

AQUATICA



THE ON-LINE JOURNAL OF THE BROOKLYN AQUARIUM SOCIETY
VOL. 31 JANUARY~ FEBRUARY 2018 No. 3

WISHING ALL A
HAPPY NEW YEAR OF
FISH BREEDING!



Blue gularis, *Fundulopanchax ajostedti*



107 YEARS OF EDUCATING AQUARISTS
AQUATICA

VOL. 31 JANUARY - FEBRUARY 2018 No. 3

CONTENTS

PAGE 2 THE AQUATICA STAFF

PAGE 3 CALENDAR OF EVENTS.

BAS events for the year - 2018

PAGE 4 WHAT MAKES YOUR FRESHWATER AQUARIUM TOO ACIDIC: AND HOW TO CORRECT IT.

A low pH means the water is too acidic. This article will tell you how to correct pH in your aquarium.

TOBY SANDERS - AQUARISTGUIDE.COM

PAGE 7 BREEDING THE RED BADIS.

How to breed this beautiful small fish.

LEE VAN HYFTE - EIAA

PAGE 9 THE BLUE PIN TAIL GOURAMI.

Breeding strategies for this gorgeous but little known dwarf gourami.

MIKE HELLWEG - MAS

PAGE 12 RECIPES: INFUSORIA SOUP.

Tips on culturing and maintaining an infusoria soup for very small fry.

JOHN TODARO - BAS

PAGE 13 INSIDE THE FISHY WORLD OF NYC'S AQUARIUM OBSESSIVES.

A NY Post article that looks at a few of the Society's obsessive aquarists.

CHADWICK MOORE - NY POST

PAGE 16 BREEDING THE BLUE GULARIS.

Breeding blue gularis is not for beginners. Spawning blue gularis requires patience, but the rewards are great. Read how.

ANTHONY P. KROEGER - BAS

PAGE 19 BREEDING JEWEL KILLIES.

These two gems of Gabon are some of the most spectacular fish you could ever own and here are the tips on breeding them

LEE VAN HYFTE - EIAA



PAGE 21 SURPRISING BREEDING EXPERIMENTS WITH THE BLUENOSE SHINER.

Breeding this fish is tricky at best and certainly not easy. Bluenose spawn cuckoo style in the nests of sunfish. Tony did some interesting experiments on breeding this fish.

ANTHONY P. KROEGER - BAS

PAGE 24 BRACHYRHAPHIS RHABDOPHORA.

An article on this interesting little livebearer and their breeding.

ALAN ROLLINGS - ACLC

PAGE 25 DIY CORNER: MAT FILTER CORNER BOX.

How to build a foam mat filter box.

WILL WHITE - GAAS

PAGE 27 CLASSIC PLATY VARIETIES.

Like swordtails, they are hardy, beautiful, easy to keep and breed and are available everywhere. Unfortunately, just like swordtails, the platy also has many mutations which are rarely seen anymore. Keep an eye open for these rarities:

ANTHONY P. KROEGER - BAS

PAGE 28 KEEPING AROWANAS IN THE FRESHWATER AQUARIUM.

An overview of the different species of this fascinating family of fishes.

KATHERINE BARRINGTON - TFSRI

PAGE 31 TIGER BARBS.

One of the most popular species of tropical fish that is a standard in the world of fishkeeping.

JOEL ANTKOWIAK - ACLC



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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. Membership is \$25 per year family / \$20 individual / \$15 for students under 18. Send inquiries or membership checks payable to:

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BROOKLYN AQUARIUM SOCIETY

CALENDAR OF EVENTS ~ 2018



2018

JAN 12 Joe Uaru - King of DIY ~ My Aquarium Gallery The Untold Story ~ Followed by an auction of marine fish, aqua-cultured corals, freshwater fish, plants & dry goods.

FEB 9 John Coppolino - Building my dream system - 1300-gallon SPS display ~ Followed by an auction of marine fish, aqua-cultured corals, freshwater fish, plants & dry goods.

MAR 9 Nathaniel Curtis, ZooMed - The Science Behind the Spectrum ~ Followed by an auction of marine fish, aqua-cultured corals, freshwater fish, plants & dry goods.

APR. 13 Sanjay Joshi - Reef Lighting ~ Followed by an auction of marine fish, aqua-cultured corals, freshwater fish, plants & dry goods.

May 11 Giant Spring Auction ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods, including a brand new 55-gallon tank & stand.

JUN. 8 James Perrenod, President of Discus R Us - Discus Keeping Q & A ~ Followed by an auction of marine fish, aqua-cultured corals, freshwater fish, plants & dry goods.

NO MEETING JULY & AUGUST

SEPT 14 TBA ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction

OCT 12 Giant Fall Auction ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods, including a brand new 55-gallon tank & stand.

NOV 9 TBA ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction.

DEC 14 Holiday Party ~ Members, their families & friends • Fish Bingo & Prizes • BAS awards presentations.



WHAT MAKES YOUR FRESHWATER AQUARIUM TOO ACIDIC AND HOW TO CORRECT IT

Are your fish covered in mucus? Gasping? Or dying? You may have an acidity problem. It is not always the case that you can see an acidity problem directly with the naked eye. The water may appear clean, but the pH is too low.

A low pH level means the water is too acidic. You need to monitor your pH levels and make adjustments to the environment quickly if you have a low pH. An unsafe pH level must be corrected to preserve the health of your aquarium. Equally, a reading that is too high is dangerous.

What is pH and why does it matter?

- pH stands for the 'potential of Hydrogen.'
- A pH scale numbers from 1 to 14
- The pH level refers to the acidity, or alkalinity, of the water. It is a scientific scale used to determine the characteristics of a liquid.
- 7 is neutral, e.g., water that we drink.
- A pH of less than 7 is acidic. (like a lemon)
- A pH greater than 7 is alkaline. (like soap)
- The lower the number, the stronger the acid.
- The higher the number, the more alkaline the solution.

What is the pH of a healthy freshwater aquarium?

6.6 to 7.8 pH

A healthy freshwater aquarium is neither too acidic nor alkaline. These are measures used to describe the balance of chemicals and biological products which are present in the water, such as gases and wastes like nitrates. The filtration of water removes some of these products and keeps your water clean.

What makes your aquarium acidic?

- There is a delicate balance between your fish, their waste products and the bacteria that feed off the waste.

- When this balance is upset, it can lead to an increase in toxins in the water.
- Ammonia and nitrates are consumed by nitrification bacteria. If the water pH goes below 6, these bacteria die, and the water becomes flooded with waste products.
- Overcrowding can also cause excess waste.
- Too many fish in a small aquarium will produce too much waste. Your filter system will become clogged.



- It is a good idea to check with a specialist about how many fish you can keep in the exact size aquarium you have.
- Tannic acids or tannins come from certain plant and wood materials, such as driftwood. They may leach into the water.
- The type of water you use to fill your tank is also important. Check the pH, as different areas have slightly different levels.

Why is pH important?

Why do I need to monitor the pH?

One of the biggest problems that aquarium owners have is maintaining the correct pH level. All the fish have adapted to the unique water environment that they come from, and thrive in those exact conditions. Fish are very sensitive to changes in their environment. Just like the air

we breathe, the water in your tank must meet set conditions for your fish to be healthy and safe.

A change in the pH of the water can be very harmful to your fish. It is not something you can see just by looking at the water, but needs to be tested on an ongoing basis. An acidic freshwater aquarium is harmful and can cause illness and death to your fish.

What is a healthy pH range?

Why is it important to the fish?

- Freshwater aquarium fish are happiest in water that has a pH range between 6.6 and 7.8. This is the healthiest pH of water for your aquarium.
- This pH level is ideal and actually provides an antiseptic effect, meaning that the water will help your fish to stay healthy!

Carbonate Hardness 'KH	Carbonate Hardness in mg/l (or ppt) calcium carbonate	Water Conditions
0 - 2	0 - 36 mg/l	Very soft; pH liable to be unstable, and plant growth poor
2 - 5	36 - 89 mg/l	Soft; unsuitable for livebearers and goldfish, but good for barbs, tetras, angelfish, etc.
5 - 10	89 - 178 mg/l	Moderately hard; good for a broad range of community tropicals
10 - 20	178 - 350 mg/l	Very hard; ideal for brackish water fish, livebearers and cichlids from Malawi, Tanganyika and Central America; tolerated by hardy community tropicals
20 +	350 + mg/l	Extremely hard; too hard for most community tropicals, but good for hardwater/ brackish water fish

Image Credit: <http://www.wetwebmedia.com>



How to correct an acidic aquarium?

There are different ways to manage the pH of your tank. There may be a single factor causing an acid problem, such as overcrowding, in which case you may need a new tank. Generally, the following are good practices and suggestions to correct an acidity issue.

There are two elements that you need to look at – your water and filtration – when correcting an acidic aquarium. Adding rocks, corals, plants, etc. are natural filters, and help to adjust the pH.

