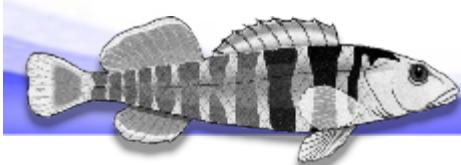


The **DARTER**



V48#1

March/April 2022



The DARTER

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MEMBERSHIP

join MASi



Annual Voting membership in the Missouri Aquarium Society is \$15; annual Corresponding membership is \$10; both include an electronic subscription to The Darter, published six times per year.

Join or renew membership at any meeting, most club events, by PayPal from the MASi Website's Membership Page or by contacting the membership chair.

EDITOR Chuck Bremer editor@missouriaquariumsociety.com www.missouriaquariumsociety.com



**Cover -Nymphaea bloom
From the
HAP Program**



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Click/Tap this to bounce back here. Then tap/click the article you want to read next!





FROM THE PRESIDENT'S TANK

Pat Tosie

**We're looking for a
new DARTER
Editor.**

**Are you interested
or know someone who might
be?**

**Contact either the President
or the Editor to explore.**



Thanks for your help! & Keep looking below water....

Chuck Bremer

FROM THE EDITOR

Again...

MASI is back to Face to Face (F2F) for most activities. Only the Council is meeting by ZOOM to save travel time and with the higher gas prices.

Our new meeting location has proven well adapted to the club for both General Meetings and Public Events. We inaugurated it to the public at the March 13th Auction and they seemed to have no problem finding it as we had 145 buyers, a normal number. Many came from several hours away, looking for Fishy Activities in which to participate.

The large new space is welcome for future activities!!

Your Society is always looking for new volunteers! Come out, support your club and give a hand. You'll be warmly welcomed and as the club grows volunteers are more needed than ever.

There's always something to do to help



make it an even better club. Now that we've surpassed 200 members they'll expect more to remain. There's more than can be done by just a few!!

**Come
help!!**

Content deadline for the 3rd Darter of 2022 is May 10th!!
[Send Feedback and Letters to the Editor to: editor@missouriaquariumsociety.com](mailto:editor@missouriaquariumsociety.com)



MASI General Meeting: 7:30 PM CT, Thurs, March 17th, 2022!!

Two of Missouri's Nationally Known Aquatic Professionals bring you up to date on the Hobby:

Melanie Holmes & Drew Clark Aquashella: Review and Aquascaping Demonstration!



atics" showcasing new people and things in the hobby, his own video tips for the avid fish keeper and hobnobbing with well known Aquatic Celebrities. He brings you the sights and sounds of the hobby from across the USA.

Melanie is teaching MASI the art of Aquascaping, beginning with the Wabi-Kusa workshop we had in October, 2021. She has become well known in several national and international aquascaping contests. She WON her classes in both Dallas and Orlando Aquashellas and picked up some of the top overall honors!

COME LEARN WHERE YOUR HOBBY IS AT AND WHERE IT IS GOING!!

Drew is known for his national YouTube Channel "FishyBizzAqu

Both Drew and Melanie attended the late February Orlando Aquashella and will be give an update of the new things in the hobby and the sights and sounds of the Aquatic Hobby of the 21st Century.

Melanie will give a class on the Aquascaping techniques that helped her win top awards and will aquascape the Marineland 25 Gallon All-N-One 25 Gal WiFi System that will be the night's Raffle Prize!!

Come to the meeting for a night of Aquatic fellowship, information and Fun!! Guests are welcome!! (- and someone will take home a FANTASTIC NEW aquascaped Aquarium!!)

Both are MASI Members.

AQUASHELLA IS THE LARGEST AQUARIUM EVENT IN AMERICA FEATURING THE BEST OF FRESHWATER, SALTWATER, REPTILES AND AQUATIC ART!



At MASI's NEW meeting location:

**Jost Chemical Complex building:
8195 Lackland Road
St Louis, MO 63114**

Follow the signs - Map on MASI's Website



Win in March with MASi:

At MASi's Club Meeting - March 17th
aquascaped by an Award Winning Professional Aquascaper!

Come make a chance to Win one!



Exhibit Series Wi-Fi LED Kit 25 Gallon

This Marineland® Exhibit Series Wi-Fi LED complete system has everything needed to create the perfect home for your fish, including a glass canopy and aquarium stand. The 25-gallon frameless glass aquarium with integrated filtration and submersible heater features mitered edges for a modern viewing experience. The wi-fi controlled LED lights help create a customized aquatic showcase can be controlled and scheduled using the Marineland® LED Lighting app.

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Marineland® products are designed with both performance and style in mind. We push precision and power beyond the expected. We do this because at the heart of our innovative spirit is a desire to help hobbyists everywhere do more, create more and, most of all, enjoy more. So whatever you're passionate about – freshwater or saltwater, big or small, beauty or science – **make this aquarium your own.**



Raffle at MASi's NEW location:

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Saturday 9:00 am - 6:00 pm
Sunday 11:00 am - 5:00 pm



Only 2 1/2 hours from the Arch!



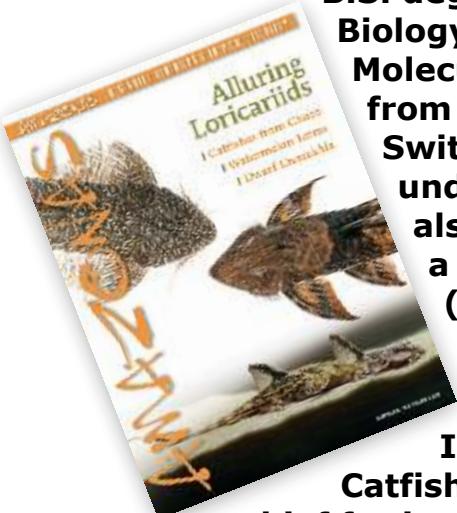
MASI General Meetings: 7:30 PM CT, 3rd Thursdays, 2022!!

April 21st: Stephan Tanner



BIO: Stephan Tanner has kept aquarium fish since 1982. Born in Switzerland, he set up his first fish tank at age 14, followed by a whole bunch more over the years. His fascination for nature and biology led to a

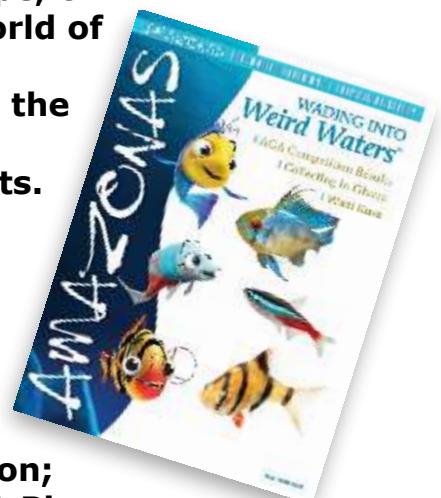
B.S. degree in Ecology and Molecular Biology (1995) and a Ph.D. in Human Molecular Genetics (1998); both from the University of Bern, Switzerland. During his undergraduate years, Stephan also worked for several years for a local fish and pet shop (Spiezer Zoo, Spiez, Switzerland).



In 1992, Stephan became a member of the International Society for Barbs, Tetras, Loaches, and Catfishes (IG BSSW). From 1994-2006, he was the editor-in-chief for its quarterly publication BSSW Report. He regularly travels to fish related events all over the United States and Europe, or to visit friends that he has made throughout the great world of fish. Stephan is a member of the IG BSSW, the American Cichlid Association, the American Livebearer Association, the North American Native Fishes Association, the Minnesota Aquarium Society, and the Columbus Area Fish Enthusiasts.

Stephan is now Senior Editor and Publisher of AMAZONAS Magazine, the English edition is published by Aquatic Media Press. He has been a senior editor and the translator since January 2013.

Possible Programs: Xingu Plecos: Let's Save Them Before They Vanish; A Science-based Approach to Filtration; Catfish Nutrition; Let's Breed "Em Before They Vanish... A Pleco Talk; Amazonas; The Lacy Act; Etc.



At MASI's NEW meeting location:

Jost Chemical Complex building:
8195 Lackland Road
St Louis, MO 63114

Follow the signs - Map on MASI's Website



MASI General Meetings: 7:30 PM CT, 3rd Thursdays, 2022!!



May 19th: Alex Scharnberg: West African Cichlids



BIO: Alex got into tropical fish when he was 8 years old with his dad getting him a 5 gallon tank. One of the earliest fish he became hooked on was the common krib, *Pelvicachromis pulcher*. Since then he has been interested in reptiles, birds, orchids, native colubrid snakes and tarantulas.

After spending time in New England

teaching Environmental Education he attended UNC Charlotte for a Masters in Education. He has spent over 10 summers at various summer camps running nature programs, and other duties, and it was his experience at summer camps that got him to go into education. After keeping and breeding a wide variety of snakes and tarantulas as well as fish and plants he has settled back into keeping tropical fish, orchids and roses.

He spent a few years in the tropical fish business with Fintastic, until it closed. Currently he specializes in West African riverine cichlids, and the genus *Pelvicachromis*, with nine tanks, about 40 orchids and other tropicals, 60 rose bushes and other outdoor plants, at his condominium in Central Charlotte. He is an elementary school science teacher, board vice president of the Charlotte Civic Orchestra, and president of the Charlotte Area Aquarists Society.



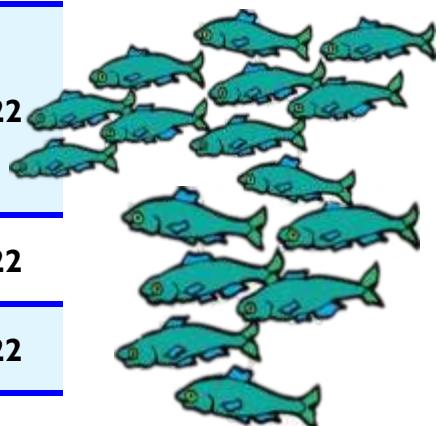
PROGRAM CHAIR'S CORNER

Steve Coxon



Speaker	Topic	Date
Melanie Holmes & Drew Clark	Aquashella: Review and Aquascaping Demonstration!	3/17/2022
Stephan Tanner	Topic TBD (Filters, Catfish, Amazonas, etc.?)	4/21/2022
Alex Scharnberg	West African Cichlids	5/19/2022
Dean Tweeddale	Fry rack system	6/16/2022
Scott Fellman	Tannins in the Tank!	7/21/2022
Justin Warnock	CO2 in the Planted Tank	8/18/2022
Rodet Rodriguez Silva	Lake Miragoâne Limia Project, MASi's 2022 Challenge	9/15/2022
Bob Hrabik	Native Fish Topics (Maybe his new book?)	10/20/2022
TBD	TBD	11/17/2022
Christmas Party!!		12/15/2022

MASI's Own Fish School



Programs will be In-Person at our meeting location:

Jost Chemical Complex
8195 Lackland Rd
St. Louis, MO
63114

And simultaneously streamed on MASi's Youtube Channel:



[Tinyurl.com/
MASI-video](https://tinyurl.com/MASI-video)

SEE YOU THERE?



