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December 2025
volume XXXII
number 10

Greater City Aquarium Society - New York

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Series III Vol. XXXII, No. 10 December, 2025

ON THE COVER

Sometimes I come across an old photo that calls to mind a favorite fish. That being said, our cover photo this month features *Heros efaciatus*, the green (or gold) severum. These have been a mainstay in the hobby for many years, and why not? They're good looking fish, pretty easy to maintain, and in my experience very people friendly!

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From the Editor

by Dan Radebaugh

What is the old adage — something old, something new, something borrowed, something blue? Take a look! I think this issue sort of covers all those requirements!

My special thanks go to all of our wonderful authors, who have been the main reason for our success over the years. Steve Sica and Joe Ferdenzi both have *more* than one article in this most likely final issue of **Modern Aquarium**. Our cartoon caption winner this month is the redoubtable Ed Vukich! Congratulations, Ed! Well done!

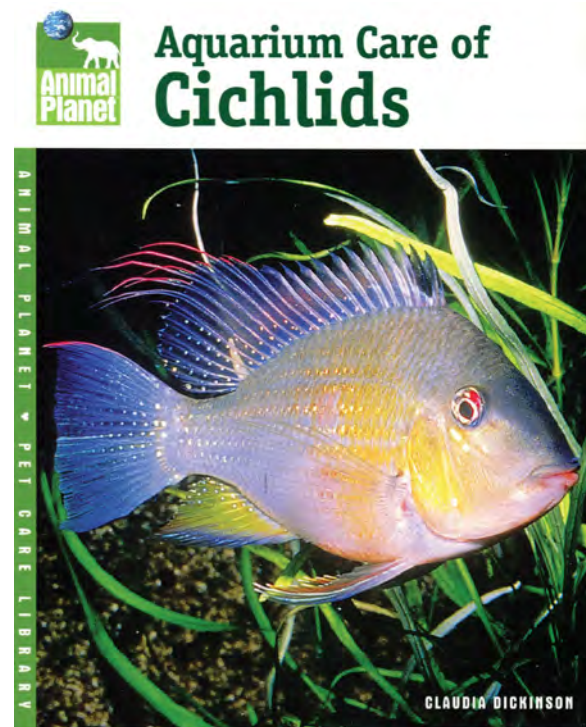


“Something Old” is covered by your’s truly! A little masochistic research revealed that I assumed the Editor reigns back in 2008, and spent some time as President starting in 2009. Time, however, marches on.

Some years back my sister Patricia sent us an article for **Modern Aquarium**, and following a recent visit, she has sent us another one! Not quite about fish, but certainly in the ballpark!

There are more articles than usual in this apparently final edition, so I won't try to describe each of them in advance. There's plenty to like in here, so have some fun reading! Hopefully this won't be the finale of a great publication.

Ciao! Remember, that can mean hello or good-bye! Best of luck to all!



by Greater City member Claudia Dickinson
(Animal Planet® Pet Care Library)

Hardcover — Also available on Amazon Kindle
<https://www.amazon.com/Aquarium-Cichlids-Animal-Planet-Library/dp/0793837774>





GCAS

Meeting Schedule

2025

March 5	Breeder Boxes
April 2	Natural Aquariums, Part 1
May 7	Natural Aquariums, Part 2
June 4	Guppies
July 2	The Balanced Aquarium
August 6	Night At The Auction
September 3	The Blue Gularis
October 8	Cichlids with Livebearers
November 5	Matias Garcia
December 3	Holiday Awards Dinner!

Articles submitted for consideration in **Modern Aquarium** (ISSN 2150-0940) must be received no later than the 10th day of the month prior to the month of publication. Please email submissions to gcas@earthlink.net, or fax to (347) 379-4984. Copyright 2025 by the Greater City Aquarium Society Inc., a not-for-profit New York State corporation. All rights reserved. Not-for-profit aquarium societies are hereby granted permission to reproduce articles and illustrations from this publication, **unless the article indicates that the copyrights have been retained by the author**, and provided reprints indicate source, and that two copies of the publication are sent to the Exchange Editor of this magazine (one copy if sent electronically). For online-only publications, copies may be sent via email to gcas@earthlink.net. Any other reproduction or commercial use of the material in this publication is prohibited without prior express written permission.

The Greater City Aquarium Society meets every month except January and February. Members receive notice of meetings in the mail or by email. For more information, contact: Dan Radebaugh at (718) 458-8437, email to gcas@earthlink.net, or fax to (347) 379-4984. For more information about our club or to see previous issues of **Modern Aquarium**, you can also go to our Internet Home Page at <http://www.greatercity.net>, <http://www.greatercity.org>, or <http://www.greatercity.com>.



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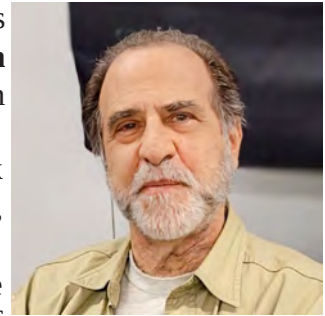
President's Message

by Warren Feuer

Hello again! Remember me? I know it's been several months since my President's message has appeared in **Modern Aquarium** and since I attended a GCAS meeting, but I'm hoping I haven't been totally forgotten.

In case you did not know, I am recovering from major back surgery that I had in September, and the recovery is slow and difficult, but I think I'm finally seeing some progress.

However, that is not why I am writing this column. I'm here to report that this is my "opening farewell" This is the last issue of **Modern Aquarium** that will be published (for now, at least).



Our editor, Dan Radebaugh, has announced his and his wife Marsha's retirement from the club at the end of this year, and there seems to be no one to pick up the mantle. Additionally, the print media is declining and does not seem likely to recover any time soon. Case in point, we do not print more than 25 copies of the magazine each month. Instead, we have been emailing the magazine to our members and others. The print media in general is declining, and does not seem likely to recover any time soon. So it's time to say good-bye to large press runs in the near future.

The first issue of **Modern Aquarium**, Series III (there were earlier versions) was published in January, 1994. That's 31 years ago. I don't think that many club publications have been printed continuously with the exceptionally high level of quality and content that MA has.

I want to take this opportunity to thank my successors, Al Priest and Dan Radebaugh for the great job they have done in keeping the vision of a high quality, content rich club publication going after my time as Editor ended in 1999. I left then because I was facing life changing, major surgery, and now I'm writing to you again as the magazine is ending its run. Hmm, maybe I should skip this surgery stuff! I'll try to keep that in mind going forward. I would be remiss if I did not mention Susan, Al's wife and Marsha, Dan's wife, whose support and contributions made their respective turns as Editors easier. Believe me, I know.

Without **Modern Aquarium**, where do we go from here? I can tell you with complete confidence that the things that make Greater City an amazing club and our meetings fun and informative to attend will continue, and I believe improve. There are some interesting changes coming to Greater City, changes that will make membership rewarding and acknowledge the support you provide by paying dues and being a GCAS member. Benefits such as our subsidized yearly Holiday Party, the increased take on member share for sales at our annual "Night at the Auction" and more to come. Just recently, our members were given the opportunity to purchase a one-year subscription to Tropical Fish Hobbyist magazine for \$10, as opposed to the usual cost of \$30 per year. We are working on more perks like these, things that make being a member of Greater City a real value.

As we bid farewell to **Modern Aquarium**, we say hello to a new era at the Greater City Aquarium Society. One that will make you glad you are a member of GCAS.

Warren





BOWL SHOW RULES

There is a Bowl Show at every GCAS meeting, except our Night at the Auction/ fleamarket meeting and our Holiday Party and Awards Banquet meeting. Bowl shows are open to all members of GCAS. Rules are as follows:

- Only current GCAS members may enter fish in the Bowl Show.
- There is a limit of 2 entries per member per meeting.
- Unlike some other clubs, every month is an “open” Bowl Show at the GCAS (i.e., there is no “theme,” such as that one month cichlids are judged, the next livebearers, the next anabantoids, etc.).
- Any fish that wins any prize (1st, 2nd, or 3rd) may not be entered again in the same meeting year.
- B.Y.O.B. (Bring Your Own Bowl!) Entrants are responsible for providing suitable containers and suitable water for their fish. These containers must be clear on at least three sides.
- Only one fish per container (i.e., no “pairs”).
- No plants, ornaments, or equipment (filters, airstones, etc.) are allowed in the judging tank (an external mirror, or opaque cards between containers is acceptable, as is a cover that does not obstruct side viewing).
- Points are awarded: 5 points for 1st Place, 3 for 2nd Place, and 1 for 3rd Place.
- Ribbons are awarded: blue for 1st Place, red for 2nd Place, and green for 3rd Place.
- The person with the most points at the end of the meeting season receives the Walter Hubel Bowl Show Champion trophy at the Awards Banquet.
- The decision of the judge(s) is final.
- A running UNOFFICIAL total of the points awarded is printed in **Modern Aquarium**. Only the tally of points maintained by the Bowl Show Coordinator is official.
- **In case of ties:**
 - 1st Tiebreaker – most 1st Places
 - 2nd Tiebreaker – most 2nd Places
 - 3rd Tiebreaker – most entries

A Modern Legend...

by Joseph Ferdenzi

Back in the 1950s, when newspapers and magazines ruled the world of current information, a group of aquarists from the Greater City Aquarium Society decided to start a new magazine. In keeping with the idea that it would contain up-to-date information, they christened it **Modern Aquarium**. From very modest beginnings, a legend was born.

These early issues were simple affairs, usually less than 12 pages, and produced using primitive printing machines. The series lasted a few years, and then disappeared. But it was reborn in 1968, and this time it had all the qualities that the first series lacked. It had the look of a professional publication that featured artistic covers and many black and white photos. In addition to articles about this or that fish, it also ran numerous articles about notable hobbyists of that period. These articles and accompanying photos are a virtual treasure trove of hobby history. The advertising was also a veritable catalog of the aquarium stores that populated the local hobby scene. This second series of **Modern Aquarium** ceased publication in 1974, but for those who want to know what our hobby was like in the New York area in those years, then reading **Modern Aquarium** is indispensable.

