



AQUATIC**News**

Brooklyn Aquarium Society Online Newsletter & Magazine

VOL. 5

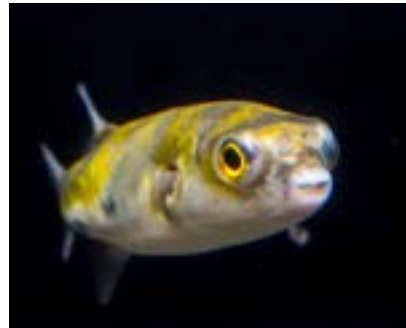
Spring 2024

No. 16





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President's Message

Our January meeting brought us James Perrenod who spoke on cichlids. He always gives a great talk and packs the house. James encourages audience participation, fielding questions in real time and our members had a lot of good questions for him. We had a nice selection of donations from stores, manufacturers, and our own members. The 50/50 is bringing in many bags of livestock each month. Whatever fish or plants that our members bring in, they split the proceeds with the club 50/50. This doesn't include equipment. We will continue to do a 50/50 every month since everyone seems to be enjoying it. This is great way to make a little money and get you to be a better breeder.

February had Joe Yaiullo from Long Island Aquarium come speak to us. Joe never lets us down! His talk last month on "A Hard Reboot of a 20,000 Gallon Reef Tank and Combating a New Coral Parasite Known Only as THEM," was a riveting tale on how he got his showcase tank emptied out and then ready for prime time again. He battled creatures both big and microscopic. In fact prior to the talk, he'd just gotten stitches removed from his hand and arm due to the potent and mysterious mycobacteria. What an incredible story! Joe is the curator of the Long Island Aquarium in Riverhead, and if you haven't been there yet, it is worth the trip!

It takes a lot of effort from many people like our board members who continue to work hard to bring a great show every month. I want to thank them for their dedication, drive and loyalty. Anyone wishing to help out, we will gladly give you something to do! Please ask.

The March meeting featured Hock Ng who dazzled us with beautifully designed aquascapes. He answered questions in real time and the members in attendance got a lot out of the presentation.

The April 12th meeting will feature Sandy Moore, President of Segrest Inc, the largest wholesale supplier of ornamental fish in the United States. We hope to see you at her talk.



Look on our Facebook page for aquatic sales from our club. We will post things for sale periodically. We always have tanks and equipment for sale. If you are looking for something aquatic, reach out to us.

Any hobby or aquatic information you hear or read about, please share with our editor, Ginny Cahill. It can be short stories about your own aquatic experiences. Please send all emails to Ginny at basny.editor@gmail.com. Help make AquaticNews a great publication that our member want to read!

We are always looking for your input on our events. Please let us know if you want speakers on any aquatic topic. We need our members to be more involved as we are always trying to better our club.

For more info, please call out hotline 718-837-4455, or visit our site at www.brooklynaquariumsociety.org

STEVEN MATASSA
President



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**The On-Line Journal
of the Brooklyn
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ALL CORRESPONDENCE CONCERNING THIS PUBLICATION SHOULD BE SENT TO:

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You can submit articles to the Editor by mail, or E-mail to: basny.editor@gmail.com.

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The Brooklyn Aquarium Society Inc. is a non-profit organization 501(c) (3) for people interested in the aquarium hobby and the study of aquatic life. The Society meets the 2nd Friday of each month except July and August at the Education Hall of the New York Aquarium at Coney Island, Surf Avenue at West 8th St., at 7:30 PM. Meetings are open to visitors. Refreshments are served.

Upcoming Events

March 8 Hock Ng — *Nature style aquascaping*

April 12 Sandy Moore — *Farm to Tank*

May 10 Giant Auction

No 50/50 for the Giant Auction held twice a year: May and October.

March 8, 2024

Hock Ng — *Nature Style Aquascaping*

Hock Ng is a member and past president of the NJ Aquatic Gardener's Club. He has been in the planted tank hobby since 2015 and participated in both live aquascaping contests as well



as the International Aquatic Plant Layout Contest (IAPLC). In addition to aquascaping, he enjoys all aspects of the aquarium hobby including fish and shrimp keeping. When not doing water changes, he can be found tending to his collection of houseplants, building mini terrariums, or taking nature walks. He loves exchanging information with other hobbyists. He can be found on Instagram at @hockscapes or @nature.behind.glass.

April 12, 2024

Sandy Moore — *Farm to Tank*

In 1992 Sandy Moore began her career in the aquatics industry at one of the largest ornamental fish wholesalers on the globe, Segrest Farms. She worked in every aspect of the company prior to becoming President in 2015, and has been pivotal in the company's overall growth. During her tenure, Segrest Farms has become known for not only its quality, but for its leadership in developing the



best management practices that set the standard for the industry.

Moore has also served as the Secretary for the Florida Tropical Fish Farmers Association the only active U.S. established organization devoted entirely towards helping the commercial tropical fish farming industry and focuses on the ethical, economic and social aspects of the industry.

Auction Rules

All fish lots must be properly bagged:
bag must have ample space and be filled with 1/3 water and 2/3 air.

No sandwich bags or Zip-Lock bags for fish!

Seller MUST put their name on each bag.

Seller must label all bags with species and sex if known.

Tags with lot numbers will be given to sellers at the time of registration, who will then tie the tag SECURELY to the bag.

Renewing Members

Brando Bringas, Matthew Mason, Matthew O'Farrell

New Members

Jeremy Thorp

Donations – Thank You!

Individuals for January, February & March

Bill Amely
 Tomasz Lis
 Denis Vadaro
 Katherine Hernandez
 Don Lang
 Scott Peters
 Jeff Kaye
 Alexandr Vinnitsky
 Al Turco
 Martin Gallo
 Gene Kogan
 Oksana Tuman
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Stores/Mfg

All in 1 Petshop, Brooklyn, NY
 Monster Aquarium, Queens, NY
 Pacific Aquarium, New York, NY
 Brooklyn Zoo & Aquarium, Brooklyn
 Absolutely Fish, Clifton, NJ
 Pop Coral, Brooklyn
 Algae Barn, Online

Open Board Positions

The board members meet once a month to discuss club business, and we can use your help! There are four board positions currently available: corresponding secretary, treasurer, webmaster and recording secretary. If you'd like to attend a meeting which are held the **1st Friday of the month**, September through June, please notify Steve Matassa at (347) 277-4793 by the Tuesday before the meeting.



113 Years of Educating Aquarists

THE BROOKLYN AQUARIUM SOCIETY
PRESENTS

GIANT AUCTION

FRIDAY MAY 10TH
Doors open 7:30 pm

At The New York Aquarium, Education Hall, Surf Ave. & West 8th St., Bklyn, NY 11229

HELD THE 2ND FRIDAY EACH MONTH, EXCEPT JULY AND AUGUST

Free Parking • Free Refreshments

\$5 Donation for Non-members. Good towards membership that night only.

For Information Visit **BROOKLYNAQUARIUMSOCIETY.COM**

Or Call BAS 24 Hr. Calendar of Events Hotline (718) 837-4455

Car Directions: Belt Parkway to Ocean Parkway South (Exit 7S). Take Ocean Parkway approx. 1/2 mile. The NY Aquarium will be on your left.
 Subway Directions: Either the Q or F trains to West 8th St., NY Aquarium Station.

Tip of the Season

The weather's getting warmer, but be careful when putting plants and fish in outdoor ponds. We can still experience cold snaps, and that could retard growth of outdoor plants for the entire summer and kill your fish.

Many tropical fish breed in the spring. Spring rains change the pH of the water, which trigger them into breeding mode; it also lets them know spring is on the way and insects are soon to become readily available to feed their fry. If you have, spring breeding fish, now would be the time for major water changes, and to feed fish more heavily. Of course, you can trigger breeding condition anytime in an aquarium. You just have to know what the signals are that gets your fish into breeding condition. Read about

the fish you want to breed. Learn everything about them that you can. The more you know, the more successful you'll be.

