modern AQUARIUM

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volume XXII
number 2

Greater City Aquarium Society - New York

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AQUARIUM

Series III Vol. XXII, No. 2 April, 2015

ON THE COVER

Our cover this month features a photo submitted to our Greater City Fishy Friends group on Facebook. See page 23 for more Fishy Friends' photos.

Photo by Andrew Jouan

In This Issue

From the Editor

by Dan Radebaugh

Some time back, in a conservation-minded moment, I mentioned in **Modern Aquarium** that one of the better fish conservation programs in our country is the Migratory Bird Hunting and Conservation Stamp, also known as the federal Duck Stamp. Since 1934, stamp sales have contributed to wetland and grassland conservation. Currently, 98 cents out of every dollar goes into a fund to purchase or lease these habitats, and considering how many of our native fishes are under threat, conserving and protecting wetlands is a good place to start. To protect the existence of any species you have to first protect its environment. I think you'll find another plug for it somewhere in this issue.

Well, fast-forward a few years, and at a recent meeting Susan Priest handed me a book called **The Wild Duck Chase**, by Martin J. Smith, which the author subtitles: "Inside the Strange and Wonderful World of the Federal Duck Stamp Contest." Through most of the existence of this program, the design of each year's Duck Stamp is determined by an annual art contest. I'm not going to review the book here—this is after all a magazine that concerns itself with the keeping of aquarium fish. However, I will say that I learned a lot of interesting stuff, and it gave me something to do other than watching TV while I was lying around keeping my new knee straight and elevated.

For an actual review of a book related to aquarium fish keeping, look no further than the pages of this issue, which features a "tag-team" reviewing approach. Because of the significant nature of the new book in question, Sue Priest starts the ball rolling in her "Wet Leaves" column, and then Al Priest tags in on the following page with a "Product Review." Interesting to see how two different practitioners attack the same opponent! Might even inspire you to add the book to your library.

This was a fun issue to put together, with many contributing authors, writing on nicely varied subject matter. I hope you enjoy reading it!

* * * * *

Remember, we need articles. We always need articles! **Modern Aquarium** is produced by and for the members of Greater City Aquarium Society. Our members are our authors, and with ten issues per year, we always, always need more articles. I know several of you are keeping and/or breeding fish, or working with plants or invertebrates that I would like to know more about, and I'm certain other members would be interested as well. Share your experience with us. Write about it! If you're a little unsure about the state of your writing technique, don't worry – that's why there are editors. If you don't share what you know, who will?

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

GCAS Programs 2015

It is our great fortune to have another admirable cast of speakers who have so graciously accepted our invitation to join us throughout the coming season, bringing us their extensive knowledge and experiences. You certainly won't wish to miss a moment of our prominent guests, not to mention the friends, fish, warmth, and camaraderie that accompanies each meeting.

March 4	**Joseph Ferdenzi** *A Beginner's Guide to Aquarium Equipment*
April 1	**Jules Birnbaum** *The Building of a Dream*
May 6	**Richard Pierce** *Seahorses, Seadragons, and Pipefish*
June 3	**Jeffrey Bollbach** *How to Get Rich Breeding Fish: My Obsession with Aquabid*
July 1	**Mark Soberman** *TBA*
August 5	**Silent Auction**
September 2	**Tom Keegan** *How Fish Get Here, There, and Almost Anywhere*
October 7	**Steve Lundblad** *TBA*
November 4	**TBA**
December 2	**Holiday Party!**

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 (877) 299-0522.

The Greater City Aquarium Society meets every month, except January and February. Members receive notice of meetings in the mail. For more information, contact: Dan Radebaugh (718) 458-8437 or email gcas@earthlink.net. Find out more, see previous issues, or leave us a message at our Internet Home Page: http://www.greatercity.org or http://www.greatercity.com.

President's Message

by Dan Radebaugh

If you've gotten this far into the issue, you will probably have noticed on page 3 that our Speaker calendar is filling in nicely. Right now there's only one gap, and that may actually be filled. We're just trying to work out a couple of timing details. You'll see some familiar names, as well as a few you probably don't know. The subjects look like there's something for nearly everyone! My thanks to all who volunteered to speak, as well as those who helped put this schedule together. Thanks especially to Mark Soberman and Joe Ferdenzi.

As I write this, the NEC annual convention was just held last weekend. We'll have some announcements about that this evening. I was very pleased to learn that this year's winner of the Betty Mueller Lifetime Achievement Award is none other than Rosario LaCorte, whose autobiography, **An Aquarist's Journey**, is being published in serial form, prior to release in book form, here in the pages of **Modern Aquarium**. Congratulations, Rosario!

One of the questions that occurs to us as we learn more about the deteriorating biological situation in our country and on our planet is, "What can we do?" Curiously enough, there are many ways for us to make a contribution. There are many fine, worthy programs we can participate in, even if only by making small choices at the grocery store, or by making our voices heard by our politicians. One of these of course is C.A.R.E.S., a program we here at GCAS are all familiar with. Many of our favorite aquarium fish are extinct or endangered in their native habitats. Through C.A.R.E.S. we can keep these species alive, hopefully until they can be returned to their native waters.

Another program in which we can all participate is not so well known in fishkeeping circles. This past December, the U.S. Congress approved raising the price of the U.S. Fish and Wildlife Service's Migratory Bird Hunting and Conservation Stamps, or Duck Stamps, from $15 to $25. Currently, 98 cents out of every dollar goes into a fund to purchase or lease these habitats. This program was originally designed to protect our migratory birds, but what else can you think of besides ducks that lives in wetlands? So this program, at least for the U.S., directly addresses the habitat problem, with the result that programs like C.A.R.E.S. may actually be able to find habitat where endangered populations can be allowed to rebuild. Since the program's inception, hunters have been shouldering most of the load, but all of us can contribute.

Waterfowl hunters *must* purchase a stamp. Others can support conservation by buying Junior Duck Stamps for $5. Learn more at www.nwf.org/duckstamps. Stamps can be purchased online at www.duckstamp.com or www.usps.com, and at thousands of post offices throughout the country. As an added benefit, by showing the stamp at national wildlife refuges, we gain free admission from July 1 to June 30 each year.

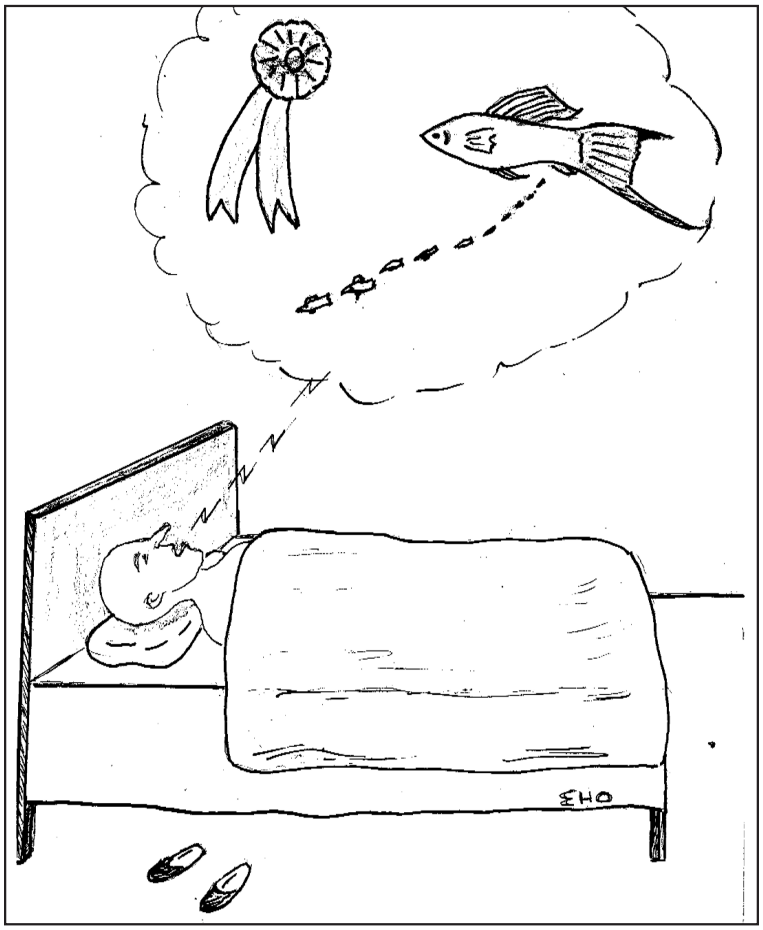
Dan

BOWL SHOW RULES

There is a Bowl Show at every GCAS meeting, except our Silent Auction/fleamarket meeting (August) and our Holiday Party and Awards Banquet meeting (December). These 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 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.
- The current Bowl Show Coordinator is Leonard Ramroop, who usually also serves as judge (although guest speakers are often asked to do the judging honors).
- 2.5 gallon containers are available for use (brought to the meetings by the Bowl Show Coordinator), but entrants are responsible for providing enough (and suitable) water for their fish.
- For a fish too large (or too small) for those containers, entrants must supply a suitable container, which must be clear on at least three sides.
- Only one fish per container (i.e., no "pairs").
- No plants, ornaments, or equipment (filters, airstone, 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

