantities of old and new fishes available it is no wonder the hobby thrived in the 1950s.

The hobby of the 1950s was also boosted by the GI Bill of Rights, which enabled thousands of veterans to attend college and professional schools at little cost. Most of the younger ichthyologists of the 1950s who identified the new fish,
engineers, chemists, and business people who brought the inno-vations to the hobby were educated under the GI Bill.

Fish cans loaded on plane for Paramount Aquarium Before the days of bags and cartons.

From Alan M. Fletcher.

I know that WWII contributed in more ways than these to the boom in the hobby in the 1950s, but I have written enough. Hopefully other AHHS* members who are as old as I am will be inspired to add to this WWII thread.
*This story was originally posted on the website of the Aquarium Hobby Historical Society: http://groups.yahoo.com/AquariumHobbyHistoricalSociety
Photos on page 15 are from the October 1965 issue of **The AOPA** (Aircraft Owners and Pilots Association).
Reprinted from the August 2011 issue of *Modern Aquarium* the publication of the Greater City Aquarium Society, New York, NY

Habitat

By Kevin Plazak

reprinted from the January/February 2012 Youngstown Aquarist of the Youngstown Area Tropical Fish Society

When looking at a book or web site while dreaming about seeing a type of fish that you would love to see in your home aquarium -- the first thought that doesn't pop into an aquarists head is "I wonder what the habitat is like"? Seriously -- do you really need to know the color of the water at 5 pm when the rain is starting to come down? Do you need to know the ambient temperature fluctuation during the day in the summer and winter? Do you need to know what species of bugs live in the habitat with the fish?

I'm going to go with a qualified "Yes". I qualify it because I have never been anywhere that cichlids live natively (other than *Herichthys cyanoguttatum* in Texas) and I have bred a lot of species of cichlid. But having visited San Jose recently I got to talking with Chuck Rambo and he dropped an article on me about how to ID the various species of *Teleogramma*. Who does that? I was smiling a lot on the inside that someone may actually take this hobby to heart as much as I do but playing very cool on the outside. Well, as cool as a fish geek can be anyway.

And then he proceeded to tell me about how the breeding cycle works for *Steatocranus casuarius* and *Steatocranus gibbiceps*. It's a neat story if you are interested. If you aren't interested, skip down a bit... They live in the same habitat and they don't hybridize. In fact, when you get Buffalo Heads in from the wild, there are frequently *S. gibbiceps* in the mix. So -- two fish, same genus, same basic breeding style -- why don't they hybridize? The habitat keeps them from hybridizing -- more or less. See, a breeding cichlid female has to put on a bit of weight to make some eggs. In order to do this she must eat. In order for her to eat, her favorite (and therefore staple) food must be readily available as well as accessible. Buffalo Heads like algae and *S. gibbiceps* likes snails. So the time-line roughly looks like: Algae ---> Female Buffalo Heads get Fat ---> Baby Buffalo Heads ---> Snails start in on the algae too ---> Female *S. gibbiceps* gets fat ---> Baby *S. gibbiceps*... It's that habitat options keeping the fish from hybridizing. There is a whole lot more to habitat than the food. The food is a good way to sort out how to breed something that just doesn't seem to be interested in breeding for you. Species that live in fast moving water will use the energy that they have for swimming in a strong current to beat the tar out of one another if they are given no other outlet for their energy. Just because the fish doesn't need to swim into a current doesn't mean that it is not still built to use energy at a rate consistent with that of a fish living in strong current. *Steatocranus* (yes -- I know, using a lot of the same example) *tinanti* lives in the same habitat as the fish noted above BUT they will live in the high current part of the habitat while the others live further out of the current. In the aquarium, *S. tinanti* can be hell on wheels chasing down its own species and terrorizing them without some decent outlet for their aggression. A power head goes a long way to keeping the peace -- and knowing the habitat will help lead you to a solution.

