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volume XXXII
number 4

Greater City Aquarium Society - New York

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Series III Vol. XXXII, No. 4, June, 2025

ON THE COVER

Our cover photo this month, from GCAS member Lonnie Goldman, features three beautiful Lake Tanganyika cichlids: *Neolamprologus brichardi* (top), *Neolamprologus tredocephalus* (middle), and *Neolamprologus leleupi*.

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from Joseph Ferdenzi	

From the Editor

by Dan Radebaugh

Each month in this column I talk about what's going to be in this issue. This month I'm not going to do that. Instead, I'm going to let someone else talk about something that has already appeared in a previous issue.

In the April issue of the Central New York Aquarium Society's **The Reflector**, Clifford H. Crain, in his Exchange Report, reviews Tom Warns' article, "How To Breed Cardinal Tetras (Without Even Trying!)" from the April issue of **Modern Aquarium**. He remarks:

"When Bill Newell visited my fishroom a few weeks ago, I told him the theme was "Failure," since fish that should be spawning are not doing so. Now Thomas Warns comes along and is getting regular spawns, and successfully raising the fry, of the notoriously difficult-to-spawn cardinal tetra.

OK, what's the story here? Thomas has a tank of discus (another difficult fish to spawn) that were, you guessed it, regularly spawning although not successful in raising the fry. He decided to give up and turn the tank into a community tank, adding a bunch of cardinal tetras. Then one day a batch of baby cardinals appeared and surprised him. He guesses the fry survived predation due to the very large size of gravel he used in the tank. The openings between the granules gave the eggs and fry a place to hide. The tank is also heavily planted, has been established for a long time, so it's loaded with micro-organisms for the newly-hatched fry, the water is extremely soft and slightly acid and warm. And food: "It also helped that I feed my discus a generous diet of brine shrimp, bloodworms and the occasional Beefheart and blackworms. The cardinal tetras patrol the bottom of the tank and catch anything the discus fail to eat towards the top. In other words, I was unintentionally conditioning my cardinal tetras for breeding."

The moral of this story? There are probably more than one, but one that comes to

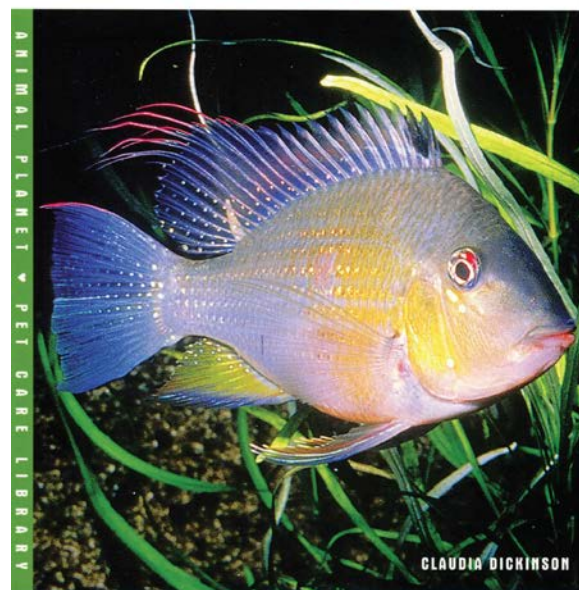


mind is that your (our) articles do have a wider reach than "just" our members. We are part of a larger community of "fish people."

So *do* share your knowledge and experience! If you have an article, photo, or drawing that you'd like to submit for inclusion in **Modern Aquarium**, it's easy to do! Just fax it to me at (877) 299-0522, email it to gcas@earthlink.net, or just hand it to me at a meeting. However you get it to me, I'll be delighted to receive it! Enjoy!



Aquarium Care of Cichlids



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	TBD
October 8	Cichlids with Livebearers
November 5	TBD
December 3	Holiday Awards Dinner!

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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>.

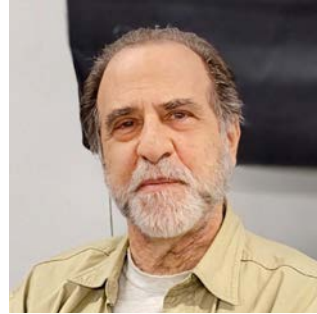
President's Message

Why do you keep fish?

by Warren Feuer

Several months ago, we decided that we are “fish hobbyists” and, for the most part, tropical fish keepers. That being said, the question remains, why fish?

For some, it may be a space consideration. When I first began keeping fish as an adult, it was largely because I wanted to have a pet that would meet the requirements of the apartment building that I lived in (no dogs allowed,) that I was not allergic to, as I had been to cats and would co-exist in my two-bedroom apartment with my wife and two children. Well, that's how it started for me anyway. I went to a Greater City Aquarium Society meeting and the rest is history.



Many keep fish for their beauty. The many amazing colors that can be found on marine fish make them truly desirable for hobbyists. That is not to say that freshwater fish do not possess amazing colors. I have a 125-gallon tank with Lake Malawi mbunas that contains dazzling yellows, blues, reds, oranges, and blends of white, black and orange (check out OB Zebras). Many visitors who come to my house and see the tank ask immediately if it's a saltwater tank. I recently added several tangerine-colored zebras that have added tremendous color pop to the tank. However, it's not always beauty. Not many would describe a bushy nose pleco (*Ancistrus* sp.) as beautiful. And yet these are among the most popular and ubiquitous catfish kept.

Keeping fish is said to decrease stress. There's nothing like watching fish swimming around in a tank. My 75-gallon tank has several different groups of South American tetras that swim around the tank singly or in groups, providing a serene viewing experience as they move about, sometimes interacting with conspecifics and sometimes just swimming end to end in the tank. With all but the tank lights off, sitting in a chair in my fish room, I find watching these two of my larger tanks fascinating and relaxing.

Many of us hobbyists keep fish for the challenge of breeding. While some fish are fairly easy to breed, and I recommend starting with them, I can say that one of the most rewarding experiences that I have had in the hobby has been the satisfaction of breeding several of the more difficult fish. I also get a little kick from the reaction of some people when I tell them that I have bred some of the “fancy” plecos that exist. So OK, I have a bit of an ego! Who isn't proud of their accomplishments? Creating and maintaining an esthetically attractive tank is something that many hobbyists enjoy doing. Mention the name “Amano” to any hobbyist and the typical reaction is how beautiful the tanks that this group creates are. Being able to create a beautifully landscaped tank or tanks of one's own, while probably not at that level, is nonetheless a rewarding experience and a reason to keep fish and fish tanks.

As our world propels itself towards ecological disaster, the ability to keep fish that are endangered in the wild becomes more and more important and necessary, and one of the most important assignments that we as aquarists can take on. Want to learn more? Check out the CARES Preservation Program spearheaded by our own angel, Claudia Dickinson at caresforfish.org. Of course Greater City is a participating club.

If you are reading this, you are a part of the Greater City community. The social part of the hobby has been incredibly rewarding to me and is very high on the list of why I keep fish. The people I have met, friends I have made, the travelling I have done and experiences I have had because of my association with the hobby of keeping fish have become a major part of my life. I have been able to successfully replace my work life with a fullness in life provided by the relationships I have made thanks to the hobby. Talking about my fish is a great ice breaker when meeting new people. People that I talk to are almost always fascinated by the fact that I have multiple fish tanks, and invariably will say that at one time or another they kept fish, almost always to pleasant memories. How many of you have heard this question: “Do you have any saltwater tanks?”

The hobby brought me to Greater City, which in turn has provided me with many of the above “reasons.” There are many more reasons for keeping fish, and each has its own rewards.

Beautiful, fascinating, relaxing, challenging, rewarding, inspirational, a social outlet, conversation starter/icebreaker, educational.... There are so many reasons to keep fish, and all of them great! And we are the lucky ones who get to realize as many of these as we wish!

Full disclosure—my President’s message this month was inspired by an article that I wrote that appeared in **Modern Aquarium**, volume 1 issue 1, titled “Why Do We Keep Fish?” That was in 1994, and what I wrote then still rings true to me. This is a fantastic hobby and one to enjoy. I’m extremely proud to tell people that I am the President of GCAS, and to represent our great club and the hobby.