MASI SPRING BOWLING

EPIPHANY LANES 6:00 - 9:00 PM

SATURDAY March 19th!



In appreciation of its Members, MASI is sponsoring a Fall Bowling Party - Get together, have some fun and exchange interests!

Free Bowling and Shoes provided for MASI Families and Guests

No outside food is allowed but there is plenty of food and drink offered at the Venue!

3164 Ivanhoe Ave.
St. Louis, MO 63139
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off I-44 At Arsenal or Jameson



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62208

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M-F 10:00-8:00

Sat 10:30-6:00

Sat 10:00-6:00

Sun Closed

Sun Closed

[Aqua-World facebook](http://Aqua-World.facebook.com)





Doors open to Buyers at 12:00 Noon. \$5 entrance for adults, Children Free! (Becomes \$3 at 1:00 PM)

Find what you want and make your best Deals!

50 Table SWAP Meet on Sunday, April 30, 2022 Noon to 3 PM!

SWAP at Jost

Chemical:
8195 Lackland Rd
St Louis, MO
63114



MASI Spring Aquatic Hobby Weekend!!

Missouri Aquarium Society's Public Fish Auction Sunday, May 1, 2022



Viewing 10:00 AM, Auction at 11:00 AM
Verbal & silent auctions until about 4:00PM

Special Raffle Items donated by Sailfin Pet Shop



500+ Lots of Aquarium FISH, Plants, Equipment, TANKS, Fish Food, Décor and all things Aquarium!!

Free Buyer Number at the Door!

Sellers must Pre-Register with

auction@missouriaquariumsociety.com

Members after 12:01 AM April 10, after April 17 for all. Seller rules on MASI's Webpage.

Auction at Jost

Chemical:
8195 Lackland Rd
St Louis, MO
63114





MEMBERSHIP CHAIRMAN

Robby Simmons

MASI is still growing!

Scott Baird	Liberty, MO
Jonathan Frederick	Fairview Heights, IL
Samuel Gogel	St Louis, MO
Matthew Hardin	Ballwin, MO
Stephen Johnson	Columbia, MO
Larry Markos	Ferguson, MO
Miles Morrissey	East Hampton, MA
Jacob Weller	St Charles, MO
Sean Wright	Columbia, MO
Clifford Barchos	Arnold, MO
Dog Walking & Boarding	Alton, IL
Barny Cagle	Arnold, MO
Anthony Dietz	Ballwin, MO
Kevin Gant	Highland, IL
Kyle Harbaugh	Arnold, MO
Ken Hopkins	St Louis, MO
Mark Maier	Boonville, MO
Allan Womack	Jerseyville, IL

Welcome
these new
Members!

since the
last Darter!

Many
Joined or
Renewed
at the
March
13th
Auction!



Don't Forget to Renew your MASi membership by March, 2022 if you want to continue to get the DARTER in 2022??!

The Missouri Aquarium Society's Annual Voting membership is \$15; an annual Corresponding membership is \$10; both include an electronic subscription to The Darter, published six times per year. Join or renew membership at any meeting, most club events, by PayPal from the MASi [Website's Membership Page](#) or by contacting Robby Simmons, membership chair, Email: robby_simmons@yahoo.com.



Memberships

Help MASi Support the Aquarium Hobby!

Support Locally by shopping our supporters.

Support Nationally & Internationally by supporting the MASi Challenge.





COUNCIL MINUTES

Executive Council

The voting portion of the Executive Council consists of 4 elected officers, 6 elected council members and the 3 appointed positions: Auction Chair, Editor and Show Chair.

On page 2 are contacts for the current Executive Council and other Committee Chairs and Service positions within our Club. Please provide input to anyone or attend the Council meetings yourself.

Members are invited to attend the Council meetings to bring up issues, contribute to the discussion or just to see how the club is run. Meetings are currently being held by invitation on the ZOOM platform. Contact the Webmaster (Charles@inkmr.com) if you desire an invitation.

Give the Council your Feedback or Support!

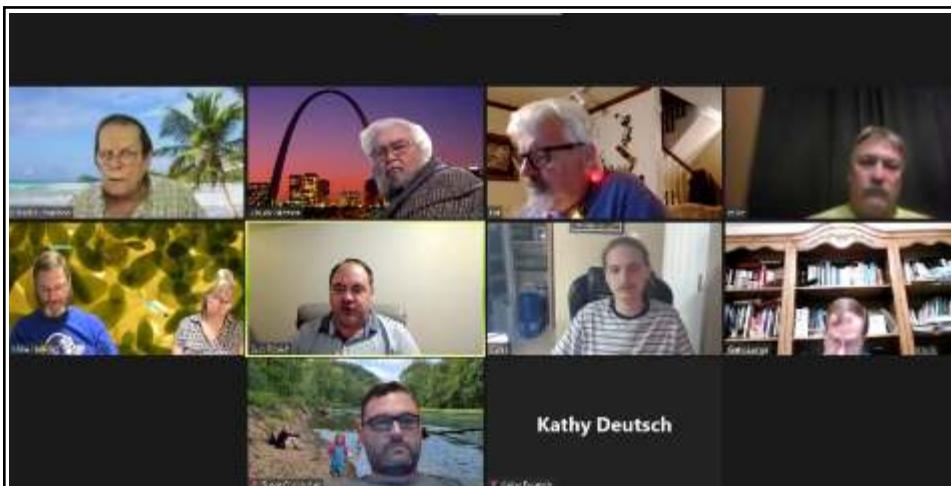
Next Executive Council Meetings, on ZOOM: 4th Thursdays at 7:30 PM:

March 24, 2022

April 28, 2022

May 26, 2022

June 23, 2022



COUNCIL MEETING

12/2/21

Pat Tosie called the Zoom meeting to order at 7:32. Present were Angela Hellweg, Scot Roach, Charles Harrison, Mike Huber, Chuck Bremer, Caleb Pitman, Kathy Deutsch, Mike Hellweg, Gary Lange and Steve Coxon.

ANNOUNCEMENTS

- ✓ The next Council meeting is Jan 20 at 7:00 prior to the General meeting.
- ✓ The deadline for Darter submissions is Jan 10.

REPORTS:

- ✓ **SECRETARY:** Angela read the Minutes from Oct meeting. A motion to approve the amended minutes was made by Mike Hellweg and was seconded by Mike Huber. The motion passed.
- ✓ **TREASURER:** Scot read the Sep Treasurer's report. A motion to approve was made by Charles Harrison and was seconded by Caleb Pitman. The motion passed. Scot then read the Oct Treasurer's report. A motion to approve was made by Mike Hellweg and was seconded by Mike Huber. The motion passed.

✓ **AUCTION:** The next auction is Feb 6 and will be held at Jost Chemical. 20 tables have been purchased and delivered to Jost Chemical. Additional tables will be purchased when prices are lower.

✓ **CORRESPONDING SECRETARY:** Pat will start sending out donation letters.

OLD BUSINESS:

- ✓ Pat needs to be put back on the club bank account.
- ✓ A motion to add a member at large as a signatory on the bank account was made by Mike Hellweg and was seconded by Charles Harrison. The motion passed.
- ✓ The 2022 MASI Challenge will be the Limia Project at Oklahoma University.

NEW BUSINESS:

- ✓ A volunteer is needed to take over the Editor position from Chuck Bremer.
- ✓ A motion to approved the FY 2022 FORC report and budget was made by Caleb Pitman and was seconded by Mike Huber. The motion passed.

A motion to adjourn at 8:45 was made by Charles Harrison and was seconded by Steve Coxon. The motion passed.

This Council Group Email Address reaches all the Executive council at once: Council@MissouriAquariumSociety.com





COUNCIL MEETING

1/13/22

Pat Tosie called the Zoom meeting to order at 7:31. Present were Steve Coxon, Scot Roach, Angela Hellweg, Charles Harrison, Gary Lange, Mike Huber, Mike Hellweg and Chuck Bremer.

ANNOUNCEMENTS:

- ✓ The next Council meeting is Jan 27.

REPORTS:

SECRETARY: Angela read the Minutes from the Dec meeting. A motion to approve was made by Mike Hellweg and was seconded by

Charles Harrison. The motion passed.

TREASURER: Scot Roach read the Nov Treasurer's report. A motion to approve was made by Mike Huber and was seconded by Steve Coxon. The motion passed.

EDITOR: The deadline for Darter submissions for the Mar/Apr issue is Mar 8.

AUCTION: The Feb auction has been rescheduled for Mar 13 due to COVID.

OLD BUSINESS:

- ✓ None

NEW BUSINESS:

- ✓ Steve needs a speaker for the Feb General meeting.
- ✓ John Van Asch has scheduled a Fishy Bowl at Epiphany lane for Feb 19. Council will ask him to reschedule for a date in March.

A motion to adjourn at 7:54 was made by Mike Hellweg and was seconded by Gary Lange. The motion passed.

COUNCIL MEETING

1/27/22

Pat Tosie called the Zoom meeting to order at 7:35. Present were Steve Coxon, Scot Roach, Angela Hellweg, Mike Hellweg, Mike Huber, Chuck Bremer, Gary Lange, Charles Harrison, and Caleb Pitman.

ANNOUNCEMENTS:

- ✓ The next Council meeting is Feb 24.

REPORTS:

SECRETARY: Angela read the Minutes from the Jan 13 meeting. A motion to approve was made by Mike Hellweg and was seconded by Charles Harrison. The motion passed.