It took another twenty years before **Modern Aquarium** was revived, but when it did in January of 1994, it made an immediate impression in the world of club publications. It had a cover designed by a professional artist (Stephan Zander) and it had a color photo on that cover—something almost unknown for club publications of that era. The inside was beautifully printed and featured black and white photos along with professionally rendered line drawings. All the articles and features were original, well written and edited. It was no wonder that in a short time the magazine began garnering award after award from both the Federation of American Aquarium Societies and the Northeast Council of Aquarium Societies.

The magazine had a small but dedicated production staff that, in addition to Zander, consisted of Warren Feuer as Editor-in-Chief, Al Priest as Assistant Editor, and Jason Kerner and Bernard Harrigan on the printing end. Al Priest would assume the role of Editor-In-Chief four years later. During his time as Editor, Al would introduce many innovations in content and production style, which continued to garner many accolades and awards in the aquarium world. After a full decade, Al passed the Editor's torch to the current Editor, Dan Radebaugh. The high standards set by the prior Editors were continued by Dan, who also set a record for service in that role for 18 years!

While certainly **Modern Aquarium** has had great content as the beneficiary of the talent of many members of Greater City as writers and photographers, there is one other feature of the magazine that makes it unsurpassed in the annals of our hobby's history. The magazine's publication schedule required that it be distributed at our monthly meetings, which were always on the first Wednesday of the month (unless a holiday necessitated a change to the second Wednesday). And so, for an astounding 32 years, the magazine was distributed to members each and every month there was a meeting (in 1994 one month was cancelled because of a winter storm). Like clockwork, the staff of **Modern Aquarium** never missed a deadline! Imagine — a group of volunteers who were never compensated one cent for their labor, produced and distributed 319 issues of **Modern Aquarium** without missing a single issue! I regard that achievement as nothing short of extraordinary! And anyone who is or has been a member of Greater City should be justly proud of what it says of our contribution to the aquarium hobby.

So, while this issue represents the last printed version of **Modern Aquarium**, I am sure the legend will continue — a legend of what people can accomplish when driven by a desire to serve, and to do so through excellence!



FISHES IN THE OCEAN: Stop Picking On Me!

Story and Photos by Stephen Sica

If you were a fish, would you like to be picked on all the time? Fish usually don't pick on each other unless one is somewhat larger and looking for a meal. There are a few other reasons but I'm going to keep this concept simple. We have seen enough television documentaries in which a pack of hungry sharks eat the carcass of a dead whale. Even more interesting may be orcas killing great white sharks to eat their liver. How's that for a taste of your own medicine? I wonder what shark liver oil tastes like. If you have lived a long life, you may remember as a child your mother giving you a dose of cod liver oil. I know that I had to ingest it

more than once but fortunately I can't recall why. But I do remember its awful taste. While it can't compare to a killer whale eating a shark, there are definite similarities. If you doubt me, just drink a spoonful or two of the stuff and see for yourself. Rest assured; it won't help any kind of medicine go down any easier, as a well-known motion picture song suggests.

During my underwater experiences, I have occasionally seen fish eating other fish. There was one time in Grand Cayman when two Nassau groupers ganged up on a lonely squirrel fish hiding in a small coral head. It took about thirty seconds to frighten the fish out of hiding, and another five seconds for both to eat it. If you blinked, you missed the action. I like squirrel fish and I was disturbed to see one eaten alive.

Most of my encounters involved a big fish chasing a small fish that would swim into the reef to hide in a crevice. Since corals are very endangered and are dying off at alarming rates, fish may be losing a safety net. Unfortunately, many of us older persons reading this will no longer be around when, and if, corals rejuvenate to a status that they had a mere thirty years ago.



Large neon goby has a whole trumpetfish to clean.

Luckily, the trend of big fish eating little fish has a reverse tendency with many little fish eating parasites living on the skin and scales of bigger fish. If a person was unaware of this natural inclination, you might insist that a smaller fish was picking on a larger

fish which it actually is.

Here's some fish food for thought. Are fish particular as to which parasites they eat? Do fish parasites come in varieties and even flavors? Can small fish eat big parasites? Do fish enjoy the taste of parasites, or do they



Shrimp and gobies have a delicious meal on a green moray eel in Curacao.



Large neon gobi has a whole trumpetfish to clean.

just eat them for sustenance? Finally, if you eat sushi, is the person also eating parasites? There are all sorts of serious and even inane ideas and suppositions that one can throw at the wall. Maybe, some will stick. I will state that I do not eat sushi just in case.

By the way, do small parasite eating fish have parasites too, and who eats these? I guess it's shrimp. I like shrimp and I also like to eat them, but maybe in the future I'll

stick to fried clams, but don't they filter both dirty, as well as clean water?

Perhaps the under-the-water gravel person, in his next column, can ponder these bothersome, to me, questions. I wonder what Donna's making for lunch today?





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If you like history, and you like pets, then this is the place for you. Dedicated to the history of aquarium & pet keeping. The Museum of Aquarium & Pet History includes a huge depository of over 3,000 items all focused on the pet industry. From antique fish bowls, aquariums and cages, to foods, medications, books and advertising signs, we've got it all!

To learn more about this amazing collection of historical pet artifacts, please visit our website:

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November's Caption Winner:

Tom Keegan



Eeny Meenie Miny Moe! Which Annoying Tooth Must Go?

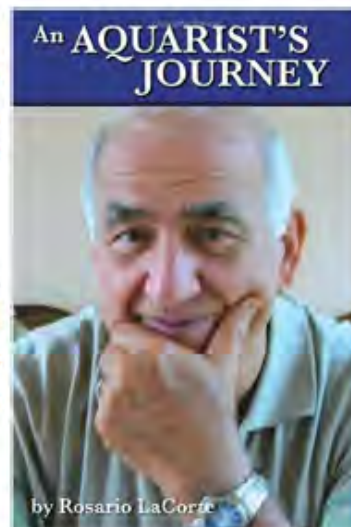


An Aquarist's Journey

Rosario La Corte is one of the world's leading authorities on breeding fish and he has written numerous articles and books, contributing greatly to our understanding of fish and their habits.

Now, for the first time, here is a compilation of his travels, adventures, successes (and, very occasional failures) all relating to collecting, keeping, and breeding fish, and in his own words (and edited by **Modern Aquarium's** Editor, Dan Radebaugh).

Available in softcover at [Amazon.com](https://www.amazon.com)



FISHES ON THE WEB:

Siamese fighting fish need more space in pet shops, study shows



Betta at the Canadian Aquatic Expo 2023

photo © Lisa Bloomer

Scientists have found that Siamese fighting fish are typically kept in containers just one-quarter the size they need to thrive, challenging decades of retail practice in the ornamental fish industry worldwide.

https://www.sciencedaily.com/releases/2025/02/250225122358.htm?utm_source=substack&utm_medium=email#google_vignette



Florida
AQUATIC NURSERIES



My Turtle Charley (Charlene)

by Patricia Radebaugh

Living in Florida almost all my life, I've witnessed the shrinking of natural wetlands as development and explosive population growth push into the natural habitat for the abundant wildlife here.



Florida enjoys some of the most unique and charismatic animal species—whether it be our Florida panthers, bobcats, bears, coyotes, Sandhill cranes, alligators, raccoons, armadillos and opossums. The abundance of freshwater lakes and ponds surrounding and protecting old cypress bayheads teem with wood storks, blue heron, tilapia, bass and softshell turtles.

In the pond behind my house, in addition to the fish, the softshell turtles have increased in number and size. I'd like to think that is due in part to my feeding them with food scraps that otherwise would be shoved down the garbage disposal or end up in the landfills with other trash.

The Florida softshell turtle, (*Apalone ferox*), is in the family Trionychidae and is identified by its long neck, which can extend about halfway down their shell, tubular snout,

webbed feet with claws and leathery dark brown-olive green shell. Since 2021, taking or transporting of these turtles is prohibited by the Florida Fish and Wildlife Commission (FWC).

These turtles are primarily carnivorous and eat a variety of prey, including snails, fish, insects, crustaceans, frogs and sometimes small birds or ducklings. Also strong swimmers, they are active, spending time in the water or basking in the sun along the banks, even burrowing in the soil. When threatened, they can be aggressive and will secrete a strong smelling musk as a warning. With their very long necks when extended, softshell turtles can reach a remarkable distance when they strike, delivering a powerful bite with their strong jaws.

These turtles are known to be intelligent, curious and playful. As I have experienced first hand, they also can get attached to and recognize their owners by sight and sound, developing a strong bond of trust and comfort- associating presence with a positive experience, like feeding. While I don't claim to be their owner, there is one extremely large individual who I'll call Charlie, that swims up



to the pond's edge anticipating my approach, sometimes even crawling up the bank getting too close for my comfort - especially when the treats are still in my hands - so I always maintain a respectable distance.



Although several turtles swim up to greet me now when I bring my food scraps, Charlie has definitely befriended me and clearly recognizes my presence, scurrying across the pond to see what I have brought. Charlie is a monster sized turtle, probably approaching 18 inches or so in length.

However, while doing research for this article, I have since renamed "her" Charlene, as I learned that female softshell turtles are larger than males and can grow up to 30 inches in length and weighing up to 100

pounds, compared to males, who only grow to a length of between 6 and 12 inches.

I have also since learned that females can be identified by their short tails, while male Florida soft shells have longer tails. Nesting season is from late March to July, and females typically can lay a clutch of 10 to 40 eggs per year in the sandy banks. Although I've found the turtle on occasion in the bushes close to my house, I never discovered any eggs.

I'm not sure how long my new friend Charlene will be around, but it is reported that the typical lifespan for Florida soft shells in the wild is between 20-30 years. Habitat loss and environment degradation such as contaminated runoff affect water quality and food sources, contributing to mortality. Plastic pollution is also driving up premature death. Hatchlings and juveniles face a high mortality rate from predators including wading birds, raccoons and even some fish.

Even with these statistics, my pals seem to be thriving in the large pond. Another turtle who may be younger is catching up to Charlene in size, but is content to watch from a distance then scoop up any leftovers. I often see between three and six turtles of various sizes enjoying the Florida sun on the banks across the water so it appears that all are healthy and happy at this time.