- Replace 25% of your water on a monthly basis. Be sure to clean as much of the waste out as possible. This is the minimum time before you need to replace some water.

- If possible, replace 25% of the water every 2 weeks.

- Boil any wood before putting it in your tank.

This will remove tannins.

- Monitor the pH levels, ammonia, and nitrates.

- Add Baking Soda: one teaspoon to five gallons of water. Be sure to REMOVE YOUR FISH FIRST.

Once the conditioned water is added to the tank, the fish will need to be re-acclimated to your tank. (The same procedure as when they are new


– float your fish in a bag (for at least 15 minutes) to get used to the temperature etc.)

- Crushed coral: inserting coral into the tank will also raise the pH.

- Rocks: adding rocks will also increase the pH. These can be put into the tank directly or placed into a bag and added near the filter. (There are a variety of rocks to use from limestone to pebbles.)

- Products from your local specialist such as alkaline buffers, acid buffers, and water softener pillows. These products will adjust the pH of your tank.

- A Reverse Osmosis filter is a highly specialized filter that removes most waste products. It is very effective, but expensive.

A healthy pH level will lead to greater success. Always monitor the pH level of your freshwater aquarium. The delicate chemical balance in the freshwater environment is very important for the health of your fish and your aquarium inhabitants. 

I'm **Toby Sanders** with more than 15 years of experience in aquarium sector, I'm totally passionate about creating **Aquarist Guide** blogspot. I enjoy sharing all of my knowledge to help you guys effectively build your



own tank. I believe that when you find the easiest way to raise your lovely fish successfully throughout my blog, you will

definitely fall in love with fish keeping more than a popular hobby.



Lee Van Hyfte – EIAA

Reprinted from *Fin Flap* June 2017 the publication of
the Eastern Iowa Aquarium Association

BREEDING THE RED BADIS

Badis ruber



I recall seeing this species only in fish books.

I grew up pondering through pages of many fish I have never known nor seen in real life. These were certainly not the common fodder of the local fish stores. I was placing an order with the Wet Spot in Portland Oregon and saw them on the list and thought to myself, why not. And here my new adventure began.

The fish arrived as fresh wild caught in modest shape considering they flew from India to Portland and then on to Iowa. (Google lists India to Portland as a 26 hour trip by air with a minimum of two stops) I took immediate charge of them and began acclimating them to their beautiful planted tank, which would in time become their breeding tank. The aquarium was

filled with many species of plants, rocks and several other fish species. They got along amicably with other fish and the males of *Badis ruber* began to defend little territories.

I ran into a few issues and lost some fish, presumably due to a disease they carried in from their natural home in India. The surviving female, however, began to find her way and so did the males. The males dug out small caverns under rocks in various places in the aquarium. I had placed a couple of small flowerpots in the tank, hidden in the back behind plants. In my experience with *Badis*, this was the preferred breeding cave of their cousins *Badis badis*. Much to my surprise, they were ignored completely, except on one occasion. The males sought the rocks for breeding instead.




It was not terribly long before I began to see a few young after noticing the males becoming much more defensive of their territories, a beautiful sight indeed. The red-blue checkered pattern of the males was highlighted amongst the plants and rockwork. Though I did not observe the fry with the male directly, I am assuming they were forced to remain hidden under the rockwork.

I fed the tank twice daily with baby brine shrimp as food for the various tetras so it became a ready source for the freshly discovered baby *B. ruber*. The adults were offered mostly Hikari frozen bloodworms and frozen adult brine shrimp with occasional daphnia, glass-worms and mosquito larvae.

The adult fish grew to be quite sizable, with one dominant male pushing the 3 - inch mark. Females were bland in color and grew to a size of 1 ¾ inches. Pretty typical trait for members of this genus of fish, though the adult size was a shock to me, as *Badis badis* never approached this length.

Water parameters were as follows. 72°F, 70/30 mix of RO and tap water (approx. 200ppm TDS); pH would rise and fall daily due to CO₂ administration. Lighting was brilliant with 2 T5 54W bulbs over a 33-gallon long aquarium. Eco Complete sand was used and the black bottom made the fish stand out all that much more. I found that my 50% water changes would induce spawning behaviors particularly if performed on a rainy day.

All in all, it was a fine addition in my planted tank and they obviously loved the environment as well. *Badis ruber* is a spectacular fish to keep and a good small community species that loves a planted tank. If you ever happen upon them, give them a try. 

God Bless, and Keep It Fishy.





Mike Hellweg, CFN "(Certifiable Fish Nut)" MAS
Reprinted from Missouri Aquarium Society's
The Darter May/June 2017 Vol. 43, No.3

The Blue Pin Tail Gourami

Malpulutta kretseri

A C.A.R.E.S. Species



Hiding among the leaf litter on small Sri Lankan streams, and even among the leaves and plants growing in some family water collection and storage tanks on the island is the gorgeous, yet little known dwarf gourami - *Malpulutta kretseri*. I've been told local boys collect them and gave them the name that translates to Blue Pin Tail.



Males are among the most stunning of freshwater fishes. They are a pale tan color, covered with metallic blue dots. The

unpaired fins are bright metallic blue. The dorsal fin can extend well past the caudal base and the central rays of the caudal form a pin tail that is sometimes as long as the rest of the fish!

For many years, this fish was been rumored to be extinct, nearly extinct, endangered, or threatened, depending on the source you read. Due to the recently ended long and brutal civil war in Sri Lanka, actual data is hard to come by, even today. They disappeared from the hobby in the late 1980's, leading hobbyists to fear the worst. But in the last few years, numbers of them have made their way to Europe and from there

to the US. Prices reflect their scarcity in the trade, and paying \$150 for a pair is not unusual. Once a few more specialized breeders bite the bullet and start working with them, I see that price coming down quickly.

The fish are remarkably undemanding for such a rumored "delicate" fish. In my experience, they are remarkably hardy and prolific. The biggest disappointment is that these gorgeous fish are extremely shy. This could lead to being thought more rare in the wild than they actually are because they hide all the time.



Males prefer caves, and females seem to prefer hiding in plants. Most of the time even with small dither fish you don't see them and the tank looks empty. Sometimes a week or more will go by without ever seeing them, especially the females. Not even food can bring them out, though Grindal worms will sometimes coax the male out into the open.

Oddly, young fish are just the opposite, gregarious to the point of not letting other non-kretseri in the tank even to get something to eat. Upon reaching maturity, however, they also take on the secretive ways of their parents.

A tank setup is simple.

I kept a single pair in a 10-gallon tank, filtered by a sponge filter (before my Mattenfilter phase). The tank was tightly covered; as with many other

ppm). Temperatures were in the low to mid 70°s. They appeared to stop spawning when it gets close to 80°.

As you might guess from their hiding nature, they are also a hidden nest spawner. My males have preferred to spawn in caves made of inverted flower pot saucers with a notch in the side. You'll know something is up when the male doesn't even come out for a nice, juicy worm, or if he does, it's a quick dash and back to the cave. It seems that almost magically one day you are presented with a group of 25 to 40 fry when they become free swimming. I remove the fry



small Anabantoids, they are excellent jumpers. The tank was full of caves and plants, and the surface of the tank was completely covered with Water Sprite (this was back when it grew like a weed for me - I can't keep it alive now!). I kept them at a pH of around 7.0 - 7.2 with a total hardness of 125 ppm, mostly from carbonates (about 70


to another tank as I see them, though I've missed some and they've grown up in the tank with the adults, so they don't seem to be serious fry predators. This is similar to their cousins, *Pseudosphromenus cupanis* and *P. dayi*, neither of which are fry predators to a great degree. Over the last year



or two that I kept them, I noted a couple of nests that were made by young males in caves up against the front glass. They are small, barely larger than a dime. Spawns are likewise small. I've had some spawns as large as 60, but some of the first were only a dozen or so. I fed the adults and juveniles a variety of foods - live and freeze dried. Rehydrate freeze dried foods for 10 - 20 minutes, then feed to the fish with a baster like brine shrimp. They loved newly hatched brine shrimp, small Daphnia and Moina. They also enjoyed smaller worms like Grindals and young black worms. The fry ate microworms, 'Walter Worms', Cyclopeeze, Golden Pearls and APR, along with grazing micro-fauna from the large number of plants in the tank. The species was kept alone. My interest is mainly in breeding and study-



ing fish, not in keeping a "community", though I do have a few of those. Most of the folks that received fry from me reported a similar shyness when the juveniles reach spawning age. Thinking Pygmy Rasboras would act as dithers and make the kretseri feel comfortable

enough to spend time in the open, at least one person tried to keep adult fish with this diminutive fish. His kretseri nearly starved to death! Judging by their shyness, they probably won't do well with a lot of other fish. If you come across these rare gems, don't hesitate to give them a try. Provide them with their own tank set up in a simple manner as outlined above, keep them cool, and they'll provide you with more fry than you know what to do with! 