TREASURER: Scot read the Dec Treasurer's report. A motion to approve was made by Mike Hellweg and was seconded by Mike Huber. The motion passed.

AUCTION: The next auction is Mar 13. Members can register beginning Feb 20 and the general public on Feb 27.

LISTMASTER: Chuck will send reminders about 2022 membership renewals.



SOCIAL: Bowling at Epiphany lanes has been rescheduled for Mar 26. Pat will verify the date with John Van Asch.

WEB: The PayPal button has been fixed on the website. There are now 2 types of MASi membership, full membership and corresponding membership.

OLD BUSINESS:

- ✓ A motion to spend up to \$350.00 for a second table cart to be kept at Jost Chemical was made by Chuck Bremer and was seconded by Steve Coxon. The motion passed.

NEW BUSINESS:

- ✓ The in person General meeting for Feb 17 has been canceled. We will have a virtual speaker instead (TBA).
- ✓ The possibility of having another parking lot bag swap was discussed.

A motion to adjourn at 8:15 was made by Charles Harrison and was seconded by Gary Lange. The motion passed.





MASI AUCTION MESSAGE

Mike Hellweg

WELL, THE
FIRST
auction of
2022 is in the books.

Wow! The March 13th auction was our second highest auction EVER! More than that, the previous biggest total auction was the result of selling almost TWICE as many items – and took nearly 4 hours longer than this one! So, if you compare item for item, this was far and away our best auction ever.

Thank you to Jerry Jost for hosting us, and thank you to all of our volunteers for helping to make it such a success. Thanks to all of you for your patience while we worked through a few kinks in the layout before the auction. We will modify the layout a bit to make the flow easier.

And for now, 'nuff said,

Mike :

Auction@missouriaquariumsociety.com

SUCCESS!!



All Photos by Pat Tosie:





GOAL:
\$2000+

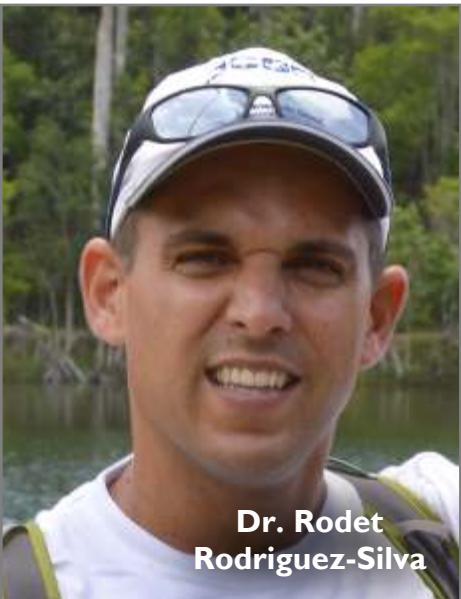
WE'VE BEEN IN communication with Dr. Rodet Rodriguez-Silva of Oklahoma University who has been studying the *Limia* livebearers for several years and is manager of the Lake Miragoâne project.

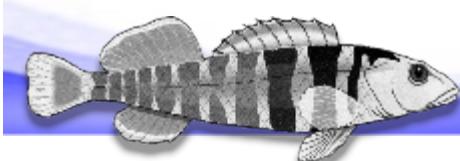
Dr. Rodrigues-Silva will be speaking to MASI in August about that project. He will discuss the fish, the Project's plans and needs. You may have met him a few years ago at the 2017 ALA Convention in St. Louis. Since then, he recently published a couple of papers describing two new species of *Limia* from Lake Miragoâne in Haiti including *Limia islai* (the Tiger Limia), and reconfirmed *Limia garnieri* from newly caught specimens.

He and several of his grad students are setting up a breeding project to gather and maintain all of the known species and populations of Limias at Oklahoma University.

Populations of Limias on Hispaniola are stable on the Dominican side, but the populations of several species on the Haitian side of the island have very limited ranges and may be in trouble. The project is just getting

MASI's 2022 Challenge is the Lake Miragoâne Limia Project!





Keeping *Limia tridens*

**A Livebearer
from Hispañola**

By Dan Radebaugh



**Reprinted from
'Modern
Aquarium',
GCAS (NY),
March, 2022**

A FEW MONTHS AGO I received a small group of *Limia tridens* from fellow GCAS member Jack McDonnell. I have a couple of small tanks (10 gallon) that for the past several years have mainly served as grow-out space for various cichlids, but more recently have only been providing homes for some cherry shrimp and a few snails, so I put these newcomers into the lower of the two tanks (I know, I know, but I've had the over & under ten gallon setup for a while now, and didn't want to use the top tank yet because I need to do something to improve the lighting).

Limia is derived from the Latin 'limus', meaning mud, and pertains to the feeding habits of the fish. I have to say that I was a bit surprised to see how small these are! Wow!

I started them off in a rather plant-choked 29 gallon, but moved them to the ten a couple of days later. After a few more days I began to notice that there were tiny little fish



© Aquarium Glaser GmbH

Limia tridens: VITAL STATS

Common name: Tiburon Limia
Family: Poeciliidae
Temperature: 75- 84° F (22-25° C)
Water Hardness: gH 12-25, pH: 7.5 to 8.0
Max Length: 4.5 cm
Distribution: Hispaniola (Haiti, Santo Domingo)
Reproduction: Livebearer
Temperament: Peaceful
Environment: Heavily planted with large open swimming area.
Nutrition: omnivore—Variety of live, frozen, and dry food
Filtration: Medium flowing water

swimming around in the 29. Sure enough, at least one of the females in the original group had given birth before being moved!

These are very small fish, but also very pretty! Since they're living in the lower tank I pretty much have to lie down to photograph them, using the "spray and pray" tactic of subject acquisition. You'll get an idea of their size by noticing the ID info on the heater (top photo).

Native to Haiti and the Dominican Republic, maximum length for males is about 3 cm—4 cm for females. They are said to be peaceful when kept with other fishes, and I have seen nothing so far to refute that. Some say that it's a good idea to add a bit of salt to the water (2 teaspoons per 25 liters of water), but I haven't yet tried that.

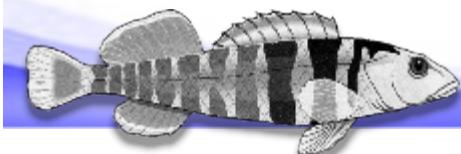
If there are plenty of hiding places (plant roots, leaves, etc.) the young can stay in the same aquarium with the parents. I guess I'll find that out real soon. They like a good swimming area, as well as a lot of hiding places.

This species is recently available within the MASi HAP Program!

Editor: This article arrived as part of MASi's Exchange program with other Aquarium Societies and I couldn't resist publishing it to support the 2022 MASi Challenge supporting the Endangered *Limia* species of Hispaniola.

Dan, the excellent Editor of GCAS' Newsletter, provided his own photos but being difficult to lift, I opted for others. **-My apologies, Dan.**





The DARTER

A Little Baby Fish and A Mom Fish

Mom fish goes to get the baby fish food for both of them today. The baby fish eats the little pieces. The mom fish eats the big pieces. The baby and the mom fish live happily ever after.

By: Matthew Haines



From Mitchel Wendel:

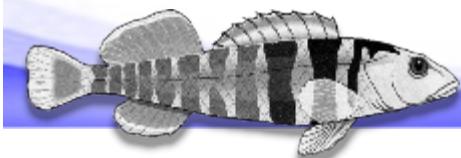
My son Matthew, is newly introduced to the hobby of growing and breeding fish and has been showing great interest in the activity.

For school he had an assignment of writing a story with an animal character and gladly chose to write about fish.

Matthew has been to 2 SWAP Meets and has his own tank with *Tropheus moorii*, commonly known as Red Tropheus, which he feeds, cleans, and fully takes care of himself.

This is Matthew and his assignment to show everyone his enthusiasm for the hobby.





Steve Coxon's been at it again! Snaping photos in his fishroom!!



Got this little guy feeding closer to the front than the others, but with mom keeping an eye. (Can you see her in the background?)

I've been feeding sera micron in the morning, but just did killi feast today. It's a little bigger. I feed fresh bbs every afternoon. I give them microworms, too, for the first couple weeks.

These guys are a couple weeks old now, note the Java moss for size!!



Young *Apistogramma*



And a Bit 'O Salt!

This is my 6 year old's favorite animal in the fishroom.

His red legs outshine the dragon's breath macroalgae I set this tank up for.

As named critter, 'Hermie' gets a top honor bestowed by the kids on only a special few aquarium animals.



steindachneri



Corys can be Soo...much Fun!!

Funny how I only find hydra when I take photos...

For hydra control, I use SL-Aqua Bio Protector Z1, recommended by Melanie.

Note that it is shrimp safe, but does seem to kill mystery and nerite snails, sadly. It does not seem to have any impact on fish.

Hydra are usually completely gone in a day or two.





As of early December, 2021, this was Steve's "Current favorite aquascaped tank, a 20 high, low CO2 injection."



NEW on MASI's Presence

Go on over, look around and get acquainted. Subscribe for notice of new videos as they're posted. The Missouri Aquarium Society's Webinar happens here!

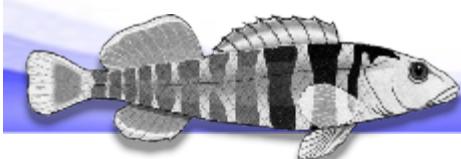


Jake would be glad to give other members a chance to see your Fish Tanks. Just let him know.

Go there easily anytime by using this easy to remember link:

**[TinyURL.
com/MASI-
video](https://tinyurl.com/MASI-video)**





Aquascaping a 3 Gallon “Bookshelf” Aquarium for Neocaridina Shrimp

By Steve Coxon

PRIOR TO THE pandemic, I had a 2.5 gallon tank on my office desk with *Neocaridina davidi*, ‘Blue Dream’ shrimp. I enjoyed it quite a bit and the 6 original shrimp were very productive. At one point, I cracked the tank and counted more than 50 shrimp as I moved everything to a new tank.

As my only tank outside home, it received a lot of maintenance attention. After bringing it home to my fishroom in March, 2020 because of the pandemic, however, my attention was divided among many tanks and the little shrimp tank quickly grew into a jungle. The shrimp also became less productive and I decided it was time for a reset.