Finally, some food for thought: On June 6th, the 81st anniversary of D-Day, the Allied forces landed in France to liberate that country will be observed. On that day 4,400 Allied forces died, among that total were 2,500 Americans. Please take a moment to think of, and give thanks to all the brave souls who paid the ultimate price for our freedom, something never to be taken for granted.



Warren



GCAS Thanks You!

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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

ODE TO A BUCKET

Story and Photos by Stephen Sica

I was lying in bed the night of February 25, 2025. It was actually the next day, since it was after midnight when we awoke after falling asleep on a downstairs sofa—Donna in the living room and I in the den. When we finally made it upstairs, I struggled to set the alarm for 6 AM so Donna could arise and make an 8 AM medical appointment at Elmhurst Hospital in Queens for one of her annual WTC Health Program evaluations. The staff of the specialized unit whom Donna has come to know over the years was abuzz with worries of losing their jobs, since the program is funded by the federal government.

In the darkness of that early morning our dog Cordelia was curled up on the landing just below the top of the stairs, breathing steadily and heavily while we lay in bed. Donna asked me if Cordelia was snoring or just breathing deeply. I replied that it was breathing but then reconsidered based upon the obvious fact that Cordelia was asleep, as well as my own history in these matters. I began voicing my reasons for Cordelia snoring but soon realized that my wife was asleep. Now I know another thing that I'm good at doing.

Feeling wide awake myself, I started imagining topics for **Modern Aquarium** articles. I was prompted to do this because our illustrious editor Dan R. had just forwarded to Donna a draft of the March 2025 issue for its initial proofreading. While proofreading my articles before forwarding them to Dan, Donna once told me that I was often able to make nothing out of something, so I tried very hard to think of new topics for future issues of the GCAS's award winning magazine.

I know that I do write stuff according to Donna's observations, so I figured that the opposite was possible too. For reasons that I cannot explain, I began to imagine that our dog Cordelia was of Polish ancestry, just like Donna. This silly premise soon failed to impress even me as an opening for a fishkeeping topic. Besides, Cordelia was rescued as a puppy from a shelter in Martinsville, Virginia. How many Polish puppies could possibly come from a small southern town? I decided to refocus.

I began to think about the fish in our basement. Picturing the large mess that I make with my twelve small aquariums and their related stuff,

my mind's eye came upon a visual of my small pile of plastic buckets. Maybe I could write about buckets, I thought. Before I could think about why and how, I fell asleep.

When I woke up later that morning I decided that anyone who has an aquarium must own and use a bucket, so what was the harm about writing a tribute to a bucket? Modern buckets are made from plastic. The last metal bucket that I owned was packed with sand, and I stored it in the garage. It was quite vintage. I think that it was used in fire safety and prevention to smother fires in or near a furnace. I only kept it because it was ancient. I have no recollection what happened to it. It might still be in the garage.

The big problem that I had with my bucket topic is that it must be self-evident to everyone how to use one in the tropical fish hobby. Now if you own several in various sizes like I do, then I'm sure that you can really start to get into buckets. By that I mean mentally and not physically. I'm beginning



Part of my bucket "collection"

to rethink buckets, but I have no choice since I chose this topic.

I believe that the universal size that is good for all jobs is five gallons. While I often use two or three gallon buckets to manually siphon my small betta tanks and for other small jobs, you have to be careful not to spill water on the floor. The bigger the bucket, the less chance for spillage.

I currently use a one gallon bucket to keep a few extra plants. Some duckweed covers the surface, with a wad of java moss beneath. I think that there is a brew of young plants mixed in so if I need a plant or something, I just stick in my hand and pull out a surprise! To keep the plants healthy, I extended an LED clip light over both a small betta tank and bucket of plants.

Another important use for the bucket is as a storage container for fish equipment, as well as other miscellaneous items. I fill up some of mine with siphons and their hoses, algae scrapers for glass, cleaners, all sorts nets, tank decorations, rocks and gravel. You can store a myriad number of items in a bucket. Just choose something and put it in a bucket!



I store substrate in buckets. The red one has rags and old dish towels that Donna gives me for fish use.



My favorite 5 gallon all-purpose bucket

If your fish-keeping space is small, a bucket can help keep your stuff orderly. Call it a round filing system. I'm sure that you will agree with me that a big problem is to find something when you truly need it. We must try to keep things from becoming lost, because when you go out and purchase a replacement, the next day you'll find the lost item. Also, sooner or later there is a good chance of losing the replacement and having to replace it again.

I also use a small bucket as a hand tool carrier for fix-it jobs around the house, both indoors and outside. Aside from using a bucket for siphoning, its most vital chore may be as a substitute fish tank. I recall springing a leak in an acrylic tank a few years ago. That very morning we were scheduled to fly somewhere, but the prior evening we had received a telephone voice message from the airline informing us that due to severe local weather all flights were canceled and were being moved back by one day. Who would think that a flight delay would be so opportune? I recall putting the fish in one bucket and plants in a second one while I fetched a spare twenty gallon tall tank from the garage to replace the leaky tank.

I had designed a small custom acrylic tank for our den. It was twenty-six inches in length and fifteen inches tall, but only ten inches wide to facilitate easy entry and cleaning. It held about seventeen gallons of water. I kept a school of small tetras in it that



Use a bucket for a plant repository or when you replace or upgrade a fish tank.

had sufficient space to swim to and fro. It was manufactured by an out of state company to my custom specifications. The tank only lasted three years before developing a leak.

Needless to say, I was extremely disappointed, but my emergency was overcome due to a flight delay, one spare tank and two buckets.

There are so many great uses for a good bucket! I venture to boast that it is one of the five or less most important fishkeeping tools, which is why I ask anyone who will listen to me, “What’s a good fish tank without a good bucket?”



Florida
AQUATIC NURSERIES





Paul standing in Joe's fishroom circa 1995

Dr. Paul V. Loiselle

1945-2025

A Personal Memoir

by Joseph Ferdenzi

When Paul passed away in April of this year, the internet exploded with shock and horror that one of the greatest American hobbyists was no longer with us. Of course it also paid many tributes to Paul, which included recitations of all his many achievements and his contributions to the aquarium hobby.

I have no desire to summarize all of that. Instead, I choose to write about the Paul I knew, the man who was my friend, and whose passing is a great loss to me (as it is to many others).

The mists of time have obscured my memory of my first meeting with Paul. It could have been 1985 when I attended my first American Cichlid Association convention. Or it could have been later, when in 1986 I became President of Greater City and also took on the responsibility of scheduling speakers for our monthly meetings.

Paul was certainly one of the first people who agreed to do a presentation at Greater City after I became President. But that was only the beginning of his support for our club. He would be a guest speaker many times thereafter, and would also serve as a judge at a number of our tropical fish shows. Paul's presentations were always top-flight, and I was so grateful that I could rely on having Paul as a guest speaker so frequently. Needless to say, he was much in demand at other clubs and at national events.

Almost always, when he was a guest speaker at our club, he would be coming straight from work at the New York Aquarium in Brooklyn (Paul lived in New Jersey). It was therefore a pleasure to have Paul at my home beforehand for a home-cooked dinner made by my wonderful wife Anita. Like me, Anita looked forward to those dinners because Paul told great stories and offered insightful comments on whatever you said. The range

of topics upon which Paul could speak was immense, and you constantly learned new things about history, nature, current events, and so on. Indeed, the running gag became that I was convinced that Paul knew more than I on every subject except for one—Italian!

His knowledge about cichlids was truly unsurpassed. Two incidents stand out in my memory. Of course they both revolve around cichlids.