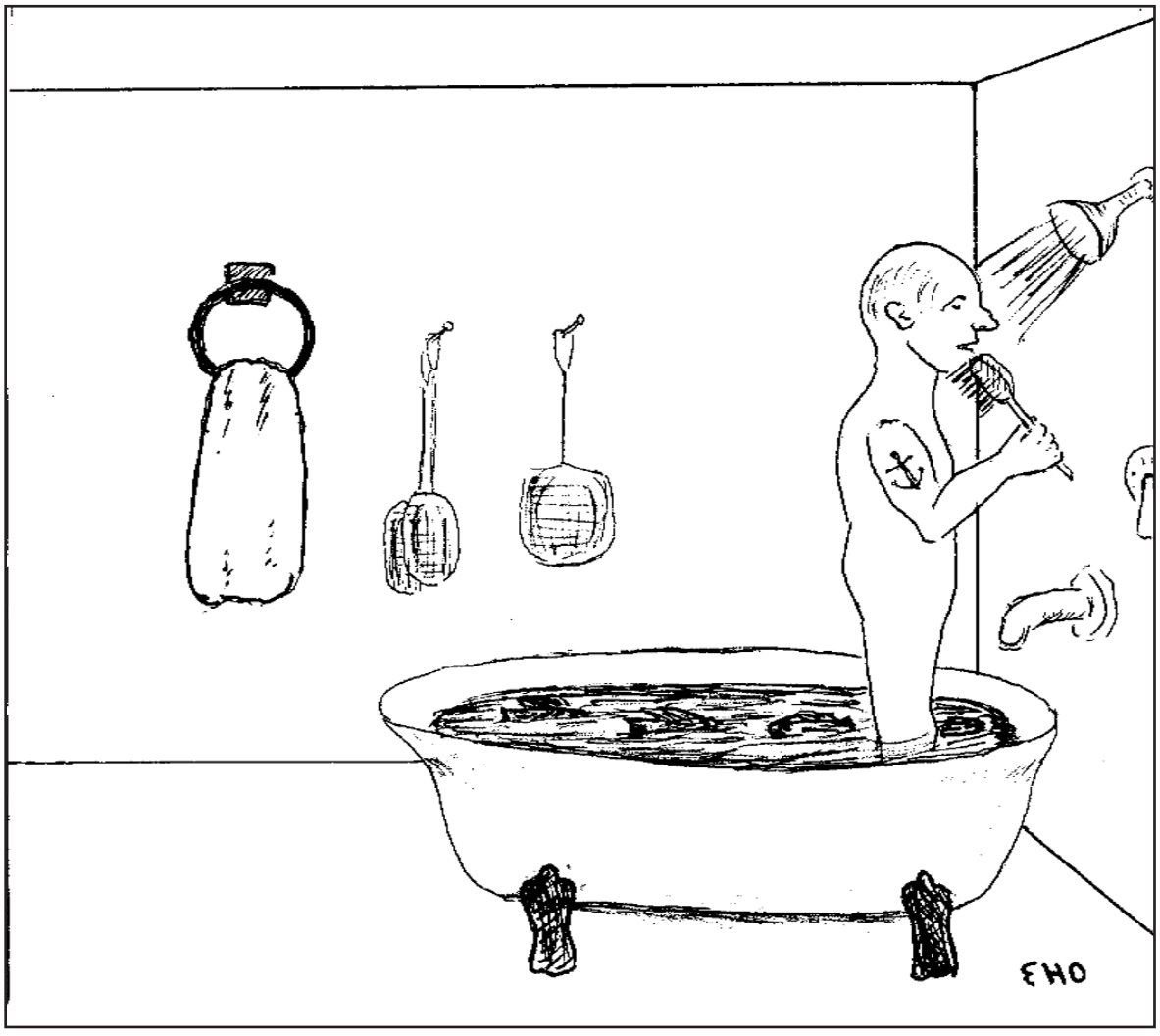
March's Caption Winner: Bill Amely



♫ *I dream of ribbons with the bright blue hue...*

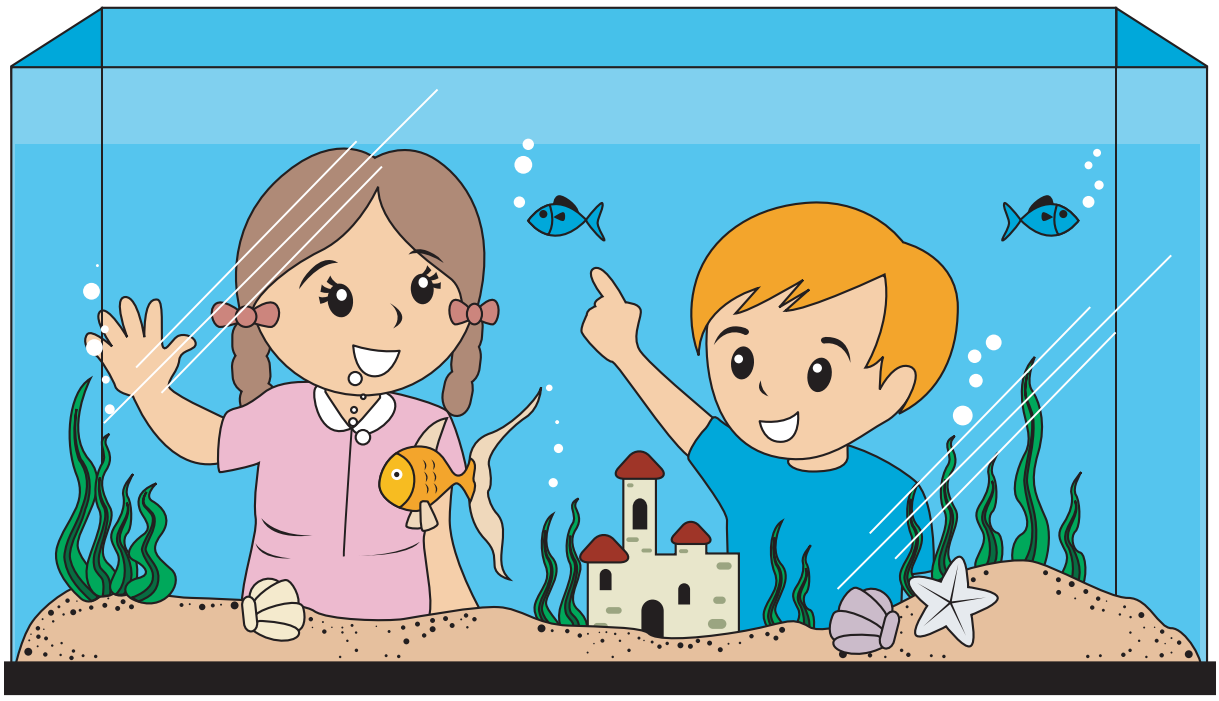
The **Modern Aquarium** Cartoon Caption Contest

Modern Aquarium has featured cartoons before. This time though, you, the members of Greater City get to choose the caption! Just think of a good caption, then mail, email, or phone the Editor with your caption (phone: 347-866-1107, fax: 877-299-0522, email: gcas@earthlink.net. Your caption needs to reach the Editor by the third Wednesday of this month. We'll also hand out copies of this page at the meeting, which you can turn in to Marsha before leaving. Winning captions will earn ten points in our Author Awards program, qualifying you for participation in our special "Authors Only" raffle at our Holiday Party and Banquet. Put on your thinking caps!



Your Caption:

Your Name:



Support Fish in the Classroom!

If you have any 5 or 10 gallon tanks, or any filters, pumps, or plants that you could donate to NYC teacher Michael Paoli's classrooms, could you please bring them in or email Rich Levy (**rlevy17@aol.com**). If you'd like to donate larger tanks, be sure and email Rich so he can make sure Michael can accommodate it.

ALL FISH NETS
ARE NOT CREATED EQUAL

By Edward Vukich

Certainly every aquarist has a few fish nets in their possession that they use for various functions. Whether it is for fishing out a dead fish (Oh No!), removing unwanted materials and dirt from the aquarium, or netting out a few fish to bring to a monthly auction, we have all used a fish net at one time or another.

I myself have numerous nets, in a vast array of sizes and colors. These may be colored red, light blue, green, black or white, and may range in size from 2 inches up to and over a foot or more to address different size fish and applications.

As we all know, when attempting to net a fish it always appears that the fish you want to catch knows it is the one, and can give you a hell of a time. In many cases I have had to remove all the decorations in a tank to catch one fish that always finds a place to hide under the filter, behind the heater, or under a rock. Some fish, such as angels and guppies, are small or not too fast, so they are easy to catch, while I have found the Lake Malawi yellow lab to be one of the most difficult to catch, as they are so gosh darn fast. I am sure you each have a horror story you could share of a fish that just gave you fits while trying to net it.

I had a recent such experience while netting out some *Tilapia snyderae* for auction that caused me to rethink my plan of attack. I had these fish in a 55 gallon tank, so there was plenty of room for them to escape my net, despite the fact that I was using two nets, and one was pretty large. These nets were colored a fairly bright red, as some years ago a fellow aquarist advised me that the fish could not see the red color and thus the nets. Unfortunately, I was not having much success catching my quarry, and was becoming frustrated to say the least. On a whim I decided to try a different net, and went to a similar size but this time colored a darkish green. Much to my amazement the fish just about swam right into it. I am exaggerating a little here, but in a short time I had all the fish I needed to bag up.

Well, what can I say, but after many years it had finally dawned on me that perhaps the simple color of the fish net would make a difference when trying to catch a fish in an aquarium. Undoubtedly, fish can see in color. I just am getting smarter each and every day, and will continue to test my new theory in the months ahead. So if you are having trouble catching a fish, try a different color net. It may just be the difference and save you a few gray hairs.