A store I visited in Dallas during last October’s Aquashella event had a few very small, long and narrow display tanks referred to as “bookshelf aquariums.” I normally purchase inexpensive, standard aquariums, but decided to spend a bit extra for one of these sleek, rimless tanks and purchased a 3-gallon Tideline which measures 18” long x 6” wide x 7” tall. Some St. Louis area stores are carrying bookshelf and other unique tanks now, including Art of Aquaria.

Searching a unique look for the tank, I began saving photos of very small aquascapes and materials that I liked. In particular, I found sodalite, an aquarium-safe blue stone, from Ron Coleman Mining (colemanquartz.com) and decided to form the tank around these stones by showcasing them on black Fluval Stratum capped with black sand.

I’ve had great success with *Neocaridina* in small, filterless, heavily planted tanks and bowls, and considered going sans filter, but decided to filter the tank for now to keep it clear of detritus. An



New Aquascape on Febrary 27, 2022 after about 2 months of grow out. ...now it needs a trim!

internal canister is utilized. It’s not ideal aesthetically, but I didn’t want to use an air-driven filter in this open top tank both because of evaporation and, when it is eventually in my office, the noise of an air pump. I may experiment with removing the filter in the future.

A flat heater designed for small tanks was added as my basement fishroom is often cooler than my target of 72-76F similar to my office outside working hours in the winter.



December, 2021, Testing Layout



Dec 24, 2021, final Rock Layout - Water Added!



The tank is now illuminated for about 8 hours per day with an 18" AQUANEAT LED. It sits just over the rim and is very bright so I added *Salvinia minima* to reduce the risks of unwanted algae at least for now. The light may be raised a few more inches off the tank rim in the future.

To inject CO2 and quickly grow the plants, I am repurposing an FZONE paintball CO2 regulator from a larger tank. The paintball tank size is too small to last long on a larger aquarium, but so far it is lasting well enough here. In fact, I have the regulator set as low as it can go, but was still getting too much CO2 so I set a 15-minute break every hour on the timer and it is now just right (medium to dark green in the CO2 indicator).

Along with the floating *Salvinia*, I planted the tank with tissue cultures of Brazilian micro sword (*Lilaeopsis brasiliensis*), dwarf hairgrass (*Eleocharis parvula*), and dwarf baby tears (*Hemianthus callitrichoides*). Instead of the blue dream shrimp, which were hard to spot in the previous tank, I decided to pull 6 adults from a colony of "24K Golden backs" I have in another tank to really standout against the black substrate and blue sodalite.

For maintenance, I feed the shrimp about 1/8 of a Shrimp King Complete pellet one day, a tiny pinch of Bacter AE the next, and nothing the next. This seems suitable to them as their population recently exploded with shrimplets seemingly everywhere. I conduct a 50% water changes with treated, aged, and heated St. Louis County tap water about every 10 days. I add one drop of an all-in-one aquarium fertilizer every other day. The tank does require frequent removal of *Salvinia* and is topped off with RODI water.

As I write this, the tank is just at the two-month mark. I'm pleased with the results so far and look forward to having this back on my office desk in the future.



Dec 24, 2021, Adding Plants



Dec 29, 2021, Adding CO2

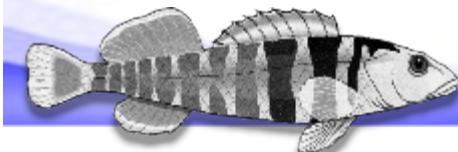


January 22, 2022, Growth after only 1 Month!



February 27, 2022 - Two Months in, filling out nicely!!





Atractosteus spatula The Use and Misuse of Alligator Gar “Fillers” in Historical Newspapers

By Thomas M.
Keevin

'M CURRENTLY RESEARCHING
the Historical Ecology of the
Alligator Gar using
newspaper archival services
as a source of information. The
preliminary 'CliffsNotes' version
of my findings is that the
Alligator Gar's range was much
larger than it is today, the
species was much more
abundant, and the monster fish
were truly monsters!

Regarding the historical range,
there are nine scientific records of the
Alligator Gar in Missouri (Pfleiger
1997) but I have found 129 detailed
historical newspaper accounts of the
species in the state with 25 newspaper
reports of the Alligator Gar in St. Louis
alone. There are only 22 scientific
records of Alligator Gar in the

neighboring state of Illinois (Poly
2001), and 103 historical newspaper
reports of the species.

The cultural history of the
Alligator Gar is equally fascinating.
Historically, the Alligator Gar was the
most hated and feared native fish
species in North America, but
commanded respect and aroused
intense curiosity from Americans.

All-out war was declared on the
species, by both recreational and
commercial fishermen and,
surprisingly, by local chapters of the
Izaak Walton League, the Will H. Dilg
League, the Audubon Society, the
Mississippi Wildlife Federation, and by
state conservation agencies in almost
every state within the species' range.
Chambers of Commerce, American
Legion Posts, and Lions Clubs also took
up the cause of ridding the world of
gars, and making some money at the
same time by sponsoring Gar Rodeos.

Contact the Author at: Tom Keevin <keevintm@yahoo.com>

DARTER March/April 2022 Volume 48 #2

FISHERMEN CATCH ALLIGATOR GAR WEIGHING 298 POUNDS.

A monster alligator gar, 7 1/2 feet
long and weighing 298 pounds, and
estimated to be at least 50 years old,
was captured yesterday in the
Cahokia Creek in the rear of
“Frenchy” De Wolf’s saloon, opposite
the East St. Louis Relay Station, by
Isadore Vermillion and De Wolf.

It required the combined efforts
of almost a dozen men to pull the fish
out of the creek. Mr. DeWolf has
made arrangements to preserve the
fish.

St. Louis Republic, June 21, 1903



Commercial and recreational
fishermen claimed that the gar ate all
the sport fish, since proven incorrect by
scientific studies. They also claimed
the gar ate their bait, ate fish from their
trot lines, destroyed their tackle, and
tore their nets. All unfortunately true,
but also the cost of doing business.

The Mississippi State Game & Fish
Commission was one of the first to
wave the war flag, claiming that the
Alligator Gar ate its weight in game fish
on a daily basis which was certainly not
true. The fight was on! However, the
“gar hate” had been smoldering way
before the Mississippi State Game and
Fish Commission took up the banner in
the 1930's.

The first Alligator Gar newspaper
article in the historical archive, is from
The North-Carolina Star (Raleigh, NC;
10 July 1828). It poetically described
the Red River in Louisiana – “the river
discharges its waters into the



Mississippi by a broad and creeping stream, through a vast and profound swamp." The newspaper then described one of the Red River's inhabitants, the Alligator Gar, as the "shark of rivers." This phrase and the fear and hatred it conjures have continued for two hundred years.

Pouring through literally thousands of Alligator Gar newspaper articles, I encountered around 25 different short little statements concerning the species. They were printed in newspapers all around the country, some reprinted hundreds of times. They fell into two general categories, either short informative statements or short derogatory statements concerning the species, suggesting that gar are not good to eat, attack swimmers, and alligators have value because they eat Alligator Gar, ...and on and on.

First, I lacked a good term for these short articles and called them "little ditties" or "tidbits". However, it quickly became obvious that the newspaper editors were using the short articles as space "fillers", to fill in column space if an article was not long enough to fill a column. The use of "fillers" was preferable to readers staring at a blank white space, usually at the end of the column.

A quick Internet search confirmed my assumptions that sure enough they were space fillers, and appropriately called "fillers" by newspaper in-crowds. With the dawn of the computer age, "fillers" are no longer used and are a thing of newspaper history. Spacing once made by hand are now made with computer programs.

Spacing and font size of the article or its title can be changed with a couple clicks of the key board to fit the available column space. Therefore, we no longer see these short bits of news, interesting information, wisdom, or advice. If your interest is piqued, you can learn more about the history of "fillers" on the Internet at Allen (2012) and Kelly (2013).

The Kansas City Star "filler", below, meant to be humorous, praises the sport value of the Alligator Gar from a fisherman's perspective and incorrectly suggests that they are not good to eat. Beginning in the 1940s-1950s, fishermen increasingly became

aware of the tremendous fight the species provided.

Arkansas advertised Alligator Gar fishing in newspapers around the country, suggesting that one come to Arkansas to go deep-sea fishing with no need for an expensive trip to the coast.

Alligator Gar do leap into the air like tarpon, fight like hell and often take hours to land. They are often shot as a safety measure prior to bringing them aboard the fishing boat to avoid injury to everyone on deck. For two decades, the Alligator Gar fishery in Arkansas attracted fishermen from around the country, and with increasing habitat destruction and unmanaged sport and commercial fishing, the Alligator Gar became a ghost of the past.

Actually, the fish are good eating, mother was wrong about that. Just don't eat the eggs; they are poisonous (Brooks 1851; Martin & Akpunonu 2020). There are other "fillers", not shown, that come right out and incorrectly state that Alligator Gar is completely inedible.

Alligator gar, according to reports, are about the ideal fish to suit the whole family. Father says they're wonderful fish to catch, and mother appreciates the fact that they're not worth cooking.

**The Kansas City Star
(Kansas City, MO; 24 August 1954)**

The Herald and Review "filler", which appeared all around the country during World War II, was a personal attack on Emperor Hirohito and both the Bowfin and Alligator Gar, all at the same time. Mikado being a title formerly given to the Emperor of Japan as a term of endearment. The article suggests that the Mikado, Emperor Hirohito, would be dining on the dried heads of bass and trout, while his loyal subjects would be eating a diet of dried mud-cat (an early regional name for the Bowfin) and Alligator Gar heads.

Note that this article appeared at the end of World War II. The first atomic bomb was dropped on Hiroshima, a month after this article began to appear all around the country,

and the second bomb was dropped on 9 August 1945. Emperor Hirohito announced the surrender of Japan on 15 August 1945, and the unconditional surrender was signed on 2 September 1945.

When the Japanese have settled down to a recommended national diet of dried fish heads we suppose the mikado will be privileged to crunch the dried heads of bass and trout while his loyal subjects eat mud-cat and alligator gar.

**Herald and Review
(Decatur, IL; 6 July 1945)**

The Weekly News filler is a straight forward informational statement noting that there are four species of gar in Louisiana and the Alligator Gar is the largest of the species. Many "fillers" just presented interesting facts concerning gars, especially the Alligator Gar.