The first involved a couple of friends of mine who went on a collecting trip to the Dominican Republic circa 1987. On that trip they caught about a half-dozen juvenile specimens of an obscure cichlid that was then known as *Heros hatiensis*. My friends, not being cichlid enthusiasts, asked me if I would take them, and I did. Even though I had an extensive library, I could find absolutely nothing on this fish (remember, there was no Google back then). So I decided to call Paul and ask him where I could find any reference material on this cichlid. Without missing a beat he gave me the name of a book (written in English). I bought the book, and there it was! Many months later when he was at my house, I showed him the three sub-adult individuals that had survived and were then housed in a tank with three compartments. I asked him if he could tell what gender they were. He looked at them carefully and then very authoritatively said that the fish in the left compartment was a male, and the other two were females. Now mind you, these fish were not fully mature, and he never removed them from the tank for examination! Also, these were cichlids that nobody in America had at the time, so I doubt he had seen them elsewhere. About six months later, when I got a surprise spawning, wouldn't you just know it?! The genders were just as he had said! When I told Paul about the spawning, he encouraged me to write an article, and so I did

(first appearing in the journal of the American Cichlid Association, and then later in **Tropical Fish Hobbyist**). That was Paul—a helpful and encouraging friend all rolled into one.

The second cichlid episode was equally wonderful for me, if a bit more comical. One day, on a visit to Paul at the New York Aquarium, he mentioned that he had just brought back a new cichlid from Panama. He rattled off the Latin name, and told me that he wanted to give me some.

Now, two things about that are worth highlighting. First, Paul always treated people with respect, in that he was the antithesis of a condescending person. No! He always spoke to you as though you were his equal, which of course I was not. So he rattled off the Latin name of this new fish as though I would know what he was talking about! Second, all my brain heard was that it was a Central American cichlid, which generally have a reputation for being aggressive. I didn't say anything, but frankly, I was hoping he would never get around to giving me the fish. Well, months passed, and I figured he had forgotten, when on a visit to his home and just as I was about to leave, he presented me with a group of four! Little did I realize what was about to follow!

Many months later, a pair of them spawned. Like a new 'Daddy' who calls 'Grandpa' to tell him about the birth of a child, I immediately phoned Paul to tell him the news. Paul was congratulatory, and in a voice that was calm and dispassionate, he informed me that I was the first person he knew who had spawned this new cichlid. In my brain that news exploded! Really? A first? Paul went on to explain how he knew that, and again in his typical style strongly encouraged me to write an article about the spawning. So I did. The cichlid was then known as *Cichlasoma nanoluteus*, and after my article appeared in the journal of the American Cichlid Association, I was inundated with letters from hobbyists who wanted to purchase fry. Of course, because I had a monopoly on the fish! This story once again illustrates Paul's unselfishness, his encouragement, and his foresight.

Speaking of unselfishness, I recall another time when Paul and I were working on an article about keeping and spawning a particular species of killifish from Madagascar. Paul knew more about killifish than I did, and he certainly knew more about the ones from Madagascar. In addition, he was the Curator of Freshwater Fish at the New York Aquarium. Yet after we had completed a draft of the article he offered to make me the lead author of the article! Wow! What an honor! But I knew I was not going to let his kind offer get the better of my judgement, and when the article appeared in the journal of the American Killifish Association, Paul was rightly the lead author. But I would never forget his generosity.

Over the many years of our friendship, we continually exchanged favors in the way that friends do. Each of us was happy to help the other when we could. One example occurred when Paul asked if I would translate his text into Italian for a presentation (via Zoom) to the Italian Cichlid Association. I was, needless to say, thrilled to do so, and because of Paul I now have a bunch of cichlid buddies in my native Italy.

The last conversation I had with Paul was by phone several months before his untimely death. Paul was now retired from the New York Aquarium and living in New Jersey. Of course Paul was actively involved with his local fish club, the North Jersey Aquarium Society. Indeed, he was their speaker chairperson. So our conversation was about clubs, how to do this and that, and other hobby topics. Never did I imagine that was to be our last conversation.

Paul was a very unique individual. He was a world-renowned scientist and a very active and prominent hobbyist—such a combination is exceedingly rare. That he was my friend made him all the more special.

If you are ever looking to donate to a worthy charity, please remember the Paul V. Loiselle Conservation Fund of the American Cichlid Association. I for one would welcome supporting his legacy.



Neocaridina Davidi

(aka Freshwater Shrimp aka Neos)

by Larry Thompson

Originating from Taiwan and southeast Asia, Neos have quickly spread across the world. Long a popular water pet, which I have seen personally spread throughout the market, They attract people who are not interested in fish. (Yeah, I know, they're weird but do exist.) Here are some facts, pros, and cons to the freshwater shrimp.

Freshwater shrimp come in a large variety of color morphs but are green/brown in the wild. Neos feed on a variety of microscopic life and are omnivores. They provide an important between tiny and larger organism in their food chain. They tend on the small size of an inch to inch and half. Males are smaller and skinner while females are larger and with wider tails for carrying the egg sack aka "Saddle." Eggs can be watched developing in the Saddle. Breeding



starts around the 2-month mark. Broods are 20 to 30 young in size and take about 2 to 3 weeks to develop. Lifespans are around 2 years depending on temperature of water.

Pros: Easy to get a colony started. Neos tolerate a large parameter range. Common varies are inexpensive and easily found across the hobby sources. Rare/weird variants exist to spark renewed interest. Peaceful and tolerant, to the point they can be placed with fish eggs to be cleaned off, Neos are welcome in a large range of community tanks and ponds. They are little vacuums eating the uneaten food and detritus adding a food layer to tanks without the limit(less)s of snails.



Cons: Tolerating a large range of parameters, Neos have become invasive across the world in natural water systems. Yet, tank crashes do happen still from their tiny delicate systems. Hard to net out due to small size and "big" jerking behavior. Neos are small to the point of easily predated by larger organisms, aka tank mates, especially young. They are also predated from organism which won't affect fish (looking at you Planaria worms). Requires a high amount of culling to keep colors consistent yet also affected by inbreeding.

Love them or hate them, Neocaridina have made a splash in the aquarium hobby spreading around the world. They provide some unique pros and cons to the water pet hobby. And generally popular to the point to have appeared in every Lancaster Aquarium club auction over the past year.



References:

Influence of the ornamental red cherry shrimp Neocaridina davidi (Bouvier, 1904) on freshwater meiofaunal assemblages

<https://www.sciencedirect.com/science/article/pii/S0075951116300354?via%3Dihub>

FISHES ON THE WEB

Striking new moray eel discovered in Central Indo-Pacific river mouths, named after god of the underworld



The Hades's snake moray, a unique species found in dim, muddy river mouths, has been discovered and named for its underworld-like qualities, including its dark coloration and burrowing behavior. Originating from the Central Indo-Pacific, this species stands out for its adaptability to low-light and turbid environments, sparking intrigue among scientists who stumbled upon it while seeking another eel species.

Photo above shows a female *Uropterygius hades*. Image credit: Dr. Wen-Chin Huang

<https://www.iflscience.com/strange-new-species-of-moray-eel-named-after-hades-god-of-the-underworld-77448>



Florida
AQUATIC NURSERIES



Borneo Biotope

by Jason Gold

Part 1 of 2

When I was in college in the late '70's, the world had not yet become so digitized. Research for, say, a paper—and there were a lot of them, maybe ten per semester—meant physically going to an actual library with actual books, rifling through a card catalog arranged by the Dewey Decimal system, then heading into the acres of stacks. I spent many, many, *many* hours sitting on the floor of some aisle in the main library or the architecture library going through book after book on whatever subject I was researching. The only computers on campus then were in the School of Engineering. I literally never set foot in the E-Quad

my entire four years there, not even to use the word processors. Instead, I typed up the results of my library research on my Smith-Corona Coronamatic. But I definitely learned how to immerse myself in some arcane topic I found inexplicably fascinating and assemble what I learned into some sort of coherent narrative.

In fact, those papers in many ways retraced the research process itself. They told a tale of personal discovery, but in the impersonal third person. The arc was always the same. Start with the general and obvious and move to the specific and obscure. Show how one fact or find or

insight leads to another...and another. Be willing to change course if that's where the facts lead you. Move toward the most surprising and detailed things you learned as you dug deeper and deeper. Then connect the dots, and you're done. The paper was the record, but the research was the reason.