Spring is one of the best times to check your local fish store to see what fish are coming in. As the weather gets better, shipments of fish arrive in better condition.

Check out society auctions. Local breeders bring fish bred over the winter to these events. Homebred fish are usually healthier than farm-raised fish that have been stressed out by a long trip in a styro from Florida and Far East farms.

This is also a good time for mail order fish eggs. Killifish and rainbow fish eggs travel well and have a much better chance of arriving in good condition Good luck. *JT*

Current NEC affiliate clubs

If someone wants to travel, they can visit another club. Here's a list of the clubs.

- Aquarium Society of Lancaster
- Boston Aquarium Society
- Brooklyn Aquarium Society
- Bucks County Aquarium Society
- Capital Cichlid Association
- Cichlid Club of NY
- Central New York Aquarium Society
- Danbury Area Aquarium Society
- Diamond State Aquarium Society
- Erie Aquarium Society
- Greater City Aquarium Society
- Jersey Shore Aquarium Society
- Koi Organization International
- Long Island Killi Assoc
- Long Island Aquarium Society
- Metropolitan Area killifish Assoc.

- Norwalk Aquarium Society
- Nassau County Aquarium Society
- New England Cichlid Assoc
- New England Fancy Guppy Assoc
- North East Live bearers Assoc
- North Jersey Aquarium Society
- Otter Valley Aquarium Society
- Pioneer Valley Aquarium Society
- Pioneer Valley Water Garden & koi
- South Jersey Guppy Group
- Southern New England killifish Assoc
- Tropical Fish Club of Burlington
- Tropical Fish Society of Rhode Island
- Upstate NY killifish Assoc
- Worcester Aquarium Society

HOLIDAY PARTY & JAN MEETING



Don Lang and special guest.



James Matassa receives the **young member award**.



Ginny Cahill, receives the first annual **Joe Graffagnino award**.



Liz Puello, receives the **Breeder Award** at the BAS Holiday Party.



Bill Amely is presented the **John Todaro award** for writing.



James Perrenod speaks to the club in January.

FEB & MARCH MEETING



Joe Yauillo speaks to the club in February.



A 20,000 gallon tank overhaul at Long Island Aquarium.



Hock Ng addresses the club in March.



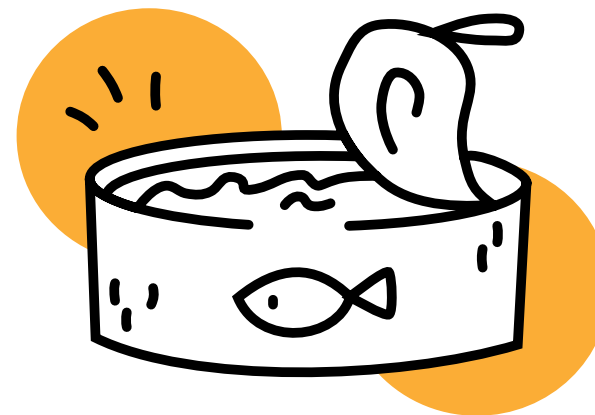
John Todaro was a past president of BAS and editor of the Bulletin and Aquatica Magazine for decades. We republishing recipes from the Brooklyn Aquarium Society's publication SCRUMPTIOUS MEALS & LIVE FOOD TREATS compiled, edited and written by John.

Cat Food Surprise Recipe

From Jeff George, (BAS, GCAS and ECGA) here is an easy to make, high protein, no cooking paste food your fish will love. Plus it's nutritious! If you have never made your own foods, maybe this is the first recipe you should consider trying. It's easy to make and you can add more, or less of the baby foods depending on your fishes' needs. If you do add more, you might have to use an extra envelope of unflavored gelatin. Check the liquid content of the food; you don't want your Cat Food Surprise to be too wet.

INGREDIENTS:

- 1 14 oz can Iams Catfish Formula cat food
- 1 ob. Shrimp, uncooked, fresh or frozen
- 1 4 oz. Jar Gerber baby foods in these flavors: peas, carrots, sweet potato
- 4 cc Prime concentrated vitamin supplement (made for birds by Rolf C. Hagen Inc.)
- 1 pkg. Knox unflavored gelatin
- 2 tblsp. Spirulina powder (optional)



PREPARATION:

1. Blend shrimp in a food processor until broken down to the consistency of a thick milkshake. If additional liquid is required, add some of the baby food.
2. Gradually add cat food and the rest of the baby food to mixture. Again, bring mixture to consistency of a thick milkshake.
3. Slowly add the unflavored gelatin while blending to keep mixture from getting lumpy.
4. Add powdered vitamins and Spirulina powder and blend until fully dissolved in food mixture.
5. Follow general directions for freezing and storing.

FEEDING:

To feed, grate frozen into a cup. A revolving-drum type grater like a Mouli works best. Feed by spooning small portions right into the tank.

For larger fish, cut into cubes and drop directly into tank. Never feed more than your fish can eat in 5 to 10 minutes.

Club Exchange



Daniel Smith — BAS

THE CENTRAL NEW YORK AQUARIUM SOCIETY, REFLECTOR, JANUARY 2024

This issue has an article about January's featured speaker, mason Jason Dee Harese. His talk was about armored catfish Loticariidae family of the Amazon River valley. His work at D'Youvilke University included research about breeding growth and the survival of fry.



The tales from the tank column reviews the Seachem tidal 110 HOB FILTER

KITCHENER-WATERLOO AQUARIUM SOCIETY'S FIN AND TALES OF FEBRUARY and MARCH MARCH 2024.

Features members tanks, and fish. KWAS member Glenn Roberts' article *One Plant, Two Plant, Red Plant Green Plant* discusses red pigmentation in plants in the March issue.



THE GREATER CITY AQUARIUM SOCIETY, MODERN AQUARIUM, MARCH 2024.

The covers of the Greater City, Aquarium Society publication Modern Aquarium are always striking and the March issue is no different. This month's image is bright red freshwater shrimp against a background of green.



The lead article is *A Life With Fish — Raja Empat* by Jason Gold. Mr. Gould shares with us his experience diving in the south Pacific Sea in Western New Guinea.

An article that originally appeared in *Science Daily*, describes two new species of freshwater Gobies from the genus *Rhinogobias*, *Rhinogobias estrelllae* and *Rhinogobias tandikan*.

BUCKS COUNTY AQUARIUM SOCIETY, THE BUCKETTE, MARCH 2024

For those of us, who feel keeping fish and aquariums isn't enough, should check out an article by Peter King, titled *A Slice Of Rainforest*. The article takes us beyond aquariums into the world of paludarium. Peter King is President of the Jersey Shore Aquarium Sociey. He recommends some YouTube Channels and incudes a list of plant species that will grow out of the top of an aquarium.



THE RALEIGH AQUARIUM SOCIETY is hosting the AGA 2024 convention beginning April 4 and runs to April 7.

If anyone would like to read a specific article, please let us know with an email to: basny.editor@gmail.com.



All in the (Matassa) family: from left to right: Dan, Jack, James and Steve.

Generations in the Hobby

Steve Matassa — BAS

As long as I can remember, there were always fish tanks in my house growing up. My dad kept two 29 gallons in the basement, usually with South American cichlids. Oscars, Demseys, Severums, the basic in the early 70s. We used basic box filter before we graduated to hang on the back filters. Incandescent lights, tin foil for a background, and underground filters run by a piston air pump. They were very noisy, ran hot, and use a lot of electric compared to today's air pumps. The hobby has come a long way since then.