Four species of gar fish are found in Louisiana. They are the longnose gar, the spotted gar, the shortnose gar and alligator gar, which is the largest. An outstanding characteristic of the alligator type is its two rows of teeth in its upper jaw.

**The Weekly News
(Marksville, LA; 24 March 1956)**

The Piqua Daily Call is another straight forward informational "filler" from the 1930's stating what the Louisiana Conservation Commission had to say about Alligator Gar attacks on humans. Today most fishery biologists & Ichthyologists believe that the Alligator Gar is harmless as Jeremy Wade, of River Monsters fame, reports. However, contrary to the scientists and Jeremy Wade, there are numerous newspaper articles of humans being attacked by Alligator Gar while swimming or hanging a foot or hand over the side of a boat. The hand, foot, arm or leg are usually the primary targets of bites, likely a case of mistaken prey identity.



The Louisiana conservative commission says authentic instances of alligator gars attacking human beings have been recorded.

**The Piqua Daily Call
(Piqua, OH; 4 Nov 1937)**

Newspapers were full of historical articles with complaints by sport fishermen concerning the Alligator Gar, and gars in general, eating all the sportfish. Commercial fisherman complained that gars were putting them out of business by eating their catch and tearing up their nets.

Southern fishermen blamed the loss of the alligator for the rise in gar numbers, suggesting that the alligator kept gar numbers under control. There may be some truth in that statement: Delany et al. (1999) examined stomach contents from 219 American alligators (*Alligator mississippiensis*) collected from four Florida lakes. Fish, mostly shad (*Dorosoma* spp.), bowfin (*Amia calva*), and gar (*Lepisosteus* spp.) occurred in 55.3% of the stomachs and was the most important food group (57.5%) by volume.

Note that sportfish were not the main gar target foods. Scientific studies have shown that Alligator Gar are not responsible for sportfish declines and, for the most part, sportfish are not the main prey of the Alligator Gar. They prefer the slower moving fish or schooling fish like shad, but it all depends on the abundance of fish species in the systems studied.

Alligators make themselves useful by eating up alligator gars which destroy food fishes and by eating crawfishes.

**The Daily Advocate
(Greenville, OH; 6 Nov 1930)**

If alligators kill gars by all means let's guard them.

**The Tampa Tribune
(Tampa, FL; 15 Dec 1906)**

Newspaper articles in the 1800's and early 1900's, reporting the catch of a large Alligator Gar, provided all the pertinent catch information: who caught the fish, where it was caught, how it was caught, and the length and weight. Often the article ended with a detailed account of the capture and the final dispatch of the fish (clubbed, shot, etc.).

Commonly articles included an editorial statement, usually suggesting that a large gar had been caught and it wasn't safe for "the boys" to bathe in the area because they could be dragged under the water by the monster fish and drowned. For example, after a 7'2", 175 pounds catch of an Alligator Gar was reported from Caruthersville, MO, (Permiscot Argus 18 Aug 1910), the article ended with the following: "The sight of this big fish should be a warning to the boys who are in the habit of going into the river swimming, as the creature could easily have caught a boy by the foot and pulled him under the water to drown." This 1920's "filler" follows the same line of reasoning.

Every time we see a picture of an eight-foot, 200-pound alligator gar, we wonder if swimming is as fine a sport as lots of persons appear to believe.

**Nashville Banner
(Nashville, TN; 6 Jun 1926)**

It's not bad enough that the Alligator gar, and gar species in general, have been persecuted by fishermen and the vast majority of the conservation departments within their ranges. The newspapers had to get really personal with their attacks and call the Alligator Gar the "ugliest fish in the world"

The alligator gar of the lower Mississippi has the reputation of being the ugliest fish in the world.

**The La Marque Times
(La Marque, TX; 25 July 1960)**

The following two regional informational "fillers" provide length and weight information for the Alligator Gar. The first of these "fillers" was printed in newspapers around the country, as indicated by the occurrence of Arkansas-centric filler published in the Marion Star, in Ohio. The original "filler" was modified, probably by the Fort Lauderdale News' staff, to include a reference to the presence of the species in "certain areas in Florida", making the "filler" more relatable to the readers.

The alligator gar, found in the lower reaches of the White River in Arkansas and other southern locations, weighs as much as 300 pounds and grows to lengths approximating 10 feet.

**The Marion Star
(Marion, Ohio; 1 Aug 1966)**

ALLIGATOR GAR

The Alligator gar, found most abundantly in the lower reaches of the White River in Arkansas and throughout certain areas in Florida, weighs as much as 300 pounds and grows to lengths approximating 10 feet.

**Fort Lauderdale News
(Fort Lauderdale, FL; 4 Jan 1967)**

The "filler" articles were not always technically correct. For example, the Alligator Gar is not a "strictly fresh-water fish" as these 1950's and 1960's examples suggest. They commonly occur in brackish waters along the southern coast and were often caught in the Gulf of Mexico, from Florida to Texas and Mexico. Nobody apparently checked the accuracy of the "fillers". This "largest fish" "filler", or a slight modification of it, was printed hundreds of times in newspapers all around the country.



Largest Fish

Largest freshwater fish of North America is the alligator gar, which may grow to a length of 15 feet. Its flesh can be used for food, but is not commonly eaten.

The Chillicothe Constitution-Tribune (Chillicothe, IL; 19 May 1958)

The alligator gar is the largest of the gars and is one of the largest strictly freshwater fish in the world, some reaching a length of 10 feet.

The Crowley Post-Signal (Crowley, LA; 10 Jan 1967)

Louisiana was not the only state with laws requiring fishermen to kill gar rather than to release back into the water. In the 14 states within the historical range of the Alligator Gar, almost every Conservation Department had programs to eradicate all gar species. Such programs included bounties, seining programs, electro fishing programs and gar rodeos. Gar rodeos were designed to round up and kill the gar.

Missouri had one of the most interesting gar eradication programs. It utilized dynamite, as one of its eradication methods, to kill congregations of gars. The program ended up in a lawsuit (State v. Freeland, 300 S.W. 675 (Mo. 1927) to determine if the State had the authority to use dynamite. The Missouri Supreme Court held that Missouri did have the authority to eradicate gar using dynamite, but couldn't kill sportfish in the process.

With a view to destroying gars, Louisiana laws provide that all gars caught by anglers be killed before returning them to the water. Of the three species in Louisiana, the alligator gar is the largest and is extremely destructive to game fish.

The Miami Herald (Miami, FL; 3 May 1933)

This "fillers" describes the use of Alligator Gar scales by Native Americans. In addition to the suggested use of scales to cover war-shields, scales were used by Native Americans as arrowheads. Gar were a preferred food and the jaws (teeth) were used to assist in body tattooing, and as ritual tools, and may have served as talisman-like objects (Costa and Fox 2016; Peres and Deter-Wolf 2016).

Shields sometimes were covered with the bony covering of the alligator gar fish by primitive warriors.

The Bradenton Herald (Bradenton, FL; 15 June 1941)

So why did the Alligator Gar become a major topic for newspaper "filler" articles rather than the Largemouth Bass, Bluegill, or Bowfin? The answer is simply as the introduction stated:

Historically, the Alligator Gar was the most hated and feared native fish species in North America, but it commanded respect and aroused intense curiosity from Americans.

Human interest was piqued because the Alligator Gar can be more than 10 feet long and weigh in excess of 300 pounds. As a sport fish, it can leap into the air like a tarpon when caught, fights like hell, and can often greatly outweigh the fishermen trying to land it.

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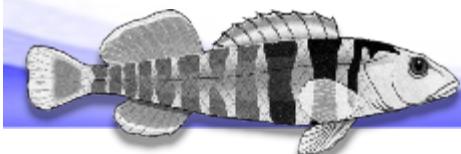
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Author's Photo from the Florida Aquarium, Tampa, FL





A St. Louis Urban Legend

The Alligator Gar and Lock and Dam 26 - Alton, IL

By Thomas M. Keevin

URBAN LEGENDS HAVE been around for a long time and are always evolving, and changing with the times. They are normally fictional stories associated with the macabre, superstitions, ghosts, demons, dangerous creatures, and other fear generating narratives. Such legends often come to life and are shared around the campfire or on Halloween to scare young kids.

Growing up in St. Louis during the 1950's, I heard stories about commercial divers on the Mississippi River not wanting to work at the locks and dams because of the huge fish they encountered while making underwater inspections and repairs. There seemed to be a general fear by the commercial divers that monster catfish and Alligator Gar were lying in wait to attack them while they worked.

While reviewing historical newspaper articles as basis for scientific papers on the historical distribution of the Alligator Gar and the cultural history of the species, I found two articles in the Alton



Alton Telegraph (15 June 1942): "Photo of J. J. Carver, a guard at Lock and Dam 26 during World War II, with a 7'2", 112 lb. Alligator Gar that he shot with a 45-caliber revolver and a shotgun, lassoed it with a rope and pulled it out of the Mississippi with the help of three men."

Telegraph that indicated one of the urban legends of my youth may have had some truth behind it.

The 15 June 1942 issue of the Alton Telegraph had an article that reported that J. J. Carver had caught a 7'2", 112 lb. Alligator Gar at old Lock and Dam 26. He had shot it in the neck with a 45-caliber revolver and then hit it with a shotgun blast. The fish was lassoed with a rope and pulled out of the Mississippi by four men.

My first thought was why did Mr. Carver have a 45 revolver and a shotgun at Lock and Dam 26 and why did they let him use them to kill a fish?

An Alton Telegraph article published six years later, on 30 June 1948 answered at least one of the gun questions and also shed some light on why commercial divers might not have been happy about diving at Lock and Dam 26.

The 1948 article stated:

"Giant alligator garfish have been visiting the Alton Lock and Dam during the past week for the first time in five years*. The fish, from six to seven feet in length and weighing about 200 pounds, appeared on the downstream side of the locks when the Missouri River began to rise. Today, the numbers of fish were decreasing, but several of the huge fellows could be seen below the locks, dwarfing any other fish in sight. In

1943*, the last year that the gars visited the Alton locks, one of them was killed by a guard who was posted on the dam during the war. This fish measured more than seven feet in length." *Author: Actually 5 years after the 1942 article.