Photos from
www.seriouslyfish.com (c)



Photo: Chozukan.com



John Todaro - BAS

From the Brooklyn Aquarium Society's publication

SCRUMPTIOUS MEALS & LIVE FOOD TREATS Compiled, Edited & Written by John Todaro

Infusoria Live Soup

Infusoria are protozoans of the phylum *Ciliophora* or any of various microscopic organisms found in infusions of decaying organic matter.

Infusoria can be cultured in filtered water in a one gallon pickle jar or a 2 ½-gallon tank.

To maintain a nutritional supplement for the culture, organic matter should be added periodically. A few grains of boiled rice will do nicely.

A highly recommended alternative to filtered water is water from a healthy tank. Tank water will give the infusoria culture a jump start. This trick should cut the time needed for the culture to bloom and become viable.

There are a number of methods of setting




up an infusoria culture. Most variations will develop into adequate first foods for fry such as killies, bettas, gouramis and other fry so tiny they can't eat brine shrimp nauplii.

A good rule to follow is that the food particles (infusoria) should be no larger

then the newborn fry's eye. You know we're talking small!

Setting up a couple of jars, possibly with different ingredients, is a good way to ensure you get a viable working culture.

Keep notes as to which ingredients work best for you. 

RECIPE

INGREDIENTS:

To start a culture, a small amount of any of the following ingredients should be added to the water.

- A pinch of yeast
- Dried Straw
- Dried lettuce leaves
- Dried grass
- Rabbit pellets (rabbit food - said to work best) Ask your pet store dealer for some rabbit food pellets.
- Banana peels (Half a peel works fine in a quart jar)

STARTING & MAINTAINING:

To start the culture, add 8 oz. of pasteurized 2% milk to the water. Place the jar or tank near a window, uncovered where it can get sunlight. 60° - 70° F. Keep pH at 7.0 neutral.

From 3 to 6 weeks are needed for the development of the culture. A culture should last about a week to ten days. To refresh the culture, add fresh aged water and either a pinch of yeast, dried lettuce leaves or a few rabbit pellets.

FEEDING:

Use a small plastic baster for sucking up the infusoria to feed your fry. Infusoria will live in the tank until eaten. Be aware that too much infusoria will deplete the oxygen in the tank water depriving the fry of oxygen they need to live. Don't feed more than you think they will eat in a couple of hours, or make sure you have some mild aeration in the nursery tank.



INSIDE THE FISHY WORLD OF NYC'S AQUARIUM OBSESSIVES

Around midnight the auctioneer threw up his hands in dismay.

"Tough crowd!" he shouted.

**"Where are my saltwater people?
Unbelievable!"**

On the block, a stupefied yellow tang — one of the world's most popular aquarium fish, who prefers a brackish environment — swam suspended in a clear plastic bag. On his head was a starting bid of \$10. It was a fraction of the retail price of \$50 and up for a two-inch specimen. But no bidders were biting — yet.

It was business as usual at a lengthy Friday evening meeting of the Brooklyn Aquarium Society (BAS) where a crowd of about 100 hobbyists had convened for their monthly confab at the New York Aquarium in Coney Island.

It's an ideal spot to plumb the depths of New Yorkers' obsession with aquariums.

The pastime manifests itself across the city in forms high and low, eclectic and chic (think massive, awe-inspiring displays at area hotels). Aficionados include local collectors with dozens of tanks, as well as high-end interior

designers and installers for posh pads.

But at the BAS meeting, members wanted to grow their collections — and discuss them ad nauseam, of course. The next parcel up for bids: a monster pearlscale goldfish (which can weigh up to two pounds!) sparked a fierce price war, finally going for \$95 to a man in the back of the packed room.



Brooklyn Aquarium Society president **Steven Matassa** shows off the saltwater tanks in his Marine Park home. From his dad down to his grandson, Matassa is part of four generations of fish fanatics.
Photo: **Annie Wermiel**

The sophistication of the craze has ramped up in recent years.

"Back when I joined in '74, this was known as a goldfish-and-guppy club," says former club president **Joe Graffagnino**, a freshwater stalwart who has 37 tanks in his Dyker Heights, Brooklyn, home. They are mostly used for breeding exotic fish, including the rare wild betta, a colorful specimen with impressive

fins.

Joe Graffagnino has 37 freshwater tanks in his Brooklyn home housing some 200 fish. He currently pampers about 200 gilled friends with a



monthly cost of about \$150, most of which goes towards his electric bill (for lights, pumps, filtration, etc.).

Decades ago, BAS discussion was limited. "You couldn't talk about cichlids or catfish," he recalls. "So then I'd go to the North Jersey club. Each club had their own special niche. But now it's different. Anywhere you go is so mixed." (Yes, that means including saltwater aficionados, too.)

A century ago, fishkeeping was an aristocratic pursuit. Today, the 1 percent still holds claim to the coolest-looking tanks. The colorful (quite literally!) pursuit has even sparked a reality TV show on Animal Planet called "Tanked," on which **Neil Patrick Harris, Shaquille O'Neal, Howie Mandel, Nick Carter, David Hasselhoff** and **Tracy Morgan** have showed off their sizable at-home fishbowls.

But love of aquariums is hardly limited to the rich. The 1911-founded Brooklyn Aquarium Society is the oldest continually running club of its kind in North America, at times boasting as many as 500 members. The ragtag meetings include a social hour, guest speaker and the main event: the live fish auction, which sometimes lasts into the wee hours of the morning. Proceeds go back into the non-profit club, to pay for speakers, field trips to regional aquariums and environmental conservation efforts.

Back on the high end, one of the tri-state area's foremost custom luxury tank installers is **Robert Bray**.

He began working at a shop in the '70s at 12 years old, and took it over 10 years later. Today his business — **House of Fins in Greenwich, Conn.** — does millions of dollars a year in fish sales, new tank design and routine tank maintenance, he



Joe Graffagnino has 37 freshwater tanks in his Brooklyn home housing some 200 fish.

Photo: **Annie Wermiel**

says.

House of Fins doesn't skimp on the starfish. Very often our customers are people who had aquariums as kids. "Once you've had one, you get hooked, and you tend to have them later in life," Bray says. "They're very relaxing. Especially around here, we have such busy

lives. To get lost in an aquarium is a very nice thing."

For children, they can also be an education, but check your budget first. Bray's estimated initial set-up costs for a 250 to 600-gallon marine tank in a home or office: \$30,000 to \$40,000. Expect to spend another \$2,000 to stock up on fish, says Bray, although in his shop it's not uncommon to sell a single \$20,000 peppermint angelfish or masked angelfish.

Here are 4 NYC shops to get you hooked on pet fish. His stock mirrors changing trends in aquarium contents — and what it means to make a statement over the years. "Back in the '80s, we used to do a lot of huge predatory fish: sharks and eels," Bray says. "The tendency now is reef tanks — the coral, the shrimp, crabs, the colorful fish."

House of Fin's clients run the gamut from A-list celebs to Wall Street power brokers — for privacy reasons, Bray would only identify one, **Howard Stern**, whose tank is rumored to be 7,500-gallons. Price tags can reach into the millions. "We did a shark tank that was 27 feet long here in Greenwich," Bray says. "That was a \$1.4 million dollar installation."

But that shouldn't frighten the fin-curious on a budget **Patrick Donston** of **Absolutely Fish in Clifton, NJ**, says there's room for everyone in



this aquamarine avocation. Freshwater tanks tend to be smaller and thus cheaper to start up and maintain. Those into saltwater tanks, which tend to start at 55-gallons, can expect to pay more.

"The most successful hobbyists are the ones who take it slow," says Donston. "When the aquarium ends up in the garage sale is when people buy the tank and don't consider the total sum cost of what it takes to set up."

Once your tank is up and humming, don't let your fish go belly up. The most common reason they'll end up in that great fishbowl in the sky is due to overfeeding and infrequent water changes, which allow deadly ammonia and nitrates to build up, experts say.

In New York, you'll find elaborate aquariums in public locations like the Kimberly Hotel.

For those who want only the occasional serenity of an aquarium but can't make it to Coney Island every weekend, venues offer some worthy sights to ogle. The Kimberly Hotel (145 E. 50th St.) has a 2,300-gallon marine aquarium in its lobby with some 340 tropical fish. Midtown's Dream Hotel (210 W. 55th St.) has a floor-through cylindrical marine aquarium that connects its lobby to a downstairs event space called the Fishbowl. A few years ago, the city spent \$750,000 to install two 8-foot-tall saltwater tanks stocked with 400 fish at the Staten Island ferry's St. George


terminal. And insiders say that Bloomberg LLP's Lexington Avenue headquarters keeps impressive saltwater tanks on each floor and employs a full-time aquarist.

The "Fishbowl" at Midtown's Dream Hotel. **Edward Menashy** an analysis of die-hard fish fans seem to confirm two facts: it's an overwhelmingly male-dominated hobby, and it tends to run in families. Marine Park resident **Steven Matassa**, current president of BAS, says his family now claims four generations of fin fans.