Do the fish like to breed in a cave, a mud tube, among plants, in a sand pit, between leaves stacked on the bottom of the pool, in the water column... these things will help solve issues. If a fish breeds in a mud tube like *Hypsophrys nicaraguensis* or *Triglachromis otostigma* you may find breeding the fish very difficult without that information. *H. nicaraguensis* has non-adhesive eggs that need to be laid in a bowl of sorts. . The bottom of a mud tube will allow that but how will you sort out what to use in your home aquar-ium without knowing they need to borrow the hole from another species that makes

those holes in their native habitat? You may not need to buy imported Central American mud for the fish but making sure there is a bowl in a cave available might be the trick.

You might be asking "Convicts breed in the bag on the way to the auction -- habitat isn't important for all cichlids, is it"? Well, no. Knowing the habitat of a Convict is probably not critical -- unless you can't breed them. Then knowing that the pH should be above 7.0 and they like tropical waters would be helpful. That doesn't mean they won't breed in a pH of 6.0 at 68 F -- but if you are struggling with a fish, knowing a bit about its native biology will help you a lot. And the point of this article is that foreknowledge of what you are in for when acquiring a fish can go a long way to the success of your hobby. Trying to breed a fish that prefers soft water in San Jose tap water might be a stretch. Conversely, keeping a stockpile of hard water fish might just do you well if you like to work with the water your house provides naturally. Your home habitat matters too...

The important take away point of this blathering is knowing your fish well will help you to succeed with your fish. Proactively researching a fish and building an appropriate habitat in your home will go a long way to enjoying your fish a lot more. And putting that energy into the fishes needs will reward you with behavior that will sometimes really surprise you. Since our primary goal in keeping a fish is getting to see what they are up to -- allowing them the opportunity to do as many of the things they would do in the wild will give you a window into their world. And isn't that what we are really doing here? Building little remote windows to the world thousands of miles away?

Segrest Farms e-newsletter offer for members

Segrest Farms is a premiere wholesaler of ornamental fish. They have been in business to the trade since 1961. Read more about them on their website: http://www.segrestfarms.com/

They are extending an opportunity to our aquarium club. Segrest is creating a newsletter that they will send out via email. It will feature fish they are importing that are unusual to the hobby.

Please note: Segrest is wholesale ONLY. If you are interested in anything featured in their newsletter, they will ask you to contact your local fish store. The store will obtain it for you. Segrest has a handy "store locater" feature on their website.

If you are interested in their e-newsletter, please send them a BLANK email with the word "subscribe" in the subject line. subscribe@segrestfarms.com

(use this email address, send a BLANK email with the word "subscribe" in the subject line)

Let me know how you like the newsletter
Kathy Deutsch
kathy@skdeu.com

What is in Your Fish Food?

By Kathy Deutsch

This article does not endorse any particular fish food.

If you know me, you know that over the years I have fed many species. Some with less success than others; cutting up a pinkie mouse to coax a baby corn snake to eat was the most gruesome.

What I am learning as I make meals for poultry, plecostomus and poodles is: read the label, and price does not equal quality. No one food, fed solely, will maintain a healthy animal over its whole life. Variety is key.

If you read the labels of many kinds of fish food, the first ingredient is grain. In the wild, fish don't eat grain. Depending on the species, they eat protein, algae or greens, and some sort of roughage like rotten wood, grit, or crustacean shells.

Carbohydrates like grain will satisfy a fish's hunger quickly, but it does not give them a lot of long-term energy. It can be addicting, though. So the fish crave it and eagerly eat it. A fish food with a mix of grain and protein can be a good "basic" food.

My goal in keeping fish is to grow them slowly, keep them healthy and let them live to old age. For this purpose, a basic food is my starting point. I get a variety of flake foods and mix them in a coffee can. Every time I run low, I get some different flavors of flake. Earthworm flake is always in the mix, though. Fish like smelly food, and fish love variety. By mixing various types, I have a greater chance of supplying the fish with more nutrients.