A Moral Dilemma

by Donna Sosna Sica

At the outset, I confess that I am not a devotee of the fish keeping hobby. My pet of choice has a furry body, a wagging tail, a wet nose and a loyal heart. Although I have visited many large aquariums across the country and participated in their scuba diving programs, including the Aquariums in Atlanta, Tampa, Denver, North Carolina and Disney's The Living Sea, I experience pangs of conscience when thinking that these magnificent sea creatures are being held captive and put on parade for the enjoyment of people like me. I have similar sensibilities when I see birds for sale in pet stores and restrained in cages. Puppy mills are another pet peeve of mine but that is not part of this article.

That being said, I respect the knowledge and devotion of hobbyists at Greater City, my husband Steve included, who might have opinions contrary to mine. I acknowledge the value of learning about fish and other non-human creatures with whom we share this planet and passing on that knowledge to others. I extend kudos to all those who maintain a safe, clean and comfortable habitat for their fish. It's just not my thing. What prompted me to write this article was a recent visit to an aquarium store.

Steve, our canine companion Cordelia and I recently visited a pet store on Long Island in pursuit of Steve's quest for some

elusive penguin tetras to add to his aquaria. While he was browsing the freshwater tanks, Cordelia and I wandered over to the - in my opinion - more interesting saltwater section. I was stopped in my tracks before a tank housing a solitary panther grouper of substantial size. As a scuba diver, this fish piqued my interest. It was a beautiful specimen and, I mused, one which should have been free to roam the warm waters of the Caribbean, the Florida Keys or the South Pacific, wherever its chosen habitat might be. To my dismay, this grouper kept its nose pointed downward in its solitary



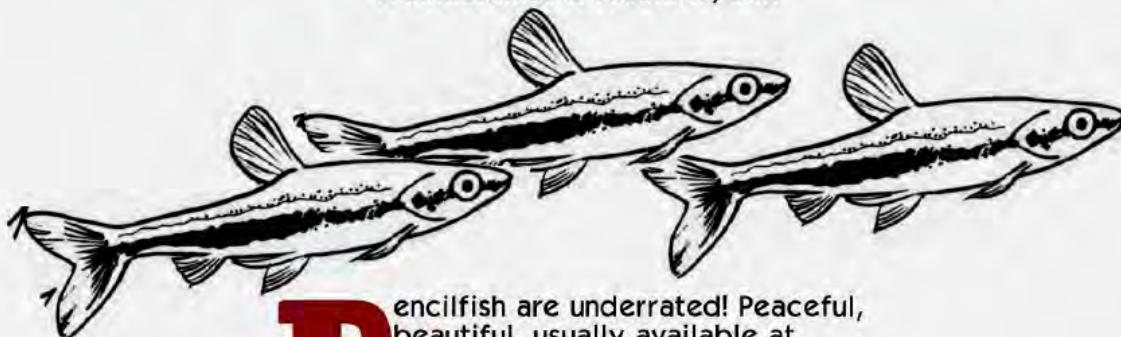
tank and did not so much as swim side to side. It had a price tag of \$150 with no apparent purchasers in sight.

I questioned the store proprietor as to what would happen to this seemingly depressed, solitary beauty if no one came forth to provide a home. She informed me that it would be transferred to their larger display tank at night and eventually donated to an aquarium if not purchased. This image sticks in my mind and I respectfully caution all responsible aquarists to proceed with intelligence and compassion when making their purchases. Now that I have expressed my views, I will leave my soapbox and return to the back benches with my beloved canine.



A POCKETFUL OF PENCILS

An overview of some popular pencilfish
Nannostomus & Nannobrycon



Pencilfish are underrated! Peaceful, beautiful, usually available at reasonable prices, small, fairly hardy and a good community tank fish...so what's not to like?

by Tony Kroeger

In this article, we will look at six commonly available species in the aquarium trade. But first let's look at some general family information. Pencilfish are divided into two species groups, *Nannostomus* and *Nannobrycon*. Each group has several species in it, with *Nannostomus* containing the greater number of species.

All pencils come from the Amazon basin in South America. All are small fish, sizes ranging from 1½" inches to 2½" inches. 2" inches is an average size.

All pencils are shy, timid and peaceful. Never house them with boisterous fish like tiger barbs or hyperactive fish like zebra danios. In nature, they stay motionless between leaves, grasses, twigs, etc. floating in their water. In nature they eat small insects.

Being small fish, pencils do not need a lot of room. Dwarf species such as *N. marginatus* can be kept in nano tanks, but really I prefer to keep my pencils in groups in 20-gallon long tanks. Their coloration and behavior is much more natural that way.

Being shy, pencils always must have well planted tanks. Use floating plants to enhance their sense of security. I use anubius, crypts and sword plants with water sprite and duckweed floating on top. Use black sand substrate and black background and their color will really shine forth. Not the best jumpers, but cover their tank anyway

as species such as *N. espel* and *N. eques* can jump quite well if they want to. A small power filter or large sponge filter is fine for their needs.

All pencils prefer soft, acidic water with some tannins (from peat moss/extract) added. Keep their pH at 5.5 to 7.0, medium hardness. Temperature should be between 74° and 80°F. They will tolerate harder alkaline water, but will show much less color if kept in such water. What they will not tolerate is ammonia or nitrite. Keep their water quality high; change small portions of their tank water frequently to keep their water sweet and clean. I change 10% to 15% of their water two or three times per week. Never change more than 20% of their tank water at a single time. If you exceed 20%, you run a risk of putting your pencils into shock from which they rarely recover. Shock in pencils is usually fatal!

All pencils have small mouths and need small foods, micropellets, crushed flake foods, baby brine shrimp, tubifex, daphnia and other small high protein foods should be offered. They love live fruit flies as a treat and frozen daphnia will definitely help bring out their best colors.

Pencils shoal together in a loose school. Never keep any pencil alone. 4 to 6 is good, more is better. Pencils are very peaceful fish and mix well with other small quiet fish. They

This article originally appeared in the Brooklyn Aquarium Society's *Aquatica*

do especially well with neon tetras, black neons, lemon tetras and harlequin rasboras.

Some pencil fish have an adipose fin (between the dorsal and caudal fins) and some do not. All have very different night time (sleep) and daytime colors. The horizontal bands of day disappear at night and are replaced by vertical bands.

All species discussed here have been bred, but it is not an easy task. Most specimens offered for sale are wild caught.

To breed them you need very soft water 2°GDH, acid 6.0 pH water, a temperature of 78° to 80°F. Condition them on frozen mosquito larvae and live fruit flies. Use a 5-gallon tank per pair.

Cover the bottom with marbles or a screen and add Java moss on top of the marbles. Keep the light dim and their water level low (4" inches). Spawns are small - a few dozen eggs.

Adults are voracious egg eaters. Remove adults immediately once spawning is complete. Keep the tank dark and use a flashlight to search for glass silver like fry. Once you see fry (one to three days) gradually increase light and feed with rotifers and infusoria and baby brine shrimp after 10 days. Fry are light and water quality sensitive.

Now onto some popular species:

Nannobrycon eques



The original pencilfish! Up to 2 inches, commonly available at reasonable prices. Standard care. A pretty fish. Golden brown nape, gold stripe snout to tail, dark broad chocolate band underneath snout to tail, anal fin red with blue/ white edge, Pelvic fins blue/ white tipped on males only. Lower 2/3 rds of caudal fin chocolate/ red edged in black. Blue iris with black eye. Sometimes sold as black lined pencils. Healthy fish always swim tail down. Never buy one that swims head down, as it is sick.

Nannostomus espei

Barred pencil up to 1 1/2". Admittedly the rarest, most expensive and most sensitive of the pencils discussed here. You must look to find this pencil online or in stores. Highly seasonal and expect to pay when you do find it. Standard care, but hyperly sensitive regarding water quality. If your water quality drops, it will die en masse with no warning.

Very sensitive to light and water change shock. **This cannot be emphasized enough!** Do everything very gradually with this fish! Very sensitive to moving. Golden honey brown nape and flanks. White belly. Flanks adorned with 5 broad, irregular backwards leaning blotches. Random green metallic spangled scales overlay along flanks. Iris; silver/ orange top. eye black. A rare sensitive fish. Definitely not for beginners.



Nannostomus trifasciatus

Three lined pencil - stunning! I saved the best for last. Up to 2" inches. Seasonally available. Expect to hunt a bit to find this pencil. Reasonable prices. Standard care. Honey/ gold body. Two broad black horizontal nose to tail stripes separated by broad metallic gold stripe nose to tail. bright red large swaths on all fin bases extending out except for pelvic fins. Ventral and anal fins gold stripe has sporadic neon red incomplete overlay mid stripe area only. Neon red snout. Black eye. Black -lower, gold upper iris, brown topmost iris. This pencil is simply stunning!



Nannostomus beckfordi

Beckford's pencil. Usually available at reasonable prices. Standard care. Up to 2 1/4 " inches. A really pretty pencil! Milk chocolate body, broad nose to tail dark chocolate stripe, males have a broad red stripe above the dark chocolate one. Males nape overlaid in royal purple. Dorsal and caudal bases are bright red. Anal fin solid fire red. Pelvics broadly tipped neon blue. Iris gold, eye black. Swims slightly head down. A stunning fish!

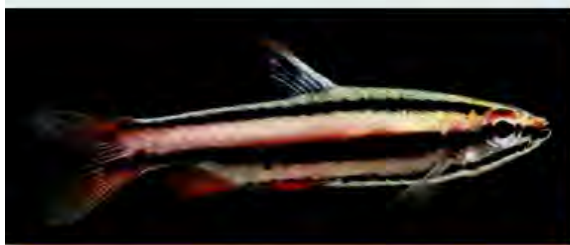


Nannobrycon unifasciatus



One line pencil up to 2 1/2 ". Seasonally available. Standard care. Green/ gold nape, broad black line nose through center of caudal fin, black edging on lower caudal surrounding diffuse red and white swath. Small black spot on upper caudal just above black stripe. Spot is surrounded with red on lower side, white on upper. Males have black anal fin tipped in white. Females have red and black anal tipped in white. Reasonably priced, but expect to look a bit to find this pencilfish.