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Present

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a.k.a the 2015 ALA Convention ~ Lancaster PA

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John Lyons – Wisconsin
Karl Trochu – Florida
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Bill Gill – Maine
Joel Antkowiak – Pennsylvania

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For more information about the 2015 Convention and Convention registration:

Convention Website: http://alaconvention2015.com

If you have any question or need assistance contact Kurt Johnston at ConventionChair@alaconvention2015.com

BREEDING ON THE FLY

Story and Photos by Rich Levy

My wife and I decided to break up the winter by going to Florida for a few weeks. We had also just decided to move closer to our granddaughter in New Jersey. My LIKA friends had just been to our house and seen my fish room beginning to be dismantled. My dilemma was now, how much of the old room was going to the new place. I figured I would start bringing in my fish to Greater City in March. The last thing on my mind was to bring back any fish from Florida. I even resisted buying any fish at the SunCoast Killifish meeting the second day of my vacation.

We were at a mall, and my wife went shopping. I saw a pet store and figured I could spend some time browsing. To my surprise I saw a killifish in one of their tanks. Very rarely will that happen, let alone what I saw. It was a male "golden wonder." Its scientific name is *Aplocheilus lineatus*. I searched the rest of the tank and found a female. Up north you never see pairs, as they only ship the more colorful males. I am a big believer in "opportunity knocks but once." I couldn't pass it up, and I'll figure out the rest.

I bought the pair for five dollars, and hid them from my wife. That didn't last long; we had a small room and I needed to keep the fish alive. This was the third day of our vacation, so my wife didn't bring out all the guns. I had each fish in a glass. I realized that I still had two weeks to go, and both fish may not make it back alive. The next day I bought a small container, made a mop out of yarn and a piece of Styrofoam, and put them together. I figured might as well start breeding them, and if I get eggs that would increase the chances of my keeping this strain going.

I had purchased some adult brine shrimp, and gave that to them every day. I also bought a small container of flake food, which they also ate.

The next day my wife was complaining that the fish weren't happy in that small container. I examined the mop and found 12 eggs. So much for not being happy! I don't even have that success at home. We were visiting close friends, and the wife enjoyed seeing the eggs. I told her that by the time we went home she would see a difference in the eggs. So the next week, from being clear the eggs had turned dark inside. With a magnifying lens she was able to see the embryo inside.

We had reached the end of our vacation, and I now had a pair of breeding killifish with twelve eyed-up eggs. They never bred again in Florida. I am familiar with the rules and regulations with TSA and the airlines, but not all of the security people are. I even had a bill of sale that I purchased these fish at a local pet store.

Fate was still on my side. I had put the fish separately in a small Gatorade container with a little water. This was in my carry-on bag. My wife was randomly picked not to get checked, but I was pulled off for screening. I was glad it was in my bag. The agent was very nice but said he had never seen anything like this before, so he called over his supervisor. I explained that I was a retired science teacher and hobbyist, and was breeding this species. She said, "Keep up the good work," and I was through!

We got home from Florida on February 6th. As of March 2nd, I have two breeding golden wonders, twelve three-week old fry, and 20 more eyed-up eggs. I'm hoping to bring some fry to the April meeting of Greater City.

Pictures From

Marsha Radebaugh, collecting dues and handing out *Modern Aquarium.**

Joe Graffagnino, with his new novel, *The Journey of Mary/Ma Li.**

Ed Vukich and Artie Friedman welcome back returning member Steve Chen.*

Rich Levy and his guests Lauren and Olivia Ng, preparing items for our auction.**

Olivia, Julian, and Lauren Ng***

Our Last Meeting

Door prize winner Joe Gurrado with GCAS President Dan Radebaugh****

Dan with Mario Bengcion, winner of 2nd *and* 3rd prizes at this evening's bowl show contest.*

Dan with Richie Waizman, blue ribbon winner of the bowl show. Early Arrivals Chairperson Al Grusell looks on.*

***Photo by Joseph Gurrado**
**** Photo by Julian Ng**
*****Photo by Rich Levy**
******Photo by Marsha Radebaugh**

The Chronicles of Kwikee

by Joseph Ferdenzi

As readers of **Modern Aquarium** well know, in 2014 Greater City began the serialization of Rosario LaCorte's autobiography. In Chapter 9, which appeared in the November issue, Rosario recounted the short-lived craze over "instant fish" that took place in the early 1960s. And therein lies a tale that is altogether so remarkable that Rosario insisted that I write about it.

To appreciate how remarkable it is, we have to begin with a misunderstanding that I had harbored for many years. Being a long-time friend of Rosario, I had heard him recount this "instant fish" story on several occasions. Also, being a frequent visitor to his home, I had seen that he possessed a box of the "instant fish" product that was marketed by Wham-O, a famous producer of toys and novelty items. Well, I put one and one together, and came up with this flawed

Rosario with a package of Wham-O's Instant Fish

assumption: that the Wham-O product was the one for which Rosario had been contracted to produce the annual killifish eggs that would turn into "instant fish."

That assumption stayed with me until the evening that I was proofreading Rosario's Chapter 9. This chapter contained many details that I had before either not known, or that had just not registered. The two most important facts I learned were that the Wham-O product, officially called "Instant Fish," was **not** the one for which Rosario had provided eggs, and that the name of the product for which he had was "Kwikee Fish" (note the odd spelling). Prior to this I had no knowledge (or at least no memory) of the name of the product. This was to be key for what happened next.

That very evening, I decided to see if any "Kwikee Fish" boxes were listed for sale on my favorite buying site, eBay. I was very apprehensive as I typed in the search term "kwikee fish." I mean, after all, what were the odds of finding something that had only been marketed for one or two years, and with an unknown popularity? I was not optimistic as I waited for the search results.

To my astonishment, one lone entry appeared. Among all the sellers in the U.S. and beyond, one person in Virginia was offering the item for auction. The starting price was amazingly low, I thought. Moreover, and even more remarkably, it was an intact, unused set. This meant it included the unopened pouch with the peat moss that had contained the killifish eggs! How many of those could there still be?! Not many, I would venture to say. As for the auction, I was literally in the nick of time, as there was just a bit more than 24 hours until it ended. And there were no bids yet!

Here was my chance. I cautiously entered a bid that was way above the starting price, feeling this would discourage any other potential bidders. I was also preparing to watch the item for the last five minutes in case I needed to raise my bid. After entering my secret maximum bid, the nervous waiting began.

When it was over, I was the only bidder! What a relief! And the shipping, if all went well, was estimated to bring me the package in time for me to photograph it and use it as an illustration for Rosario's then upcoming Chapter 9.

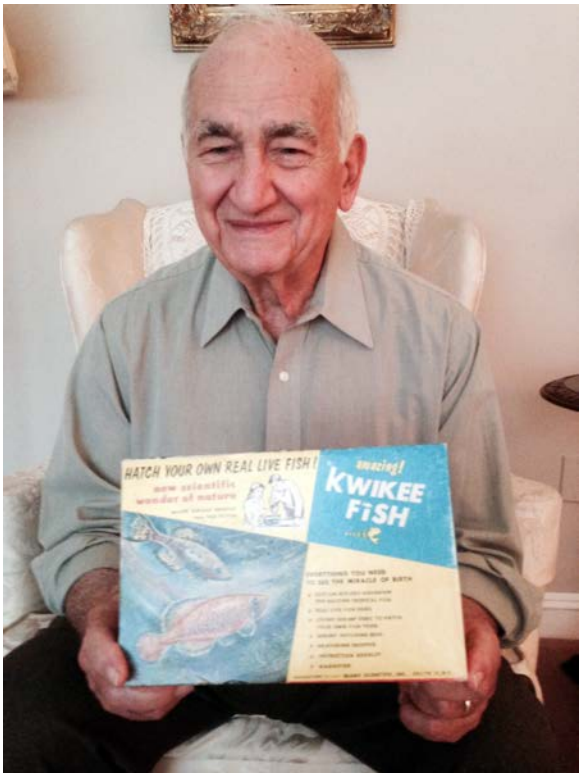
But what I knew would be even more of a delight would be surprising Rosario with my find. If you will recall Chapter 9, Rosario wrote that, though he did not have any example of this product, he did have a copy of an original instruction sheet that he wrote for it, but that was all. The "Instant Fish" box that he owned had actually been given to him at a much later date by his friend (and mine) Wayne Leibel.

The box arrived on time, and just in time to bring it to the next Long Island Killifish Association meeting (Rosario and I are both members). When I showed him the Kwikee Fish box, the look on his face was something to behold. It was as if I had found his long-lost high school graduation ring, or something

of similar sentimental value. Of course he wanted to know how I had acquired it. When I told him, he thought it was such a remarkable event that he wanted me to include the story in his upcoming chapter. I demurred, however, as I did not wish to be an intrusion into his wonderful narrative. He was so insistent though, that I offered a compromise: I'd write the story, but as a separate offering.

The timing was extraordinary in itself, because if Rosario had not written Chapter 9 when he did, and the eBay auction had not occurred when it did, the odds are that the listing would have gone without a bid, and without a bid at such a low price, the seller might not have listed it again. The item then, for all practical purposes, would have been "lost" to us. That I had no competitors was also rather remarkable, and is probably explained by a few factors. First, unlike the Wham-O product, Kwikee Fish was not marketed by a company that has a line of famous toy products that are highly sought-after by collectors. Second, the seller did not use words in his description that are commonly searched for by collectors of aquarium hobby items. Third, a casual buyer would expect that a product from the 1960s could no longer deliver on its original promise of producing instant fish, and so what would be the point of buying this novelty? Fourth, the unusual name and spelling of the product would not be something that even an inquisitive collector of aquarium items might guess.