Protein is my go-to for color, faster growth, and conditioning for breeding. Any carnivore pellet or a carnivore flake helps. Even the most vegetarian of fishes likes an occasional protein pellet.

Nothing replaces fruits and vegetables. In a fish diet, an algae wafer or flake works. Don't overlook cooked peas or carrots, and zucchini. I use a weight to keep the zucchini at the bottom. Romaine lettuce, weighed down, is a nice treat and will attract snails. After a day, remove the lettuce (don't let it rot) and any snails with it. I experiment with all kinds of raw and cooked foods.

Finally, there is the roughage, or fiber, which every fish needs and gets in various ways. I don't have it all figured out, but I think many fish eat wood. They also seem to forage for grit amongst the rocks in the tank. I assume brine shrimp flakes have the shell ground into them, giving some roughage.

In the wild, fish forage for what they crave and need to stay healthy. In a tank, they rely on us to provide the nutrients. I try to provide variety and balance, which is a pain but will result in (hopefully) long-lived, happy fish.

Five Easy Plants for Summer Ponds

by Sherry Mitchell

Reprinted from the Summer 2011 issue of The Delta Tale of the Potomac Valley Aquarium Society

(1) Hardy Water Lilies: Hardy water lilies are the ubiquitous staple of summer ponds everywhere. The tubers are long lived, easy to plant and divide and when treated well, the plants live for many years. Plant the tubers in large lily pans, tubs or even under-the-bed boxes in water plant soil. My trick to creating the best soil is to use heavy clay over a layer of plain clay kitty litter. Hardy water lilies are heavy feeders and require a lot of fertilizer to bloom. Use a layer of time-released fertilizer pellets on the bottom of the planting pot, or use the big horse-pill sized fertilizer tabs throughout the season to ensure the best blooms with remarkable coloration.

(2) Pickerel Rush: One of the easiest and prettiest bog plants is the Pickerel Rush, a native North American plant. Medium sized, heart shaped leaves make a tidy clump at waters edge for most of the year. This plant really comes into full beauty in late June when it blooms. Tall spikes of blue flowers attract an abundance of butterflies, bumble bees, and even hummingbirds. Dragonflies will even perch on the flower spikes.

(3) Sweet Flag: Sweet Flag is a nice clumping plant for the bog garden or edge of the pond that sports sword-shaped green and white leaves. It does not grow out of control and the variegated foliage creates a nice contrast to the heart-shaped leaves of pickerel rush or burgundy leaves of canna lilies. The plant grows to nearly three feet tall, and can be potted in a shallow tub in rich water plant soil and placed in 6 inches of water. The name comes from the scent that the plant releases when the leaves are crushed.

(4) Water Iris: There are many different kinds of water iris, but the most colorful, by far, is the Louisiana Iris. A rather short lived iris in the pond, the Louisiana Iris benefits from good aquatic soil. Let the plant die back on its own in the fall and sink the pot to the bottom of the pond to prevent it from freezing. The yellow Iris pseudacorus is much hardier and long lived, but be warned, it must be divided and replanted annually as it will grow like a weed.

(5) Anacharis: Lest the watery realm below the surface be ignored, the ponding gardener should provide submerged plants. Anacharis is a favorite in my garden. The goldfish nibble on it constantly and clumps of it shelter a nursery of young goldfish in the summer. The fish will breed in the clumps of the anacharis as well. One need do nothing more than float it in the pond, or it can be planted in pots of gravel at the bottom of the pond. It's far better to remove the rubber band and lead plant weight from the store than to leave them on and risk the plant rotting through the bands. The plant grows an inch a day, so for those with smaller ponds, regular grooming will be necessary. When anacharis is happy, it blooms freely, with small white, bell-shaped flowers.