The means to do all this have now changed. Google has replaced the card catalog, and the dozens of open windows on my laptop are now like the piles of books collecting next to me on the library floor. Instead of Dewey Decimal, there's The Algorithm, which remembers what I'm interested in and provides suggestions with an accuracy bordering on the creepy. I can

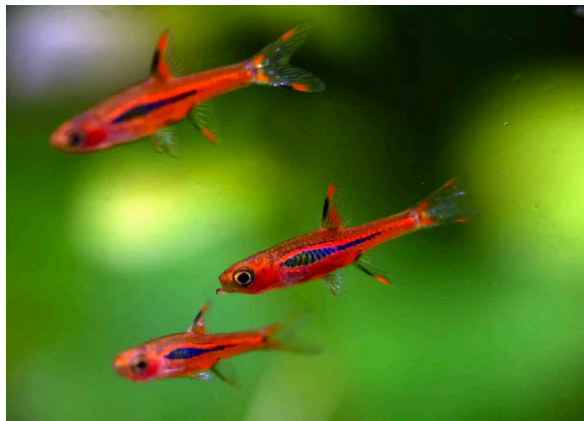
now copy and paste what I find rather than feeding nickels into a Xerox machine to squirrel the precious info back to my dorm room and my trusty Smith-Corona. But the basic approach is the same.

My last installment in **Modern Aquarium** was about my "Borneo-ish" tank. Which got me thinking, inexplicably fascinated with an idea: what if I wanted to do a serious Borneo biotope aquarium, no "ish"? As in, all the fish would be species that actually meet in nature. They'd swim among the same plants, over the same substrate, between the same rocks and roots and branches as in their home waters.

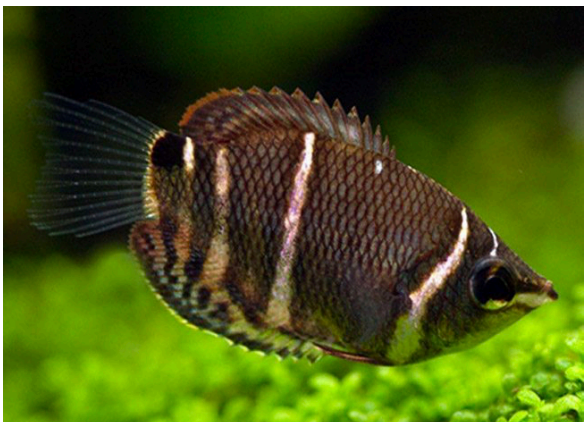


The water chemistry would be the same, too. And would it be possible to even replicate the natural daily and seasonal environmental rhythms without enlisting enough equipment to rival a public aquarium?

One thing I definitely would not be replicating would be the full web of predator-prey relationships. I mean, what's the point of obtaining a school of some obscure Rasbora or a colony of rare *Parosphromenus* licorice gouramis only to have them disappear down the maw of a Forest Snakehead, however true to nature? Nature may be red in tooth and claw; a home aquarium, not so much. There are going to be some concessions along the way, and there's the first one. I'll only include fish that won't eat one another. Which brings me to a personal preference: I want this to be a biotope *community*. I want to see the fishes interact not only with their environment, but with one another. I want fish that occupy various niches and



Boraras brigittae (Chili Rasbora)



Chocolate Gourami (*Sphaerichthys osphromenoides*)

practice different lifestyles. I want to build an interactive, aquatic lifeweb.

OK, we've established that nothing's gonna eat our fish. But what about the downstream side of the predator-prey web? What would our fish eat? In Borneo and just about everywhere else, small freshwater fish eat a lot of mosquito larvae. Not something I'd recommend culturing at home. Or other aquatic invertebrates they might find such as *Daphnia*, other crustaceans, and worms. They'll pick on leftovers from larger predators' meals. As we all know all too well, they'll feast on fish eggs and fry, even their own. They'll snap up insects and seeds that fall from above and suck up worms from the substrate below. Relatively few fish actively eat plants, though many will graze on the film of microfauna that covers the leaves and rocks and everything else underwater. They certainly never come across a sudden shower of TetraMin flakes or Sera granules. So unless you have an endless supply of live mosquito larvae and *Daphnia*, we're gonna have to make a second concession here. Live food is best and closest to nature. Whenever possible, frozen food is next best, flakes and pellets only in a pinch.

To me, the centerpiece of any tank is the fish. I'll give myself a running start. In my last piece, three of the fish I mentioned are native to Borneo: (in order) the Chili Rasbora (*Boraras brigittae*), the Chocolate Gourami (*Sphaerichthys osphromenoides*),



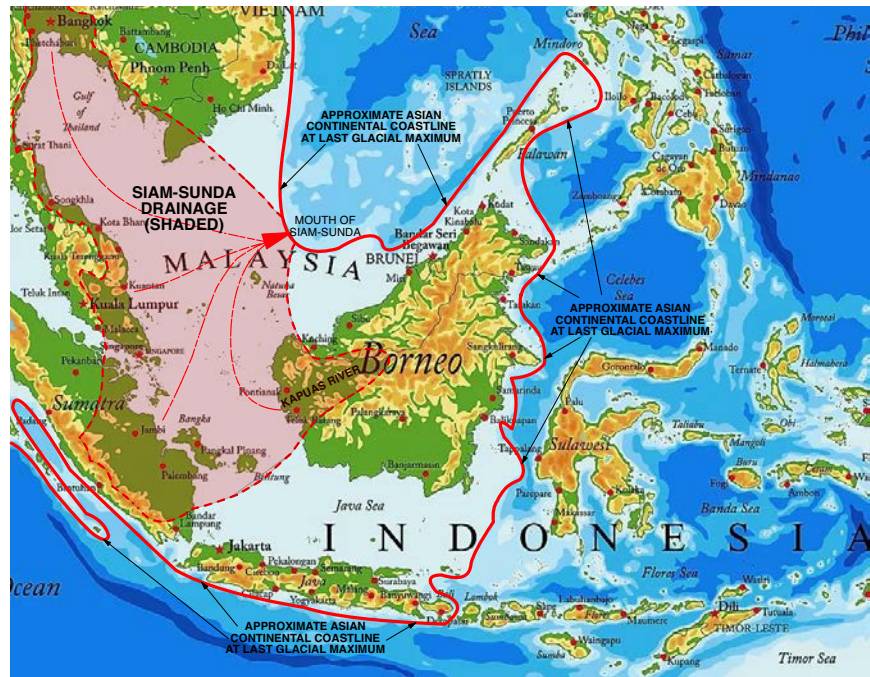
Vaillant's Chocolate Gourami (*Sphaerichthys vaillanti*)

and Vaillant's Chocolate Gourami (*Sphaerichthys vaillanti*). All three are occasionally available at our better-stocked local aquarium stores, the rasboras more often than the two gouramis. Let's pull **seriouslyfish.com** ("SF") out of the virtual stacks. They list info about thousands of aquarium species, including each fish's range, biotope, and lifestyle. And sometimes they also mention sympatric species, that is, other species sharing that range and biotope. Gimme a sec....

OK, here's what I found on Seriously Fish: For the Chili Rasbora: It "appears to be endemic to southwestern Borneo. The type locality is 'Bandjarmasin', a port town in the Indonesian province of Kalimantan Selatan (South Kalimantan), and...its range extends westwards as far as the Jelai Bila river basin, near the town of Sukamara, where it is said to occur sympatrically with the congener *B. merah*." Hmm. Nothing about sympatrics except *B. merah*, the Phoenix Rasbora, which is quite similar to *B. brigittae*.

For the Chocolate Gourami: "This is by far the most widely distributed species in the genus, being native to much of Peninsular Malaysia, Sumatra, and Borneo. In the latter records exist from throughout the Malaysian state of Sarawak and Indonesian province of West Kalimantan."

And for Vaillant's version: "Type locality is the village of Nangah Sebroeng, which lies south of the Danau Sentarum National Park within the upper Kapuas river basin, West Kalimantan (Kalimantan Barat) province in the Indonesian part of Borneo. It appears to be endemic to the



Kapuas drainage, where it's also been recorded from the Danau Sentarum lake system itself as well as further downstream near the city of Sintang."