In any event, fate was on our side, and now this Kwikee Fish box, for which Rosario supplied the eggs



Rosario with a package of Kwikee Fish

so many decades ago, is enshrined in the pages of **Modern Aquarium** and in my little hobby museum. As they say, fate sometimes works in mysterious ways.

Breeding Rainbows

by Jules Birnbaum

This article relates to my own experience with one species of rainbowfish. Although I appreciate the scientists in our hobby, I'm certainly not one of them. I don't even know how to pronounce some of the technical names of various tropical fish, yet I've had some success keeping and breeding many varieties, and you can too. I know a little bit about a lot of things. I read articles, books, use the internet, and consult experts in the field. It is amazing how receptive the giants of the tropical fish hobby can be. We have the foremost tropical fish historian right here in the Greater City Aquarium Society, so I don't have to go far to get accurate background information.

I was introduced to rainbowfish by Jeff Bollbach, who in turn introduced many of the current members of GCAS to his friend and famous rainbowfish expert Gary Lange, who spoke to our club in November of 2014.

If you missed that meeting you missed one of the highlights of the GCAS year. Gary spoke about his rainbow collecting trips to New Guinea. He brought many vials of various rare rainbowfish eggs, along with hatching instructions and starter food. These were placed in our auction, and some brought more than $30 per vial of eggs.

I personally won one of those egg kits, and although I followed the instructions, and most of the eggs hatched, I could not keep the fry alive. Whatever the reason, it was very discouraging, and I thought, if rainbows don't like my fishroom, so be it. At that point rainbows seemed not to be for me.

While attending another club's auction, I noticed that Jeff Bollbach had brought a breeding pair of *Melanotaenia* Sp. "Wapoga" red lasers. The red laser was mentioned in an article by Gary Lange in the November/December issue of **Amazonas**. This fish is about 2.5" at maturity. The male is easily distinguishable, because he has more vivid color. No one was showing much interest in this rare fish, so I placed a low bid and won the pair. I put them in a five gallon tank, just to park them somewhere until I could decide what to do with them. The November/December issue of **Amazonas** magazine was all about rainbows new to the hobby, and after rereading it I noted that I had one of the rare species they were writing about, and at a bargain price!

Since I've never met a fish I did not like, I decided to try to provide these fish with the conditions needed for them to spawn. I was not impressed by their looks, but this was mainly due to the stress of having been moved. I housed the pair in a bare 20L tank, with a mop hanging down to about an inch above the tank bottom. I used one of my aged Rocket filters, purchased from Joe Gargas of Aqua Research Center. I kept the water at 78 degrees F, pH about 7.0, and changed about 40% of the water weekly, making sure the temperature of the dechlorinated replacement water was the same as that which was removed. I also cleaned the bottom of the tank every few days.

I fed them flake food in the morning and live brine shrimp in the evening. I also gave them small pieces of my home-made "Julie's super gel food," which they ate once it sank to the tank bottom. I must say that they were not very interested in coming to the surface to eat any kind of food. Their shyness was no doubt due to the lack of hiding places in their bare tank. After a week or two there were not more than one or two eggs visible in the mop. Was this to be another of my failures?

I placed a couple of small bunches of Java moss at the bottom, to see if these egglayers might use this plant to deposit eggs, and after about a week I observed eggs in the Java moss. I next saw a few very small fry swimming at the surface, so I fed a pinch of Golden Pearl powdered (0-50 micron) food. As the days went by, a few more fry were swimming at the surface. The parents stayed at the bottom, and were not going after the fry. Because of the limited tank space in my fish room, the parents are being left with the fry.

There are now twelve or more fry in the tank, and as they mature they leave the surface. So far the older fry do not try to eat their new younger siblings, but I expect they eventually will. I am going to place a divider in the tank to separate the younger fry—I want these newly born fry to have the exact water conditions in which they were born.

Rainbow fry are very small, and don't have much of a yolk sack. They must be fed shortly after hatching. Some breeders use paramecia and rotifers to get these very small fry started, but I did not. As a private aquarist, just a dozen or so fry surviving is okay with me. Gary Lange states that the fry are slow growers, and sometimes take a few years to show full color. Gary says it is worth the wait—I hope he is right.

We learn from the experts who have come before us, and that is why learning about the history of this

wonderful hobby should be important to those who wish to participate in a serious way. There is plenty of room for some ingenuity by us amateurs. As I've said in the past, "whatever works for you." Why not give rainbows a try, as I have?

References:

Amazonas Nov./Dec 2014 various articles
YouTube;Episode #1 Fish Room Tours-Gary Lange-Rainbowfish Aquarium.

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My Favorite Aquarium Plant: *Rotala* sp. 'Nanjenshan'

Story and Photos by Stephen Sica

At the November meeting of the Greater City Aquarium Society, a large selection of plants was donated for auction by Florida Aquatic Nurseries. I sat in my usual puzzled state while Donna read a book topside. I was puzzled by my unfamiliarity with the names and appearances of most of these quality plants. Then a *Rotala* was brought before the bidding audience. I had never heard of this specific *Rotala*, but several years ago I came across *Rotala rotundifolia* in a now defunct local pet shop. I purchased the three-plant stock and successfully grew them for a period of time. This success has prompted me to write a "My Favorite Plant" article. I recall that if the plants received strong lighting their tops would be enhanced by the development of a pinkish to reddish tint. As a keeper of aquatic plants, my goal, first and foremost, is to keep them alive. Having made this statement, my reddish topped *Rotala* plants soon faded to green. In any event, I was captivated by these *Rotala* species. No one seemed anxious to bid, so I bid five dollars and purchased the plant.

A curtain of neon tetras, *Paracheirodon innesi*, provides a colorful highlight to a *Rotala* sp. 'nanjenshan' plant that serves as a centerpiece between Java ferns, *Microsorum pteropus*. Above the plants, four Harlequin rasboras, *Trigonostigma heteromorpha*, hover in a sentry-like formation.

I scurried right home with Donna, because I was eager to plant my new plant! When we arrived home, Donna announced that Cordelia, our dog, required her final walk of the day. It was after 10 PM, so I placed the *Rotala* on the end table next to its new home, and went dogwalking.

The next morning my plant was where I had left it. It looked to be in good shape, because it was moist. This was fortunate because Cordelia now needed her first walk of the new day! Afterwards, I finally planted my new plant. Although it was at least seven or eight inches in length, I did not pick a mid-range or background location, but planted it where I could readily observe it. Its home is only a seventeen gallon aquarium, so there were minimal places to plant it anyway. My new plant now appears to be happy. Its fish neighbors swim to and fro and all around it.

I speak to my plant occasionally in an attempt to keep it healthy and happy. I can vouch that talking to some of my terrestrial plants has helped them stay alive and grow. It is obvious that they are happy. I am unsure if an aquatic plant can hear a voice from the air column into the water column. As an amateur diver, I did consider putting my face into the aquarium since sound travels through water very well. I abandoned this consideration because my face is too big and the tank too small. Also, I was fearful of looking silly. Besides, I doubt that the fish would tolerate me in their home, and I didn't want to frighten any fish post-Halloween. Some of my readers may be wondering if I am joking or serious. For now let it be a mystery, or you can ask my wife. She knows me very well, and is the one person whom I cannot fool, even though I am always trying.

This *Rotala,* in the *Lythreceae* family, is a true aquatic stem plant that is native to Taiwan, but is farm raised in the United States. Most plants that are farm raised in the United States, including mine, are grown in Florida. Many experts believe that moderate lighting is sufficient to keep *Rotalas* healthy, while some think that a higher level of lighting is necessary. A few contend that lower light is acceptable. I recommend moderate lighting in the beginning, with increased lighting as necessary. I do not believe that this plant would survive under low light, but these varied opinions should make the plant a good subject for some lighting experimentation. I would observe the plant daily and study it carefully. Good lighting will enhance this plant's overall light green color. I don't know if the top will take on a pinkish to reddish tint.

Since I initially established my seventeen gallon aquarium with LED lighting, I have learned that too much of it can "burn" and melt some plants, especially *Anubias.* Therefore I only keep the lights on for four hours, beginning in the early evening before the sun sets. The time is approximately from 4:45 to 8:30 PM. Since the aquarium is next to three side-by-side windows, the natural light always causes the growth of algae.

If you purchase this plant in a pet store, the length should be seven to eight inches, which was the length of the donated plant that I purchased. Many feel that it is a mid-ground plant. It can grow to fourteen inches, so the plant will landscape an area from mid to the rear of your aquarium. A bunch of three or four can fill up space in a small aquarium. If my current plant does well, I may try to buy one or two more of this species, or another in the *Rotala* family, so that I can grow or build a "forest."

***Rotala* sp. 'nanjenshan' occupies the center of my seventeen gallon open top aquarium. Java ferns, *Microsorium pteropus*, that were purchased as GCAS auctions make my simple plant cultivating skills appear a bit more impressive than they really are. I purchased a commercial substrate that contains minerals and bacteria and claims to accelerate the growth of aquatic plants. The substrate appears to have a positive effect.**

Rotalas enjoy water temperature in the 72-82 degree range, with pH just below to above 7. If your plant grows well, take some cuttings from the top and trim the leaves about an inch or so at the bottom and replant. You should have no trouble propagating *Rotala*. Of course your plant will appreciate carbon dioxide fertilization and supplements. I'm trying to grow my plant in mineral nutrient substrate only, with no other additives.

With moderate care, you should have an attractive and hardy plant that is fairly uncommon in the hobby, and will surely enhance your aquarium. I am optimistic that your fish, like mine, will enjoy this *Rotala* and welcome it to its new home for many years to come.