Keeping & Breeding *Danio tinwini*, The Gold-Ring Danio

By Kurt A. Zahringer

Species Info

Rebels, insurgents, pirates, drug cartels, and highwaymen have no respect for us aquarists, and often insist on staging their shenanigans in countries that contain prime habitat for beautiful tropical fish. Such has been the case in Burma, or the Republic of Myanmar, which had been in the grips of Soviet-style socialism for many decades, and then endured violent revolutionary conflicts in recent years. Thankfully, the country has recently emerged into a more peaceful and democratic time, and brought with it numerous species of appealing tropical fish!

One such species is *Danio tinwini*, often called the Gold-Ring Danio (I fail to see any gold rings on these fish, but so many retailers have taken to this name, I can't fight it). Regardless of the name, this is a beautiful little cyprinid that sports a highlighter-green body with intricate black spots. Males are slightly smaller than females and these spots are more defined on their unpaired fins, whereas females' patterning is more subdued, and they're slightly more deeper-bodied. These little gems reach a max size of barely 1 inch, making them an excellent "nano-tank" inhabitant.

This species was first seen in 2003, under various trade names, but was described as D. tinwini in 2009. The species was named is in honor of U Tin Win, director of Hein Aquarium Company, who first discovered the fish. This species is moderately similar to D. kyathit, and may be confused with them when young, but D. kyathit has a more prominent stripe along the middle of its body and grows substantially larger.

Danio tinwini is a typical small cyprinid and prefers to be maintained in a school. These are very energetic little fish and look stunning in a group. They're not picky about food, but because of their small size, care must be taken feeding them. They'll take finely-crumbled flake food, but live or frozen foods should be offered for optimal growth and conditioning. Baby brine shrimp is an ideal food, along with frozen or live daphnia. Larger adult specimens may take adult brine shrimp.

Reproduction

When I first obtained my fish, there was little information on their captive-breeding, and the few reports that existed weren't altogether consistent. So, I simply decided to wing it, experimenting to see what would yield successful results. First, I tried the method of embedding a net (wedding-dress tulle from the fabric store) into a 5-gal tank with a small power filter. I placed a single pair in the net and left them there for a week, feeding them well with live baby brine shrimp. The spawning tank was situated beneath a bare-bottom tank with a timed light, giving them a dim day and night period. I removed them after a week and watched the tank closely, but never found eggs or fry.

Next, I took a different approach and covered the bottom of the tank with a shallow layer of very coarse gravel, no more than 2 pieces deep. I then put my whole school of 8 Danios into the tank (of which I think there were 5 females and 3 males) and returned the small power filter. This kept the water quite turbulent, which they seemed to enjoy. Again, they received a day and night period from the upper tank light. The temp was approx 69^{O}F, and the pH was 8.0. Again I fed them live baby brine for about 1 week, after which I removed the adults and disconnected the filter.

After approx. 3 days, I found the first tiny fry swimming near the surface. The fry were no more than 3mm in length, practically no more than a featureless sliver. I then acknowledged the harrowing tank ahead of me, as these were by far the smallest fry I'd yet to raise. Fortunately, I had a healthy paramecium culture already from raising some annual killifish with especially tiny fry. I began adding a turkey-baster full of paramecium each day, which the fry actually did seem to feed upon.

Over the course of the week, more fry appeared, numbering 18 in total. I began adding more paramecium to their tank twice daily, and the fry did appear to be growing, albeit very slowly. After 3 weeks or so, the fry appeared large enough for San Francisco brine shrimp, which they eagerly consumed. I fed these and paramecium concurrently for about a week until I was sure everyone was eating the brine shrimp. After another week, they grew large enough for standard baby brine. At this point, growth improved substantially and the fry started to gain an inkling of their adult coloration.

I attempted to spawn them again, this time repeating my previous setup but with a small sponge filter rather than the power filter, which unfortunately yielded no fry. I then reproduced the setup from the successful spawn by returning the power filter. This again produced viable fry, so I can confidently say that high turbidity seems to facilitate spawning.

From each of the successful spawns, I was able to raise approx. 40% of the original fry to juvenile fish. Getting the fry past the critical first 3 weeks was the challenge, after which I never lost a single fry.