"My dad is 90, and I just had to cut him down to one large tank from eight, because he couldn't care for them all," Matassa says. "My son is also into fish tanks. My grandson is now 7, he's into it. Since he was 4 years old, he could name all the fish."

Matassa, who recently downsized from 20 saltwater tanks to two large ones, is also on a mission to spread the aquarium gospel to the next generation of club members.

In a community of aging traditionalists, this meant pushing buttons.

"We've been trying new innovative things to get young people interested," he adds. "We launched our website 5 years ago — but even then some of the board members fought us on it!" 





Anthony Kroeger - BAS
Sherwood Kenton - Artwork



BREEDING THE BLUE GULARIS

Fundulopanchax ajostedti

The blue gularis is easily one of the most recognized killies. Beautiful with its gorgeous coloration, extended finnage and resplendent trident tail. The male is the official emblem of the American Killifish Association.

Native to West African, Ghana to Cameroon, it grows to about 4½ to 5½ inches. Breeding blue gularis is not for beginners. Spawning blue gularis requires patience, but the rewards are great. Blue gularis are always in demand and sell for high prices in stores.

Here's how I breed blue gularis...

Sexing:

Sexing this fish is easy, males have all the color. I use one male with 2 or 3 females. I find a male will drive a single female much too hard and will usually beat her up, if not kill her. This problem is negated with 2 or 3 females per male, as no one female gets his incessant attention.

Conditioning:

Blue gularis must be conditioned heavily prior to spawning if you expect lots of viable eggs. Separate the male from the females. Females can be conditioned together. Forget about conditioning this killie on any kind of flake food. They need protein (and lots of it) to spawn. I condition my breeders heavily for 7 to 10 days on

live blackworms, baby guppies, and freeze dried or live tubifex, frozen bloodworms and freshly swatted houseflies and mosquito larva. Pinhead crickets work well too, as do small moths dropped onto the water's surface. They love wingless fruit flies (*Drosophila*), but they are so small it takes a ton of them to condition blue gularis. Small earthworms work well too.

Be careful not to condition the females for more than 10 days, as they may become eggbound if you do.

Conditioning tanks:

I use two 10-gallon covered bare tanks, use one for the male and the other for all the females. Use a sponge filter, a few potted *Cryptocorynes* and a flower pot laid on its side for the breeders to rest in.



Water:

I use soft acidic water, just above room temperature to spawn my blue gularis, 10-12° GDH, pH between 6.5 and 6.8, a temperature between 72° and 74°.

Spawning Tank:

This one is easy. I simply add a tupperware bowl weighted down with 3 rows of marbles and cover them with peat moss to the female's tank. I always add the male to the female's tank as he is less aggressive and less likely to injure the females if he is moved, rather than the other way around. You can add weighted spawning mops rather than peat moss if you so choose, but I find the tannins in the peat help stimulate spawning.

Always add the male in the dark. This allows him time to adjust to the water and not see the females.

Once introduced, they will start spawning the next morning. Turn the airflow to the sponge filter down to a low trickle at this time. Use a valve in the airline to do this.

Spawning behavior:

Blue Gularis are bottom spawners. They will lay their eggs near plants on the bottom as well as under the open surface of the substrate. They bury their eggs in the substrate and under the peat.

Courtship is a vigorous affair. with the male displaying and chasing the females, occasionally nipping

them.

The male forces the female to the bottom, his dorsal over her back and pushing her down.

The fish form a J to S shape upon reaching the bottom, the male pushing the females into the substrate or partially burying themselves in the peat. At this time a few eggs are laid, fertilized and buried, after which the pair separates.

Spawning goes on continually for days even a week or more.

Usually a female will produce up to 20 eggs a day each, initially; dropping to 1 or 2 over time. Remove the females when this happens. I remove my females usually after 7 to 8 days. The adults do not eat the eggs.

Egg care:

Here is where the patience comes in. Once you remove the breeders, remove the eggs, peat, marbles and spawning mops too. The eggs are easily visible; any that fall through the peat/spawning mops into the marbles in the bowl can easily be seen.

The eggs are very thick skinned; you can move them gently with your fingers or use a tweezers. Just touching the eggs does not injure them. I gently squeeze out the peat moss so the extra water drains out. I try to keep it to about the dampness of pipe tobacco. I like to split the eggs up into multiple batches of peat. To do this, I first boil extra new peat moss and let it cool to room temperature. Then I divide my eggs up into several batches. I place each batch of eggs and peat into a non-ziplock bag, seal each bag with a twist tie. I do not use ziplock bags as I find the seals sometimes are not as consistent as a regular bag sealed with a twist tie.

The fish form a J to S shape upon reaching the bottom, the male pushing the females into the substrate or partially burying themselves in the peat. At this time a few eggs are laid, fertilized and buried, after which the pair separate.





I use freezer bags rather than sandwich bags as the thicker plastic holds more humidity. I then write the date on the bag and place them in a dark place at room temperature. I use an empty shelf in my linen closet. Do not expose the eggs to sunlight.

Now comes the patience part. The eggs must "rest" for six weeks after which you can place the peat and eggs in a glass fish bowl that is half full of water, (use water from the adults' tanks) add 1 drop of condensed milk; this helps the eggs to hatch.

Within 1 week, 75% or so of the eggs should hatch. Remove the resulting fry to a growout tank. Not all eggs will hatch, so redry the eggs that do not hatch. Bag them up and place them in the dark resting place for 2 more weeks. Then repeat this procedure again. Most eggs do generally hatch.

Care for fry:

Fry are large at hatching and easily can handle newly hatched brine shrimp as a first food. They grow very rapidly and can reach several

inches long in a few months if fed well. Keep their feeding constant as a lack of food will easily stunt their growth. Keep their water clean and make regular water changes. I use sponge filters with gularis fry. Always keep both adults and fry covered; this fish is an amazingly good jumper.

The hardest parts of spawning blue gularis are obtaining sufficient live and frozen foods to condition them and the waiting time to hatch the eggs.

But the fish is so beautiful it's worth both the challenge and the effort.

Try some blue gularis, you'll be glad you did. 

Happy fishkeeping.

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Breeding Jewel Killies:

Diapteron georgiae GWW86/2 and *cyanostictum* Makokou



***Diapteron georgiae* GWW86/2**

These gems of Gabon are some of the most spectacular fish you could ever own. Colors of deep crimson and electric blue and in *georgiae* highlighted with orange bands in the fins. They live in high elevations of the rain forests of Gabon.

These two species are the easiest to keep, breed and maintain of the group of *Diapteron* killies. They are diminutive in size and can grow to large adult breeding size of 1 inch in a 2½-gallon aquarium. They are, however, still demanding of water qualities and temperatures, mirroring the Gabon rain forest environment.

Key ingredients to care and breeding: they are obviously very small fish and require foods that are equal to their stature. I have found feeding them baby brine shrimp very useful to production, in fact, they can live out their very long tiny lives on this fare. Optimally, however, I suggest *Daphnia*

and grindal worms as additional menu items. Interestingly enough, they would rather starve than eat any surface foods, so feeding fruit flies is fruitless. It is very uncommon in the killie-keeping world for a killifish to ignore fruit flies. In the wild they indeed feed on native copepods and other small crustaceans. Frozen foods often exceed the size of their mouths and are typically ignored.

They require very soft acid water in order to produce young. I find that over 75ppm Total Dissolved Solids to be a production limit. I try to maintain them at 25-50ppm instead and have much better results. To keep the pH low, I utilize Alder Cones (many thanks to **Chris Lotz**), almond and Oak Leaf. Caution must be taken here as low TDS and acid becomes unstable easily, so small weekly water changes are a must. Without the buffering capacity of higher TDS, pH can drop



rapidly and potentially kill the fish.


They seem to do very well in small aquariums. I find best to utilize 1 pair per 2 ½-gallon aquarium, as two males will battle with the loser eventually dying from the stresses. Additional females are not suggested as it has been often observed that a second female will follow a spawning pair and perform immediate egg predation. It is a fine line between right and wrong as the males can at times beat the females to a pulp, so it is important to watch them closely for fin or body damage. I have discovered that some aggression tendencies can be averted with more frequent small feedings. I assume they take time to digest rather than beat on the females.

The aquarium set up is simple. I utilize a 2.5-gallon tank. A small sponge filter running at a moderate pace seems to fulfill their higher oxygen requirements. In addition, I try to keep the tank 2/3 full as these fish live in shallow streams and find their niche at the stream edge along leaf litter. The bottom is covered in sand and oak leaves and as such makes nice cover for the pair. I utilize Java moss and occasionally Java fern in their tank to help control nitrogen wastes. They do, however, breed best with the addition of coarse sphagnum moss and it has proven critical to produce this fish in any significant quantities. Mops can be added, but I find collecting the eggs nearly pointless, as the eggs are quite sensitive to water qualities and often die before hatching. My suggestion is to allow the pair to breed in the tank for 3-4 weeks then move the adults to an identical set up. This will peak your production numbers, which by the way is still quite small. This method really minimalizes labor and allows the fry to feed on microorganisms in the Java moss. Supplementing the fry diet with micro worms and vinegar eels may be beneficial.