I was always fascinated by my dad's fish tanks but I wanted a tank of my own. Although my dad let me change his tanks around, add fish, I wanted one that I can take care of totally by

myself. My brother had given me a 10 gallon tank he had. I wanted to try live bearers, so I started with Guppies then Mollies, Swordtail, Platies' any livebearer I can find. After a while I realized it's time for another tank, and another. Eventually



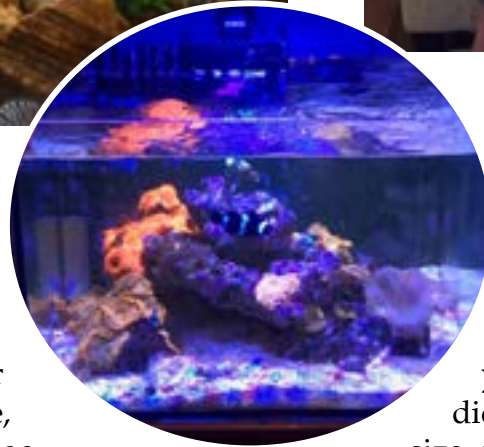
BAS President, Steve Matassa's saltwater tank at right.



Jack Matassa's freshwater tank...



...his great grandson's saltwater tank.



I took over my dad's two.

One Saturday my dad took me to work with him in Manhattan and after work he took me to Aquarium Stock; I was about 10 or 11. Now for anyone who has never been there, it was like no other store in the 70's. It was huge, went from one side of the block to the other. I was in awe of this store. If I wasn't hook on keeping fish before, this store did it. It was not what I was used to in Brooklyn that's for sure.

As time went on and I got older, I got into saltwater fish, so yes that meant another tank. This time it would be a 55 gallon, the biggest so far. My brother was married at the time and had a 75 gallon of his own. I was still only about 14, and with very little saltwater stores in Brooklyn, I relied on him to drive me around. That's the good thing about family all being interested in fish keeping.

When I eventually got married, and moved out I had to find a place for a tank or two in my apartment. Soon after I had a son of my own, and he also showed interest in the fish at an early age. Eventually he wanted tanks in his room as he got older. I setup a couple of 30 gallons for him. One of the first fish he had was a Pacu that killed everything we put in the tank. We purchased him about the size of a nickel, but he grew very quickly. The only fish left in the tank, he grew to about 12 inches. Way too large for a 30 gallon. He would bang on the glass from side to side until one day the tank started leak. It's not easy to find a home quickly for a fish of that

size, all while your tank is leaking on the second floor of your apartment. I also didn't have a net of the size, so I was trying to get him in a bucket. He ended up on the floor, under the stand flopping around. My wife was not happy. I did find him a home and he was fine.

Well before you know it my son is married and on his own. He eventually setup a tank in his basement too. First a freshwater tank, then a saltwater reef. I had a saltwater reef at that time and he loved it. We bought loved reef tanks and would go to shows and store together.

Now the fourth generation my grandson James has started to show interest. At a very early age James would ask the names of fish and inverts. To my surprise he would remember them when someone would ask. James started coming to BAS with me from the time he was six year old and still does at now 14 years old. As James got older he wanted a reef of his own, so my son got him a small 15 gallon reef, which he has now.

This has stretched from the early 60's to present with all of us having tanks. My dad recently passed away at 97 still with a tank in his house. He never gave of his love of the hobby, I hope to be so lucky and live as long. Maybe someday James' kids will be into the hobby as well, with a 5th generation.

FISH SHOPPING: GOING FROM BEGINNER TO PRO

David Manuel — BAS



Checking out the gorgeous blond naso tang.

There's a difference between a pet owner and a hobbyist who enters a pet store. We are an odd bunch. The method of going to buy a fish can be a really intricate process.

The way people go to buy a car is the best way to describe how we go to buy fish. Let's talk about how fish folk shop for fish.

Everything starts with the hobbyist. The tropical and saltwater aquarium hobbyist are not very different. The buying process starts before we leave the house. There is a list of dream species and a list of stores by size, distance and track record. What do you mean when you say track record? Everyone gets familiar with what store carries saltwater fish versus special tropical fishes. Not only do you watch what stores regularly get in, but we

usually have such a good relationship with workers that we know what day shipments come in. I can go to the reef shop on Thursday and catch the delivery fresh off the plane. This is when you see how the fish were received and which ones are high value. The average aquarium owners goes in Petco looking for colorful fish at the lowest price. Not the Hobbyist. We're looking the the rarest of the rare find that might have been mislabeled or priced at the bargain number. If you know the sales person or the owner you may the pleasure of suggesting what hits the order list for next week. Why are there just 2 Discus on the order?



The author on an Absolutely Fish field trip.

It's that order that Nick requested to complete his breeding group.

If you are the savvy hobbyist you go looking for straight fins, vibrant colors and a nice price tag. The really really savvy shopper asks to see the fish eat. The one thing a new hobbyist has to their advantage now is the internet. You can easily ask "Google" for a description of a fish and the care requirements. You'll be happy to know a good shop owner will be more than happy to set you up with a good selection of animals based on your tank size and skill level. The worse thing you can do is go in blind and randomly select various species without knowing one fish from another.

There are various books printed for first time aquarium owners such as *AQUARIUMS FOR DUMMIES* by Mary Hargrove and *FRESHWATER AQUARIUMS* by Stuart Thraves. It would extremely helpful to look into joining a local club if planning on investing your hard earned money into a saltwater set up. This will save you a ton of stress and money in the long run.

Local clubs house groups of friendly fish keepers whom will be willing to advise you or practical set up as well

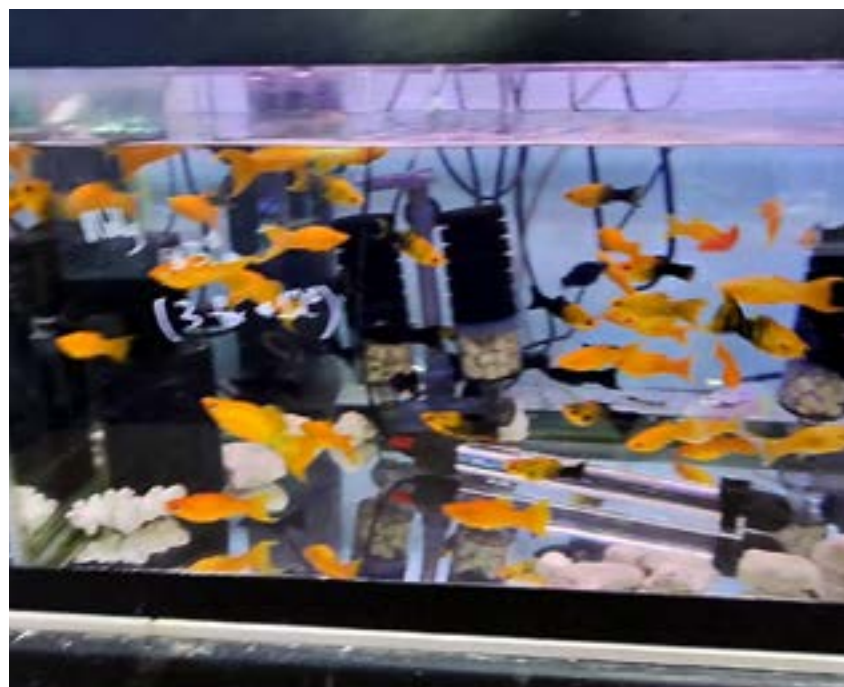
as the best places to find the fish, plants or coral you desire. We can absolutely refer to to the best stores to find a particular fish or coral you might be looking for.

The Brooklyn Aquarium Society has a list of supporting stores and advertisers which even offer special discounts and advise to help fish keepers succeed. Some even provide home maintenance for tanks. While there are tons of internet videos and freely given information online nothing can beat the in person proven experiences of a person that can show you first hand fruits of their advice.

I know this may not seem like a fish shopping tale, but it is definitely a guide to the best practices in finding

and setting up a successful aquarium. Don't try to do it all on your own. Talk to knowledgeable staff and look at their aquariums in person.

A true hobbyist will jump at the opportunity to talk fish with anyone. Believe me, we do it every month at the Brooklyn Aquarium Society meetings. Maybe we'll see you at the next meeting.



Examining Platy fish.