The Lesson Learned

Every species I successfully spawn (and even some of the failures) teaches me something useful that improves my abilities as a fish-keeper. In this case, the payoff came from trying different setups, when useful info was rather lacking. I simply looked at setups for spawning other similar species and melded together ideas for setups that might work. I've since found other breeding-reports that insist that this species will only spawn in hyper-acidic, soft water, which obviously wasn't the case in my experience. This demonstrates another issue that we aquarists often have: seeing something once and assuming the conditions thereof were necessary to it happening (sometimes called the "Post hoc, ergo propter hoc" fallacy in debate). If something works, I like to run a counter-experiment (i.e. swapping the power-filter for a sponge filter) to see what was actually necessary. Also, this was yet another case of how my best successes in fish keeping come from being pro-active. Being creative and resolving to try it now, even it may not work, has proved to be a very advantageous attitude in keeping and breeding fish, especially species like this.

American Killifish Association

The American Killifish Association is pleased to announce its **50th National Convention**, which will be held at the **Crown Plaza –St. Louis Airport Hotel** on **May 25th, 26th and 27th, 2012**. The convention is opened to all aquarium hobbyists, both AKA members and non AKA members, and hobbyists new to killifish will find the weekend very exciting and informative. You will have the opportunity to see and purchase more species and varieties of killifish than you will see in any general aquarium show, and will have the opportunity to hear some outstanding speakers on a variety of fish related topics.

Ask Jack Heller – (314) 576-5111, hellerjackl@aol.com if you have any questions about the convention or would like to help in the running of the convention.

Speakers:

There will be seven different presentations and workshops, including programs on collecting in Africa by Holger Hengstler of Germany, a program on collecting on the Gulf Coast of Florida and Louisiana by Charlie Nunziata and Tony Terceira, a program on blue eyes by Gary Lange, a program on live foods by Mike Hellweg, a program on the evolution and genetic relationships of West African killifish by Dr. Glen Collier and a program by the New England Killifish Association on fish room management. All speakers should be interesting and informative.

Fish Show

The show will provide the opportunity to see a tremendous number and variety of killifish from many of the finest killifish hobbyists in the world. This is a rare opportunity to see more species of killifish than will be assembled in one place at one time than almost any other place in the country.

Fish Sale:

The fish sale will provide the opportunity to purchase killifish at a fixed price prior to the giant Sunday auction. There will be available a large selection of killifish and killifish related items for purchase.

Awards Banquet:

The convention always includes a Saturday evening awards banquet with great food and discussion followed by an awards banquet.

Sunday Auction:

The giant Sunday auction is the grand finale of the weekend. This is the opportunity to bid for all of the fish in the show plus many more new and rare fish reserved for the auction. The bidding is fast, furious and exciting and a lot of fun.

Hope to see you there!

Club Hopping 2012

Steve Edie

Note: Some dates are tentative.

Mar 23-25, 2012 – Hartford, CT: North East Council – Annual Convention

Apr 13-15, 2012 - St Louis: Missouri Aquarium Society – Annual Workshop

Apr 22, 2012 - Chicago: Greater Chicago Cichlid Association – Swap Meet

Apr 26-29, 2012 – Miami: American Livebearer Association – Annual Convention

May 25-27, 2012 – St Louis: American Killifish Association – Annual Convention

May 25-27, 2012 – Chicago – Greater Chicago Cichlid Association – Cichlid Classic

July 7, 2012 - Urbana, IL: Champaign Area Fish Exchange – Auction

July 11-15, 2012 – Indianapolis: American Cichlid Association – Annual Convention

Aug 12, 2012 - St Louis: Missouri Aquarium Society – Auction

Sept 19, 2012 – Everywhere: Talk Like a Pirate Day

Oct 6, 2012 - St Louis: Missouri Aquarium Society – Swap Meet

Oct 18-21, 2012 – Herndon, VA: All Aquarium Catfish Convention

Nov 1-4, 2012 – St Louis: Aquatic Gardeners Association – Annual Convention

Nov 11, 2012 - St Louis: Missouri Aquarium Society – Auction

Nov 16-18, 2012 – Cleveland: Ohio Cichlid Association – Extravaganza

Check with the individual clubs for more details.