The fry are too small to eat baby brine shrimp upon hatching; typically I rely upon paramecia and infusoria living in the mosses to provide forage for them. Fry seem to congregate often at the surface at the very edge of the aquarium. I have on occasion seen freshly hatched fry adhere themselves vertically to the glass even at mid water range. Once the fry have attained a decent size, feeding of baby brine shrimp can commence - my guess is at about 2 weeks of age.

The fry have proven to be painfully slow growing and may not attain a length of ½ inch until 6 months of age. Sexable size is not attained until 8-9 months with earliest production of viable eggs at 1 year and peak production begins at 1½ years of age extending to almost their 3rd year. It seems to take forever for this fish to reproduce considering that they only attain a size of 1-1¼ inches, with adult females often never exceeding ¾ inch.

Care must be taken with this fish and temperatures. It has often been discovered that after growing them for 6-8 months that you have risen up a gorgeous batch of 100% males. This is entirely frustrating and a common occurrence. Seeking that 65°F temperature mark makes this much less likely to occur. It also must be said of temperature that though these fish can tolerate 80°F for short times, the oxygen demand becomes a huge problem and the fish fail and succumb to oxygen depletion. Adding higher aeration during hot spells improves probability of survival. An additional note must be remarked upon that though the metabolism of the fish is higher at a higher temp, care in avoiding foods during this time must be limited. The common theory is that the enzymes in their gut fail to function. This in turn leaves undigested food to rot in their gut rather than being absorbed by the fish. It is better to starve them at high temperatures than feed them and they develop the dreaded black gut which is 100% fatal.

I find these fish remarkably easy despite all of my warnings. They thrive on quality neglect. This seems odd, but they are not fond of massive water changes and not terribly fond of disturbances. So optimal conditions are cool very soft water, darkness to the point of Java moss is at its survival limit, and small foods. Once you mirror their natural environment, you will find these fish quite undemanding. 

God Bless, and Keep It Fishy...

Lee



Anthony P. Kroeger - BAS

SURPRISING BREEDING EXPERIMENTS WITH THE BLUENOSE SHINER

Pteronotropis welaka



Admittedly the bluenose shiner - *Pteronotropis welaka* is one of our most beautiful minnows. Males displaying in full color are an unforgettable sight.

But breeding this fish is tricky at best and certainly not easy. Bluenose spawn cuckoo style in the nests of sunfish - *Centrarchidae* family.

The following are my experiments/experiences in breeding this beautiful fish. These are not refined methods; however, I offer them as possibilities to pursue. I continue to experiment.

I kind of fell into breeding this fish by accident. I am by trade a commercial fish farmer/importer/exporter and I travel widely to visit my customers. While traveling, I stop at bait shops whenever I can just to see what they have. You never know what you'll find.

I found some *P. welaka* in a bait shop just north of Mobile, Alabama after visiting a customer there. I bought them all and took them home

with me, as usual on a "spur of the moment" fish purchase.

I was unprepared and had no room. I knew these fish spawned with sunfish and needed good water quality so I put them in with a small, 3-inch pair of Texas cichlids, *Herichthys cyanoguttatus*. They would be safe there until I could prepare a tank for them. I also figured that as Texas cichlids are now all over Florida, *P. welaka* probably existed with them in nature too.

The small pair of Texas cichlids did not bother them; they were too busy digging pits to breed in, which they subsequently did. But so did the *P. welaka* too. I walked into the fishroom to find both species spawning. The male *P. welaka* was doing sort of a "flutter dance" in front of the female (perhaps as a signal?), after which the pair dove into the cichlids pit and spawned. This was not a productive arrangement, however, as I got only a few *P. welaka* fry. Perhaps the Texas cichlids ate the *P. welaka* eggs or fry?



Either way my curiosity was piqued and I decided to experiment. I divided my *P. welaka* into 3 groups, 1 or 2 males and multiple females in each group.

I do not have access to sunfish except to bream which would eat the *P. welakas*, so I decided to try some common cichlid specie. I was breeding commercially. Cichlids are cousins to sunfish and I figured whatever hormonal triggers the sunfish supplied the *P. welakas*, perhaps the cichlids would do the same. I also figured cichlids spawn year round if conditioned well, rather than having to chill the water and spawn sunfish in season, so I had a lot more frequent chances to spawn *P. welaka* with cichlids rather than sunfish.

I decided to try 3 different species of commonly available substratum pit spawning cichlids. All 3 species are very easy to breed, thus providing ample hormonal trigger opportunities to trigger the *P. welakas*.

The 3 species

I chose are:

1. Texas cichlids - *Herichthys cyanoguttatus* an easy choice, my *P. welakas* first spawned with them.
2. Blue Acara - *Aequidens plucher*. I chose this species due to its bright blue color pattern, similar to bluegills, and its more rounded shape, thinking maybe visual triggers are

...breeding this fish is tricky at best and certainly not easy. Bluenose spawn cuckoo style in the nests of sunfish - *Centrarchidae*-family.

involved too?

3. Rainbow cichlids - *Heotilapia multispinosa*. I chose this cichlid due to its rounded shape, close territory pit spawning habit, similar to male sunfish likes and massive spawn numbers; lots of hormones for such a small fish.

I used the same setup for each: sand, pebbles and smooth stone substrate, a sponge filter, an airstone, hard alkaline water with a temperature of 74°F.

I conditioned all fish heavily on daphnia and various types of worms. I received fry from all 3 cichlid species, but only saw the "flutter dance" signal of the male *P. welaka* with the rainbow cichlids.

I did not see the other *P. welakas* spawn.

Fry production was least with the Texas. I wonder if they do not eat the eggs or fry or do they differentiate between them?

Blue acaras were better, but still not productive.

The rainbow cichlids, however, were a completely different story. Rainbow cichlids

eat a high proportion of vegetation in their diet and they are extremely productive and reliable parents with their eggs and fry. They evidently took good care of the *P. welaka* eggs / fry too.

I received 2 to 3 times as many fry using the rainbow cichlids as any of the





other cichlids.

Because rainbow cichlids spawn in groups, I had 3 pairs of rainbows in the tank with the *P. welakas* vs one pair of each in the Texas and blue acara tanks.

The *P. welakas* spawned with all 3 pairs, thus I believe because of their communal spawning style, the rainbow cichlids offered the *P. welaka* not only more hormonal triggers due to their fecundity, but also more sites to spawn in (thus the increasing fry numbers), due to their communal spawning style.

I also believe the rounded shape, similar to a sunfish, of the rainbow cichlids is a visual trigger to the *P. welaka*. They were much less skittery and flighty around the rainbow cichlids than they were with either the Texas or the blue acara.

And I believe the excellent egg care (egg fanning/cleaning) of the rainbow cichlids allowed more *P. welaka* eggs to hatch. Both blue acara and Texas cichlids, though good parents, are more lax about egg care than the rainbow cichlids. These initial results were encouraging, but I'm a commercial breeder and a few fry are good, but not commercially viable.

So I decided to try to replicate these experiments in pools as it was summer. I took my breeders and put them outside in pools, same species, same setup, only cichlids in the pools.


The results were again encouraging with greater numbers of *P. welaka* fry produced.

The results followed the previous pattern. The least fry with the Texas cichlids, the most with the rainbow cichlids. The blue acara, a happy medium. But by far and away the largest amount of fry produced, 2 to 3 times the other pools, was with the rainbow cichlids.

Again I did not observe the "flutter dance" signal of the *P. welaka* in the Texas cichlid or the blue acara pool, only with the rainbow cichlids. The *P. welaka* seemed to me to be much more "comfortable" with the rainbows than the other two.

I will continue to work with the bluenose and refine my methods and experiments at breeding them. But I believe I am on the right track

I feel that rainbow cichlids in their fecundity, ease of breeding, hormones and body shape are keys to being able to trigger *P. welaka* as commercially viable as a species to offer to aquarists who want to keep this beautiful fish.

The experiments presented here are relayed so as to give other breeders ideas and possibilities to work with. Hopefully you obtain similar or better results. I continue my experiments in the hopes the beautiful bluenose shiner, *P. welaka* will continue to grace our aquariums for a long time to come. 

Happy fishkeeping!

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BAP report by **Alan Rollings** – ACLC

Reprinted from *Tank Tails*, December 2015L

The official publication of the Aquarium Club of Lancaster County

Brachyrhaphis rhabdophora

Among the 39 bags of various fish species that I brought over from England, was a bag holding a trio of *Brachyrhaphis rhabdophora*. In Europe the less common species of livebearers attract a very high price, so these were not to be left languishing in England.

Brachyrhaphis rhabdophora is known by the common name Olomina. This word is a bit difficult to translate (it is Spanish in origin) but probably means something like the English minnow, describing a small fish that has an identity that is deemed unimportant. It is also the name used for guppy. They are too small to be used as a food fish, have yet to become popular in the aquarium trade, and all have a similar body shape and coloration. The females are the larger of the sexes and are usually around 2.5 inches in length, whereas the males seldom exceed 1.5 inches in comparison.