Deep Dive into Amazon Puffers



By Dan Hodnett

© DansFish.com

Amazon Puffer (*Colomesus asellus*) in full smile mode. This species can be purchased at DansFish.com.

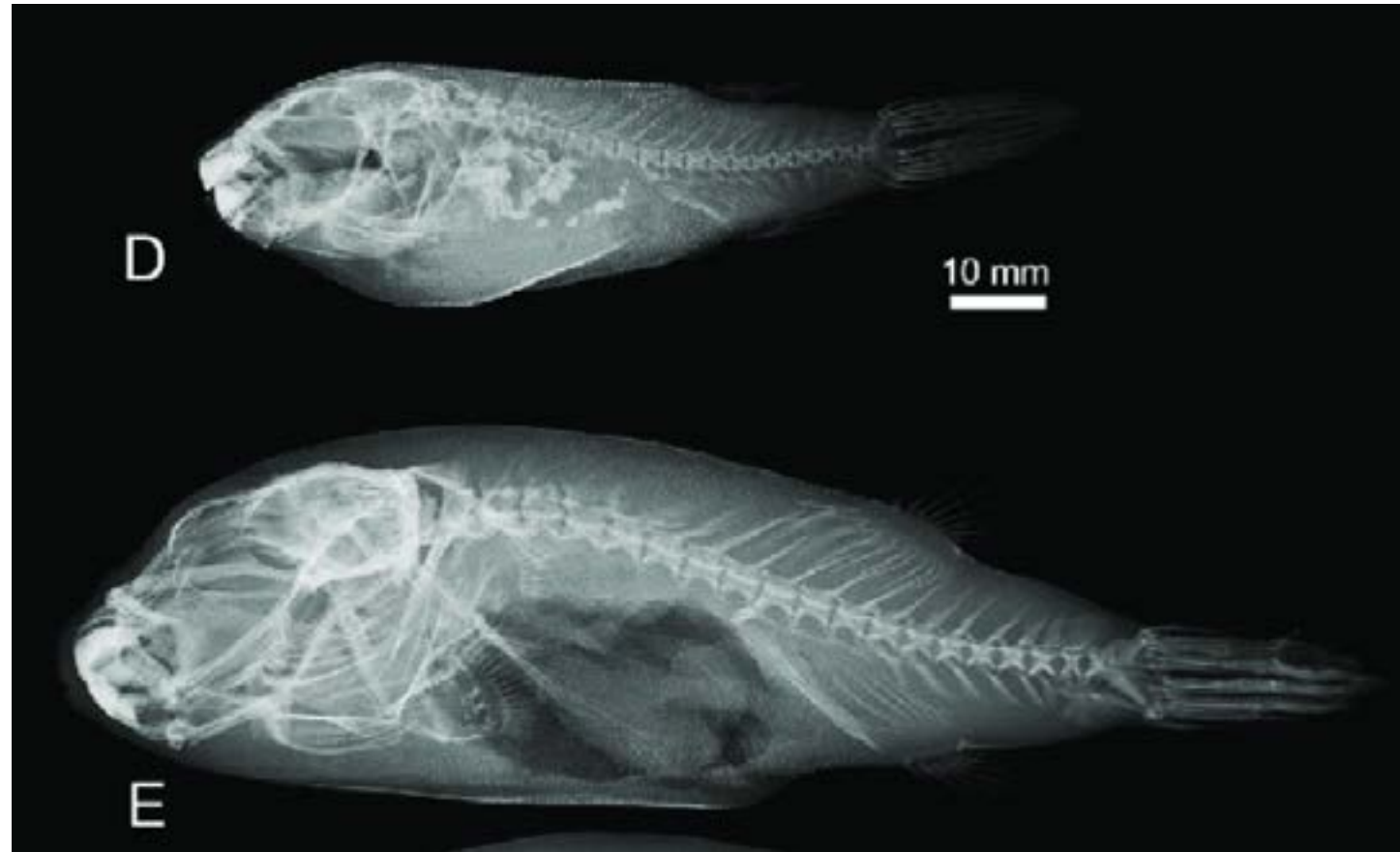
This article is made possible by all of our wonderful dansfish.com customers. Thanks for your continued support!!!

Each type of freshwater puffer has different care requirements based on the niche it inhabits, so there is no one-size-fits-all care guide that works for this group of fish. Instead, each individual species deserves careful consideration. So, let's take a deep dive into the fascinating world of *Colomesus asellus*, a popular aquarium fish commonly known as the Amazon Puffer.

But first, let's learn a bit about the natural history of puffers in general so we can better appreciate how unique our subject is. Fortunately, we know a lot about puffers. These fish have

the smallest known genome of any vertebrate, making them ideal subjects for scientific research. This, combined with their unique anatomy and the deadly toxins embedded in their tissues, fascinates scholars resulting in ample study.

There are currently about 187 species of puffers divided into 28 genera. The vast majority of these inhabit saltwater environments. However, over the millenia, a few species have migrated into freshwater environments. This type of "freshwater invasion" has occurred on at least 8 separate occasions. The original invaders subsequently differentiated into the diverse species of freshwater pufferfish we enjoy today. Depending on which scientist you listen to, the first puffers moved to freshwater between 20 and



X-ray showing the skeletal structure of *Colomesus psittacus*, the ancestor of the Amazon Puffer. Credit: Cesar Amaral et. al.

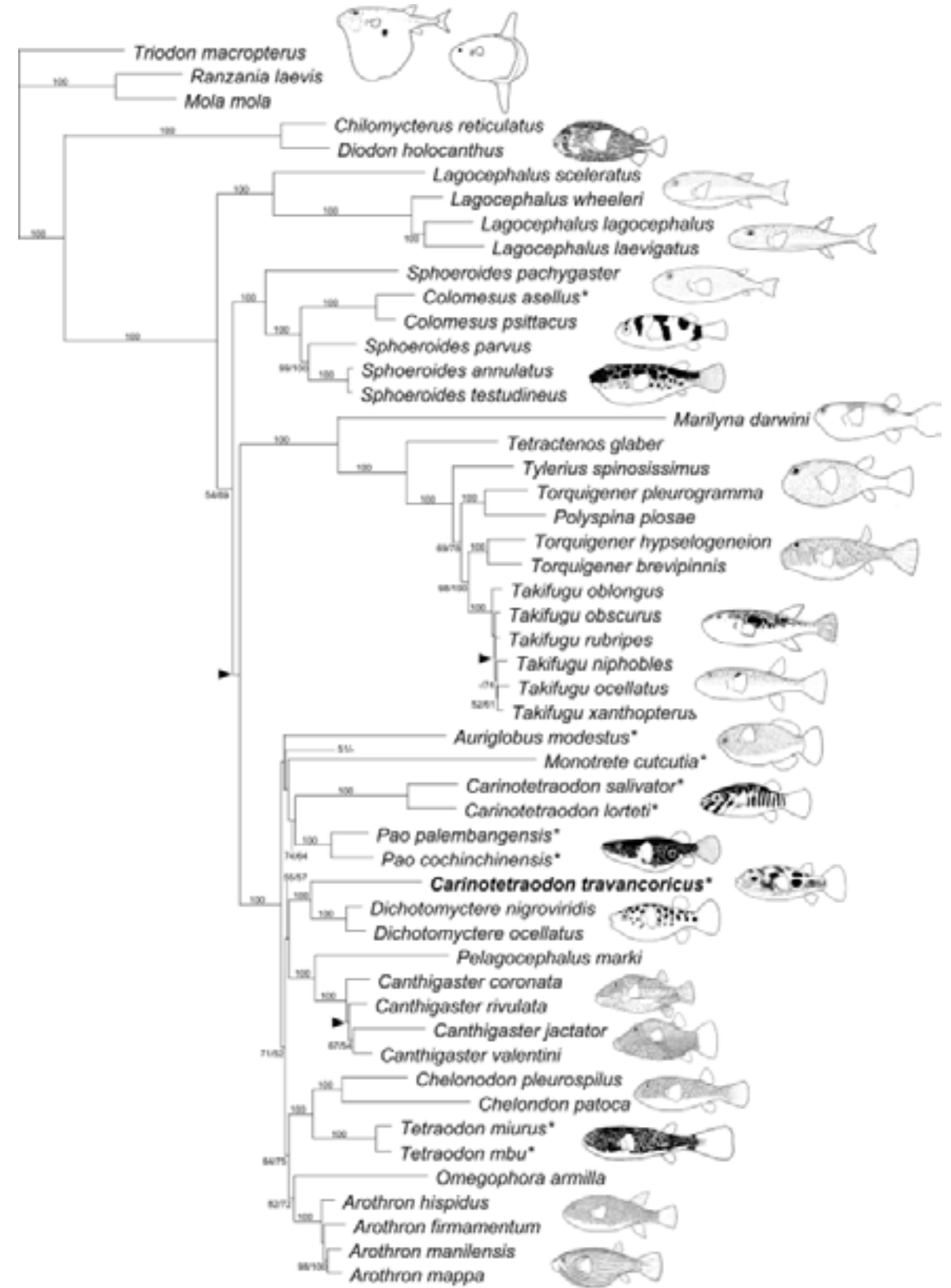
78 million years ago. That's quite a time-spread and alone might not be a very helpful statistic. What is helpful is knowing that the invasion began in Southeast Asia, then later in Central Africa, and lastly in South America.