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Electronic Distribution Now Available

For those who prefer, the Darter is now available electronically, instead of the paper distribution. To change from paper to electronic distribution, email me at editor@msiiouriaquariumsociety.com. You will get your Darter sooner and the club will save printing and postage.

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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MASI MEMBERS E-Mail Addresses:

Jim & Sue Amsden	suzjimmie@aol.com
Klaus Bertich	kbertich@sbcglobal.net
Earl Biffle	biff.bat@juno.com
Roy Brandhorst	Skipperoy4@juno.com
Scott Bush	sportspicks@charter.net
Steve Deutsch	steve@skdeu.com
Kathy Deutsch	kathy@skdeu.com
Steve Edie	sredie@charter.net
Charles Harrison	csharrison@inkmaker.net
Mike Hellweg	mhellweg511@charter.net
Angela Hellweg	pugdog64@yahoo.com
Steven Hoffman	hoffmo@cablemo.net
Lisa Hollenbeck	lisah@alpineshop.com
Bart Kraeger	bartck@aol.com
Lawrence Kent	lawkentnorton@yahoo.com
Gary Lange	gwlange@sbcglobal.net
Mark and Tammy Langer	JTMS@sbcglobal.net
Micky Lee	too_fishy@hotmail.com
Charles and MaryAnn Lenau	cmlenau@centurylink.net
Gary McIlvaine	gmcilvaine@msn.com
Ed Millinger	amazoneddy1@sbcglobal.net
Jim Miller	jjimdeemiller@att.net
Jim Mueller	j.a.mueller@sbcglobal.net
Bob Newton	robt.newton@sbcglobal.net
Brad Riley	briley53@aol.com
Randy Shell	rdsma@charter.net
Rick Smith	polarfish2003@yahoo.com
Rose Sonderman	RoseSews@Earthlink.net
Jim & Brenda Thale	tbird55jb@aol.com
Mark & Alice Theby	markrehabber@yahoo.com
Pat Tosie	pattosie@yahoo.com
Patrick A. Tosie, II	patricktosie@juno.com
John Van Asch	johnsfishy@att.net
Dave and Laura Wagner	dave_laura@charter.net
Andy Walker	awalker02@sbcglobal.net
Harold Walker, Jr.	fiveinall@sbcglobal.net
Jim & Rosie Yaekel	jryaekel@htc.net

Member Classifieds

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, charles@inkmkr.com –

Thiosulfate crystals (Chlorine Remover)……$3.00 a half pound
OTO double strength Chlorine/Chloroamine test kits - 4 ounce …$12.50
Flubendazole, 10% powder 25 grams …….. $20.00
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

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.