Heading to Google Maps, I can see that the Chocolate Gourami's range overlaps with both the others', but the others don't overlap one another. The broad range of the Chocolate Gourami is going to make this job easier, so let's stick with that and the Chili Rasboras, if only because they're so tiny, red, and cute. Their ranges overlap at the Jelai Bila River, which is the border between West Kalimantan and Central Kalimantan, two of the provinces of Indonesian Borneo. (The northern third of Borneo is part of Malaysia, with a notch taken out of the coast for the Sultanate of Brunei. The rest of the island is part of Indonesia.) So the Jelai Bila is now our geographic focus.

Wikipedia has a list of "Freshwater Fishes of Borneo" that could help. But Borneo is a big place—the third largest island on the planet after Greenland and New Guinea. Just knowing that a fish is from Borneo doesn't mean it consorts with every other fish from Borneo. It's got to be from the Jelai Bila. There are only 68

fish on the Wiki list, although other sources say there are at least 340 and possibly upwards of 600 species of freshwater fish native to Borneo. We're only going to need maybe five or six compatible species to build our sympatric community, so it warrants a look.

There are a ton of *Rasbora* species, only a couple of which I've even heard of and only one of which I've ever seen live, the Clown Rasbora (*R. kalochroma*). In fact, I have four of them in my 75-gallon display tank and would love to get more! They're awesome, but they're swift, avid feeders and probably big enough to chow down on their tiny Chili cousins. Too bad, because according to SF, their range includes the Jelai Bila. In addition, I note that the Wiki list doesn't include any *Parosphromenus* species—the licorice gouramis. Because my mind is a trivia junkyard—more like the dogeared periodicals than the relentlessly organized stacks—I happen to know that some of those species are also native to Borneo. So I'll check out The Parosphromenus Project site as well, which includes in-depth info about every known species of Licorice Gourami. I won't relate every detail of the journey—this might be a fish story, but it ain't Moby Dick—but if you give me some time, I'll come back and tell you what I learn out there....

I did find a few fish that are documented from the Jelai Bila river system: Chili Rasboras, Chocolate Gouramis, *Trigonopoma gracile* (another rasbora), and two Licorice Gouramis, *Parosphromenus linkei* and *P. opalios*. But I kept on coming across references to the Kapuas River. (Note SF's range info for *Sphaerichthys vaillantii*, above.) Back to the map.



The Kapuas is north and west of the Jelai Bila, in West Kalimantan. There's a long Wiki article devoted to the river, and Google also led me to a nerd-ly gem, a 2025 article from **The Journal of Paleobiology** called "Paleodrainages of the Sunda Shelf detailed in new maps." It's way more interesting than the title lets on. And did I ever mention that I totally LOVE maps? And anything "paleo." And anything "Sunda." I learned that the Kapuas is not only the largest river in Indonesia, but also was once part of the much, much larger Siam-Sunda River that flowed through what's now Borneo, Java, Sumatra, peninsular Malaysia, and Thailand when they were all part of the Asian mainland during the last glacial maximum—just 26,000 to 6,000 years ago. (Side note: that's the same Ice Age that created Long Island.) Pretty recent in evolutionary time and the blink of an eye in geological time. Back then, with so much of the Earth's water tied up in glaciers and ice caps, sea level was as much as 400 feet lower than today. This exposed the Sunda Shelf and connected on

dry land what are now mostly islands and peninsulas. The present-day Kapuas is an isolated fragment of the once-great Siam-Sunda. And because it served such a large area of tropical rain forest and savannah that supported enormous biodiversity—akin to the Amazon and Congo today—its remnants are now species refugia for the many lifeforms that once occupied this huge river system. In other words, there's a ton of different kinds of fish in the Kapuas. So...change of plan.

The Kapuas has three distinct zones. The headwaters consist of small, steep clearwater jungle streams with high flow rates and high oxygenation. They're home to one of the current darlings of the hobby, the Hillstream Loaches, adorably chubby little flounder wannabes. In the coastal plain, the Kapuas flows through lowland rainforest, though all too much of that has been lost to sugar palm plantations. Here, it's wide, meandering, braided, muddy and, as one approaches the sea, increasingly brackish and rimmed with mangroves. Mudskipper Central. In between are jungle tributaries, some clearwater, some blackwater, depending on the local geology and vegetation, all feeding into the ever-widening main river channel. And although the rainforest flora change from zone to zone, what they all have in common is a closed canopy. The leaves of the tallest trees meet and mingle, preventing much of the sunlight from reaching the forest floor and the small rivers, streams, and wetlands that run through it. Shady spots will be a must in our Kapuas setup.

The Kapuas watershed straddles the Equator and has no distinct seasons. So much for that public-aquarium-scale mechanical system! The sun is up for 12 hours each day, every day, so we'll set the timer on the lighting accordingly. And it rains, a lot, all year long! That's one of nature's ways of doing a water change, and tells us what sort of upkeep is going

to be required. In all three zones, the river frequently floods during the tropical downpours. The overflow creates a series of large lakes in the headwater region, the Kapuas Lakes. (Note that this same lake system is called the Danau Sentarum in the SF info on *S. vaillantii*, above, in reference to the national park in which it's located. Sounds like another great biotope aquarium project!) These sudden infusions of rainwater can temporarily alter the local water chemistry, especially in the more extreme blackwater regions. In other words, whatever the chemistry of the water in the river/swamp/tank, the rainwater coming in will be pH neutral and dH zero. (Can I hook up a reverse osmosis contraption to my kitchen sink? I think not, so here we have another concession. NYC tap water, fresh from the Catskills, will have to do. Luckily, its chemistry is pretty close to rainwater's.) The larger regional climate is tied to the El Niño cycles, with wetter or dryer years depending on that global oscillation.

And what of Borneo's geology and vegetation? That's gonna be in a totally different part of the stacks. Maybe I can grab something to eat while I head over there....

It turns out that Borneo is a patchwork of different geological processes. It sits on the Sunda Plate, which mostly, but not always, moves with the adjacent Eurasian Plate. But with actively moving plates at the rest of its margins—the Pacific, Philippine Sea, Australian, and Indian—it's subject to a lot of tectonic jostling. There are zones of granite that cooled slowly from lava intruding from below, there are zones of basalt that cooled quickly from lava that made it to the surface, there are bands of lithified sea and river sediments that have been raised into mountains and eroded into caverns, and there are ophiolites, whole slices of ancient oceanic crust and sediment shoved onto dry land by colliding



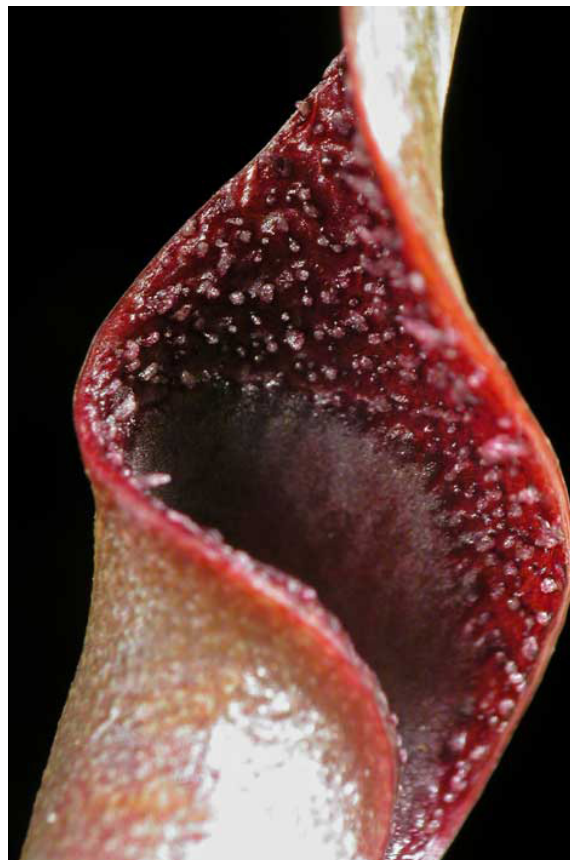
Cryptocorenw aura



Cryptocorenw ferruginea

continents. And because of all that rain, all the rocks exposed at the surface immediately start to erode away to form gravels and sands and especially laterite, basically tropical mud. It's rich in minerals that help feed the lush rainforests and makes durable bricks as well. Angkor Wat was built of laterite.