Having only recently split from their ocean ancestors, the freshwater fish of the genus *Colomesus* are unique in their newness. There are 3 species in the genus. The oldest, *Colomesus psittacus*, differentiated from its ancestors about 12.9 million years ago. It remains in brackish and seawater environments along the shoreline, but two newer species, the recently described *C. tocantinensis* and the widespread *C. asellus*, left the salt and adapted to pure freshwater environments. These two species are the only freshwater puffers in South America. The largest one on record is around 5", but that is an outlier. They usually only grow to about 3". Here at dansfish.com, we've never seen them even close to 5".

The Amazon Puffer diverged from *C. psittacus*

2.5 - 7 million years ago, a recent occurrence in evolutionary time. Because the puffers in South America are relatively new arrivals on the freshwater scene, they have not had enough time to radiate into the variety of spectacular phenotypes found in Asia and Africa. Both South American freshwater species are striking in their similarities. The main differentiation is that *C. asellus* has small dermal flaps on its chin. These flaps are absent in *C. tocantinensis*. This difference is so small that they were considered the same species until 2013.

While the natural range of *Colomesus tocantinensis* is restricted to the Rio Tocantis drainage, the Amazon Puffer is found throughout the Amazon basin in Brazil, Columbia, Peru, Ecuador, Guyana, and Venezuela. They are strong swimmers capable of handling the current in the main river channels. During the wet season these currents gain strength as the water level routinely rises over 30 feet, eventually flooding out into the forests surrounding the main river



Amazon Puffer Family Tree. Credit: Chandhini Sathyajith et. al.

channels. Because fish with large natural ranges and extreme seasonal fluctuations encounter many different habitat challenges across their distribution, they tend to be hardy and adaptable.

In our experience, Amazon Puffers are indeed hardy aquarium fish.

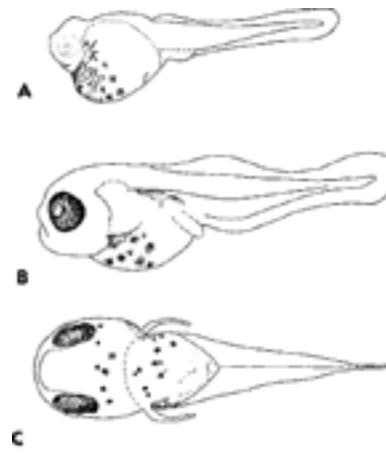
Reproduction is tied to these vast seasonal changes. Amazon Puffers spawn in the "quantity



Yellow dots represent known Amazon Puffer collection locations. Credit: discoverlife.org

over quality" fashion of their saltwater ancestors. Instead of laying a limited number of eggs and practicing brood care to ensure a quality hatch, our subjects scatter huge numbers of eggs and promptly abandon them. The resulting larvae are poorly developed in the way of planktonic saltwater fish larvae. Despite its popularity, this form of reproduction is difficult to simulate in aquaria. Despite its popularity among aquarists, the aquarium industry has yet to successfully culture *C. asellus*. All the fish in the trade are harvested from nature.

In one study of Amazon Puffer reproduction, Carlos Araujo-Lima and his cohorts attached a fine mesh seine net to a boat and trawled the Amazon River for puffer larvae over the course of a year. They found that 97.9% of larvae were found about



Amazon Puffer larvae. Credit: C. Araujo-Lima

30 days after the beginning of the wet season. Because these larvae were congregated near the bank of the river at the mouth of side channels leading to floodplain lakes, it is thought that adults aggregate at those locations to spawn. The study found that as the wet season progressed and the water level continued to rise, the larvae were washed into floodplain lakes where they developed onto fry. As the water level dropped during the dry season, the young puffers were flushed back out into the main river channel to continue the cycle.

During the course of this study, the water temperature averaged 82.94 F, with little variation. It is important to note, however,

that this data is from a single study in a very small part of the Amazon Puffer's natural range. This species experiences greater temperature fluctuations throughout its range and we've had no problems keeping them long term in our aquariums in temperatures ranging from 78F-84F.

Many freshwater puffers are highly aggressive towards conspecifics. When kept in groups in an appropriately sized tank, Amazon Puffers enjoy each other's company. In nature, they are found in large aggregations. These are community minded fish that like being surrounded by their neighbors. In aquariums, they are best kept together in groups...the more the merrier. In addition, these fish are strong swimmers which appreciate open swimming space. It is important to keep both their gregarious nature and their desire to swim in mind when selecting the right sized aquarium for this species. They explore endlessly, so having lots of plants, decorations, and hardscape to scan will greatly enrich their lives.

Puffer, is a small freshwater species that, in our experience, does not tolerate conspecifics.

When we think of puffers, most aquarists think of molluskivores. However, Amazon Puffers are different. While they do eat a significant amount



Carinotetraodon irrubescens, the Red Eyed Red Tailed Puffer, is a small freshwater species that, in our experience, does not tolerate conspecifics.



Mayfly nymphs are the mainstay of an Amazon Puffer's natural diet. Photo credit: Jon Sullivan

of shellfish, mollusks, usually in the form of snails, only account for 25% of the adult puffers' diet. In juveniles, the percentage drops to 6.42%. This is because Amazon Puffers don't have very large mouths and so their tooth plates can't handle hard snail shells until they are adults. Even adults can't tackle anything except small snails. This is why aquarists tend to smash their snails' shells before feeding them to these fish.

The majority of *C. asellus*'s diet, 62.18%, is made up of insects. Of these, 48.63% consists of mayfly nymphs. Then come the aforementioned snails at 25%, followed by...wait for it...FISH SCALES! It turns out that Amazon Puffers are scale eaters. 8.16% of their diet is fish scales. This has important implications regarding their compatibility with other species in aquariums.



Unfortunately, there are no images of living *Colomesus tocantinensis* available, so we will have to settle for this image of the holotype specimen. Credit: Cesar Amaral et. al.

They definitely can be kept successfully in a community aquarium long term. I've seen it work on several occasions. However, this species might not play nice in every situation. It could be that fast moving fish are not at risk but that slower moving benthic grazers are. Should some of your fishes' scales start disappearing, the puffers may need to be removed.

To round out their diet, these fish ingest small amounts of algae (0.34%), fish (0.06%), and plants (0.03%). However, it is more likely that the algae and plants are acquired from the stomachs of their prey or as bycatch while attacking their prey than as food items which is purposefully sought out.