Nannostomus marginatus



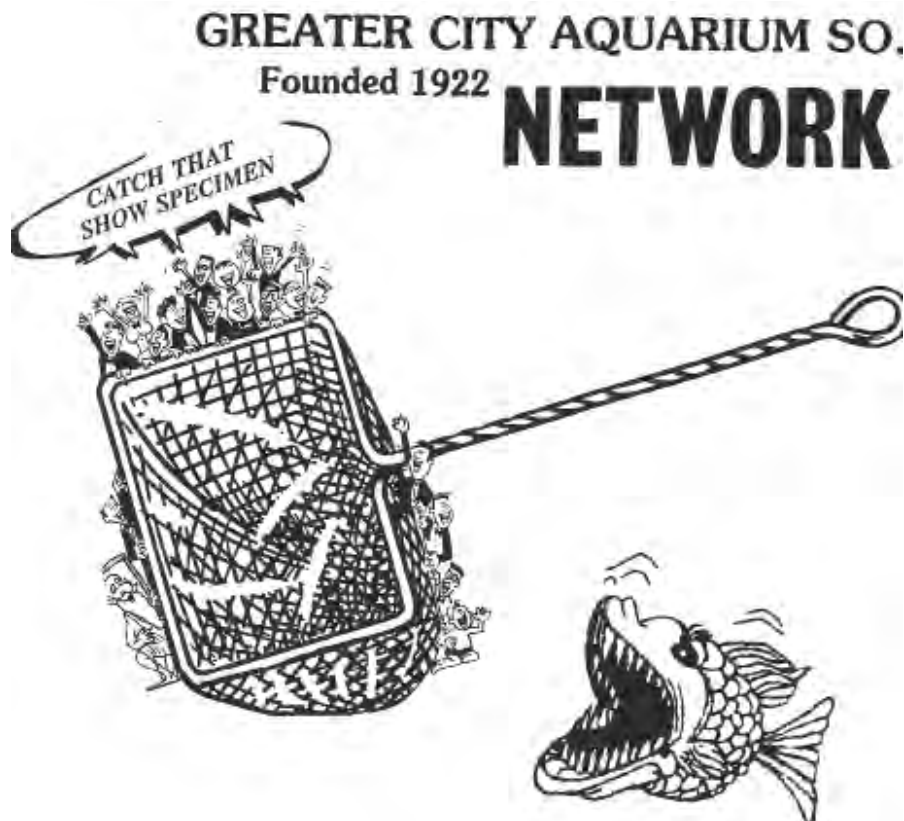
Dwarf pencil. Beautiful! Smallest pencil; up to 1 1/8" inches. Commonly available. Reasonable prices. Standard care. Greenish/ brown nape and flanks. White belly. Two broad longitudinal black bands nose to tail base along the flanks. Thin black edge around entire body. Neon red dorsal anal and pelvic fins. Dorsal and anal - thin black edge. Partial red stripe mid flank just before dorsal base.

One Final Note on Pencils

All pencils are very susceptible to ich. Do not chill pencils. Ich is usually fatal to barred pencils, *N. Espi*. Use all dyes at half strength, except methylene blue, chelated copper is the best treatment for ich in pencils. Pencilfish have much to recommend them. Try some! You'll be glad you did. Happy Fishkeeping!



Tony



Mekong Rice Killies

Oryzias mekongensis

by Joe Graffagnino

I was at the latest convention of the Northeast Council of Aquarium Societies in Connecticut, and had no intention of purchasing any new fish, since my aquariums were already very well stocked. As I wandered around, I came upon Frank Greco's sales table. Frank has the most interesting and rare fish that you will ever see. As I strolled around the table my eye caught something small flash by. It was a really small fish with a silver body; the male sports an orange-red coloration on its caudal fin. I had to ask, and that, of course, was my undoing.

Frank told me that this particular fish was commonly called the Mekong red lampeye rice killifish. They are found in the Mekong River delta in northern Thailand. The adult of this species doesn't get to be over a half-inch in size. There are approximately two dozen varieties of rice killifish. The nice thing about these fish is that they can live and spawn in aquariums as small as two gallons. All that is needed is a sponge filter and some java moss. Since these fish are really small, frozen baby brine shrimp works well for food (regular brine shrimp and daphnia are too large for them). They also thrive on live

microworms, vinegar eels, and crushed flake food.

When the female is carrying eggs, she carries them on her body. The eggs are slightly adhesive, so when the female swims through java moss the eggs rub off of the mother and attach to the java moss. The male fish follows closely behind and

fertilizes the eggs. At times I have seen one female carrying several eggs. The eggs are quite large for such a small fish, and they resemble clear to opaque killie eggs. As the embryo

matures, the egg darkens. Within a week the fry are free swimming. The parents ignore the fry, so you don't need another tank to rear the fry to adulthood. You can't ask for better than that in a fish!

The water parameters are basic, with the pH 7.0, GH of 3, and the temperature 78 to 80 degrees Fahrenheit. This is a great and unique little fish, and quite prolific once they get started. Because of their small size, I would maintain them in a species-only tank. Enjoy them, and share them with other hobbyists!



Photo courtesy of PlanetCatfish.com
This article previously appeared in *Aquatica*.

Aquarium Advice

That Never Reaches Beginners

by Joseph Ferdenzi

My life as an aquarium hobbyist began some 60 years ago. In that time I've learned a lot, but still have a lot to go. Thinking back on my earlier years and the many errors I've made along the way, however, imparts to me a special concern for the beginners in our hobby. I want them to succeed and find as much joy as I've obtained from this wonderful hobby of ours.

Experience has led me to observe that some mistakes can be avoided if certain simple ideas were communicated before the beginner sets up that first tank. Most of these ideas were not invented by me, but they are worthy of repetition. Some may be original, and I certainly delight in sharing those with beginners.

Let's start with the size of the tank. The myth persists that a small tank will be easier for a beginner. But except for the price, there is little merit in that idea. While understanding that our homes have space limitations, aside from that always acquire the largest tank your space and budget can afford. A larger tank is more forgiving if you should fall behind in maintenance, or if you should have a power outage, or if you or someone else should accidentally overfeed your fish, or if any number of other calamities should occur. A larger tank also gives you more choices as to what fish you can buy and in what numbers.

And speaking of numbers, a common syndrome that I often see befall beginners is what I refer to as the Noah's Ark syndrome. That is, two of everything! Do not populate your tank that way. Do some basic research before you buy a particular species. Some fish will only feel really comfortable in a group or school of their own species. This usually means at least five or more. Some fish, on the other hand, can be extremely territorial, and this is usually a problem with their own kind (something beginners might find counterintuitive).

Therefore, for these fish you either want only one, or a large group where the aggression can be dispersed. Even if you stick with only peaceful fish (the so-called community-tank fish), the two-of-everything approach will have your tank reminding observers of a train station at rush hour — creatures rushing about with no apparent relationship with each other.

A piece of equipment that I often feel beginners do not need is a heater. If your aquarium is going to be in the living quarters of your home or apartment and the ambient temperature is in the low 70s (F), most aquarium fish will do just fine. It's not that heaters are too expensive, it's just that they sometimes malfunction and literally cook your fish to death. Again, a little basic research will tell you which fish require high temperatures (such as Discus), and then by all means a heater is required.

Before you put a drop of water in your tank, or anything else for that matter, you must do two things: Place some sort of plastic covering on the cabinet or stand where your aquarium will go, and place a background on the tank. The first will prevent water from damaging the cabinet or stand, and the second will prevent your tank from looking unsightly. Once you have a background on your tank, you will no longer see all the wires and equipment that visually mar the appearance of the tank, and it will also make many of your fish feel more comfortable and look more outstanding. From the many photos I have seen of beginners' aquariums, I have come to the conclusion that many have just never heard of backgrounds or have never noticed that virtually every tank in the pet shop that they frequent has a background!

Speaking of placing items in your aquarium, be mindful of what you want to place in it. If you are going to place a lot of rockwork, place the rocks *before* you fill the bottom with gravel. For one, you do not want a lot of heavy rocks sitting on a particular piece of gravel so that it creates a pressure point that could give rise to



One of the author's tanks. Note the clear vinyl cover on the stand and the background that hides all the wires and equipment on the back of the tank

a crack. For another, doing this eliminates the possibility that one day you'll acquire a fish that likes to dig, so much so that your edifice of rocks will be undermined and come tumbling down like a house of cards, but with much more dire consequences.

All of your aquariums need a cover. Do not make the mistake of thinking you can do without one. Make one yourself if you think the one in the pet shop is too expensive. (Youtube has

dozens of tutorials on this subject). The cover prevents fish from jumping out, it prevents the evaporation of your water, it helps keep the heat and humidity inside the tank, it prevents foreign material from entering your tank, and simply put, you need a cover!

I hope that some of what I have told you here helps you. If it does, you will, in time, be helping me enjoy this hobby more!



How To Decorate Your Fish Tank In One Easy Step

Story and Photos by Stephen Sica

After Joe Ferdenzi gave a two-part mini lecture on “Natural Aquariums” in early 2025 at the Greater City Aquarium Society, I decided that there has to be an easier way, or at least a different way. While Joe’s presentation was about basic aquascaping techniques, I decided that an even simpler method might motivate aquarists who wish to develop a new artistic style. My primary qualification is that art must align with nature. If that is the situation, maybe all aquarium decorating methods are the same.



All or most aquariums are decorated with a combination of substrates, plants, rocks, driftwood and ornaments. Of course, the most important things are the animals, and how your decorations assist with their well-being. After your fish and other inhabitants, an aquarium should please the decorator first and then to whomever the aquarist decides to show his or her creation. Most of us keep fish tanks for our own pleasure and enjoyment. You may have one or more nicely decorated aquariums in your living room as furniture but most of us keep fish tanks because we just like fish. They enable us to have fun in many different ways, such as simply observing the fish, breeding them, decorating a tank in a natural or unconventional manner. Fish can give us pleasure in all sorts of ways.

As I become older, I try to make things simple for myself, if not by a finished product, then at least in my mind. With simplicity as my principle, I propose that all aquariums can become instant “show” aquariums with my “one easy step decorating technique.” Sometimes a step, easy or not, may have a few subdivisions, so bear with me.

I employ this method with my small aquariums because if you have lots of plants and not lots of fish, you probably only have to change two or three gallons of water every two or three weeks. I know that it is difficult at times not to have too many fish. I suppose that’s what having more fish tanks are for when there are so many spectacular fish in the hobby!

Now, here’s my scoop on how to decorate a fish tank. Some of the following does not fall into the “one step” concept because there is always preliminary work to be done—such as cleaning a previously used tank. Makes sense, yes?