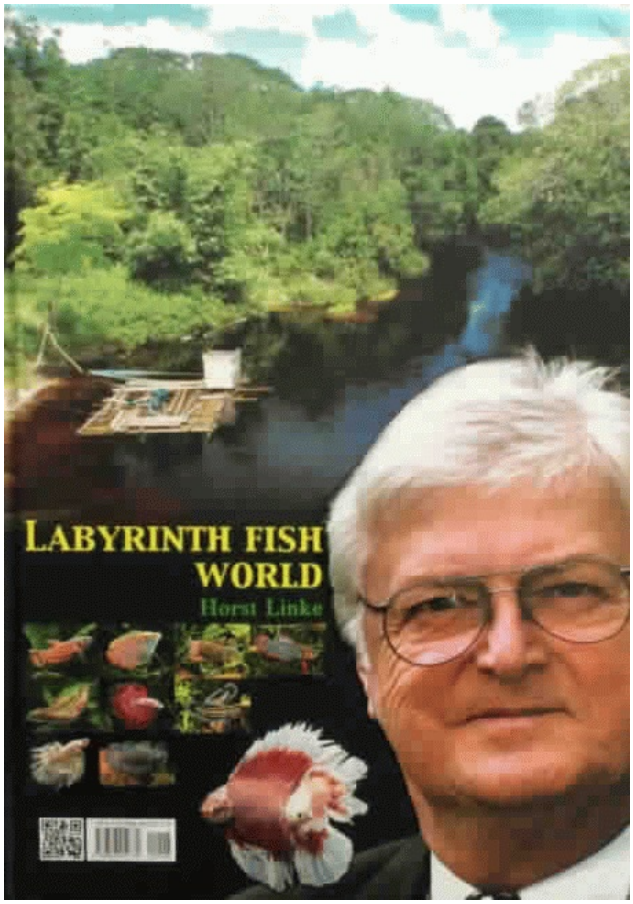
Wet Leaves

a Series On Books For The Hobbyist
by SUSAN PRIEST

Are you a serious book lover, a serious fishkeeper, or possibly both? If you are, then get ready to be seriously impressed.

For many years I have been tripping over stacks of books dedicated to the widest variety of labyrinthfishes imaginable. Well, imaginable has just taken on new meaning. In a quote from our author, he states that "In this book I have tried to present all the species [of labyrinthfishes] known to and described by science up to 2012."

Labyrinth Fish World
by Horst Linke
Publisher: Fish Magazine Taiwan
August, 2014



The remarkable amount of information collected between the covers of this book would seem to require many more than the 575 pages within. There are fourteen genera of Asian labyrinthfishes, and two from Africa, which are arranged alphabetically. The numerous species within each genus are also alphabetized, using their scientific names. This makes it a simple task to locate any particular fish under your scrutiny. Many, but not all, of the fishes also have an "English," or what we would call, a common name.

On the title page it says "with 1,768 selected photographs." The contents page lists the photographer as Horst Linke. The only photo I could find which actually had a photo credit attached to it was the one of our author. It said "photo by Mike Linke." Based on these observations, the only conclusion to be drawn is that Mr. Linke selected all of the 1,768 photos from among his broader personal collection. This fact is all the more astonishing when you are actually looking at them. For the not-so-serious among you, browsing these photos is a uniquely enjoyable experience.

I have chosen a biography of one of the fishes to describe in some detail. This fish is a favorite of mine, which resided in my home for quite a few years; the beautiful and fascinating *Betta enisae*. (Its "English name" is Enis's betta.) It is native to Indonesia, and was first described in 1993. "The location for the specimen used for the description" is the tributary of a river, and specific coordinates of latitude and longitude are included. "Biotope data" prescribes soft, acid water, and with parameters at that location having been recorded as a pH of 5.58 and a temperature of 80.5°F. Under the heading of "Reproduction," the text describes it simply as a mouthbrooder. However, the several accompanying photos of their mating procedures, along with the descriptive captions, leave you with no questions in your mind as to what is happening. "Remarks" comments on the slight differences in appearance to closely related species.

One of the most important pieces of information offered is the total length of each fish. The *Betta enisae* is 3.5 inches. This is particularly pertinent because the numerous photos are of all different sizes, which could lead the reader to wonder which, if any, of the photos are true to life size. Some of the fishes are presented on one or two pages, while others take up ten or more. As meticulous as the information in the text is, the photos tell most of the story.

Whenever the opportunity presents itself, my little dog Joey likes to sit in my lap. After about ten minutes he starts to feel heavy, and I chase him

off. Not so with this book. It is heavy right from the start. This sends me in the direction of a desk, a table, or the kitchen counter. It gives new meaning to the term "heavy reading."

There is a bibliography, but no index. There are several pages of advertising In the front and the back which are easily bypassed, and don't detract from the overall presentation.

I usually don't comment on the cost of a book, because most are available from a variety of venues at a variety of price points. Check out Al's companion piece to this review for details on this as well as other aspects of this book.

When all is said and done, I find myself wondering why someone would go to such great lengths to produce such a comprehensive work. I can't even imagine how long it must have taken, and how soon it will become obsolete. Mr. Linke has answered this question for me. "I hope that this book, containing my biotope studies, numerous illustrations, and my suggestions for optimal maintenance, will contribute to the conservation of the host of colourful and extremely interesting labyrinthfishes." I hope so, too!

By Alexander A Priest

Observations on an Over Due Book:

Labyrinth Fish World by Horst Linke

A few years ago, our society's C.A.R.E.S. coordinator asked me to suggest good reference material on anabantoids. At that time, I had to tell him that, unfortunately, there were no recent books on labyrinth fish. The best available literature on this suborder at that time was **AQUALOG All Labyrinths - Bettas, Gouramis, Snakeheads and Nandids** by Frank Schaefer (144 pages published in 1997 with a supplement poster of 64 photos released shortly thereafter). Slightly more up to date with respect to species in the genus *Betta* was Dr. Robert Goldstein's **The Betta Handbook** (167 pages, printed in 2004). When I mention books on "Bettas" I am excluding those primarily focused on keeping (or showing) *Betta splendens*. (For example, David Boruchowitz's **Aquarium Care of Bettas** (111 pages, printed in 2006, devotes only 2 pages with 14 small photos to *Betta* species other than *splendens*.)

Any long-time reader of this publication should be able to guess why I was asked to recommend a labyrinth fish book, as I have been specializing in (and writing about) them for over 20 years. Many of the species I have kept and written about were only recently identified.

To give just two examples, when I wanted to research *Betta midas* (2009) or *Betta uberis* (2006) for articles I was writing, I had to rely mostly on my own observations and some Internet accounts (which might or might not have been accurate, or even real).

I kept hoping one of the aquarium atlases (such as Dr. Axelrod's or Baensch's) would come out with a new volume and include the more recently discovered and identified labyrinth fishes. (Fish in the Anabantoidei suborder are sometimes referred to as "labyrinth fish" because they possess a labyrinth, or maze-like, structure capable of extracting oxygen from air gulped at the water's surface.)

However, I was not expecting to see anything even closely approximating the size and quality of **Labyrinth Fish World** by Horst Link. The author takes a strict interpretation of the term "labyrinth fishes" and does not include Nandids (leaffish), or Badidae (*Badis* and *Dario*) species. Even without including those species, this book is BIG--577 pages, and that's A4 size paper, which is 8.3 inches wide and 11.7 inches high! (A4 size paper is the standard business letter size in much of the world outside of North America.) In other words, this is one BIG book with 1,768 very high quality color photographs. (And, yes, this book **does** include both *Betta midas* and *Betta uberis*.)

In my opinion, this is by far the best book ever produced on labyrinth fishes, but it's not perfect. It is a translation from the original German, and apparently some "common names" of fish in Germany (or perhaps in Europe generally) are less common in the U.S. For example, Linke attributes the common name of "Enis's Betta" to *Betta enisae*, which in the U.S. is much more likely to be called the "Blue Band" (or "Blue Banded") Betta; *Betta miniopinna* is more commonly (in the U.S.) referred to as "Small Fin Fighter" than "Bintan Betta"; and while *Betta macrostoma* **is** sometimes referred to as the "Spotfin Betta" (as the book indicates), it is much more frequently known in the U.S. as the "Brunei Beauty."

I would have liked to see an index with both common and scientific names. I would also have liked to see more information on keeping these fish in an aquarium. For example, in the description of *Betta macrostoma*, Linke writes, "For maintenance an aquarium of adequate size is required." But, he does not specify what he considers to be an "adequate size" aquarium for this species, although there is a general mention in the opening pages to the effect that "larger" species (undefined) should have a tank of from 48 to 55 inches in length. (Specifically in the case of *Betta macrostoma*, I've had very good experience, including spawnings, with one adult pair in a 20 Long tank.)

However, the thing that bothers me most about this book is that, being so large and colorful, it is also quite expensive, and only a few hobbyists (either labyrinth fish specialists, such as myself, or collectors of aquarium literature) are likely to buy it. I ordered it from Taiwan at about $90, and with shipping (even by using the slowest and least expensive means), the book cost in excess of $100.00!

In addition, its size, cost, and therefore limited appeal, make future updates highly unlikely. I would like to see soft cover supplements describing newly discovered species.

Fishy Friends' Photos

by Greater City Aquarium Society Fishy Friends

Here is another installment of our newest ongoing column—photo submissions to our "Fishy Friends" Facebook group. Once again, I've left the species 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!