Like other puffers, Amazon Puffers have a set of tooth plates, often referred to colloquially as their "teeth" or "beak," which is used to dispatch prey. Just like a rodent's teeth, these tooth plates grow continuously and must be constantly worn down or they will become so overgrown that the fish won't be able to feed. In the wild, puffers routinely wear down their teeth as they hunt. When *C. asellus* attacks, it grabs the prey item while simultaneously scraping its tooth plates against the rocks onto which the mayfly nymphs cling. Eating snails further wears down the tooth plates.

In the aquarium, we must provide opportunities for our puffers to wear down their tooth plates. This can be done by rotating crushed snails into the diet. Here at dansfish.com, we find that Repashy gel foods into which crushed oyster shells have been embedded helps with puffer "tooth maintenance." Crushed oyster

shells are commercially produced as chicken grit and can be purchased cheaply at livestock supply stores. To embed them in the Repashy, mix the Repashy powder with hot water as per usual, but stir the crushed oyster shell into the slurry so that when the Repashy hardens, it has bits of oyster shell throughout. When this is fed to the Amazon Puffers, they will wear down their teeth on the oyster shell as they feed on the Repashy mixture. It takes a week or so of training to get the puffers



Freshwater cyanobacteria produce the saxitoxin which make Amazon Puffers deadly to eat.

Photo credit: Silviapvadi's Blog

to accept this Repashy/oyster shell mix, but, once they do, their tooth plates will be simple to maintain.

Amazon Puffers are eager feeders and can be trained to eat dry, gel, frozen, and live foods. We rotate the Repashy into the diet and feed it every third feeding or so. Other readily accepted foods include Hikari Vibra Bites, frozen blood worms, frozen mysis shrimp, frozen brine shrimp, live scuds, live cherry shrimp, and crushed snails. Rotating a variety of foods into their diet helps ensure our puffers get all the nutrition and enrichment they need.

Puffers are deadly to humans if ingested. Fugu, a Japanese delicacy prepared from the flesh of the Fugu Puffer, is famous for being deadly if it is not properly prepared. There are

two types of toxins in pufferfish: Tetrodotoxin and saxitoxin. Neither compound is produced by the puffer itself. Instead, these toxins are created by bacteria, cyanobacteria, protists, and algae. Small quantities of these toxins get passed up the food chain. Most animals excrete these compounds before they can build to harmful levels, but Puffers have the ability to retain these compounds and concentrate them. Amazon puffers store concentrated saxitoxin in their skin and other tissues, especially their gonads. Saxitoxin is a potent neurotoxin which cuts off the nerve cells' ability to transmit signals, causing paralysis and death. A dose of 0.57mg, or about 1/8 of a medium sized grain of rice, is lethal to humans. However, you can still keep puffers safely as pets because these toxins have to be ingested to be of any concern.

Freshwater cyanobacteria produce the saxitoxin which make Amazon Puffers deadly to eat. Photo credit: Silviapvadi's Blog

So, I guess the takeaway is don't eat your pet puffer, and all should be fine.

If you have any questions about this article, join us for our weekly livestream Wednesdays at 9pm EST on the Dans Fish Youtube channel at this link: <https://www.youtube.com/c/DansFish/featured>

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Meet My Tank!

Tomasz Lis — BAS



Tomasz's 40 gallon breeder tank, his own slice of heaven!

I had a 10 gallon tank in Poland when I was about 14 years old but I had zero idea what fish could be kept together. I had goldfish, angels, neons, catfish all in one tank. I was guilty of every single error that a rookie could make.

I started to get the right idea about 12 years ago when I joined BAS. My eyes were opened on how to do stuff the right way, mostly through conversations at meetings and by visiting Joe Graffagnino in his fish room.

How long have you been in the hobby?

Around 20 years.

How many tanks do you have?

Three at the moment.

How many gallons each tank?

40, 20 and 10 gallon.

Freshwater or saltwater?

Freshwater.

Types of fish?

All Medaka rice fish, each tank a different color.

What do you feed them?

I mix about 7-8 different foods in one small canister.

Do you have live plants?

All the tanks are planted!

What else do you want to tell us about your tanks/fish/experience?

I try new fish/shrimps/snails every few months, it is my slice of heaven, a never ending journey into discovery and complete awe of nature and the will to survive of these fabulous creatures that swim in my tanks.

I find keeping fish, growing plants absolutely riveting. The drive to preserve the species, the mating rituals, caring for their young captivate me.

Meet My Tanks!

Don Lang — BAS



Forty-gallon breeder with water sprite on top with a rock and wood substrate. This tank is used to breed SuperCross guppies that were donated to one of our auctions by Denis Vardaro years ago.

MY DAD HAD A 29 GALLON tank when I was about 6 years old and that started my life long fish keeping adventure.

I probably have around 30 fish tanks, but the amount of tanks I have up and running at any given moment depends on the time of year and what fish I'm trying to breed. Currently I have 13 active tanks: a 7, 2-10s, 1-15, 3-20s, 1-25, 2-33s, 1-40, 1-45, & 1-90. If my math is right, that's 368 gallons of freshwater. No salty tanks for me. I

dabbled a bit into saltwater but I soon realized that I was a freshwater guy.

Just about every fish I keep is to breed or try to breed. One of my 33 gallon tanks is planted with a sand substrate and it's mainly for breeding Cory cats.

Above that, I have the 40 gallon breeder that's used to breed the SuperCross guppies that I won at an auction several years ago.

Next to that tank is a 10 gallon with some



One of my 33 gallon tanks is planted with a sand substrate and it's mainly for breeding Cory cats.



Next to that tank is a 10 gallon with some Cherry shrimp that I'm currently breeding.

Cherry shrimp that I'm currently breeding.

Next to the shrimp is a 15 gallon tank dedicated to growing out Xiphophorus Kallmani laguna catemaco which is a wild type swordtail. This type of swordtail can't be found at a local fish store.

Next is the 7 gallon cube, I use that for incubating eggs and raising fry. At the moment there are some Corys eggs in there waiting to hatch. Sorry I didn't get a picture.

Up next is a 33 long, this tank is being choked out with java moss and is housing a colony of Variatus platies and a small group of Endlers.

I use the 45 to breed Manacapuru Angelfish and the 90 to grow out the fry.

The three 20 gallon tanks are used to raise Mascara barbs, Indian Ricefish, and San marco redtail goodeids.

There is a 10 gallon tank with a bare bottom and a bunch of Subwassertang growing in it. That's for breeding some Medaka ricefish. There are more fish but I think I've given you the highlights for now!



Next to the shrimp is a 15 gallon tank dedicated to growing out Xiphophorus Kallmani laguna catemaco which is a wild type swordtail. This type of swordtail can't be found at a local fish store.

AS FAR AS FOOD GOES, all the newborn fry if and when they are large enough get newly hatched baby brine shrimp. If they are too small for the brine shrimp they get golden pearls, that's a very fine high protein powdered fish food, designed for feeding fry. When the fish get older I start feeding them crushed pellets and flake food. I'll mix in foods like frozen bloodworms and frozen brine shrimp from time to time, especially when I'm trying to get

adult fish to spawn.

I keep a few different types of plants, all the easy to keep hard to kill plants like, java fern, java moss, subwassertang, & watersprite. I keep the plants to help young fry evade larger fish trying to eat them and to add some enrichment in the tanks. All of the fry grow out tanks are bare bottom, due to the large amount of water changes involved in fry rearing a bare



A 33 long, this tank is being choked by java moss and is housing a colony of Variatus platies and a small group of Endlers.



I use the 45 to breed Manacapuru Angelfish and the 90 to grow out the fry.

bottom tank works best for me.

Living in the big apple can be very hectic and downright crazy at times. It's nice to have a place where you can forget the nonsense going on in the world, meet with a bunch of like minded people and just talk fish.

The three 20 gallon tanks are used to raise Mascara barbs, Indian Ricefish, and San marco redbtail goodeids.