The Kapuas basin for the most part traverses ancient granitic continental rocks overlaid by basalt lava flows and laterite sediments. Once the river emerges from the highlands, there's not so much oceanic sedimentary rock—limestone and mudstone—here to turn the flowing waters alkaline. But since the river and its tributaries mostly run through tropical rainforest, there are a LOT of plants.



Cryptocorenw ferruginea

Maybe not so much growing in the river itself—that will depend on the strength of the current at a given spot—but along the banks and filling all three zones of the watershed. And when pieces of those plants die and fall to the forest floor or into the water, they immediately start to decompose. This releases tannins, the same chemicals that make coffee and tea brown and acidic. Where this decomposing detritus accumulates and compresses to form peat, the clear, pH neutral rainwater flowing through it also turns brown and acidic. And where the current is slow, this peat and its runoff collect to form blackwater streams and oxbows and swamps.

We can shortcut this entire natural cycle in an aquarium by including peat and decomposing plant matter. Peat can be added to the filter system to leach its tannins into the tank, or it can actually be used as the primary aquarium substrate instead of or on top of sand or gravel. Over the past twenty

years or so, aquarium “botanicals,” dried tropical leaves and cones and pods, have become more easily available, allowing us to more accurately replicate the leaf litter that covers the beds of slow-moving tropical rivers and swamps. Catappa or Indian Almond trees, the source of the available dried leaves, are in fact native to SE Asia. And of course other tree parts end up in the water, namely wood. Malaysian driftwood is widely available in our local pet stores. The sand and gravel usually sold for aquarium use is mostly quartzite, which is a significant component of the granite underlying the Kapuas and would also be the primary mineral in the river sands there. In areas of low water flow, the smallest eroded particles would be able to settle, creating laterite mud. Here’s another concession I’m going to make: no mud.

But what of the aquatic plants? There are lots of general references to Cryptocoryne and Utricularia, but the only actual species mentioned on SF is *C. bankanensis*. In rifling through my stack of open browser windows to find out if that’s even available, I found myself at cryptocoryneworld.org. They list all known Cryp species. Bingo! And they can be sorted geographically. Double Bingo! I clicked on “Borneo,” and a list of 37 species came up. Most species descriptions even include a map (maps!) showing the plant’s verified collection locations, so it was pretty fast work to pick my way down the list and see which had been collected from the Kapuas drainage. That left me with nine species. I found one on buceplant.com. Another at Arizona Aquatic Gardens. And then I came across BorneoAquatic.com, an aquatic grower actually located in Central Kalimantan that deals primarily in plants native to Borneo. Mother lode! They had five of the nine documented Kapuas Cryps for sale: *C. aura*, *C. ciliata*, *C. ferruginea*, *C. fusca*, and *C. striolata*.

They also have a huge selection of *Bucephelandra* species, most of which are also native to Borneo. The Wiki article on the genus had a long list of species described as native to Kalimantan. That’s the entire southern 2/3 of the island, not quite as geographically specific as I’d like. But it does include the entire Kapuas drainage, so I’m gonna declare that close enough. (Another concession.) Borneo Aquatic had five of these for sale. Wiki calls four of the five “obligate rheophytes” meaning they grow on solid surfaces (rocks, logs, etc., not in the substrate) at the edge of fast-flowing water. Not so suitable for the biotope we’re assembling here, although a driftwood anchorage right by the filter outflow could suit them. But one, *B. kishii*, is a “facultative rheophyte,” found growing on rocks where the water flow is variable and therefore much better suited to aquarium culture. A definite maybe.

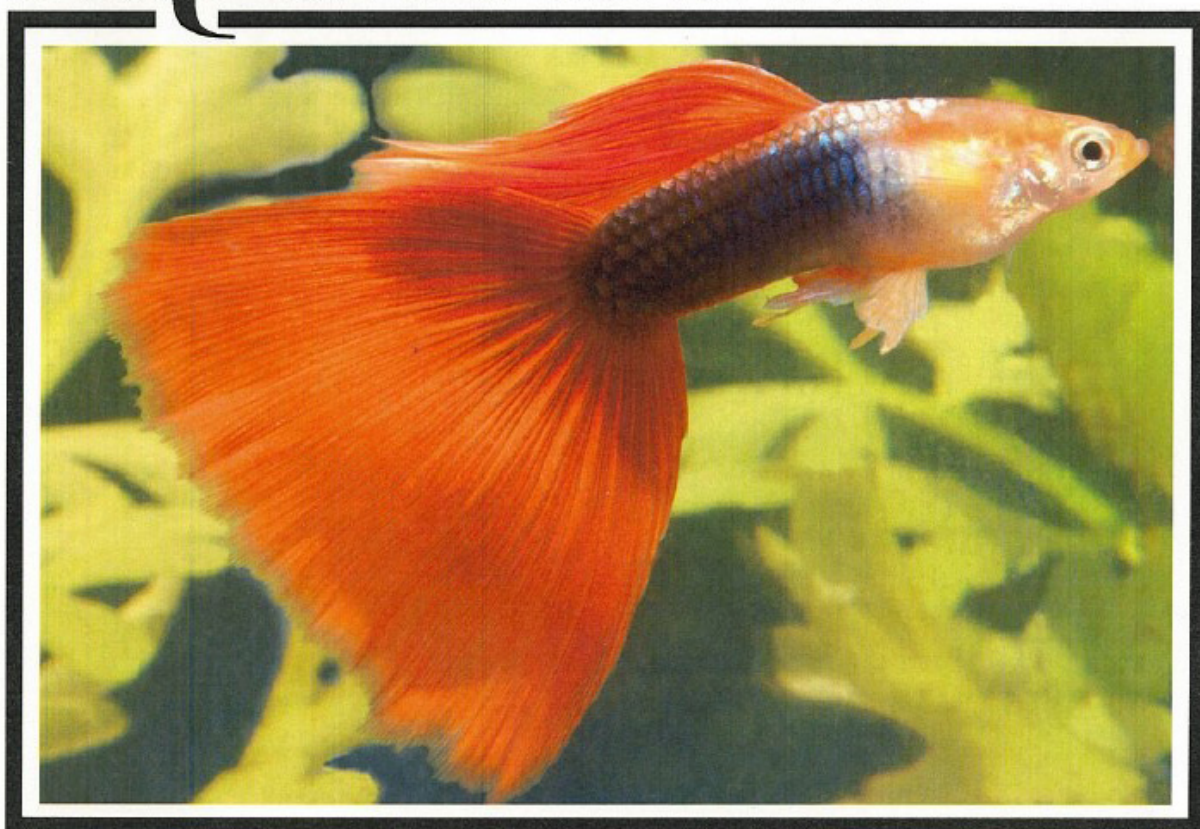
Borneo Aquatic also sells other Borneo native plants: *Aridarum*, *Bolbitis*, *Fenestrarium*, *Barclaya*, and *Crepidomanes*, plus several types of Java Fern (*Microsorium*) and Java Moss (*Taxiphyllum*). Of course, I’ve now looked them all up and independently confirmed that all these plants are actually found in the Kapuas—with the exception of Java Fern. But we’ve now got plenty of plants to choose from. And by the way, Borneo Aquatic also sells locally collected rocks and driftwood for your hardscape. They carry native fish too, but the stock list isn’t online. Think of it as something you’d have to request from the rare books room. Not today. And an FYI: because Borneo Aquatic is actually in Borneo everything purchased there does require an import permit.

Editor’s Note — Part 2 of this article will appear next month in our July issue of **Modern Aquarium**.



*The following cover and pages previously appeared in the June, 2004 issue of Modern Aquarium
Photo Copyright © 2004 Stephen Giacobello*

modern AQUARIUM



JUNE 2004

**volume XI
number 6**

Second Sight

Reprints
deserving
a second look

Part of the history of the aquarium hobby are clubs that are no longer in existence. One such club, the Bronx Aquarium Society (founded in 1952), still “lives” in the memories of some of its former members. One of those members, Horst Gerber, is now a Greater City member. Horst has given his permission for Modern Aquarium to reprint the 30 year old article below, which originally appeared in the April 1974 issue of the Bronx Aquarium Society’s publication, Of Fins And Things.