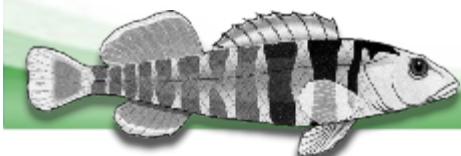
This article also cleared up one of my questions by indicating that the armed guard was there to guard Lock and Dam 26 during World War II. Of course, it still didn't answer the question - Why he could blast away at fish from the lock and dam.

The large aggregation of monster Alligator Gar could certainly put the fear of God into commercial divers and start an urban legend that was in reality true.

Temperature and flood stages experienced at the time of the articles are the factors that initiate Alligator Gar spawning behaviors as they normally form aggregations and move to the floodplain to spawn during flooding. They generally spawn in June in our part of the Mississippi River- the month of publication for both articles.

The Alligator Gar no longer occurs in the Mississippi River within the St. Louis District of the Corps of Engineers- although, stocking efforts by both Illinois and Missouri are in progress.





Growing Water Chestnuts in St. Louis

By Dean Gunderson

Reprinted from



IF YOU WANT to try something new and different this year and still get a fair amount of food then water chestnuts are worth a try.

There are actually two different, unrelated crops that are commonly known as water chestnuts; *Eleocharis dulcis* and *Trapa natans*. *Trapa natans* is a floating aquatic plant that can grow in water up to 15 feet deep whose seeds are eaten whereas *Eleocharis dulcis* is an aquatic plant that likes to grow in shallow standing water around 4" deep and whose tuber-like corms are eaten. *Eleocharis dulcis* was grown in a trial at the



Side benefit of growing water chestnuts is building habitat. We had quite a few tadpoles living in our water chestnut "ponds."

demonstration garden in 2020 and that is the species referred to when we say water chestnut.

Although water chestnut is a perennial in hardiness zone 9 and higher where winters only go down into the 20's at their lowest, in St. Louis it's grown as an annual. To get a good harvest as an annual it needs about a 7 month growing season. It's an aquatic plant that likes standing water. Different aquatic plants prefer different water depths but about 4" of standing water is optimal for water chestnut and like most crops they do best when they have full sun.

HOW TO GROW WATER CHESTNUTS

FINDING PLANTS AND STARTING SEEDLING

The first thing needed to grow water chestnuts is finding water chestnuts to plant. Water chestnut plants are grown by planting fresh water chestnuts, similar to garlic or potatoes. The tricky part is that although water chestnuts can be found



Small water chestnut ready for planting

in just about any grocery store in a can, they are much harder to find fresh, which is what is needed. The best bet is to look at an international grocery store or to find them for sale from a grower online.

Editor's note: This article was submitted for Darter publication by MASI member Megan Moncure. Megan works for Seed St Louis, also a 501c3 organization.

Since 1984 Seed St. Louis has connected people to the land, to their food, and to each other. Seed St. Louis supports a network of over 250 community gardens, school gardens, and urban orchards in neighborhoods throughout the St. Louis Region. Their purpose is to provide communities with the tools, education, and empowerment to grow their own food.

Megan gets to work with all the projects for the area and provided this article after a conversation we had at a MASI Auction. She mentioned that Seed St Louis had a project helping St Louisians grow their own food, including the water gardens growing "Chinese Water Chestnut". Most think of the illegal *Trapa natans* when hearing Chinese Water Chestnut, but Megan informed that they are teaching how to grow *Eleocharis dulcis* instead.

This was interesting to me because the *Eleocharis* are a well known group of hair grasses and spike rushes in pond and aquarium culture and at least 10 species can be found in our HAP records but surprisingly *E. dulcis* doesn't show up anywhere there- in fact, even out HAP Chairman didn't recognize it!

Megan provided the accompanying article written in February, 2021 to help us get started written by one of Seed St Louis' agronomists.

The original may be found on the Seed St Louis website: <https://seedstl.org/tips-and-tricks/growing-water-chestnuts-in-st-louis/>

Maybe our aquatic hobby can also be useful providing a bit of delicacy at the dinner table on occasion!



The water chestnuts can be quite small for planting, in fact the ones we got were very small as you can see in the picture. Once we have the water chestnut starts we planted them into individual pots in potting mix and put all of the pots into a tray to hold water and put them under our grow lights just like all of our other seedlings. When they are little they need plenty of water but don't need to be in standing water so we just watered until water came out of the bottom of the pots and into the tray beneath.

At this point just treat them like warm season vegetable seedlings, keeping them inside with plenty of light and water until the temperatures warm.

GETTING A PLANTING AREA READY

Based on our trials this year any container that can hold water and be put in full sun will work. Kiddie pools worked well for us and are cheap and easy to acquire. They also give a pretty large growing area for the soil needed and for the cost of the container.

Once a container is picked out, fill it with soil. In the kiddie pools we put 5-6" of soil. A good garden mix is best. Since it's essentially a pot, the plants only have the nutrients that are in the soil. Their roots can't wander so don't use just topsoil. Nice rich soil is best. We added potting mix because it was

available and it worked but all the perlite (the little white beads that look like Styrofoam) floated to the top.

PLANTING AND GROWING THE WATER CHESTNUTS

Once the container is prepped it's time to plant. These are warm season plants so it is best to wait to plant outside at the same time planting tomatoes, beans, and squash. They spread quite a bit over the growing season so not many plants are needed. We only planted 6 little water chestnut plants in each kiddie pool and they were full by the end of the year as seen in the pictures.

Once planted water the container until a minimum of one inch of water is standing on top of the entire surface. For the rest of the growing season add more water anytime there isn't standing water on the surface. If kept watered so there is always standing water there will be virtually no weeds and no need to weed the container.

HARVEST

In the fall the tips of the green tops will start turning straw colored and drying out. Over several weeks they will turn green to straw colored from the top down. This is normal and a good sign. It means that as winter is coming the plant is recognizing it and moving the energy in the inedible green tops down into the edible water



A hole dug to the side of the water chestnut bed to allow bailing the water before harvest.

chestnuts below ground. When the top couple of inches are straw colored keeping it flooding is no longer needed.

Once the tops are mostly straw colored, or if a cold period down into the mid to low 20's or lower is expected it's time to harvest.

The first step is to drain off the water. The easiest is to dig a hole in the container all the way down to the bottom along the side big enough to reach down to the bottom with a cup or other item that will hold water. See an example in the picture below. Fill up the cup with the water and dump it out and continue until the water is drained from the container.

Next is work up the soil with a trowel or hands. Since the soil is so wet it's generally easy to just work through the soil with hands and pull out the water chestnuts as they are found.

STORAGE

The freshly harvested water chestnuts are ready to be put in a plastic bag in the fridge.

As with most root crops it's best not to wash the water chestnuts. After harvesting they are generally caked in mud which is actually good. It helps keep them wet and protected from drying. Store in a loosely closed plastic bag in the



Left picture shows water chestnuts soon after planting, July 22, when the kiddie pool looks sparse. Right image shows the kiddie pool totally full in September.



refrigerator- ideally in the crisper drawer. We have had them stored this way for over two months and they are still nice and crisp.

FOOD PREPARATION

The only preparation needed is to wash and peel them. We found the best way to wash is to take a handful and rub them all together vigorously under running water. The dirt comes off very quickly, then peel with a knife or vegetable peeler.

After peeling they are ready to



These freshly harvested water chestnuts are ready to be put in a plastic bag in the fridge

use. They are edible raw but are also great in all sorts of dishes and add a nice fresh crunch to almost any meal.

OUR 2020 TESTS TO DETERMINE THE BEST STRATEGIES TO GROW

Because not everyone has full sun and because setting up a growing area that will hold standing water might not be easy for everyone, we grew our water chestnuts in 4 different beds with different conditions to see what was most important to get a good yield of large water chestnuts.

The size of the water chestnuts is particularly important because they need to be peeled so even a high yield if they are the size of a large bean is not very feasible to peel. Those the size of a large walnut are much easier to peel.

We used the four different beds to compare the impact of soil depth, sun, and water level on yield and the size of water chestnuts. The four beds were as follows

Bed 1: Full sun 8" deep kiddie pool with several inches of standing water all year

Bed 2: Full sun 8" deep kiddie pool with a hole in it that was watered heavily but not flooded

Bed 3: Partial sun 8" deep kiddie pool with several inches of standing water all year

Bed 4: Full sun 24" deep rice bed with a hole in it that was watered heavily but not flooded

Bed 1 is generally recommended by others. Bed 2 is to see if the water chestnuts could be grown in heavily watered but not flooded conditions

similarly to how some rice varieties can be grown with minimal yield impacts. Bed 3 was to see how much impact level of sun has on yield and water chestnut size. Bed 4 was to see if a deeper bed would result in higher yields by comparing it to Bed 2 as a simulation of growing it in ground.

TEST RESULTS

We found from the tests that the most vital factor to both yield and size of water chestnuts is sun.

Bed 3 had by far the lowest yield and smallest size water chestnuts. Most of the water chestnuts in bed 4 were two small to feasibly peel. Water level was the next most important with Bed 2 and Bed 4 yielding more than bed 4 but about half the yield as bed 1 per square foot. The size of the water chestnuts in the unflooded beds were nice and still big. Soil depth seemed to have little to no effect on yield or size of water chestnut. The size of the water



Beds 1-Right & 2-Left, August 21st.
Although both beds were filled by the end of November the plants in bed 1 were much happier.



Images showing the water chestnuts growing at the ends of roots and with a hand for scale.



chestnuts in Bed 2 and Bed 4 were almost identical and the yields were also very similar. The only real difference was that the water chestnuts in Bed 4 were more spread out and those in Bed 2 were almost all growing right on the bottom of the kiddie pool making harvest much faster in Bed 2.

What this seems to suggest is that shallow pots like kiddie pools will work fine as long as grown in full sun. To maximize yields one really needs a container that will allow standing water.



Left: water chestnuts from unflooded Bed 2. Right: water chestnuts from flooded Bed 1

2021 TEST RESULTS

After our success in 2020 we grew water chestnuts again in 2021. We confirmed the results from 2020 by harvesting a pound per square foot in the containers that were flooded in full sun and slightly less in those that were heavily watered but in containers with a slow leak. We confirmed that those that were in full sun produced large water chestnuts. In fact this year the chestnuts were on average much larger than last year now that we know what we are doing. This makes them much easier to peel.