There is a 10 gallon tank with a bare bottom and a bunch of Subwassertang growing in it. That's for breeding some Medaka ricefish.

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A LAYOUT DEPICTING A NATURAL WATERFRONT

by Aqua Design Amano

Translated by Tomoko Schum Photos by Aqua Design Amano

Many of the aquatic plants that grow in waterfronts, such as those in tropical waterfronts with wet and dry seasons, are amphibious because of fluctuating water levels. Since the waterfront environment is continuous from the land to the water, it is not uncommon for a single colony to develop both emersed leaves and submersed leaves at the same time, like stem plants. In this layout, many stones are piled up to create a structure that extends from the land to the water, and amphibious stem plants and *Echinodorus* are placed there to express a natural waterfront.

Colorful fish swim in the water that continues from the waterfront with dense emersed grown leaves of aquatic plants. A large swimming space was constructed by taking advantage of the tank with depth and by using compositional materials creatively.

KEY POINTS FOR THE LAYOUT AND PLANTING

Stones are piled high on the left and right sides, and cosmetic sand is spread from the foreground to the rear center of the tank to produce the waterfront structure with varying elevations.

Looking from the back of the tank,



TANK DATA

Layout produced by Takashi Amano (2013)

Aquarium:	Cube Garden W180 x D60 x H60 (cm)	Aquatic Plants:	<i>Hygrophila pinnatifida</i> <i>Microsorium</i> sp. 'Trident' <i>Bolbitis heudelotii</i> <i>Anubias barteri</i> var. nana 'petite' <i>Taxiphyllum barbieri</i> <i>Echinodorus</i> sp.
Lighting:	Solar RGB x 6 units, turned on for 10 hours per day	Fish:	<i>Hyphessobrycon sweglesi</i> <i>Hyphessobrycon herbertaxelrodi</i> <i>Hemigrammus bleheri</i> <i>Microgeophagus ramirezi</i> var. <i>Puntius rhombocellatus</i> <i>Colisa lalia</i> <i>Melanotaenia praecox</i> <i>Chromobotia macrocanthus</i> <i>Crossocheilus oblongus</i> <i>Otocinclus</i> sp. <i>Caridina multidentata</i>
Filter:	Original overflow system		
Substrate:	Aqua Soil Amazonia, La Plata Sand, Power Sand Advance L, Bacter 100, Clear Super, Tourmaline BC		
CO₂:	Pollen Glass Beetle 50 (x 2), 6 bubbles per second via CO ₂ Beetle Counter (x 2)		
Additives:	Brighty K, Green Brighty Iron		
Water Change:	1/3 once a week		
Water Quality:	Temperature: 25°C (77°F) pH: 6.6; TH: 20 mg/l		



▲ The many colorful fish contrast against the white sand in the large swimming space in front.

you can see that the substrate is raised with Power Sand, and a thick layer of Aqua Soil is laid on top.

Looking from the side of the tank, you can see that it is slanted in two levels from land to water.

Stem plants and *Echinodorus*, which can easily develop leaves above water, are planted in the substrate near the surface of the water.

Epiphytic aquatic plants such as



◀ A front view of the hardscape before planting.



◀ A rear view of the piled-up substrate so the plants can reach the surface.



◀ The layout right after planting.

Anubias and ferns were placed in the areas where the stones were piled up.

HIGHLIGHTS OF THE COMPLETED AQUASCAPE

By stacking stones high, the bottom floor is raised and a waterside environment similar to that of land is reproduced. In the completed aquascape, the *Echinodorus* leaves spread out over the water, and the floating leaves of the stem plants are thriving.

At the waterside, a single stalk of a stemmed plant has both aquatic leaves and submerged leaves at the same time. This is the natural growth condition of stem plants commonly found in nature.

In deeper water, shade plants such as *Microsorium* sp. 'trident' and *Bolbitis heudelotii* grow submersed leaves. This is also a planting method learned from nature. 🌿

✓ Shade-tolerant plants are planted between the rocks and driftwood in the lower area of the layout.



▲ A view of the right side of the layout



▼ A view of the left side of the layout.



▲ The emerged part of the layout has a Wabi-Sabi impression.

✓ At the water's edge, you can see both submersed and emerged leaves on the same stem.



TheShrimpFarm.com is the place to go for freshwater shrimp. The owner is **Ryan Curtis**, with a new mailing address: 2401 East Washington St, STE 200 A2, Bloomington, IL 61704. Visit the Aquarium Shrimp Forum <http://theshrmpfarm.com/forum/index.php> to ask questions, talk to other shrimp nuts and discuss everything related to Freshwater Aquarium Shrimp.



Can Ghost Shrimp and Betta Fish Live Together?

The short answer to this question is yes, ghost shrimp and Bettas can live together. However, pay attention, because things are a little more complicated in practice...

The long answer is TRUE that ghost shrimp and Betta fish can live together. However, not all shrimp sold as "ghost shrimp" in pet stores are actually true ghost shrimp. The term is a bit of a catch-all for transparent freshwater shrimp, not all of which are docile.

What you're after are freshwater species of the genus *Palaemonetes*. These are ACTUAL ghost shrimp, also called American glass shrimp or grass shrimp. What you're NOT after are species of the genus *Macrobrachium*, like *Macrobrachium lanchesteri*. These grow much too large and can attack your Betta fish.

True *Palaemonetes* ghost shrimp can co-exist peacefully with Betta fish. Your mileage may vary depending on your Betta's hunting instincts—some can't be kept with any tankmates, while others make great neighbors—but with the right measures, the combo could work well.

Do ghost shrimp make good 'janitors'?

Yes. One of the reasons people keep ghost shrimp with Betta fish is that they can help maintain a healthy, tidy aquarium. Shrimp are detritivores, so your ghost will feed on things like leftover food, dead plant bits, algae, and micro-organisms. It might even pick at Betta poop!

Of course, you shouldn't rely on a shrimp to do your aquarium maintenance for you. That's

your job. Still, given their low bioload, a ghost shrimp can at least help you out.

Do ghost shrimp make good Betta food?

If you can find juvenile ghost shrimp, your Betta may be interested in eating them (heck, some are interested in eating full-grown adult shrimp, too). Given that the Betta's wild ancestors feed on various bugs, ghost shrimp do indeed make a good meal for your fish.

Keep in mind that a Betta that's been snacking on ghost shrimp doesn't need a large regular meal. Remove any uneaten shrimp parts within 12 hours to prevent them from rotting and fouling the water.

Setting up a ghost shrimp and Betta tank

As mentioned, ghost shrimp and Betta fish cohabitation can work out if you manage to find true ghost shrimp and your Betta has a mellow disposition. Ghost shrimp are unfussy and can thrive in the same water parameters as a Betta.

Here are some basic care guidelines to help ensure a peaceful roommate situation.

Tank size

Although both Betta fish and ghost shrimp are often recommended for ultra-nano "tanks" as tiny as 1 gallon, we strongly recommend against this. Not only is the water volume too small to be able to maintain a stable nitrogen cycle, but it also puts the fish and shrimp in much too close quarters.

To make sure everyone has room to move and your ghost shrimp can hide if your Betta is in a nippy mood, it's a good idea to go for an aquarium of 10 gallons or larger.

Water parameters

Both Bettas and ghost shrimp are pretty unfussy when it comes to water parameters. That's why both species are so popular in the aquarium hobby. Still, they need clean water, so the tank should always be fully cycled. You should perform small weekly water changes.

A good water parameter range that suits both these species would be:

pH: 7-7.5

Temperature: 75-82 °F

TDS: 100-300

Hiding places

Tank size and water parameters in order? Great! Now you just have to make sure your Betta and ghost shrimp don't bother each other. The shrimp in particular need plenty of hides, as they molt regularly. After molting, they're very vulnerable for at least a few hours while their new exoskeleton hardens. Your shrimp will be a sitting duck for the Betta during this time if it can't hide.