I use my one step method for tanks that range in size from about three to twenty gallons. I especially prefer it for ten and fifteen gallon tanks, which is my preferred small tank. Some folks rate these sizes as nano-tanks but I like my nano-tanks to be less than ten gallons.

An initial step is to add a substrate and water. Now pay close attention to this part, or as I like to describe it, the very “first

step.” It involves live plants: fill up the rear of the tank with any or several kinds of java moss. The moss should completely cover the back of the tank or at least most of it. It will hide heaters and filters, as well as present a nice plant filled look with inexpensive and easy to grow plants under proper lighting, of course. Add medium to preferably large sized Anubias barteri plants to hold the moss in place at the back. As everyone knows, these plants should not be buried in substrate. I used to add a stone or rock here and there to help hold the moss back but after a while the



rocks would disappear in the growing moss and plants. I would forget that there were rocks in the tank and they would get in the way of siphoning the substrate. When I finally removed them, siphoning water became so much easier. Also, rhizome types of plants are often attached to driftwood, rocks, or other anchoring items but doing this may



complicate my one easy step plan. Employ your own preferences to please yourself.

While the primary plants to use are the two aforesaid types, I like plants, so I firm and fill up the tank with a few additional small fern or *Anubias* plants along the sides and mostly the front.

Lastly, I must admit that I have a submarine decoration in a fifteen gallon tank. I like to watch fish swim in, out and about it. Nonhobbyists who see this decoration think that it's cute. A few serious fishkeepers just take a quick peek. I like it because it reminds me of the war movies that I watched during my childhood. As they used to say in the movies, “Up periscope!”



A Downside To Fishing?

by Dr Rucha Karkarey



Populations of squaretail grouper face an uncertain future as new research shows fishing that targets their spawning sites is causing males to be repeatedly scared away from their territories during their short mating meet-ups. By fleeing for safety, individuals are losing valuable time to catch the eye and court female fish.

A study, led by scientists at Lancaster University and published in **Biology Letters**, shows that the impacts of fishing that targets squaretail grouper spawning sites goes beyond those fish that are caught, causing widespread behavioural change in those left behind.

These changes impact ability to reproduce. With disrupted mating, fewer offspring might be created, setting up potential long-term consequences for the survival of their population. Squaretail grouper gather at very specific spawning aggregation sites for a few days only a handful of times a year — during the new and full moons between December and March.

Male groupers arrive at aggregation sites a few days before new or full moons and establish mating territories to attract females, which they would normally defend vigorously from rivals. Females arrive a day before the new moon and fish will attempt to pair and spawn in synchrony with the moon's cycles before the females leave.

These gatherings at the spawning sites can be the only opportunities for these populations to reproduce. But fisheries, particularly spearfishing and hook and line fishing, which involve free-diving, have begun targeting and exploiting some of these gatherings intensively to guarantee catches while the fish are distracted.

India's Lakshadweep archipelago, situated north of the Maldives, has restricted access to protect the culture of its people and ecology. However, the opening of new fisheries markets has seen a sharp increase inishing at some grouper spawning sites around the archipelago over the last five years.

Aggregation densities at the studied fished site has plummeted by 70% in a decade, with fisheries targeting groupers all year round.

The marine scientists behind the research had studied some of these sites more than a decade ago, and first noticed a change in fish behaviour when attempting to replicate aspects of their earlier study.

“We discovered that we couldn’t film or study the fish as easily at the aggregation sites as we could in the past,” said Dr. Rucha Karkarey of Lancaster University and lead author of the research. “We couldn’t get as close to them — they would swim away as though we were predators. It was obvious to us that there was a difference in their behaviour, and we realised that the major thing that had changed in the decade since our previous study was the start of fishing at the site.

The researchers compared male squaretail grouper behaviour at fished and unfished spawning sites, as well as comparing with data gathered from their earlier studies of spawning sites.

They analysed fish fear responses by simulating a threat. Divers would swim horizontally towards spawning groupers to see how close they could get to a fish before it would flee, as well as the time it spent defending territory and engaging in courtship in the absence of a direct threat.

Although males who had already partnered with females at the fished site took greater risks (from potentially being caught by fishers) during courtship, fleeing later and returning earlier, the study found that single males at fished sites were twice as likely to flee and took two and a half times longer to return to territories than fish at unfished sites.

Fewer than half of the single males returned to their territories at the fished site, while two-thirds of unpaired males at the unfished site returned to their territories.

While escaping early can ensure survival for individuals, escaping too early may mean lost mating opportunities. Squaretail groupers

are a long-lived species, living up to 12 years, so researchers believe the behaviour change may result from fish individuals experiencing fishing.

“Our findings suggest that the stresses caused by fishing are making the fish more nervous and on guard,” said Dr. Karkarey. “In turn this is reducing the opportunities for single male groupers to find a mate and reproduce because they are being more vigilant and compromising territorial defence by fleeing. It also means that paired males, that are fitter and more successful at reproducing, are the ones being fished, which can have a consequence for the fitness of this population in the future. “If a spawning aggregation event only lasts for a short period of time then every hour counts.”

The researchers also found that male groupers at fished sites also spent significantly less time and energy aggressively defending territories from rivals.

The fish at the fished site traded aggressively defending their territories for fleeing. Males spent nearly ten times longer engaged in aggressive behaviour at the unfished site compared to their counterparts at the unfished site. Researchers believe this could be due to a number of factors, including females becoming less choosy in high risk (from fishing) situations, or bolder fish removed from the population by being caught by fishers, though this was not studied.

“Decreased aggression can hold significant evolutionary implications in mating aggregations, specifically through a relaxation in sexual selection, which could have implications for mate choice, population fitness and long-term resilience,” said co-author Dr. Sally Keith of Lancaster University.

Dr. Idrees Babu from the Department of Science and Technology, UT Lakshadweep, said: “This study is the first of its kind in these atoll reef islands, and the findings can play an important role in fishery resource management in this archipelago.”

Story Source:

Materials provided by Lancaster University.
Note: Content may be edited for style and length.

Journal Reference:

1. Rucha Karkarey, L Boström Einarsson, Nicholas A. J. Graham, Ibrahim Mukrikkakudi, Mohammed Nowshad Bilutheth, Abdul Riyas Chekillam, Idrees Babu KK, Sally A. Keith. **Do risk-prone behaviours compromise reproduction and increase vulnerability of fish aggregations exposed to fishing?** *Biology Letters*, 2024; 20 (8) DOI: [10.1098/rsbl.2024.0292](https://doi.org/10.1098/rsbl.2024.0292)

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Lancaster University. "Fishing is causing frightened fish to flee when they should flirt." ScienceDaily. ScienceDaily, 7 August 2024. <www.sciencedaily.com/releases/2024/08/240807122755.htm>.



GCAS Happenings

November Updates

A WARM WELCOME BACK TO RENEWING GCAS MEMBERS ARTIE MAYER AND KEN IP!

November's Bowl Show Winners:

1ST PLACE RICHIE WAIZMANN - BETTA
2ND PLACE HARRY FAUSTMANN - BLUE GULARIS
3RD PLACE RICHIE WAIZMANN - BETTA

UNOFFICIAL 2025 BOWL SHOW TOTALS TO DATE:

JOHN BUZZETTI	10	MARK SOBERMAN	5	HARRY FAUSTMANN	15
JOSEPH FERDENZI	19	RICHIE WAIZMANN	30		

Here are some aquarium societies in the Metropolitan New York area:

GREATER CITY AQUARIUM SOCIETY

Next Meeting: December 3, 2025

Holiday Awards Banquet

E-mail: GCAS@Earthlink.net

Website: <http://www.greatercity.net>

BROOKLYN AQUARIUM SOCIETY

Meets the 2nd Friday of the month (except July and August) at
7:30pm: New York Aquarium - Education Hall, Brooklyn, NY
11229

Call: BAS Events Hotline: (718) 837-4455

Website: <http://www.brooklynaquariumsociety.org>

LONG ISLAND AQUARIUM SOCIETY

Meets: 2nd Fridays (except July and August) 8:00pm. Meetings
are held at AMVETS Post 48, 660 Hawkins Avenue,
Ronkoncoma, NY 11779

Website: <https://ncasweb.thechinesequest.com/>

NASSAU COUNTY AQUARIUM SOCIETY

Meets: 2nd Tuesday of the month (except July and August) at
7:30 PM. Meetings are held at:

Molloy University - 1000 Hempstead Ave, Rockville Center,
NY, Barbara H. Hagan Center for Nursing, Room 239

Contact: Mike Foran (516) 798-6766

Website: <https://www.nassaucountyaquariumsociety.org/>



A Life In Fish - South American Biotope

by Jason Gold

Last time around, I recounted my research into assembling an accurate-as-possible Borneo biotope aquarium. And it was so much fun—definitely for me, and hopefully for you too—that I decided to have another go of it. But where to this time? Let's ask YouTube.

I really discovered YouTube thanks to the coronavirus. Before the pandemic, I'd used the site as a how-to source. An example from those Before Times, maybe fifteen years ago. My kids had a pair of Madagascar Giant Day Geckos, and one day I returned from work to find the door to their little biotope slightly ajar and one of them AWOL. Finally, I spotted the wily creature staring down at me from the room's crown molding. A YouTube video instructed me on how to use their natural instinct to climb up, always up, to get him down from the ceiling and back into his enclosure. And it worked, first time! Awesome!

But when COVID came to town, I was basically trapped in my apartment for a year and a half. Frightened, bored, and alone, my computer became my primary window to the world. I mean, my apartment does have regular windows, but the usually bustling view was devoid of people, perfectly still but for the march of days. It was then that I discovered the incredible free documentary series available on YouTube. I did not learn to bake bread or play the guitar or binge on "The Sopranos." Information was my binge, down one documentary rabbit hole and up the next. YouTube remains an incredibly positive part of my New Normal. So let's see what YouTube has to offer on the subject of biotope aquariums. As it turns out, a lot!

Borneo had been a natural first choice for me as a subject for biotope research. I first became interested—no, actually kind

of obsessed—with Borneo as a kid, learning about it as I devoured every page of every issue of TFH the moment it arrived each month. Land of Loaches, Realm of Rasboras, Home of Headhunters and orangutans and impenetrable jungles and blackwater rivers brimming with species previously unknown to science and the aquarium hobby. I was smitten. So, yeah, a natural first choice.