In total we harvested a little over 29 pounds of large water chestnuts from 1 raised bed lined with plastic and 2 kiddie pools.

After seeing that the water chestnuts grew fine in the heavily watered kiddie pool that had a leak so no standing water, we decided the next step would be to see if they could grow in a normal raised bed that was watered heavily. Unfortunately those

did not survive to produce a harvestable yield.

We also tested if container size affected the yield or water chestnut size and received promising results. Last year we planted in large kiddie pools about 5' in diameter, this year we planted in both 5' diameter and 3' diameter to see if the smaller size would have a negative impact on the yields. We found the water chestnuts were slightly smaller than in the larger kiddie pool but were still large enough to peel and the total yield was comparable per square foot.

So our results from last year are confirmed that full sun is critical for large water chestnuts and yield and the more water the higher the yield.

We also confirmed 2020's results that depth of container doesn't seem vital, with the kiddie pools yielding equivalent to the raised bed per square foot. Finally, we found this year that container size, at least down to a 3' diameter kiddie pool (7 square feet), doesn't appear to negatively impact harvestable yield.

Eleocharis species from MASI's HAP Program

Eleocharis in MASI's HAP

Species	Common Name	Total Pts
<i>acicularis</i>	Dwarf Hairgrass	50
<i>erythropoda</i>	Red Foot Spike Rush	10
<i>interstincta</i>	Giant Spikerush	20
<i>minima</i>	Hair Grass	10
<i>montevidensis</i>	Giant Hairgrass	10
<i>obtusa</i>	Blunt Spike Rush	30
<i>parvula</i>	Dwarf Hairgrass	10
<i>vivipara</i>	Umbrella Hairgrass	30
<i>vulgaris</i>	Common Hairgrass	10





Breeders Award Program Chair

Steve Edie

MASI Breeders Award Program (BAP)

MASI Breeders Award Program pits members and rivals in the top breeders arena against themselves and one another for breeder points producing spawns of the easiest and also the most difficult fishes to reproduce.

New and rare as well as the common young fish are brought by members to monthly meetings for auction to the membership. Each month we see many bags of otherwise unavailable fishes for a fraction of their retail cost to the MASi meetings for auction. Come Join MASi and enjoy this fishy exchange and knowledge base at each meeting!

Purposes:

- >To encourage members of the Missouri Aquarium Society to breed fishes.
- To share information concerning their spawning and rearing.
- To make available to the hobby a wider variety of fishes.
- To recognize achievements by members concerning the breeding of fishes.
- To promote greater participation by members in the activities of MASi
- To provide for conservation and recovery of fishes endangered in the wild.

General Rules:

- Participants must be MASi members in good standing.
- All fish entered into the BAP must be conditioned and maintained in the member's own tank or pond.

- The member must spawn and rear fry to at least 60 days of age.
- In order to defray the cost of award plaques, and to spread various fish species through the club, some fry from each spawn are donated to the club at general meetings or quarterly auctions.
- Donation skip. In the case of very rare, valuable, or non-prolific species, a member may turn in the spawning paperwork and not donate any fry under the special conditions, but only once per year per member.
- All spawning reports must be submitted upon approved BAP forms to the BAP chair for verification.
- Hybrids of any type are not allowed, with the exception of established domestic livebearer strains.

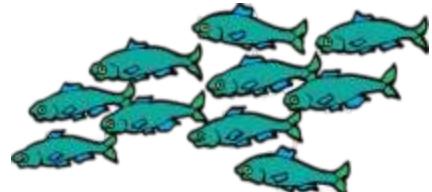
Points are received for each species submitted to the BAP Chairman:

Species are classified according to four levels of difficulty. Additional General Rules apply to each Class.

- Class "A" (5 Points) - raise at least 10 fry; donate 10 fry or the pair.
- Class "B" (10 Points) - raise at least 8 fry; donate 5 fry or the pair.
- Class "C" (15 Points) - raise at least 6 fry; donate 3 fry or the pair.
- Class "D" (20 Points) - raise at least 4 fry; donate 2 fry or the pair.

Bonus Points:

- MASI First Spawn Bonus (5-15 Points) To promote the raising and sharing of rare species, an additional points will be given for the first MASi spawn in any Genus and an additional 5 points will be given for the first MASi spawn in any Family.
- Subsequent spawns of the same species, but of different color or finnage varieties, will be awarded reduced points.

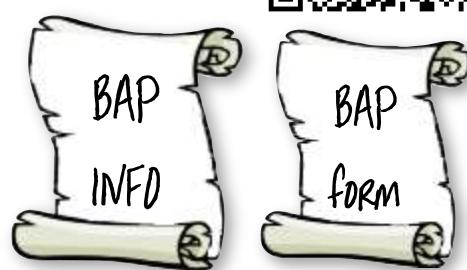
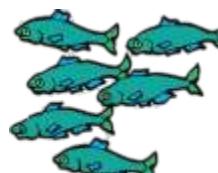


C.A.R.E.S. Bonus (5-20 points) for species in the CARES preservation program (Conservation, Awareness, Recognition, Encouragement, Support) to encourage focusing efforts on the many endangered species that we are in danger of losing if hobbyists don't get involved. To qualify, species must be listed on the CARES priority list website.

Awards:

All awards will be presented to recipients at the Annual Show Banquet, and will be published in The Darter in recognition of the member's accomplishments.

The brief information here is a reduced version of the information and requirements of the Missouri Aquarium Society's Breeder Award Program. Be sure to read the information linked to the scrolls for more complete Discussion, Requirements and the submission Forms.



Horticultural Award Program Chair



MASI's Horticultural Award Program (HAP)

Purpose:

- >To promote and encourage the keeping and captive propagation of Aquatic Plants
- To gather and disseminate information about Aquatic Plants, their cultivation, and propagation methods
- To insure the availability of a variety of Aquatic Plant species for future generations of Aquarium Hobbyists

An Aquatic Plant is a plant species which can be found growing wholly submersed, growing emersed with its roots submerged, or floating; as a regular, normal occurrence required for its survival during the course of one complete growing season.

The HAP chairperson assigns award Points upon submission of an aquatic plant's propagation to the program based on MASI's guidelines.

Requirements:

- Entrant must be a member in good standing of MASI
- For vegetative propagation plants must have been owned and maintained by the entrant for at least 60 or for at least three weeks before the plant begins to bloom.
- Any plant submitted for the HAP must be propagated in the entrants own tank or pond with new growth must be submitted for credit. In the case where plants are purchased with blooms, fruits, or seeds, those growths are ineligible for submission.
- Entrant must identify the plant. The HAP Chairperson may confirm the identification and guide the entrant to sources for proper identification. Species identification are verified in the

Missouri Botanical Garden Tropicos plant database.

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

Donations:

To receive Points for a Vegetative propagation, a donation is to be made to MASI for auction at a general meeting or at one of the club sponsored public Auctions.

Blooms and Seedlings need not be donated to earn Points but are strongly encouraged. Blooms and seedlings may be submitted by photos which are then published for everyone in the DARTER.

Propagation:

Each species, Cultivar, Hybrid, or Varietal is eligible for up to 3 submissions – Vegetative (V), Bloom (IB or OB), and Seedling (S).

- Vegetative (V): Points are awarded for Cuttings (from leaves, roots, stems, etc.), Budding (plantlets and bulbils), Division, Runners, Layering or Micro propagation
- Blooms (IB or OB): Points are earned by bringing any Aquatic Plant into flower, either Indoor or Outdoor.
- Seedlings (S): Points are earned by raising plants from seeds (Seedlings) produced from Blooms grown and submitted for HAP verification. For seedling credit, entrant must submit four photos: a photo of the bloom, the fruit, the seed and the sprouted seedling and also an article to the Editor and the HAP chairman about producing the seedling.

Prohibited Species:

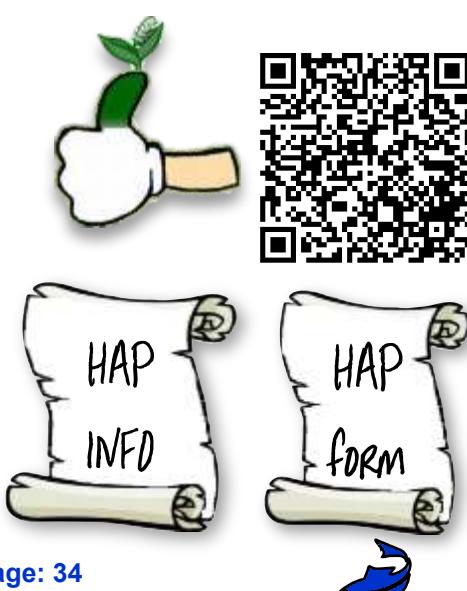
No plant species deemed a non-indigenous invasive or nuisance species or a noxious weed by the State of Missouri Department of Agriculture or the U.S. Department of Agriculture

is allowed. Invasive plant species

have not only become established in the wild, but are now considered a noxious weed or a nuisance species. No responsible hobbyist should ever keep, distribute, or discard any of these species in the wild or even down the drain. Interstate distribution or sale and/or interstate transport of these species is illegal. Possession, sale or any other type of distribution of these species, either whole or any part, is prohibited.

For the most up-to-date prohibited species, check the MASI auction page Banned Species list.

The brief information here is a reduced version of the information and requirements of the Missouri Aquarium Society's Horticultural Award Program. Be sure to read the information linked to by the scrolls for more complete Discussion, Requirements and the required submission Forms.