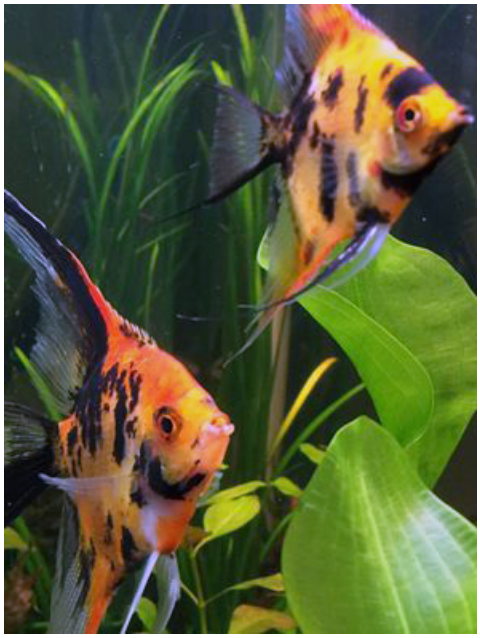
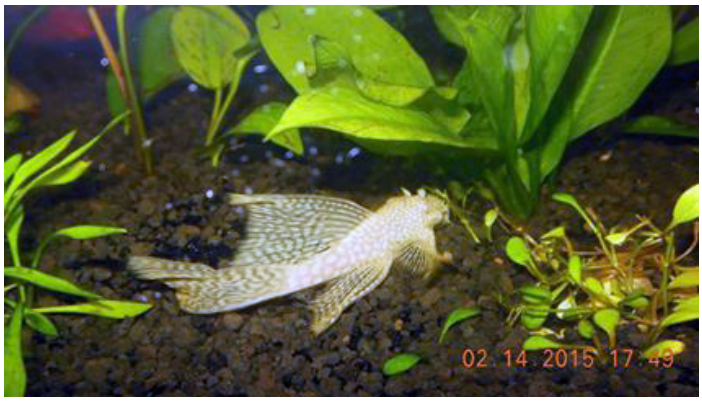


Photo from Joseph Gurrado



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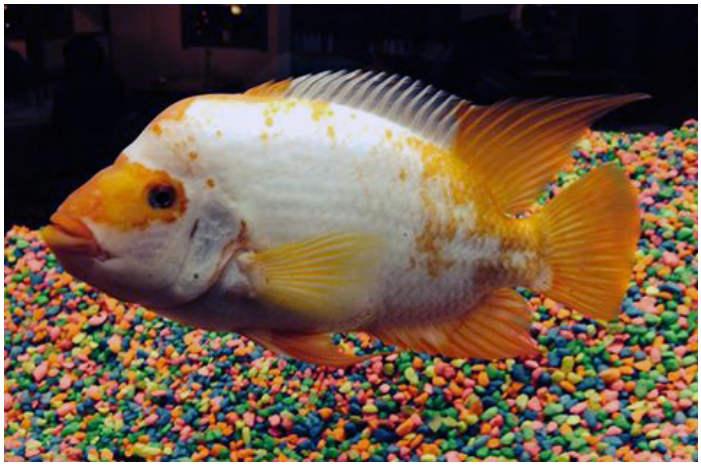

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AN AQUARIST'S JOURNEY

Story and Photos (unless noted) by Rosario LaCorte

Chapter 12

The 1970s turned out to be an exciting decade for me. Dr. Stanley Weitzman, Curator of Fishes at the Smithsonian Institution in Washington, would visit with me from time to time. Stan was one of our foremost ichthyologists, but what I appreciated about him was his deep interest in characins and their reproductive behavior. Stan was a very competent breeder, and did well with many species. He and I shared many interests: our love of classical music, of the fish species we both enjoyed, and we shared the same birthday, March 16.

In 1960 William A. "Fred" Kyburz of Bitaco, Colombia was responsible for introducing the exciting new emperor tetra, *Nematobrycon palmeri.* At that time Stan was attached to Stanford University and also the editor of **The Aquarium Journal**. We had corresponded periodically regarding some articles I had written as well as fish news. Our letters touched on the subject of the emperor tetra, and Stan suggested that I forward some preserved material to him, as I had some of the wild collection by Kyburz. The emperors turned out to be a rather easily bred fish. With the early spawns of the wild specimens breeding readily, there appeared a number of black youngsters, quite different than the adults. They were harvested to be placed in a tank of their own to assure maximum accelerated growth and well-being. About 15 or so were collected, and this became the nucleus of a breeding program that I intended to pursue.

Nematobrycon palmeri

The young black offspring grew quickly and began reproducing themselves. They bred true, and all subsequent spawns were black as well. Their color pattern was different than *palmeri*. How did this happen?

Emperor tetra: black form which came out of the original *N. palmeri* in 1960.

In 1960 I sent Stan some preserved specimens of the material that Sol Kessler of the Irvington Fish Bowl and I imported from Franjo Fisheries. Kyburz and Franjo Fisheries worked together in the distribution of the emperor tetra. Jim Thiel, the manager, and I began a correspondence in the hopes of importing other types from the Rio Calima area of Colombia, though it never developed into a successful endeavor. Jim Thiel was wonderful to work with, but logistics did not work out well, mostly because of Kyburz' inexperience in shipping fish.

After Stan Weitzman examined specimens that were in Dr. Carl Eigenmann's collection, in which he described *N. palmeri* in 1911, he found that the specimens included one black female. He and his associate Bill Fink discovered that the preserved specimens that I had sent also included a black female. In 1961 Kyburz discovered another *Nematobrycon* species from the same area of the Rio Calima. Kyburz called it the rainbow emperor. Since we were in contact with one another, Kyburz informed me of his find. I attempted to bring some in through Jim Thiele of Franjo Fisheries. The shipment arrived in Florida in poor condition, covered with ich (a protozoal infection, which untreated, results in death). They all succumbed, and no subsequent attempt was made to repeat the effort.

Dr. Myers, when senior editor of **The Aquarium Journal**, wrote a column called "Hints" for fish importers. Dr. Myers had a keen eye for fish that would prove to be a good addition to the aquarium hobby. Such was the case when he saw a preserved specimen of the emperor tetra, *Nematobrycon palmeri*, and suggested that it could be desirable. He also mentioned that a second species, called *Nematobrycon amphiloxus*, would probably be desirable. None of us had a name for the new rainbow emperor that Kyburz brought to our attention. I erroneously assumed that the rainbow emperor Kyburz collected was the aforementioned fish that Myers had suggested as another splendid addition. Armed with what I knew (or thought I knew), I informed Kyburz that

his rainbow emperor tetra was *amphiloxus*. That is how the name *amphiloxus* began to attach itself to the rainbow tetra. Fortunately, it only appeared in some of Axelrod's earlier books, and did not spread through the aquarium literature.

Stan Weitzman and Bill Fink researched tthe matter, reexamining all the literature written by Carl Eigenmann, including where Eigenmann and Wilson in 1914 described *Nematobrycon amphiloxus* as a fish from the headwaters of the Rio Altrato, quite a distance from the *palmeri* range. Finally determining that he did indeed have a new species, Stan decided to name it for me!

So one day in 1971, arriving home from work, and with all the family at table ready for dinner, Jeannie informed me that a letter had arrived from Stan. Opening the letter, I discovered midway through its contents that the new species would bear my name because of my long interest in characids. I had given Stan all the correspondence between me and Kyburz, and this had been helpful to Stan with respect to location data, which is a must in a proper description of new species. I and my family were of course elated over the naming of the new emperor tetra, *Nematobrycon lacortei*! The rainbow emperor tetra (*N. lacortei*) is also referred to as the red eye emperor.

Nematobrycon lacortei

According to Stan, the black form that appeared in my spawns were *N. palmeri*. We both feel that much more investigation is needed with collections from Colombia. I have seen some imported wild forms that look like a dull version of palmeri, and these may be closer in color to the black form. The earlier wild forms had some very attractive yellow in the major fins.

I continue to maintain the original *palmeri* which was collected by Kyburz in 1960, as well as the black form that appeared in that year. Both forms are still attractive and vigorous after nearly fifty-five years of line breeding. I might add that to continue a line with success and maintain vigor it is wise to begin with a goodly number of fish. When Sol Kessler and I imported the initial stock we split the 100 in half, each of us taking fifty fish, which gave us a nice diversity.

I never anticipated that I would be able to maintain the line for fifty-five years and counting. The fifty were broken up into several tanks, and became isolated populations. From time to time some of the young would be set up in another tank, to allow strong bloodlines. Only the best were selected to continue the breeding program.

At that time all other tetra species to be reproduced were set up in individual tanks using peat-filtered soft water. This environment almost always induced spawning within a few days. The parents would then be removed, and the following day the eggs would hatch. By the fourth day the fry were fed (very sparingly) newly hatched *Artemia*. I anticipated using this same method for the emperor forms, but I was in for a surprise. After spawning the first pair, only fifteen young resulted. I thought that at this rate it would be a long process to achieve meaningful numbers.

Most all characins normally produce the majority of their eggs in a single spawning, and seeing hundreds of eggs scattered in spawning media is not uncommon. The tanks for my groups of emperors had a layer of live sphagnum moss which I would periodically collect. After cleaning, and removing dead leaves and sticks, which are always associated with sphagnum moss, it is then layered into one side of the aquarium, providing a splendid cover for reproduction as well as an excellent hiding place for the fry to develop. Here in New Jersey there are approximately 51 species of sphagnum moss, with probably more to be discovered. Some sphagnum was once used for medical dressings—for instance to cover combat wounds during World War I.

When sphagnum is added to a tank full of emperor tetras they immediately respond to its effects. Males will spread their fins and display to the females; they will swim into the maze, mouthing bits of sphagnum, which contains some estrogens. The drawback to sphagnum is that if food is allowed to accumulate at the bottom layers, a pH drop will result, and the excessively acidic conditions will be detrimental to the health of the fish. Water changes can alleviate this problem.