Overall, *B. rhabdophora* is an easy fish to care for. They are adaptable to most water types; however, they do best in "neutral" water, pH range 6.7 to 7.4, and prefer temperatures ranging from 72° F to 82° F. During this summer, the water temperature did exceed the upper figure by as much as 10° F on occasion. Feeding was easy using a rotation of daphnia and mosquito larvae, topped off with a small amount of flake food.

They are hardy livebearers, with the females growing to over two inches in good conditions, while the males seem to max out at around one and a half inches. The females have a red and black arc on their anal fins, light bars on the back half of their body, and red and black stripes on their dorsal fins. Though they look similar to *Brachyrhaphis roseni*, they lack the iridescent band on their caudal fin, and their dorsal is not



quite as brightly colored.


They generally seem to give birth to broods between ten and twenty young, and though they likely eat some of them, are either incapable or unwilling to eat all of a brood, even in a small

holding tank. However, the exception seems to be in my tanks. The females have frequently devoured their young, and beaten up the male until he died of exhaustion.

When housed in a 10-gallon tank, they failed to raise any of their young, but when moved into a 30-gallon breeder outside with copious floating plant cover – especially duckweed – one of the females produced in excess of 40 young that were raised with her for more than 2 months over the summer period. These young have been sold and donated through the various BAP programs of the clubs we belong to.

They are good eaters, active tank residents, and adapt quickly to eating prepared commercial foods. Their young do well on a diet of baby brine shrimp, commercial fry foods, and crushed flake.

Despite not being very commercially important, they still draw the interest of various educational institutions and the occasional hobbyist. In particular, they are of interest in the areas of genetics and evolutionary studies. Partly this is because despite the somewhat complicated waterways that are their home in Costa Rica and the surrounding areas, some studies often compare the behavior of two populations that occur in relatively close proximity to each other, but separated by a mountain or some other isolating phenomenon.

The included photograph is of an uncooperative female who was determined not to provide a head on view. 





Will White – GAAS

Reprinted from *Tank Topics* Nov/Dec 2016
The publication of the Greater Akron Aquarium Society

DIY

CORNER

Mat Filter Corner Box

Hamburg Mattenfilter, they're efficient, long lasting, low maintenance, cheap to run and also a big slab of foam across one side of your tank. Not familiar with foam mat filters? I recommend going to www.swisstropicals.com and check out their library and FAQ link; a lot of good information all in one place. So what do you do if you want to use a mat filter in your show tank and not just something in your fish room?

You can always put it in the corner by siliconing in glass rods, as shown by the corner filter and half-moon filter section on swiss tropicals. But what do you do if your tank is up and running; draining it to silicone in the rods would be problematic.

Enter our project today: a DIY drop-in acrylic filter box to hold our mat filter.

Materials Needed:

Acrylic pieces
Acrylic solvent
Tape (painters tape works well)
(Optional) Aquarium safe acrylic paint



The Build:

I built mine out of 0.118 inch acrylic sheets from Lowes. You can use a thicker sheet if you want; there is a bit of flex on bigger boxes, especially towards the top from the force of the bent foam sheets. They did most of the cuts in store for my 120-gallon build. For this 10-gallon build, I used a jigsaw with an 8 tooth per inch wood blade. If you've never worked with acrylic before, there are a ton of guides online to help.

We start off by measuring the inside height to the rim and width of our tank. We're going to need 5 pieces of acrylic for each filter. This particular one was for a 10-gallon tank using scraps left from my main tank box build. 2 supports – 1½ inches



by inside height to rim minus ¼ -½ inch for base and tank seal clearance 2 sides – half of tank width by same height as supports 1 bottom piece, square, roughly an inch longer than half width of your side pieces. (My preference for the next step is to put the box together to make sure everything fits together and your edges are smooth and even to avoid gaps and weak spots.)

Using Scigrip/Weldon 4 in an applicator bottle, run a



bead along the inside creases; starting with one of the vertical pieces, press together for 30 seconds before going to the next one. Do the base last and let cure. After 10 minutes, I applied another bead of solvent and pressed again to help fill in any gaps.


(If preferred, Scigrip/Weldon 16 can be used; just build the box as you go instead of taping first.)

Once dried, remove the tape,

sand down any rough edges and paint the supports to match your filter color. (The painting can be skipped, but over time filter mud will accumulate between the clear acrylic and the foam, and give you a nice brown line.) Follow the directions on the paint, failure to do so is a very easy way to kill your fish. Colored acrylic sheets may be used as well, but the store had clear, so I used clear.

Trim down your foam to fit. Using a ruler or a board to compress the foam and using a guideline combined with a good sharp knife will help to keep your cut line even and clean. The foam cuts very easily, if you haven't had to cut any before.

Place the foam into the filter box; make cutouts or holes for your pump/airlift/power head (make these cuts with the foam in the filter so you remove the right amount of material. Clear substrate away around where base of box will go; place in aquarium and cover base

plate back with substrate to hold in place. If desired or needed, a few aquarium safe rocks can be placed inside the box behind the foam to weigh it down. 



Pictured is one of the boxes used in my main tank setup, a 5ft 120-gallon in the middle with 44-gallon pentagon corner tanks on either side.




Classic Platy Varieties


Xiphophorus maculatus & *Xiphophorus variatus*

Platies are extremely popular aquarium fish and come in practically every color and combination imaginable!

Like swordtails, they are hardy, beautiful, easy to keep and breed and are available everywhere.


Unfortunately, just like swordtails, the platy also has many mutations which are rarely seen anymore. Keep an eye open for these rarities:

 **Bleeding heart -**
Available in both wag and regular, this formerly popular type is a real knockout. Snow white body with small black polka dots and a fire red belly. The best strains have a matching red dorsal saddle and dorsal fin. Quality bleeding heart platies are seldom seen now.


 **Black platies -**
Why do black platies and black swordtails both seem to suffer the same fate? Popular in the 1950's, you rarely even find black platies offered now. A coal black body with blue metallic spangles


make this a pretty fish indeed. The best quality specimens have a solid black belly, but most strains, if you even can find them, have a thin white belly streak.

 **Blue moon platy -**
The original Mickey Mouse dates from the 1930's. This strain is still available but rarely offered. You have to ask to find it at stores. It still, however, is cheap. This platy is basically a wild *X. maculatus* with metallic blue scales overlaying the wild pattern and a Mickey Mouse or moon and stars pattern in the caudal peduncle

 **Red tail blue *variatus* -**
Popular in the 1960's and now very, very hard to find. Only a few old time fish farmers and diehard platy breeders raise it. Light blue body, white belly, neon red tail, yellow dorsal. A few vertical black body stripes over the mid flank, fine black pepper spots really make a pretty *variatus*.

 **Red tail black *variatus* -**
Almost extinct in the hobby. Sometimes juveniles can be found in "mixed live-bearer feeders" from old farmers. No one raises this platy anymore. A coal black body, yellow snout and dorsal with a neon red tail and white belly stripe makes a nice contrast, but not enough to be popular against today's colors.

 **Sunset *variatus* -**
Still available but you usually have to ask for it. Some commercial farmers still raise it but fewer and fewer. Glowing yellow front half, fire red rear and tail, yellow dorsal. A few flank stripes and spots.

Keep these varieties in the hobby. Find some classic platies and buy them. 