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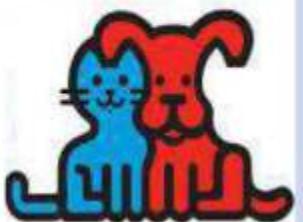
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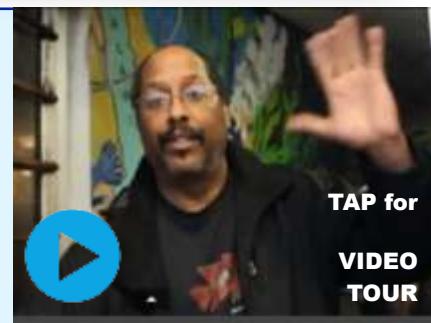


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2022 SCHEDULE & CLUB HOPPING

Steve Edie



Date Group 2022 Events

3/26/2022	TCTFC	Spring Swap Meet - Peoria, IL
3/26/2022	NEC	3/26-27 Virtual Convention - ONLINE
4/24/2022	GCCA	Tropical Fish Swap Meet - Hoffman Estates, IL
4/24/2022	QCFS	Quad Cities Fish Swap - Davenport, IA
4/30/2022	MASI	Spring Swap - St Louis, MO
5/1/2022	MASI	Spring Auction - St Louis, MO
5/14/2022	HAAS	Spring Swap - Kansas City, MO
7/27/2022	LTFC	7/27-31, Aquatic Triple Crown - Louisville, KY
8/7/2022	MASI	Summer Auction - St Louis, MO
10/8/2022	AQUA	10/8-9 Aquashella, Dallas, TX
8/13/2022	HAAS	Summer Swap - Kansas City, MO
9/18/2022	GCCA	Tropical Fish Swap Meet - Hoffman Estates, IL
9/23/2022	KeyC	9/23-25 Keystone Clash - Morganford, PA
9/25/2022	MASI	Fall SWAP - St Louis, MO
9/30/2022	AGA	9/30-10/2 AGA Natl Convention - Chicago, IL
10/7/2022	AACC	10/7-9 AACC Catfish Convention Herndon, VA
10/8/2022	AQUA	10/8-9 Aquashella, Chicago, IL
10/8/2022	HAAS	Fall Auction - Kansas City, MO
10/9/2022	QCFS	Quad Cities Fish Swap - Davenport, IA
10/30/2022	GCCA	Tropical Fish Swap Meet - Hoffman Estates, IL
11/6/2022	MASI	Fall Auction - St Louis, MO
11/18/2022	OCA	11/18-20, OCA Extravaganza 2022 - Strongsville, OH
12/4/2022	GCCA	Tropical Fish Swap Meet - Hoffman Estates, IL
12/4/2022	QCFS	Quad Cities Fish Swap - Davenport, IA

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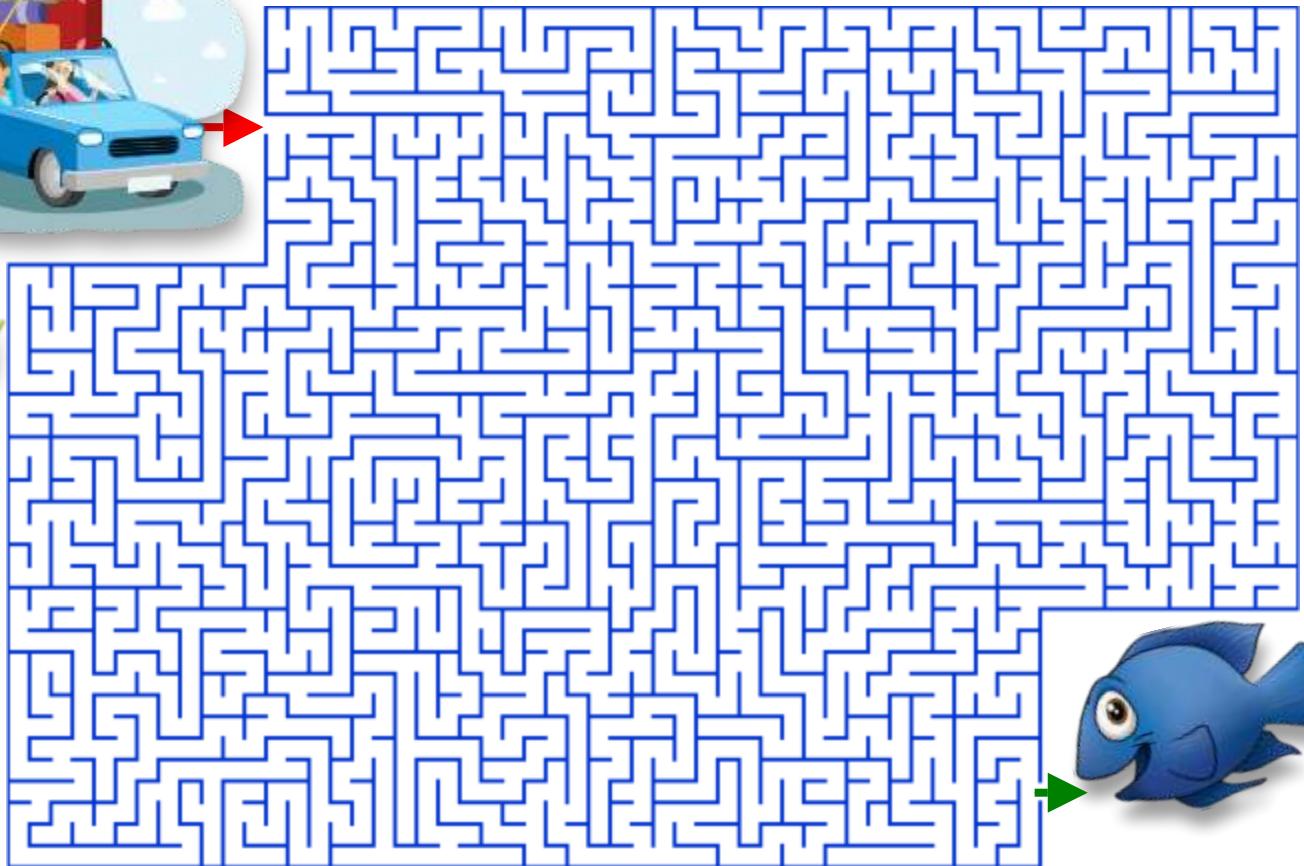
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Updates →



Eastern Iowa Aquarium Association Fish Auction

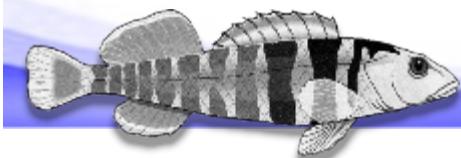


Date: March 19, 2022

**Location: Hiawatha Community Center
101 Emmons St
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**Viewing begins at 9:00 am
Auction begins at 10:00 am**





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Charles Harrison	Thiosulfate crystals (Chlorine Remover) - pound OTO double strength Chlorine/Chloramine test kits - 4 ounce Flubendazole, 10% powder 25 grams Lavamisole HCl Powder - 5 grams treats 100 gallons Methylene Blue 5% solution (4 ounces) Acriflavine Concentrate (4%) solution, 2 ounces Bromthymol Blue pH test solution, 4 ounces	\$4.00 \$12.50 \$20.00 \$10.00 \$12.75 \$12.70 \$7.00	(314) 849-9761 charles@inkmkr.com
Mike Hellweg MiniFins	General Aquarium Support: Dechlor, Coconut Caves, Flake Foods, Plants & Custom Fish Orders Contact by email or buy at the back of the room at MASI General meetings	Contact for Pricing	Email: Mike@Minifins.com



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years, the **Aquatic Triple Crown**. Now is your chance. I have a few T-shirts left. If you want one email me quickly as they will go fast.

Contact - Gary Lange gwlange@sbcglobal.net

Worm feeders, BBS strainers, FD Tubifex feeders & FD Brine Shrimp:

Triple Crown T-shirts



Miracle Tubifex Worm Feeder

\$7 or 3/\$18

Blackworm Feeder **\$6 or 3/\$15**

Brine Shrimp Strainer **\$5**

Get One of Each above for \$15

Freeze Dried Brine Shrimp **\$2**

Triple Crown T-shirts

**L/XL - \$16, 2XL - \$18,
3XL - \$20**

Additional Items Changing Constantly on [BAND.us/@MASIswap!](https://band.us/@masiswap)

- **MASI BAND Swap page** - <https://band.us/@masiswap> - This is now a CLOSED Group specifically for discussion and posting about upcoming MASI SWAPS and other sales efforts among members or others with approval on BAND. Post any sales, re-homes or other livestock exchanges here. **Do NOT post these to FaceBook.** **Those wishing to join** will need to register with BAND, and then ask the moderator to join the group. It's not hard, it's just a name, email or phone #, a confirmation text or email. Then request to join, answer all 3 simple questions that are set up and once the Moderator approves, you are in.



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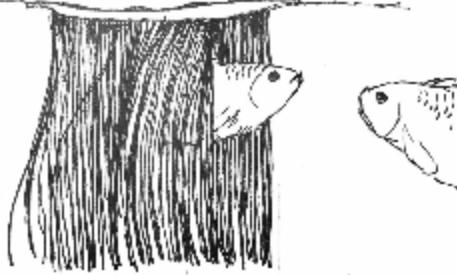
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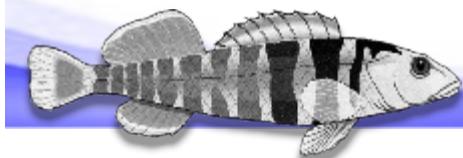
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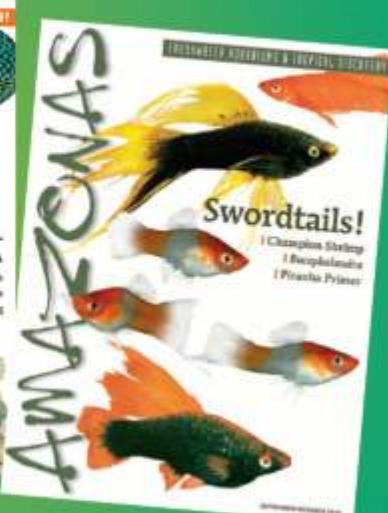
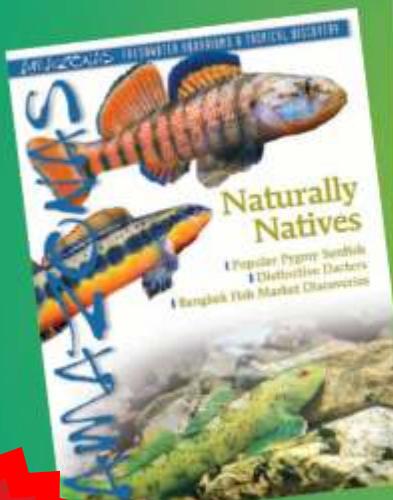
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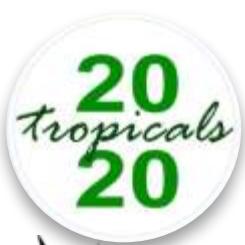
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