EASTERN AQUATICS

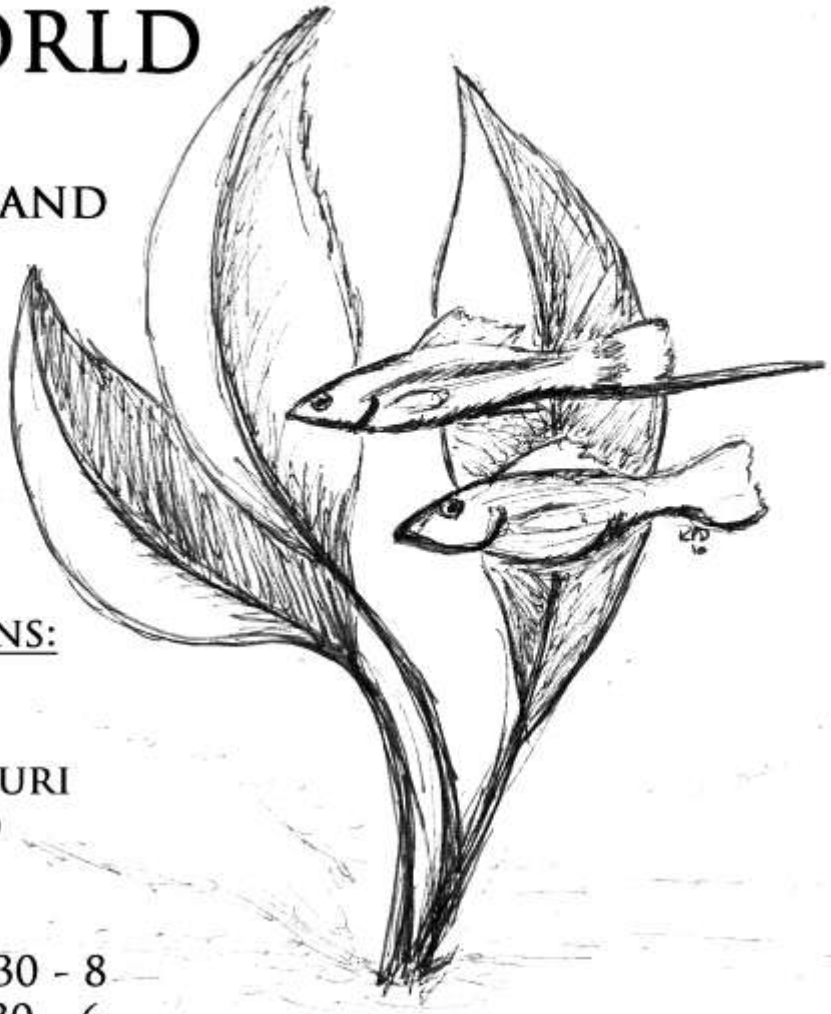
717-898-7224 (leave message) Easternaquatics@yahoo.com

LIVE CULTURED BLACKWORMS

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

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

AQUA-WORLD



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TWO LOCATIONS:

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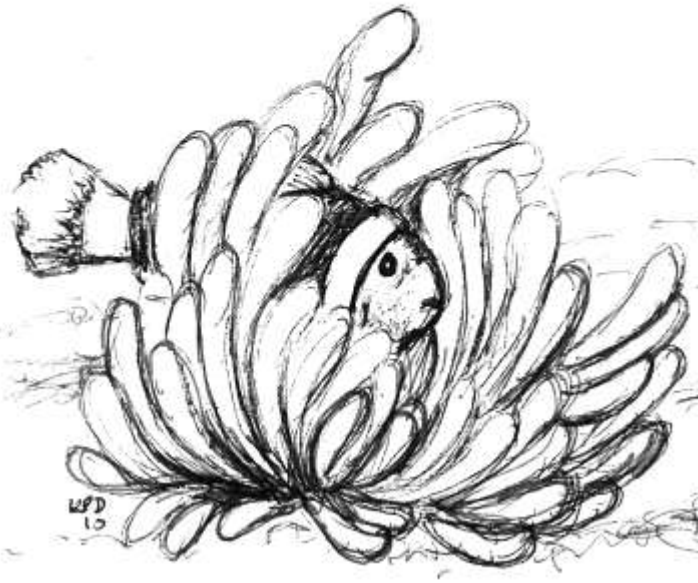
ST. LOUIS MISSOURI
(314) 772-0100
JASON

HOURS: M-F: 10:30 - 8
SAT: 10:30 - 6
SUN: CLOSED



16063 MANCHESTER RD
ELLISVILLE MISSOURI
(636) 391-0100
MIKE

HOURS: M-F: 10 - 8
SAT: 10 - 6
SUN: 12 - 5

WWW.AQUA-WORLD.COM

MASI extends a **THANK YOU** to the following businesses for their donations and support of our organization:

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THE DARTER
Missouri Aquarium Society, Inc.
P.O. Box 1682
Maryland Heights, MO 63043-1682

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