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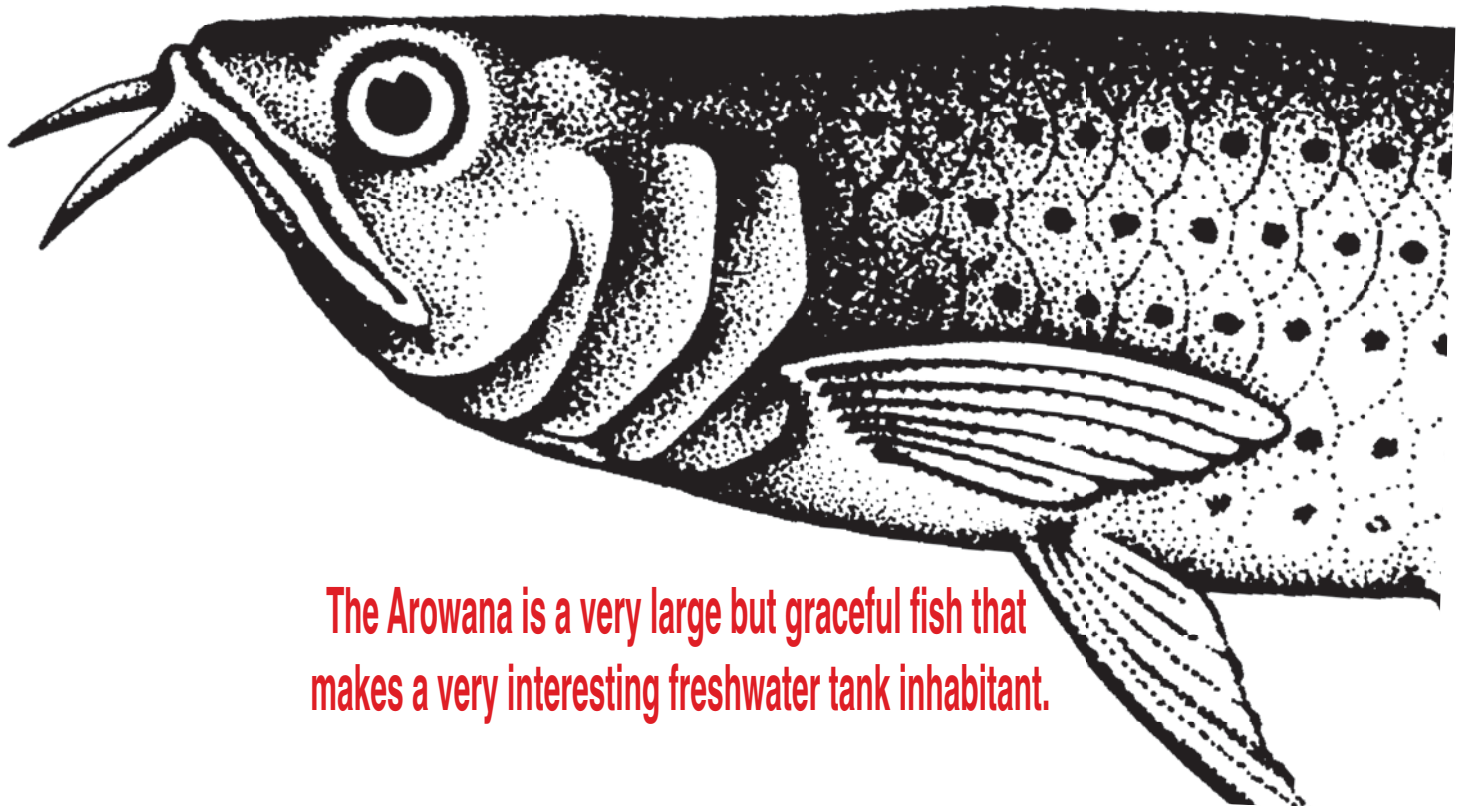


Katherine Barrington – TFSRI

Reprinted from *Tankquilizer* February 2017

The publication of the Tropical Fish Society of Rhode Island

KEEPING AROWANAS IN THE FRESHWATER AQUARIUM



The Arowana is a very large but graceful fish that makes a very interesting freshwater tank inhabitant.

There are countless different species of freshwater fish on the planet and not all of them are right for captivity. Still, if you have enough tank space and take the time to learn about their needs, the Arowana is a very unique type of fish that can be kept in the freshwater tank at home. The name Arowana refers to a group of fishes and there are several different types to choose from. In this article you will learn the basics about these beautiful fish and receive some tips for keeping them in your own tank.

What is an Arowana?

The Arowana is a type of bony freshwater fish that belongs to the family *Osteoglossidae* – these fish also carry the name “bonytongues.” These fish are known for their elongated bodies which are covered in a mosaic of thick, heavy scales. Arowanas have bony heads with soft rays on the anal and dorsal fins, but their ventral and pectoral fins are very small compared to the size of the fish. The nickname of these fish, bonytongues, was given in reference to the fact that they possess a toothed bone on the floor of their mouth. This bony “tongue” allows the fish to bite



All Arowanas are mouth-brooders which means that the parents hold the eggs in their mouths after spawning until the eggs hatch.

against the teeth located on the roof of its mouth. Another unique adaptation this type of fish exhibits is the ability to breathe air using the swim bladder organ. Fish belonging to the family *Osteoglossidae* are carnivores – they eat everything from fish and insects to birds perched on branches overhanging the water. Different species of Arowana can be found all over the world in parts of South America, Africa, Asia, and Australia. Technically, the one South American species of Arowana belongs to a different family – *Arapaimidae* – which also includes numerous species of *arapaimas* or *pirarucus*. Despite being carnivorous, Arowanas do not typically eat their own young. In fact, several species exhibit advanced parental care, building elaborate nests to protect their young after hatching. All Arowanas are mouth-brooders which means that the parents hold the eggs in their mouths after spawning until the eggs hatch.

Popular Species of Arowana:

There are a number of different species of Arowana that can be found in parts of Africa, South America, Asia and even Australia. Below you will find a brief description of five different species of Arowana:

1. Asian Arowana (*Scleropages formosus*)



The name Asian Arowana is given to several different varieties of Arowana that can be found throughout Southeast Asia where they tend to inhabit blackwater rivers and other slow-moving

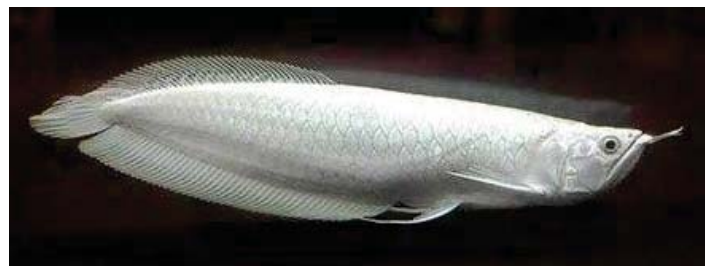
waters. The different varieties of Asian Arowana are distinguished mainly by color and examples include the Green Asian, Silver Asian, Red Asian, Red-Tailed Golden and the Blue Malayan. Most Asian Arowanas grow up to 35 inches in length, so they need very large aquariums. These fish prefer soft and slightly acidic water in the 75°F to 86°F.

2. African Arowana (*Heterotis niloticus*)



Although this species is still known as an Arowana, it is actually more closely related to arapaimas. The main difference between this and other Arowanas is that the African Arowana feeds primarily on plankton. This species still grows fairly large, reaching lengths up to 1 meter and weighing up to 22 lbs. (10 kg). African Arowanas are usually gray or brown in color, often with a bronze sheen, though juveniles exhibit dark horizontal bands.

3. Silver Arowana (*Osteoglossum bicirrhosum*)



The Silver Arowana is a South American species that can be found in the Amazon, Rupununi, and Oyapock Rivers. This species grows up to 35



inches long and it exhibits a uniform silver coloration throughout its lifespan – they are sometimes called Dragon Fish because of their armor-like scales. These fish tend to inhabit the upper regions of the river, often jumping out of the water to capture prey. Silver Arowanas eat insects, crustaceans, fish, and other animals like birds, bats, and snakes.

4. Black Arowana (*Osteoglossum ferreirai*)



The Black Arowana is another South American species that can be found in the upper Essequibo River basin in Guyana as well as the Negro River basin in Colombia and Brazil. This species grows up to 35 inches long and it has a dark, iridescent blue or steel-gray coloration as an adult but a black-and-yellow coloration as a juvenile. These fish require a minimum of 480-gallons to accommodate their size and they prefer a tank maintained with black water additives. Black Arowanas will eat a variety of insects, crustaceans, amphibians, and small fish.

5. Jardini Arowana (*Scleropages jardini*)



This species of Arowana is native to New Guinea and Australia. It is a smaller species of Arowana, growing only to about 24 inches in length. These fish tend to stay in the upper regions of the water and they will jump to catch prey, so a tight-fitting lid is needed. Jardini Arowanas are carnivorous and, though they prefer live food, some can learn

to accept pellet foods in captivity. This species can be kept with other semi-aggressive fish as long as they are too big for the Arowana to swallow.

Tips for Keeping Arowanas in the Home Tank:

Though the specifics vary from one species to another, most Arowanas are solitary fish, though some of them allow the company of other fishes while they are still young. Adult Arowanas tend to be highly aggressive and dominant, though they can sometimes be kept with other semi-aggressive or aggressive species as long as they are too large to fit in the Arowana's mouth. Some examples of tank mates you might want to choose for the Arowana include Oscars, tinfoil barbs, green terror cichlids, clown knifefish, and pacus.

In addition to making sure that your Arowana tank is large enough, you also need to make sure it is outfitted with a tight-fitting lid. In the wild, Arowanas have been known to leap more than six feet in the air to pick insects and birds off low-hanging branches by the riverside. These fish do best on a diet of live and frozen foods and they require a tank size of at least 150-gallons. In terms of tank decorations, most Arowanas prefer fine gravel substrate with live aquarium plants for decoration. Because the Arowana is so large you need to leave plenty of open space for swimming – it is best to concentrate your plants and other decorations around the edges of the tank.

Arowanas are a unique but beautiful type of fish that can make for very interesting freshwater tank inhabitants. Because their needs are so specific, and because they grow so large, you need to be careful about cultivating the right tank conditions if you plan to keep Arowanas.

Using the information in this article you can successfully plan and maintain your Arowana tank.