Does anyone remember the Greenville Aquarium Society of Jersey City, NJ, the Exotic Aquarium Society of Lodi, NJ, or the Elm City Aquarium Society of Hamden, Conn.? They are all named on the list of “local society meetings” in this issue. By the way, the editor, John Hopkins, had a sense of humor. In his plea for typists, writers, artists, etc., he says “. . . Pay is open. Hours: make your own. We are an equal opportunity publishing outfit, you can do as much work as you want.” The cover art was drawn by Eveline Ferrara, who was president of the organization at that time.

Spawning the Golden Severum

by HORST GERBER

A year ago, a friend gave me six three-month-old severums, which were tank spawned. Out of the silver dollar-sized fish in my bare 50-gallon homemade tank came six 6 inch poor men’s discus.

Lately, I began noticing some heavy activity between them. They started pushing and pulling each other around by locking jaws in a cichlid-type fashion. This tug-of-war is a preliminary courtship wrestling game used to test each other’s strength. (By having several adult fish in a tank you will have given them a chance at a “natural selection.”) So, I started to feed them heavily with liver paste, earthworms, and frozen brine shrimp in order to induce spawning. Soon after this, they started to clean the glass in the front corner of the left side of the aquarium.



In checking with my friend about their spawning behavior, I was told that they probably wouldn’t breed until they were approximately two years of age. He explained that this was the time when his fish first started to breed in his 125 gallon tank. But, against regulations (according to some books, they are not supposed to spawn before 18 months of age), they just kept on cleaning the glass in the left corner of the tank.

I then introduced (in an effort to entice them further) thirty pounds of gravel and some slate, which I stood on an angle in the left-hand corner where they had been housekeeping. After I introduced the slate, they decided to change bedrooms (corners). Four fish prepared the new bridal chamber (now the rear corner - left side of tank), and paid no attention to the slate.

Two fish then started to pair off; and at this point, I would have preferred to separate them. But, as I share the problems of all apartment fish breeders (no room for an extra tank unless you are willing to give up a bathtub), I had to leave the couple in the tank on a honeymoon shared with the other four.

Now things began happening. One of the other males decided to break up the happy marriage and started to butt in. This particular male is a good 1 1/2 inches bigger than the rest of the fish, and has been bullying everyone around for the past half year. According to his appetite he should be twice as big as he is. What two fish can eat, he eats alone. When I feed garden worms, out of six he devours four, slurping them like strings of spaghetti before anyone else gets even a taste. My five-year-old former step-daughter gave him a name: "The Fat Slob." Erika goes out and digs worms and feeds them to the severums. Sitting in front of the tank she excitedly calls out, "I hope the fat slob won't get them all." Right now, the fat slob has taken over the cleaning, and chases everyone away as if he feels he is the only one who can do the job right, and wants to do it alone. Maybe he doesn't know he can't lay eggs. I hope someone tells him about the birds and bees.

Somehow, in the last few days, he must have gained some knowledge because he and the other male are chasing the female around so much that the poor thing doesn't know what to do. She is being chased by two males, one bigger than herself, and being bullied around by the largest while she tries to make out with the first. But eventually things worked out. The female paired off with the large male, and they started to clean the slate together.

When it comes to cleanliness, the breeders take nothing for granted. They will scrub the place where they intend to lay their eggs to the point where I'm sure it could compete with any modern delivery room.

I had scrubbed the piece of green slate I introduced with Clorox, and then with salt, but this was not good enough for my severums. They scrubbed and scraped their selected spot which was to receive the eggs till no fragment could be found. Long after anything could be detected with the naked eye, they stood in front of it wagging their bodies and attacking the place with efficient swipes at whatever particles tried to settle on the slate. That went on for days—all cleaning, but no action.

Talking with a couple of people on what to do to get them to spawn, I decided to switch to a method used by angelfish breeders. I changed five gallons of water with clear cool tap water—no results. After speaking again with my friend who bred the severums, I found out that they spawn a lot on the slate bottom of the tank in the gravel. In

my tank I have a glass bottom and they had dug through two inches of gravel down to the glass bottom. Since the stand which holds the tank has no bottom, this must have given the fish the impression that something was wrong and that there was no bottom. Realizing that something of this sort must be the reason for their not going any further than courtship, I pasted a light brown piece of construction paper to the outer bottom of the tank. I was highly rewarded for this piece of strategy. Ten minutes later, the breeding tube of the female started to come out from 1/8th of an inch to 1/4 of an inch, and the cleaning of the slate started to become more intense.

This breeding tube, or eggplacer as it is sometimes called, is a small tube which is located near the vent. It shows up during spawning behavior as a small nipple and increases in length considerably shortly before the actual spawning takes place.

The trial runs of the female up the slate began. I think she felt every little ridge and crevice on the piece of slate with her breeding tube and scoured the slate thoroughly once again. It looked as if she wanted to polish all the ridges off of that slate. (What a magnificent carpenter she would have made.)

But, here I sat, not realizing that she was placing rows of small pink adhesive eggs in an angelfish manner — never criss-crossing on the slate. The proud papa followed immediately after each row of eggs was laid, gently fertilizing the deposited eggs with his milt. Within an hour, a large area of the green slate was covered with 100 to 300 little pink eggs.

From the time the breeders decided that this was the spot to raise their little ones, there was an intensive protection of the breeding place. Even during the time the female was placing her little strings of pearls (eggs), papa was driving any intruder away who dared to come too close and then returning quickly to fertilize the eggs, while mama took her turn keeping the other severums away from the spawning ground.

The standing guard over the eggs is done alternately by the male and female. They stand in front of the eggs wagging their bodies and fanning the eggs with their breast (pectoral) fins. The reason for this is still a question. Some people believe that the circulation of the water around the eggs gives the embryo oxygen. My personal belief is that it prevents the settling of dirt particles on the eggs that would cause fungusing of the eggs. Fungused eggs will be eaten sometimes by the parents to prevent spreading of the fungus. This results sometimes in not only bad eggs being eaten, but good ones as well.

The breeding pair started to eat frozen brine shrimps which I introduced in the opposite

corner from the breeding place shortly after the laying of the eggs, but they didn't touch their eggs.

Since it was the first spawn of this pair, I decided to leave the eggs in the tank with them. Normally, I would have taken the slate with the eggs out and placed it into another tank with the same water and placed an airstone on the bottom of the tank near the eggs for water circulation. This would have eliminated the possibility of the parents eating the good eggs or young fry because they would have been raised away from the parents.

For three days they fanned and watched their eggs faithfully with me. Then Saturday morning, I went on a picnic and the pair noticed that guy wasn't watching today and they decided to have a feast on their eggs. When I came home that night and saw everybody swimming around peacefully I guessed right. The eggs were gone. I was quite depressed after that but, as the saying goes, don't count your fish before they hatch.

If after reading my sad experience you still have enough nerve to leave your eggs in with the adult fish the following might happen if you are lucky. The eggs hatch within three to four days and the little fish wiggle their way down into the shallow hole in the gravel dug by the parents prior

to spawning. During the next nine days, the parents will dig several of these holes and transfer the jelly-like mass (for that is exactly how the young fish look) for cleaning purposes, from one hole into another. They will spit them into another hole, keeping a close lookout at all times for any intruders. The parents will leave the young on an alternating basis, to eat or chase intruders away, but they generally won't eat their own fry. After nine days, the young start free-swimming, heavily guarded and kept close together by the parents. At this time, you should start feeding the fry with infusoria, microworms, or baby brine shrimp at least twice daily. This way, they will grow at a magnificent rate and soon they will be gobbling up just about everything you feed them. At the age of six to eight weeks, the young fish will be able to take care of themselves and the parents will go off and start to raise another batch. (Hopefully!)

Good Luck!!!

Editor's Note: Legendary best friends and fish enthusiasts, Wayne Leibel and Lee Finley, our "Aquarian Minds Want to Know..." guest panelists for this issue, met at the Elm City Aquarium Society of Connecticut in the early 1970s.