But other fish-y parts of the world had also lit me up. All those tropical jungle rivers like the Congo and Zambizi, the Ganges and Brahmaputra, the Amazon and Orinoco, the Río Negro and Río Xingu, the Irrawaddy and Salween and Mekong. The East African Rift Lakes. The Brazilian Pantanal. New Guinea. Madagascar. So many rivers and lakes and wetlands the world over! The niche-y global geography of our niche-y hobby!

Yes, the hobby hosts fishes from all those places. But a lot of the species we aquarists regularly keep then and now are from the tropical South American rivers: angelfish and discus and oscars and Apistogrammas, a ton of tetras, some of our favorite livebearers, and all of the cories and plecos. I want to learn about new places and new fish, but I also want to be able to include some familiar friends. This has to be a feasible undertaking. So let's head to South America. First step: I googled "Orinoco Aquarium Fish." I got way more than I bargained for.

Two of the top hits were YouTube channels "Below Water" and "Biotopia." Click. "Below Water" is from Oliver Lucamus, a Canadian aquarist, author, and frequent contributor to both Amazonas and TFH; "Biotopia" is from Tai Strietman, a British biologist, author, and aquarist. Many of their posts are examples of gorgeous biotope aquariums, often with an instructional preamble showing how they were set up. In most cases, these set-up's

focus on just one or two species of fish and plants. They're beautiful and inspirational and very Zen.

And yet the other posts, the ones that I found utterly magical, are the ones featuring underwater footage of actual, in situ, aquarium fish biotopes, mostly in Brazil. (There are other similarly terrific channels that focus on other parts of the world, too!) Some videos feature species new to science and rare or non-existent in the hobby. Others feature familiar fish in their natural environments—fish like Cardinal and Ember and Serpae Tetras, Bronze Cories, Rams and Discus, *Aequidens* and *Geophagus*. The images are so atmospheric and amazing, they'll totally mess with your mind. Seeing thousands of Ember Tetras (*Hemigrammus amandae*) schooling in a Brazilian wetland lagoon is seeing Ember Tetras as I'd never seen or imagined them before.

These show a much more complex community of flora and fauna. For example, the small schooling tetras always seem to gather in mixed schools, even if the members of each species stick closer to one another than to their other schoolmates. Because of the vast scale of the actual biotopes compared to even the largest home aquarium, yes, a single-species aquarium is an accurate snapshot, a slice of the habitat. But another approach is to try to approximate or sample a larger portion of the total community, in microcosm.

Many of the wild biotope videos are narrated, describing the places and fish and plants and their relationships to one another. Typically the smaller fish live in the shallows adjacent to some form of shelter—plants, rocks, roots, logs, overhangs, shadows—into which they can vanish when a predator approaches and where they sleep when the sun goes down. The specialists occupy the bottom (cories, darter tetras, dwarf cichlids, eartheaters) the cavities (plecos and other Loricarids), the surface (hatchetfish and killifish), or disappear against a camouflage lookalike (*Farlowella*). The larger fish, typically predatory cichlids and piranhas, swim in the more open water, skirting the shallows for stragglers to swallow. But even

they retreat to the sheltered shallows at dusk to avoid the nocturnal predators, the voracious catfish and rays and eels that own every night.

They also describe the water conditions, the plants growing there, the substrates, the seasonality. Some of the environments, such as the Xingu rapids, have no plants, only water-worn boulders, intense currents, and cool, super-oxygenated water. The fish tend to hang out behind, beneath, or within the boulders, facing into the current to catch anything tasty it brings. Or they have adaptations like sucker mouths or modified fins to be able to wedge themselves into crevices or stay put in the torrent and harvest what grows on the surfaces of the boulders.

Although these waterways flank the Equator, this part of the world experiences distinct wet and dry seasons. That's one thing all these South American biotopes have in common. When the rains come in August, September, October, trickles turn into torrents, the rivers breach their banks to flood the surrounding jungles and grasslands and all sorts of fish move into the new territory to feed and breed. Lucanus has videos of vigilant cichlid parents herding their young. Perhaps the most captivating is of discus breeding among the interwoven stems and branches of the flooded forests flanking the Río Negro, hanging their newly-hatched fry under a leaf or feeding older fry from the slime on their bodies.

These flooded environments also attract piscivorous reptiles, birds, and mammals. When the rains stop and the water starts to recede, fish that don't make it back to the main river channel in time are trapped and provide a feast for herons, caiman, and river otters. And every single biotope has significant water current, even the placid-looking flooded meadows of the Pantanal. It's not the intense flow of the Xingu rapids, but way more than we typically provide in our aquaria. When there's no current, it means the water isn't flowing anywhere, and when the water isn't flowing anywhere, the remaining fish are trapped. It can be in a vast meadow or in the rut left by a truck when a downpour flooded

the road. Yes, Strietman finds Ember Tetras in a tiretrack and Pike Cichlids in a puddle.

Other places are like designed, planted aquaria, so perfectly composed they look manmade, cinematic: the plants in perfect drifts, the fish in perfect schools, the sand and pebbles and logs and roots and sunlight just so. But most are dominated by just a handful of plant species that create a series of tiered conditions supporting a wide variety of fish to fill each niche, from surface to substrate, channel to bank.

On top of that, Strietman's narrations in particular are full of quiet wonder, full of awe, full of gratitude for being able to be in those places with those fish. Other times there's no narration at all, just atmospheric, New Age-y music. But my favorites are when he doesn't speak but narrates via captions. His words silently, almost poetically, add a personal, emotional punch to the already gorgeous visuals. They complement and complete the images, conveying the entirety of the experience and elevating it far beyond mere documentation. In some posts, he also provides insightful context regarding the people who live in these places, whether they're semi-nomadic hunter-gatherers, local fish collectors, wealthy landowners, or no one at all.

And then there are the fish!!! In addition to all those familiar aquarium favorites I've already mentioned, there were fish I'd never seen or heard of before or only seen in photos, not moving images. Gorgeous fish. Two in particular captured my aquarist's heart: the Lizard Tetra (*Iguanodectes geisleri*) and the Cupid Cichlid (*Biotodoma cupido*). The Cupids, in fact, are featured on both channels.

I'd seen the Cupids for sale from time to time on Wet Spot and checked them out on Seriously Fish and other sites. They're like an oversize version of the popular Blue Ram (*Mikrogeophagus ramirezi*). Maxing out at about 5", they are described as being so gentle that they can be kept in a large aquarium with schools of small tetras like Neons and Cardinals. They are, you see, earth-eaters by nature, more like filter feeders than piscivorous

predators. They sift through the substrate, swallowing the tasty bits and expelling the rest through their gills. And like other relatively docile cichlids, they prefer to live in a group except when breeding. Strietman encounters just one of these beautiful fish, and it is a magical interaction. He is in a seasonally-flooded cattle pasture, looking for wild Serpae Tetras (*Hemigrammus eques*). He sees one Cupid Cichlid. At first, it flees this huge interloper. In this part of the world, tall animals on two legs are usually wading birds looking for a fish dinner. So he stays still and waits. The cichlid returns, warily at first, but soon comfortable enough to start foraging in the presence of this strange biped, eventually sheltering by his legs. He doesn't pester or pursue the fish, and when it leaves, so does he, continuing his search for the tetras. But you tell he's totally choked up. His quiet respect for the dignity of this beautiful animal conveys his almost spiritual wonder at the encounter more than any words, his or mine.

Strietman focuses on the experience of traveling to and being in these beautiful places; Lucanus is much more documentary. He reels off the Latin names of all the fish and plants he encounters, which is incredibly helpful and, in fact, complementary to Strietman's approach. His Biotodoma encounter shows a pair guarding their nest—a clutch of about a hundred eggs that look about ready to hatch—and chasing off curious conspecifics. It's another sort of window into these fishes' lives in nature.

The Lizard Tetras are from another location, the lagoon full of Embers. I'd never seen or heard of Lizard Tetras before, and they are unlike any tetra I know. They're torpedo-shaped like a Nannostomus pencilfish or an Annostomus headstander, but with a blunt snout, and size-wise between the two. But what makes them so unique—and the reason they're called lizards—is that they are green. Neon green! With three thin longitudinal stripes along the lateral line, red on top, then gold, then black. Crazy gorgeous! I found them listed with the German wholesaler Aquarium Glaser and out-of-stock at Wet

Spot, so they must be imported from time to time, if infrequently. I'll be checking back....

These two fish instantly zoomed to the top of my Fish Wish List. But they're featured on separate videos from separate locations. So do they occur together—are they sympatric—making it possible to build a single biotope around them? Or are their ranges disjunct, requiring two separate biotopes? Seriously Fish provides a pretty good answer.

For the Biotodoma's geographic distribution: "Type locality is 'Río Negro and Río Guaporé, Mato Grosso, Brazil', the former located in Amazonas state, northwestern Brazil, and the latter a tributary of the Rio Madeira basin in Mato Grosso state much further south."

And for the Iguanodectes: "Recorded from the Ríos Madeira and Negro within the Brazilian Amazon basin, and upper Río Orinoco system in Venezuela.... Type locality is Río Jufaris, Igarapé de Paricá, Brazil, about 1°05'S, 62°10'W', which corresponds to a tributary within the middle Río Negro basin."

So it appears the ranges of the two fish overlap in both the Río Negro and Río Madeira basins. This is a broad enough overlap that I'm comfortable assuming the two fish sometimes share the same habitat in nature. And what about my newfound appreciation for the Ember Tetra? I'd always been unimpressed with them, but now I realized that I'd just never kept them in a large enough school. Plus, they and the Lizard Tetras were living together in the wild in that seasonal lagoon, so I know they're biotope-mates. And we have the first three fish of our South American biotope! That's a great start, but we have a ways to go. We need a few more fish to fill out the various ecological niches. For that we have both the You Tube videos and the info on sympatric species from SF. And then there are all the plants and hardscape, the lighting, the water conditions, and the seasonal changes.