First off, as is recommended for Bettas in general, add plenty of décor to break the lines of sight and give your fish a large and interesting territory to patrol. Live plants, driftwood, rocks and leaf litter all work well for this.

Next, just to be sure, add a bunch of shrimp tubes and flats. These are specifically meant for shrimp to hide out in when they feel the need to, so your ghost shrimp will appreciate them if it feels harassed.

Tip: You can find more information about ghost shrimp and what they need to thrive in our full ghost shrimp care guide.

Frequently asked questions

What other invertebrates can I keep with my Betta fish?

We've got guides for that! Check out our posts on keeping Bettas and cherry shrimp, and Bettas and dwarf crayfish. If these aren't for you, you could also consider Amano shrimp or snails.

Conclusion

Keeping ghost shrimp and Bettas together can work. Just make sure you find true ghost shrimp of the genus *Palaemonetes* (not *Macrobrachium*) and set up an aquarium where both species can have their space.

As always in the aquarium hobby, there's no absolute guarantee of success—but hey, if things do go wrong, at least ghost shrimp are cheap and make a nutritious meal for your Betta.

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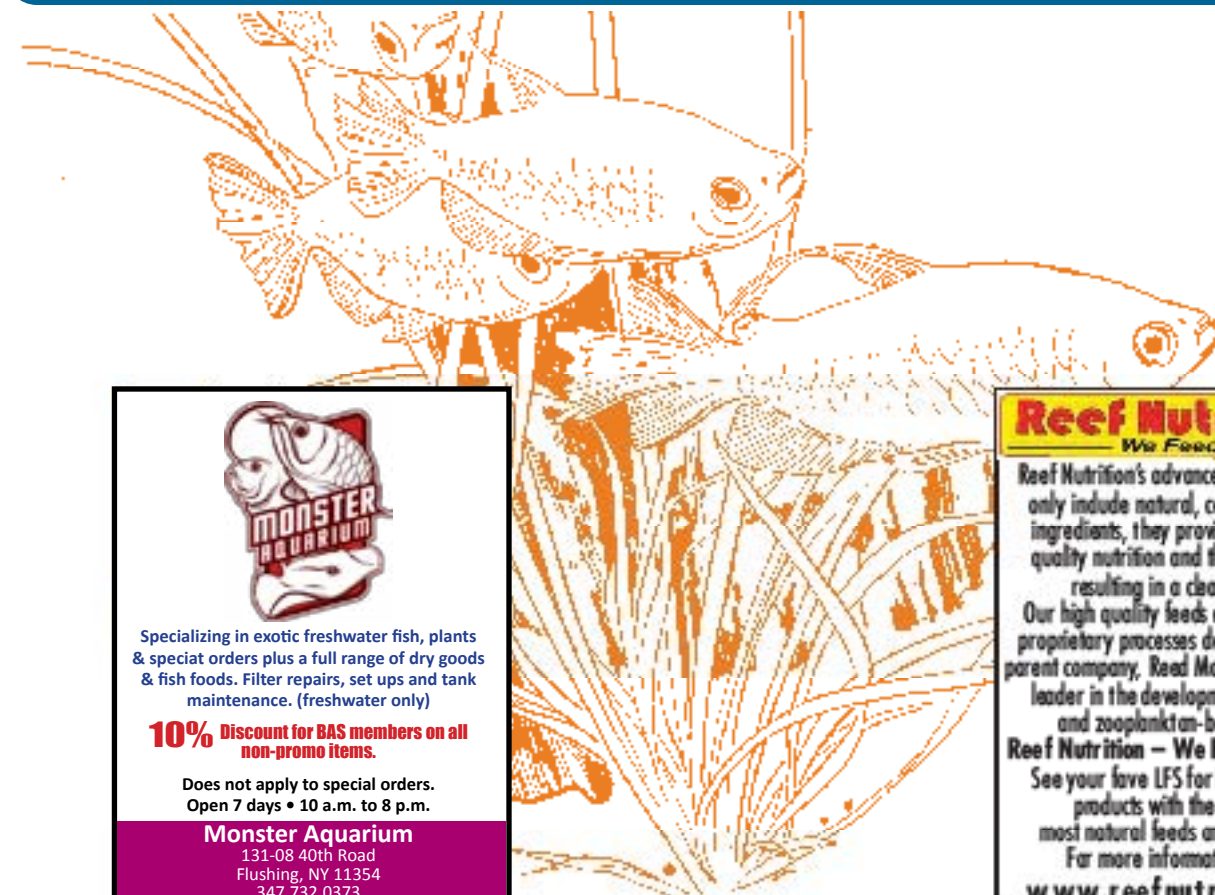
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BENEFITS OF MEMBERSHIP IN THE BROOKLYN AQUARIUM SOCIETY

Your Membership Card is your Passport to Becoming an *“Educated Aquarist.”* Don’t lose it. Put it in your wallet or purse. You’ll need it to attend Monthly Events and get discounts at participating pet stores.

YOUR MEMBERSHIP BENEFITS INCLUDE:

Free Admission to all general meetings, held on the 2nd Friday of the month (except July & August) at 7:30 pm at the Education hall of the New York Aquarium, at Coney Island, Surf Avenue at West 8th Street, Brooklyn, N.Y. The Society presents expert speakers on all aspects of the hobby, from freshwater fish to marine aquatic life. Door prizes and raffles at every meeting. Breeder Awards Program (BAP) – Certificates and trophies awarded. General meetings are open to the public (\$5 donation is requested for non-members). Free parking and free refreshments.

Special Interest Groups (SIGs) hold meetings, free at members’ homes, for members only. Here’s your chance to network with members with the same interests. Discuss, ask questions, learn, teach and develop your expertise in freshwater and/or marine aquarium keeping.

AquaticNews The Journal of the Brooklyn Aquarium Society, our tri-monthly (4 issues except July & August) award winning publication is on our website. Each issue is filled with articles on both marine and freshwater aquaria keeping. Articles can be downloaded.

Meeting reminder! All members receive flyers announcing speakers via email, keeping members up to date.

Calling all writers, artists and photographers! All members will have the opportunity to submit articles, photography and illustrations for publication in the **AquaticNews!**

BAS is on-line at BASNY.ORG. You’ll find up-to-date information about our monthly events, links to other aquarium societies in the US and stores, manufacturers and related aquarium sites. We have an on-line library with downloadable articles. We have our own BAS forum, where you can interact with other freshwater, marine or reef members and post free hobby-related classifieds where members sell and trade fish, corals, plants and equipment.

BAS Hotline: For the latest information call the BAS 24 hour Hotline 718 837-4455 for event and inclement weather information. If you need advice on fish keeping, breeding or where you can find rare or hard to find fish, you can often get help calling the Hotline. Help from the Hotline is always free.

Volunteer: The Brooklyn Aquarium Society is an organization run by volunteers. Without them there would be no BAS. Volunteers help set up events, write articles, coordinate projects, assist and work on committees, help at auctions and meetings. Join in, help, learn and have fun doing it. Call Steven Matassa, President (347) 277-4793.

Video Tape Library: We have a video tape library on different aspects of fish care and breeding plus past BAS Speaker Events. These video tapes are available via our BAS Forum. You must be a member of our Forum. Membership is free.

Discounts for Members at many BAS participating pet stores when you present your current BAS membership card.

Welcome and we hope you take advantage of the many benefits BAS has to offer.

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* If family membership, please list all family members. Only first two listed will have voting rights.

1 _____ 2 _____ 3 _____

4 _____ 5 _____ 6 _____

Number of tanks [] marine [] freshwater [] **Do you breed fish?** [yes] [no]

If yes, what types do you breed: _____

Special interest (if any) _____

How did you hear about BAS [friend] [dealer] [flyer] [Aquatica] [mag ad] [online] other _____

To volunteer check [yes] [no] A board member will contact you if you check yes. On occasion, the Brooklyn Aquarium Society uses its mailing list to send notices of interest to our members. If you **DO NOT** wish to receive these mailings please check here []

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