Pictures From Our Last Meeting

Photos by Marsha Radebaugh



Full house once again!



Raffle Table awaiting its time



Bowl Show Entries



Some of the Auction Items



Our Treasurer with some of the Treasure



Warren Feuer with door prize winner Harry Faustmann



Bill Amely presents 3rd place bowl show prize to Joe Ferdenzi



Bill Amely presents 1st and 2nd place bowl show ribbons to Richie Waizman



A puppy! Mookie, Courtesy of Donita Maynard



President Warren Feuer directing auction traffic



New member Jim Cusati



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).

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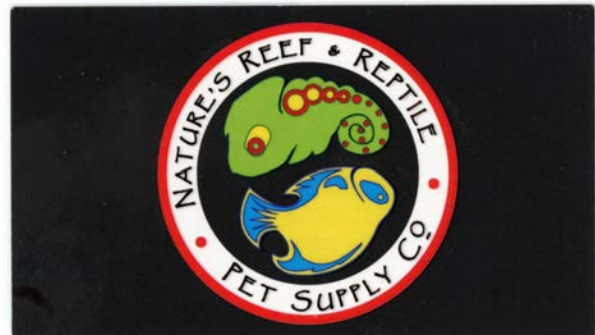
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GCAS Happenings

May

A WARM WELCOME BACK TO RENEWING GCAS MEMBER LITA GOLDBERG, AND WELCOME TO OUR NEW MEMBERS
 PAUL HALVATZIS, CHRISTOS TSAVTARIDES, JAIME FEBUS, AND SEUNGHO WIE!

May's Bowl Show Winners:

1ST PLACE	JOHN "BUZZ" BUZZETTI - ORANGE AUSTRALÉ
2ND PLACE	HARRY FAUSTMANN - NOTHOBRANCHIUS RACHOVII
3RD PLACE	JOSEPH FERDENZI - BLUE GULARIS

UNOFFICIAL 2025 BOWL SHOW TOTALS TO DATE:

RICHIE WAIZMAN	8	HARRY FAUSTMANN	6	MARK SOBERMAN	5	"BUZZ" BUZZETTI	5
JOSEPH FERDENZI	3						

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

GREATER CITY AQUARIUM SOCIETY

Next Meeting: July 2, 2025

Speaker Subject: Natural Aquariums, Part 1

GCAS Usually Meets the first Wednesday of the month
 at 7:30pm, at the Alley Pond Environmental Center
 22465 76th Ave, Oakland Gardens, NY 11364

Contact: Joseph Ferdenzi (516) 484-0944

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.brooklyn-aquarium-society.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

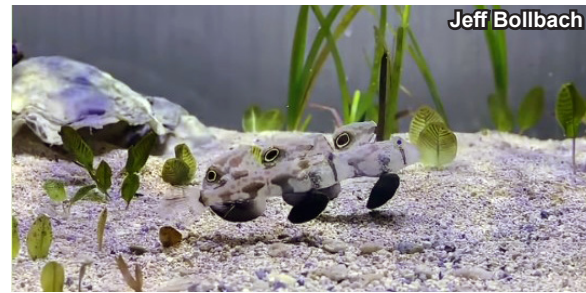
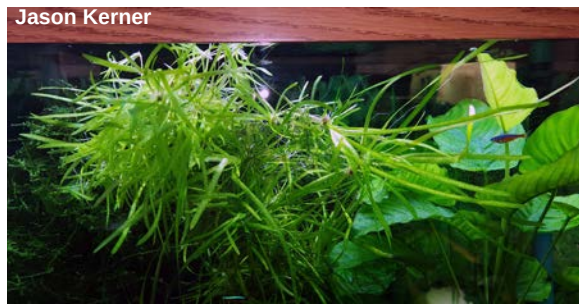
Contact: Mike Foran (516) 798-6766

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

Fishy Friends' Photos

by Greater City Aquarium Society 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!



The Secret to the Longevity of the Greenland Shark

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.

Regular readers of The Undergravel Reporter know that this column often highlights the most interesting and unusual parts of the aquatic world, whether it's the longest, largest, or newest fish known to science. This month, the Undergravel Reporter brings you news of one of the longest-living vertebrates in the world, the Greenland Shark (*Somniosus microcephalus*).

For those who have never heard of this interesting creature, the Greenland Shark primarily inhabits the cold waters of the Arctic and North Atlantic Oceans, often in deep water. There is limited evidence that they may also inhabit cold, deep water in locations as far south as the Gulf of Mexico. The Greenland Shark has extremely poor eyesight, but it is apparently a capable hunter and scavenger. Despite its extremely slow top speed of less than 2 mph, it has been observed to hunt grey seals, likely by ambushing them while asleep. The meat of the Greenland shark is toxic to mammals due to high levels of trimethylamine N-oxide, though in Iceland it is apparently fermented and dried over several months in order to make it safe to eat. This delicacy, known as hákarl, is (unsurprisingly) an acquired taste, the Undergravel Reporter is told.

They are most notable, however, for their longevity. These sharks have been known to live for hundreds of years, and only reach sexual maturity after about 150 years (the lady sharks have to deal with a gestation period that is estimated to last between 8 and 18 years). Scientists are apparently able to estimate the age of Greenland sharks by collecting a certain type of protein in the sharks' eyes that does not degrade over time. Scientists have used radiocarbon

dating to estimate that the largest Greenland shark studied (to date) was approximately 392 years old, plus or minus 120 years.

In 2024, a team of scientists presenting at the Society of Experimental Biology Conference declared that the secret to the Greenland shark's longevity is likely tied to its metabolism, which does not appear to change over time. For most animals (including humans), the body's metabolism slows with age, which leads to cell damage and degeneration that is not repaired. In the case of Greenland sharks, a comparison of enzyme activity in sharks ranging from 60 to 200 years old, scientists found no change in enzyme activity.

Those researchers studying the Greenland shark's longevity noted further that the enzyme activity did increase when the Greenland sharks were in warmer water. Though the Greenland shark is currently considered "vulnerable" and not "endangered," those researchers are sounding the alarm that climate change could warm up the Greenland shark's natural habitat, potentially speeding up the Greenland shark's metabolism and wreaking havoc on their lifestyle.

A different research team in late 2024 further decoded the mystery of the Greenland shark. After fully decoding its genome, the researchers found that for reasons not yet fully understood, the genes that repair cell DNA have been acting as "jumping genes," within the Greenland shark's genome, distributing themselves throughout the Greenland shark's genetic code and slowing down the aging process by fixing damaged DNA.

Sources:

<https://www.biorxiv.org/content/10.1101/2024.09.09.611499v1.full.pdf>

[Greenland sharks can live for centuries. We're finally learning their genetic tricks.](#)

[Secret of why Greenland sharks live so incredibly long finally revealed | Live Science](#)

[Eye lens radiocarbon reveals centuries of longevity in the Greenland shark \(*Somniosus microcephalus*\) | Science](#)



https://nature.rules1.fandom.com/wiki/Greemland_Shark



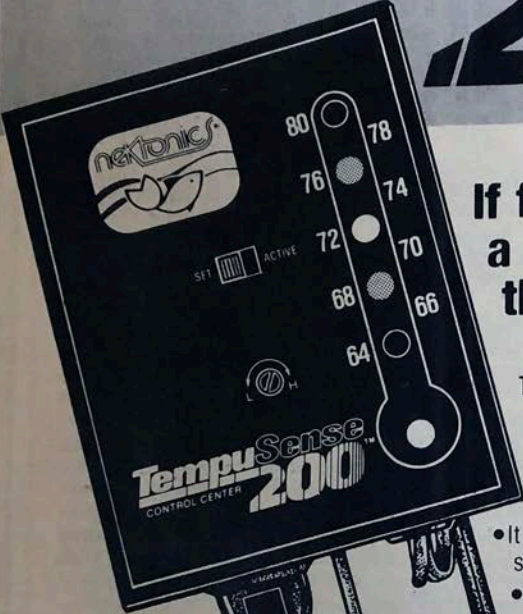
From The Pages of Yesteryear

Freshwater and Marine Aquarium Magazine December 1987

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