What we're missing, nichewise, is a bottom-dweller and a surface-dweller. One of my all-time favorites is the Marble Hatchetfish (*Carnegiella strigata*). During the day, they spend all their time schooling by pecking order in the current—filter outflow,

powerhead, whatever—waiting for whatever morsels come their way. Their world is very two-dimensional, completely oriented toward the surface. But they're skittish little jumpers, so make sure their tank is covered. SF says they have "an enormous range throughout Amazonian Bolivia, Brazil, Peru and Columbia plus the Rio Orinoco system in Venezuela," so they're a shoo-in.

Cories are also widely distributed across tropical South America, but which of the zillions of species should we choose? Oliver Lucanus has a whole series of videos on the genus, plus another that goes through the reclassification of the Cories across seven genera. (By the way, an article about this on the Aquarium Glaser site argues that this is just the beginning, and further subdivisions of the Cory group are forthcoming....) Some of these novel beauties just aren't yet available enough in the hobby. Or they're very rarely available and therefore astronomically expensive. I went through Lucanus's Cory videos and noted any whose range overlaps with our target biotope area—nine of them. Four were listed on WetSpot, all out of stock, and all pretty pricey. But any of them could be a fit for our biotope: *Corydoras fulleri*, *Gastrodermus* (formerly *Corydoras*) *guapore*, CW106, and CW107, the last two still awaiting formal scientific description and naming. So let's keep our eyes peeled and our wallets ready for the next time one of these species finds its way into the aquarium trade.

Perhaps the most well-known of the South American aquarium plants are the Amazon Swords of the genus *Echinodorus* and their *Helanthium* cousins the Pygmy Chain Swords. There are hundreds of species, hybrids, and selected forms on the market, in a range of leaf sizes. Many species hybridize readily in the wild. The iconic, plain-old Amazon Sword of the hobby is *E. grisebachii* (*E. amazonicus* and *E. bleherae* in older literature). It is widely distributed throughout the tropical Americas, widely available in the hobby, and a great backbone plant for our growing Negro/Madiera biotope.

Many of the locations filmed by Streitman and Lucanus are jammed with plants. I think

the biggest surprise for me is that water lilies, genus *Nymphaea*, are everywhere. They grow from a tuber, their adaptation to the seasonality of the waters. The tuber goes dormant during the dry season, ready to burst back into growth upon the return of the rains. Streitman visits some of these habitats in both the wet season when the water is full of the arching lily stems and the dry season when the ground is littered with their resting tubers. *Nymphaea* lily tubers are available in little packets of three at Petco and other national pet supply stores, so that's an easy addition.

Also prevalent in the videos are various species of *Cabomba*. Under the intense tropical sun, these plants often take on gorgeous tones of red or orange. Again, *Cabomba* is widely available in the aquarium trade, so now we have a range of plants at all levels of the aquarium and in a variety of leaf forms and textures to appeal to our various fishy residents.

Then there's the substrate, and that depends on then geology. The Amazon watershed consists largely of sediments eroded off the still-rising Andes. The Andes themselves are geologically complex, with silica-rich continental rock, mineral-rich volcanic rock, and metamorphosed versions of both. As the mountains began to rise, a depression formed on their eastern flanks creating a vast inland sea that persisted for millions of years. So sedimentary rocks are also present, though over time many of those have been metamorphosed as well. But going back to the videos, the substrate most often mentioned is silica sand with iron-bearing pebbles and areas of exposed granitic bedrock. Areas or times of year with slow current may also result in a thick layer of organic forest detritus—twigs, branches, leaves—over the actual mineral substrate. The Rio Negro is famous for its blackwater, enriched with tannins as these organics decompose, and the Rio Madiera, though generally a clearwater river has many blackwater tributaries. So it would make sense to include organics such as dried leaves in our biotope setup. Most of the leaves, pods and branches available in the industry are actually from Southeast Asia, not

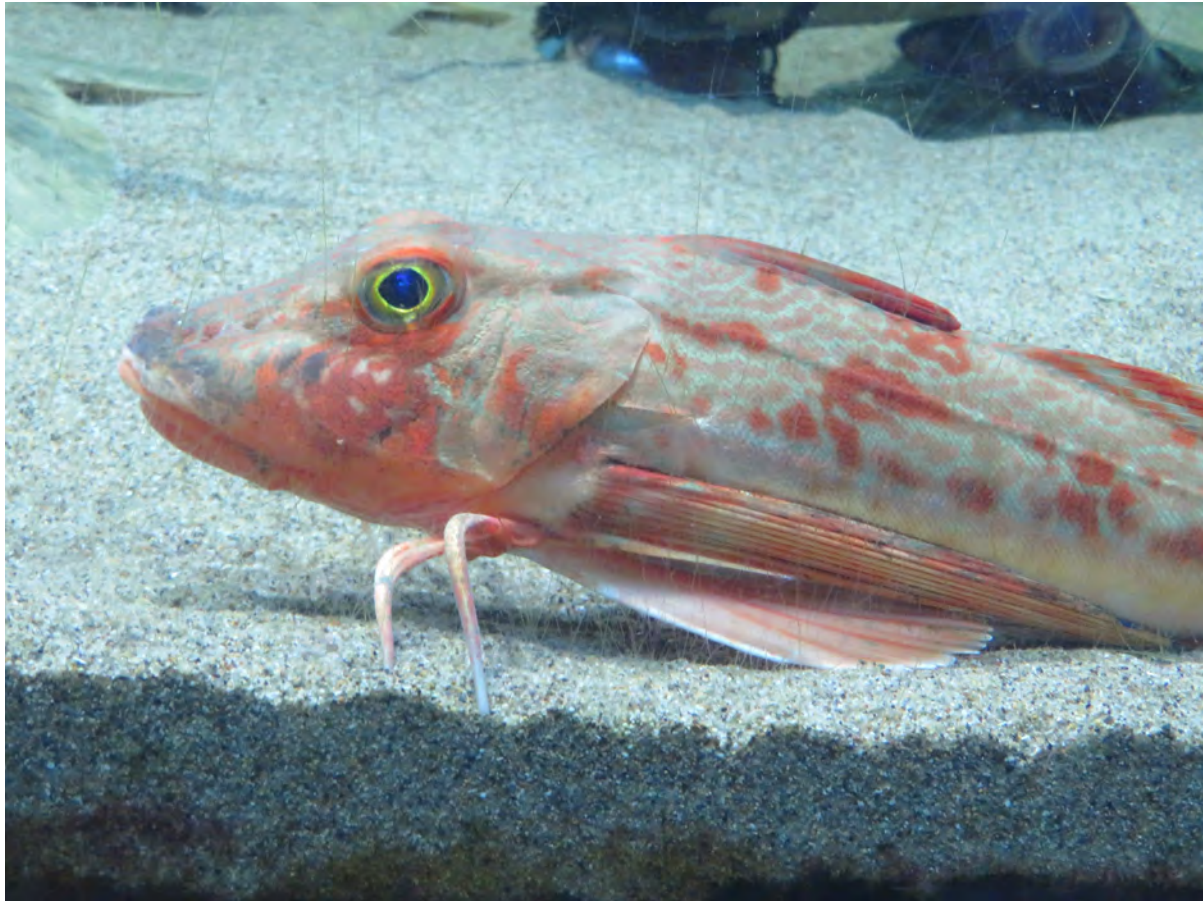
South America; however the internet is both deep and wide, and bettabotanicals.com offers botanicals specifically for South American biotopes such as dried casho, mango, and cacao leaves if you're looking for that degree of accuracy.

Finally, water chemistry. These fishes can be found in both backwater and clearwater sections of their home rivers. In either case, the pH will be on the acidic side, and the botanicals we've included can help maintain that. The water flow varies seasonally—not much current in a tiretrack—but whether the water is rising or falling, I was surprised at how strong the current was in both channels' in situ videos. Way more than we typically see with a filter outflow, more like what we see with a powerhead. And a power head with a flow rate appropriate to the size of your tank would definitely be a plus. This will also create the fast-slow gradient that seems to be a part of the picture in all except the most extreme dry-season environments.

And now a postscript. I started working on this a while ago, and since that time I've actually purchased groups of Lizard Tetras and Cupid Cichlids from WetSpot. I'd never seen the tetras listed, but when both they and the Cupids came up on the same New Fish list, it seemed like kismet. So those are now living happily in my big community tank. In my reassessment of Ember Tetras, I also started to build a nice-sized school. They're widely available, so I'd buy six at a time and now have maybe 30 of them, a group large enough that they really show off their jewel-like color. Plus, I've found Ember Tetra fry—five of them—among the watersprite, which has also fortified the school. I usually have a school of Marble Hatchets in my tank, and that remains the case. But my big community tank is not a biotope tank—there are also rasboras and gouramis and rainbows in there as well as lots Java Fern and Cryps. But just in case I ever have to room to set up another big tank, I'm already a long way toward my dream South American biotope. And hey, a big shout-out to YouTube for expanding our horizons as aquarists and in all things!



These Fish Use Legs to Taste the Sea Floor!



Sea robins are unusual animals with the body of a fish, wings of a bird, and walking legs of a crab. Now, researchers show that the legs of the sea robin aren't just used for walking. In fact, they are bona fide sensory organs used to find buried prey while digging. This work appears in two studies published in the Cell Press journal **Current Biology**.

"This is a fish that grew legs using the same genes that contribute to the development of our limbs and then repurposed these legs to find prey using the same genes our tongues use to taste food — pretty wild," says Nicholas Bellono of Harvard University in Cambridge, MA.

Bellono, along with David Kingsley of Stanford University and their colleagues, didn't set out to study sea robins at all. They

came across these creatures on a trip to the Marine Biological Laboratory in Woods Hole, MA. After learning that other fish follow the sea robins around, apparently due to their skills in uncovering buried prey, the researchers became intrigued and took some sea robins back to the lab to find out more. They confirmed that the sea robins could indeed detect and uncover ground-up and filtered mussel extract and even single amino acids.

As reported in one of the two new studies, they found that sea robins' legs are covered in sensory papillae, each receiving dense innervation from touch-sensitive neurons. The papillae also have taste receptors and show chemical sensitivity that drives the sea robins to dig.

“We were originally struck by the legs that are shared by all sea robins and make them different from most other fish,” Kingsley says. “We were surprised to see how much sea robins differ from each other in sensory structures found on the legs. The system thus displays multiple levels of evolutionary innovation from differences between sea robins and most other fish, differences between sea robin species, and differences in everything from structure and sensory organs to behavior.”