Sphagnum moss in the wild.

During his research, when Weitzman examined some of the females he noted that there were few eggs in their ovaries. That was the reason my original breeding setup, using a single pair, produced so few offspring. Using the sphagnum setup and several pairs allowed for continual daily production of fry, and upon hatching, the fry were able to feed in relative safety while hiding in the depths of the sphagnum. Over the

years I have noted that there are a number of characins (depending on nutrition) that use a similar breeding cycle, producing small spawns on a daily basis rather than one large release. The use of sphagnum works wonderfully for these species. Large clumps of Java moss may also be used instead of the sphagnum.

Over the years, I have corresponded with many prominent aquarists from many different lands. One of these was the well-known German aquarist Dr. Walter Foersch, of Munich, Germany. In one exchange Dr. Foersch told me that he would be visiting parts of the U.S. and Canada, and wondered if there would be an opportunity to visit with us. I gave him my phone number, and eventually he called and we set up a time for his visit.

Dr. Walter Foersch, of Munich, Germany, with Jeannie and the kids in the early 1970s. My mother is at the far left.

Walter and his wife Lotte stayed with us for several days. His English was very halting and my German was non-existent, but despite the difficulties we were able to converse with one another. Walter was quite impressed with my fish house. He was also impressed with the fact that I still maintained a small cyprinodont from Ghana, *Fundulosoma thierryi*, a fish he had sent me years earlier (1960), in egg form. He said that the species had been lost in Germany, and were not available.

Fundulosoma thierryi

His visit was also a delight for our children, who were very impressed with Dr. Foersch. Being from Bavaria, he was able to yodel some German tunes. The children had never heard that kind of singing, and they were most impressed with this special

***Nothobranchius furzeri*, about 1973.**

talent. He really was quite good, and the children asked him to sing on several occasions, and he always accommodated them.

At that time I probably had the last *Nothobranchius furzeri*, a fish imported several years earlier from Rhodesia (now Zimbabwe). It was one of the few specimens we had at that time, and not too many *Nothobranchius* enthusiasts had been able to acquire them. It was an extremely beautiful fish, but had one drawback, which was that it began to show age deterioration in just a few months. This may have been the reason for its lack of distribution. Dr. Foersch expressed an intense interest in obtaining some breeding stock (as I mentioned earlier, there were none available in Germany). I promised to forward some eggs to him, and I did. He managed to hatch a few, but only one pair turned out to be in fine condition.

From that hatching, Foersch was able to compose a wonderful article, which appeared in the German magazine **DATZ** in April of 1975. The article included some excellent black and white photographs of the species' reproductive behavior, presenting several positions of the nuptial embrace. (As a side note, Walter's photographic technique included the use of a single-legged stool, on which he could weave about in all directions, so that the camera could remain in focus to capture images as the fish change position.)

This sharing of eggs is a prime example of how important it is to maintain contact with other aquarists. The species was made available to other skilled aquarists, thereby allowing its continuity in the hobby.

Nothobranchius furzeri, because of its short life cycle, became a subject of laboratory experiments, perhaps most notably with the plant-derived polyphenol, resveratrol. In 1992 it was found that red wine, which contains resveratrol, has a positive effect on cardiovascular health. Testing on *Nothobranchius furzeri* confirmed that it did extend the fish's longevity.

Dr. Foersch was a wonderful person, who contributed a great deal to our hobby. He was responsible for the entry of *Nothobranchius korthausae* into the U.S. He received the fish directly from Mrs. Korthaus, who had collected the fish and whose name it bears. He forwarded eggs to me, and that was the beginning of the species in this country.

In 1977 I received a call from Stan Weitzman, and he began to explain to me about being awarded a National Geographic grant to study fishes in South America, covering the genus *Glandulocauda*, a unique group of fishes found in Central and South America, extending to Argentina. Reproduction in this genus is different than for most egg scatterers. Males have a gland in their caudal peduncle which produces a pheromone attractant. Internal fertilization then takes place, after which the female can deposit fertilized eggs for several months without the presence of a male.

After hearing the rundown on his plan, I jokingly quipped, "I'm available if you need a water boy." I never in my wildest imaginings expected his response, "Well, that's the purpose of this call. The grant would cover all your expenses if you'd be willing to assist in this project. It would also mean that you'd be away for six weeks, spending a month in southeast Brazil, a week in Amazonia, and a week in Venezuela."

Wow! Now I began to wonder how to approach my wife with this proposition. Six weeks is a long time to be away from the family, and who would look after the two hundred aquaria in my fish house? Our children were by this time young adults, so there would be a strong family support system in place. Still, I was a bit squeamish about leaving Jeannie with the burden of overseeing the care and feeding of such a large collection. I had never asked Jeannie to help me with what I had always felt was my responsibility, and didn't want to burden my wife and children with my hobby.

We discussed the whole project, and whether she could handle the situation. There was no question about her apprehension, but in spite of that she felt that it was a once in a lifetime opportunity that might never present itself again. We ultimately decided that Jeannie would take care of the feeding, and that my youngest son Tom, who was 17 at the time, would handle the water changing and general maintenance.

My son Tom, age 17

The departure time was to be September 12, 1977. Before departing for Brazil I needed to go to Washington, D.C. to sign papers for the grant money and to legitimize my responsibilities.

I traveled by rail to Washington, where Stan met me upon my arrival, and I spent the next few days with Stan and his wife Marilyn. It was a very enjoyable stay, and we had the chance to discuss our plans, and to spend some time sightseeing at the National Art Museum, as well as at the Fish Department of the Smithsonian, where Stan for a number of years was curator.

Returning from Washington, it was my intention to have Jeannie observe my work pattern during feeding time, so that she would get an overview of how to care for the whole setup during my six-week absence. Alas, that plan never materialized, as our schedules never meshed enough to allow it. The night before my departure I gave Jeannie and Tom a crash course in what to do. I told Tom that if any problem arose, just do a water change, and that would likely alleviate most conditions, especially related to acidosis. I also mentioned that I had enough friends who would visit to give advice if needed.

The beginning of this adventure finally arrived, and I met Stan and Marilyn Weitzman at Kennedy Airport. We departed at 8:45 PM on an overnight flight to Rio, our first destination. At sunrise we reached the northeast coast of Brazil, looking down as the huge area of forest, streams, and lakes revealed themselves. With each viewing of the watery basins I wondered at what fantastic fishes might be there.

We finally arrived in Rio at 8 AM. The weather was overcast and cool. An hour or so later we departed for São Paolo, a short flight from Rio. Flying over Rio was very impressive. The aerial view is one of the most beautiful sights in the world. Flying past the statue of Christ the Redeemer is indescribably awesome.


***Christ the Redeemer (2014* by Chensiyuan -- Own work. Licensed under CC BY-SA 4.0 via Wikimedia Commons: http://commons.wikimedia.org/wiki/File:1_cristor_redentor_2014.jpg#/media/File:1_cristor_redentor_2014.jpg)**

This was the second trip for Stan and Marilyn, as they had previously visited in 1976, collecting fish with Drs. Naercio A. Menezes and Haraldo Britski, curator of fishes at the Museo de Zoologia da Universidade de São Paolo.

Our lodging was a small house a few blocks from the museum. It was maintained by an elderly widow who rented out her home to visiting scientists, mostly from Brazil and other South American countries. The museum directed visitors studying at the museum to stay at this temporary residence. The lady of the house was Donna Antonetta Ciccarelli, a Brazilian of Italian heritage. The Weitzmans had stayed with her on their first visit, and Stan was hoping that my small

knowledge of Italian would be good enough for us to converse with her.

Well, it turned out her Italian was pretty bad, but somehow we were able to communicate. The rent was quite inexpensive, costing us $11 per day, which included three meals and having our clothes laundered. Despite living a rather mundane life, she still had a woman come in each day to clean the house and wash the clothes. She spent most of her day playing solitaire, chatting with neighbors, and smoking cigarettes. She was a character!

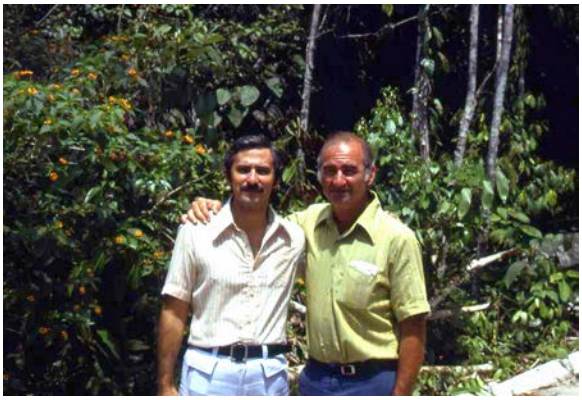
Stan & Marilyn with Donna Antonetta (center)

Prior to leaving for Brazil I had corresponded with Gilberto Campello Brasil, a hobbyist who had collected *Cynolebias antenori*, an annual fish found in the northeastern part of Brazil. The late Steve Sellers, who was then the new species chairman of the American Killifish Association, arranged to import them, and they were distributed to members of the AKA at $25 per pair. Later in this tale I will go into more detail concerning Sr. Gilberto.

On my first visit to the museum Stan introduced me to the above-mentioned Drs. Britski and Menezes, who were both well-known and respected throughout the ichthyological world. Both spoke English, which was a big plus for us. Naercio, a graduate of Harvard, spoke flawless English. Both taught many classes at the museum.