Joel Antkowiak – ACLC

Reprinted from *Tank Tales* November 2011 – Vol. 40 No. 10
The official publication of the Aquarium Club of Lancaster County

Tiger Barbs

Puntius tetrazona



There are several species of barbs that are very popular amongst beginning aquarists. Perhaps the species that is most sought after is *Puntius tetrazona*, the tiger barb. The tiger barb has been a popular fish for a long time. It is a standard favorite in the aquarium world. However, the tiger barb is believed by most aquarists to be a very aggressive species and an avid fin nipper, but when kept properly, this species is actually very much a good community aquarium fish. The same can be said about the other popular barb species.

The barbs are schooling fishes, and as such, they need to be kept in groups. When not kept in groups, the individuals become a bit more territorial and will attack other fishes. They are not as comfortable in the aquarium and will tend to hide amongst the plants or other décor.

However, when they are kept in groups of 6 or more, they tend to confine their aggressive behavior to the other members of their own species. Because of the large size of the school, and the high activity level of these species, it is best to keep these fishes in a tank of at least 20-gallons in size.

The tiger barb was originally described by Bleeker in 1855. It is found in southeast Asia. It will eat all kinds of foods and is fairly easy to breed. A great fish for the beginner and advanced aquarist alike, but as previously mentioned, if they are not kept in schools they will be nippy.

As the common name suggests, the original tiger barb is striped. Counting the eye stripe, there are four wide black bands running vertically across the body. The third band starts at the black base of the dorsal fin and extends down to the

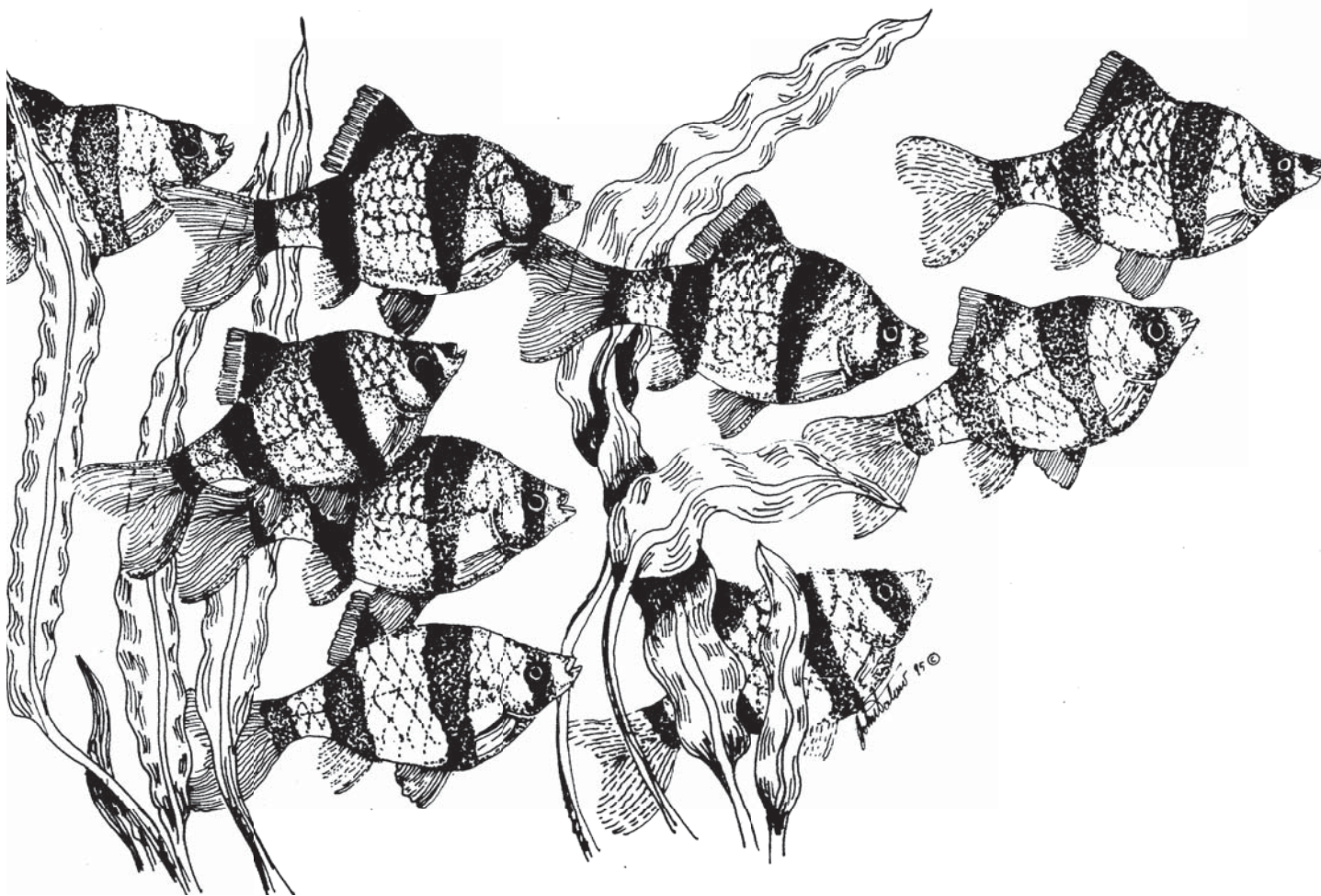


start of the anal fin. The dorsal and anal fins are a bright red orange and the rest of the fins are a paler shade of red. The fin color is more intense in males. The rest of the body is brownish orange color. The scales viewed under the right light have an iridescent gold or brass look to them.


As with many fishes that have been kept in aquaria over a long period of time, man has developed some color morphs of the tiger barb. The two most commonly available are the albino

the green may not fully cover the body, resulting in a marbling effect that can be striking.

All color forms of the tiger barb can be kept with relative ease in the aquarium. They are not fussy about water parameters, nor the food they eat. They are also easily bred by separating the males and females for a few days to condition them and reintroducing the sexes in the breeding tank that is set up with coarse gravel or marbles as the substrate. An alternative is to cut a piece of

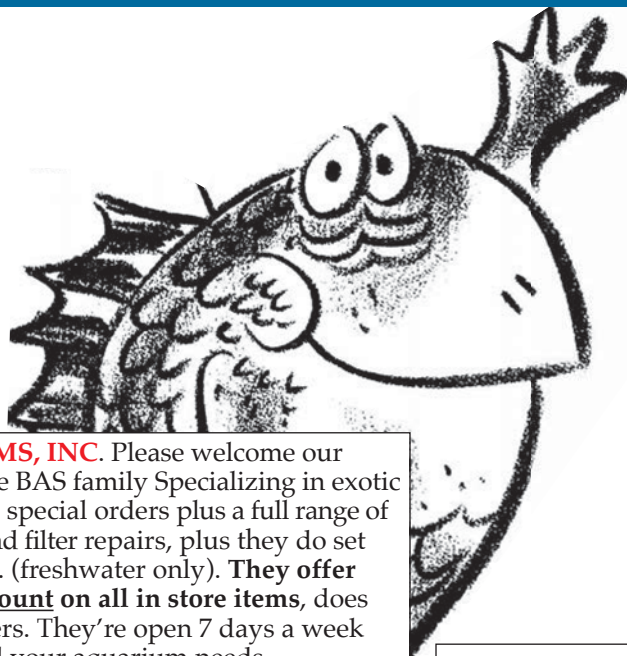


tiger barb and the green moss barb. The albino tiger barb is cream and gold with white stripes and red to orange accented fins. It is not as popular as the natural coloration, but is still widely available. The green moss barb, which is also sometimes referred to as the green barb, the moss barb, or moss banded barb, is more fashionable than the albino version. They have a deep fluorescent green to bluegreen body color, with a black dorsal fin and red edging to the pelvic fins. In some specimens,

egg crate to the size of the tank and position it several inches off the bottom of the tank. This allows the eggs to escape the munching parents. The eggs hatch in 2-3 days at 80°F and can be fed powdered food or infusoria when they are free swimming 2-3 days later. After a week, baby brine shrimp and microworms can be added to their diet, and in a couple months you have a whole new school of barbs to put in your display! 



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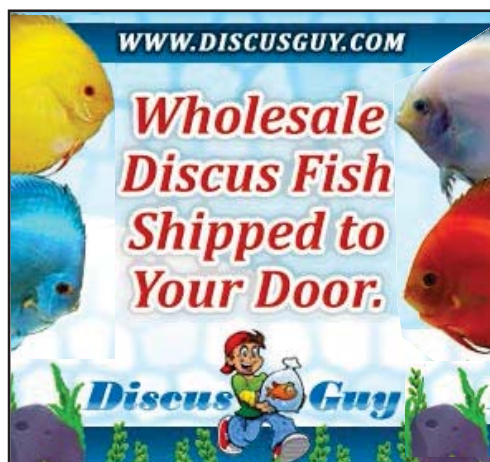
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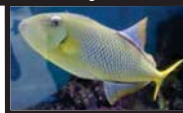
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