Through further developmental studies, the researchers confirmed that the papillae represent a key evolutionary innovation that has allowed the sea robins to succeed on the seafloor in ways other animals can’t. In the second study, they looked deeper into the genetic basis of the fish’s unique legs. They used genome sequencing, transcriptional profiling, and study of hybrid species to understand the molecular and developmental basis for leg formation.

Their analyses identified an ancient and conserved transcription factor, called *tbx3a*, as a major determinant of the sea robins’ sensory leg development. Genome editing confirmed that they depend on this regulatory gene to develop their legs normally. The same gene also plays a critical role in the formation of sea robins’ sensory papillae and their digging behavior.

“Although many traits look new, they are usually built from genes and modules that have existed for a long time,” Kingsley said. “That’s how evolution works: by tinkering with old pieces to build new things.”

The findings show that it’s now possible to expand our detailed understanding of complex traits and their evolution in wild organisms, not just in well-established model organisms, according to the researchers. They are now curious to learn more about the specific genetic and genomic changes that led to sea robins’ evolution.



Story Source:

Materials provided by [Cell Press](#). Note: Content may be edited for style and length.

Journal References:

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A Little Help

by Dan Radebaugh

Sometimes it all just gets to be too much. The water changes, the filter maintenance, making sure your fish aren't killing one another, paying enough attention to the fish who like to be paid attention to, etc., etc. So maybe it's time for a little help. Where do you turn? Well, maybe to someone whose presence you're taking for granted, but who might be willing to pitch in. Does anyone else in your household regularly pay attention to your fish?

When you feel your new apprentice is ready for some hands-on (well...) experience, water changes can be a useful and entertaining first step.



Fun and games with water changes is all very well and good. The enjoyable side of the hobby shouldn't be overlooked, and we don't want to scare away newcomers with too Calvinist an approach. Sooner or later though, the real work must be addressed. Filter maintenance can be complicated, so it's best to demonstrate first. Your apprentice needs to be able to see exactly what you are describing. Be sure and provide, simple, clear explanations. A little theory in the beginning is not a bad thing, but don't overwhelm your new helper with too many details. Do, however, be clear about the intended uses of the substrate!

Be nearby to give advice when needed, but don't baby your apprentice too much. Solo experience is a must!

If so, perhaps a little encouragement is in order. Start by encouraging their curiosity to study the habits and preferences of the species in your care.



This article originally appeared in the June, 2011 issue of Modern Aquarium.



As I'm sure we all remember, a first solo experience cleaning and re-assembling canister filters can be a bit stressful. It's only natural to want to grab a catnap afterward. In the end though, if your're diligent and patient in your teaching, your new helper will be confident and ready to pitch in again when needed!



Photos by Marsha Radebaugh



Pictures From Our Last Meeting

Photos by Marsha Radebaugh



Joe Ferdenzi and our speaker, Matias Garcis



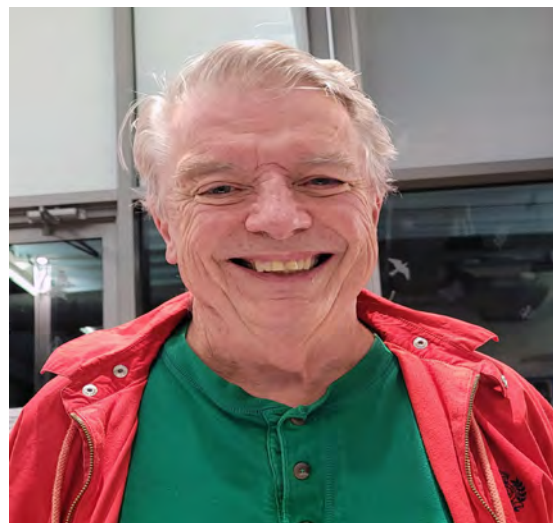
Some of the evening's auction items!



Bowl Show Entries



Another full house this evening!



New members Cody Adams and George Myers



Frank Tetro receives his door prize from Joseph Ferdenzi



Richie Waizman receives 3rd Place Bowl Show award from Bill Amely



Harry Faustmann receives 2nd Place Bowl Show award from Bill Amely



Richie Waizman receives 1st Place Bowl Show award from Bill Amely



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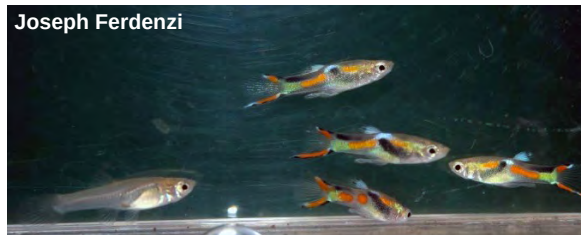
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Fishy Friends' Photos

by Greater City Aquarium Society's Fishy Friends

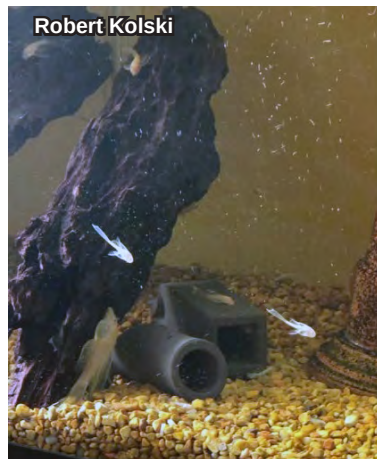
Below are photo submissions to our “Fishy Friends” Facebook group. I’ve left the subjects unnamed, but not the photographer. If you see a shot you like, and want more info, ask the photographer about it! I’m sure he or she will be delighted to tell you!



Joseph Ferdenzi



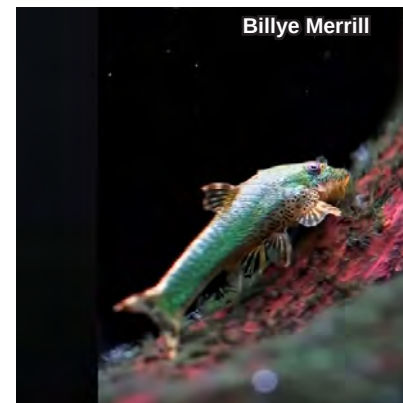
Vinnie Richie



Robert Kolski



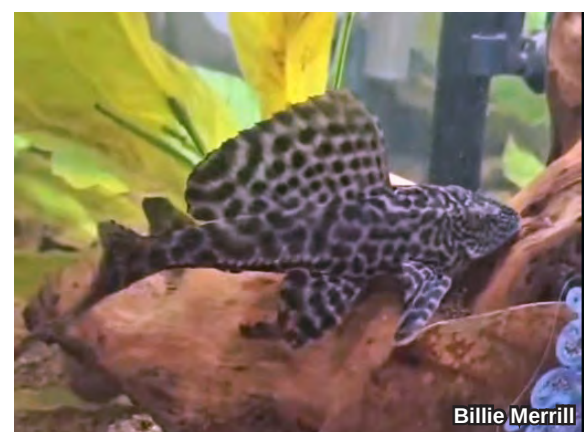
Kemaoine de Lavallade



Billye Merrill



Jan Sereni



Billie Merrill



The Night Before Christmas?

A series by the Undergravel Reporter

In spite of popular demand to the contrary, this humor and information column continues. As usual, it does NOT necessarily represent the opinions of the Editor, or of the Greater City Aquarium Society.

Twas the night before Christmans, when all through the tank Not a fish was stirring, not even for a pellet that sank. The ornaments were placed in the tank with care, In hopes that more fish would soon be there!

The children were nestled all snug in their beds, While visions of tetras and barbs danced in their heads; And mamma in her 'kerchief, and I in my cap, had just settled down for a long winter's nap, when out of the fish tank there arose such a clatter, I sprang from the bed to see what was the matter. Away to the tank I flew towards the crash, And turned on the light with a very bright flash.

The light scattered the fish with its blinding glow, Gave the lustre of mid-day to shiny fish below, When, what to my wondering eyes should appear, But a massive, gray, dinosaur bichir!

My tetras and danios started darting around quick--quick, I knew in a moment it must have been St. Nick. More rapid than trout my danios they came, And I whistled, and shouted, and called them by name!

"Now, Fishy! now, Finnaeus! now, Bubbles and Ray! On, Bob! on Squirtle! Let me see you're OK! To the top of the tank! To the side near the wall! Now dash away from that bichir! dash away all!"

As dry leaves that before the wild hurricane fly, When they meet with an obstacle, mount to the sky! So up through the tank those fish all swam, And I realized that St. Nick had left me in a jam!

Didn't Santa know anything about fish? A giant bichir with my danios, something no one would wish. As I reached for a net, and was turning around, Down the chimney St. Nicholas came with a bound!

He was dressed all in fur, from his head to his foot, And his clothes were all wet from his hat to his boot; A bag of fish he had flung on his back, He made the floors a mess with water dripping from his pack.

His eyes -- how they twinkled! His dimples how merry! His cheeks were like barbs, the ones that are cherry! His droll little mouth was drawn up like a cory, In a wry little smile like that fish named Dory!

The stump of ph test strips he held in his teeth, And the gravel siphon hung round his neck like a wreath; He had fish eyes and a little round belly, That shook when he laughed, like a bowlful of jelly!



He was chubby and plump, a right jolly old loach, And I yelled when I saw him like an angry football coach; "How could you put a bichir in with my danios you fool?" I knew to say that was naughty, but I lost my cool.

He spoke not a word, but went straight to his work, And scooped out the bichir; then turned with a jerk. And dropping a net into his wet sack, He drew out a footlong clown loach that fell in the tank with a smack!

I stared in wonder at the clown loach he had brought, No stores had ones half this size to be bought. When I turned back around he was already out of sight, But I heard him yell HAPPY CHRISTMAS TO ALL FISH LOVERS, AND TO ALL A GOOD-NIGHT!



Santa image from Yahoo.com

From The Pages of Yesteryear

Modern Aquarium

January 1971

Happy New Year

Ray Chas. Martin Dr. Arnold Bob Dave Don
Juschkus Elzer Jr. Burke Freed Fuchs Williams Sanford



Jack Herb Joan Marcia Nick
Oliva Fogal Fogal Repanes Repanes

from the staff of
Modern Aquarium