Drs. Haraldo Britski (L) and Naercio Menezes. Britski was curator of fishes at the Museu de Zoologia da Universidade de São Paulo.

At about this same time I became acquainted with Ivanzir Viera, of the Universidade Federal Juiz de Fora, who at the time was working on a degree in ichthyology. Learning of my love of characins, he mentioned that in Manaus there was a battery of aquariums that housed a new characin that had been discovered by Menezes and a group of students. This new species was named *Inpaichthys kerri*, in honor of Dr. Fredrich Kerr, the director of INPA (Instituto Nacional de Pesquisas da Amazônia). Naturally, we discussed the possibility of obtaining some specimens once we reached Manaus (following our month of exploring the southeastern region of Brazil).



Ivanzir Viera (left) with the author

I also met Persio de Souza Santos Filho, a student interested in *Rivulus* species, who also collected *Neofundulus paraguayensis*, an annual fish from the state of Mato Grosso. Later on I will go into more detail regarding our joint collection efforts.

On September 14 we spent most of the day preparing aquariums to house our anticipated collections. We also examined many jars of preserved fish. Stan showed me a jar with fifty or so magnificent specimens of a characin unfamiliar to me. He chuckled and told me that that jar had been sitting on the shelf for ten years, even though all the data was available to complete a description of the fish. The extraordinary finnage, which was the main feature of the fish, just really captured my attention. It wasn't until the mid-1990s that the fish was collected in the Rio São Francisco basin, and eventually found its way into the United States. I was able to get some of the first specimens to arrive here and to reproduce them. It was described, and named *Nematocharax venustus*. Despite its unique finnage and color, it never became popular, and eventually disappeared into obscurity.

***Nematocharax venustus*, the fish I mentioned, that "Stan showed me a jar of preserved material that had sat on the shelf for ten years."**

The fact that it was rather aggressive helped to seal its fate. Perhaps a few generations of tank-raised specimens might have reduced its aggressiveness somewhat. I have seen it happen with other species.

September 15 at 7:30 AM, we began our first journey into the south of Brazil. After driving for about an hour we reached the outskirts of São Paolo, only to break down. Our vehicle was a Volkswagen van supplied by the museum. At that time Brazil was ahead of other countries in an effort to reduce gasoline consumption. Many vehicles used a blend of 10% alcohol to gasoline. I wondered if this was to be a bad omen for our journey. Fortunately, our vehicle had come to a stop close to a gasoline station where repairs could be made. Haraldo Britski ventured to the station to seek help.

As we all waited outside of the van, a mechanic from the station approached us, carrying an old, dented-looking toolbox. He was wearing an olive-colored baseball cap with the visor pointed sideways, and sandals without socks, which was a common sight there. He did not radiate confidence in his ability to locate the problem and send us on our way, and so we were murmuring amongst ourselves about starting this journey off on the wrong foot, and wondering how expensive this ordeal was going to be. However, within ten minutes he had analyzed the problem and repaired it. I said, "This is a great lesson to learn! As the old adage warns, never judge a book by its cover."

Eventually we passed through the town of Registro, in the southeastern part of São Paolo state. We had traveled through Serra do Mar, a beautiful mountain area too spectacular to describe. The trees had thousands of bromeliads inhabiting them, and there were flowers in abundance. The environment, with its clouds of water vapor, supported fantastic varieties of plant life!

Going through the mountains, which took a few hours to complete, I took notice of the generosity of the truck drivers. Since Brazil lacks a rail system, the lifeblood of their commerce is trucking. Carrying large loads of food and other materials up and down the steep grades of the mountain roads severely restricts the speed at which they can travel. If you find yourself behind one of them, they will pull over to the side to allow faster traffic to pass them. I found that to be quite thoughtful and courteous on their part. Almost all of the trucks (usually Mercedes) are beautifully and gaudily, painted with scenes of a religious nature.

Our first stop was at Jacubiranga, in the state of São Paolo. Our collection included *Poeclia, Astyanax, Deuterodon, Otocinclus*, and *Geophagus braziliensis*. We stayed overnight in Jacubiranga, and at 8:15 the following morning left for Curitiba. While in Curitiba I had the opportunity to send my mother a cablegram wishing her a happy 80th birthday.

We then traveled to Camptesdre and collected *Corydoras natteri* and *Poecilia characidum*. From there, we made a hectic trip over a very hilly dirt road to Campo Largo, where we collected some *Corydoras paleatus* and *Hoplias malabaricus*, a characin and a predator that can reach a foot in length. The water was a chilly 62˚ Fahrenheit, but a real fish nut overlooks the discomfort of these situations, though I did wear a pair of long pants to protect myself from insect bites. We stayed overnight in Campo Largo. The hotel was not the greatest, and after showering I shivered very badly, as warm water was not available.

We departed Campo Largo on Sunday, September 18 in a very close and heavy ground fog, which later burned off when the sun made its appearance. We traveled on the same dirt road where the day before we had gotten stuck in the mud. Since it was a Sunday and the small village (Balsa Nova) had a church in the center of town, it was an opportunity to attend mass, and we stayed in the area to make further collections.

The mass was quite different than the way we do it in the U.S. All the women sat on the left side of the church, and the men sat on the right. There were quite a few children, but they were well behaved. The church was very crowded, and I had to stand in the rear. The priest who celebrated the mass delivered a homily that lasted for thirty-five minutes, and not understanding Portuguese, it seemed to me like an eternity.

After mass I rejoined our party and did some collecting. There wasn't much in the area but a small brook, whose waters cascaded down at a rapid pace. Because of the movement, the water was quite muddy. We did collect some *Corydoras* that looked like an *aeneus* type, but had a beautiful red cast to the whole body.

We then left Balsa Nova and traveled to the Iguassu River, famous for its spectacular Iguassu Falls, though we did not reach the falls, as they were too distant and not in our plans. We collected in some small secondary streams, and needed to use rotenone so that we could collect and preserve some of the more difficult-to-reach rock dwellers.

Collecting in the Rio Iguassu: Naercio Menezes (L), the author, and Haraldo Britski.

The next day, September 19, we reached Sobre o Rio Roseira, where we collected a possible new *Trichomyeterus*, *Cnesterdon decemmaculatus*, a very abundant livebearer but not very colorful. While there,

we also collected some agate rocks. This area was in the state of Santa Catarina. We then proceeded over the span of a large bridge with a breathtaking view of the Uruguai River. Our destination was south, in the area of the Jacqui River. While there, we collected several species of silvery characins which were not desirable as colorful additions to the aquarium. The main purpose of our journey was to collect specimens of the genus *Glandulacauda.*

We drove to Carazinho, which is a fair-sized city in the state of Rio Grande do Sul. We stayed in the Grand Hotel, which was much nicer than any other stop we had made to that point. While there, I called Viggo Schultz, brother of Harald Schultz. I didn't know if he had ever heard of me, and I wasn't sure if he spoke English, but as it turned out his English was flawless, he did know of me, and he looked forward to our arrival in Porto Alegre the following day.

On September 20, we departed Carazinho, and traveled to a fish culturing station, Barragem Acstacão di Piscicultura em Ernestina, where work was being done with *Rhamdia* catfish. They were stripped of their eggs, which were then fertilized in jars. The people in charge of the station were very kind, and showed us around the area. We were taken to the opposite side of the dam, where a very interesting rock formation allowed for a rapid water descent. Between the rocks one could collect hundreds of non-descript, silvery characins. The rocks were covered in algae, and by sweeping a hand net along the face of the rocks you could collect countless choronomids. Perhaps this was why the area was so populated with fish—there seemed to be an endless supply of bloodworms!

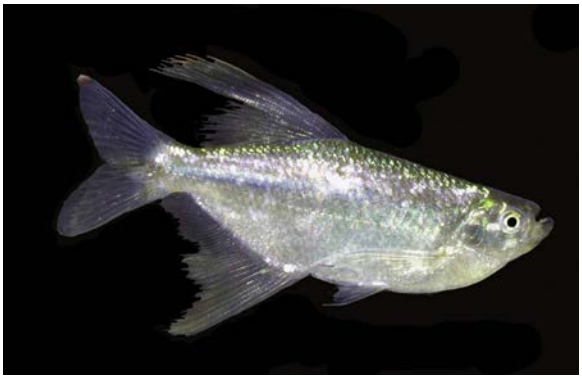
Bloodworm stream

Following our wonderful visit to the fish culture station we traveled on towards Porto Alegre, stopping en route at Rio Forqueta Marques de Souza, Municipio de Lajeado, Rio Grande do Sol. In this river—a tributary of the Jacqui—we finally collected our first glandulacaudine, *Diapoma speculiferum*. We gathered live specimens, and preserved them for histological studies. We also found several very attractive rocks. Arriving in Porto Alegre at about 6:00 PM, we spent a very pleasant evening with Viggo Schultz, and made plans with him to collect more glandulacaudas the next day.

Viggo Schultz (left) and Dr. Naercio Menezes.

Viggo was a very educated man. His forbears were German aristocrats who had settled in Brazil many years earlier. His brother Harald was an ethnologist, and internationally well known in the aquarium hobby because of his many fish discoveries and photographs. Viggo, by profession, was a translator of five languages. In his living room was a collection of nearly five hundred Western novels. He was a lover of the classics, and sang some Beethoven songs. He was a delightful and gregarious gentleman. In our conversations he would continually say, "by the way," much like some people use the phrase "you know." He had us in stitches when he described how his piano had been eaten by termites.

We arose early the next morning to prepare for our journey to the areas around Porto Alegre. We arrived at Viggo's home at about 8:30 AM, and with his son and a friend we went on our way. Our first stop was a fast-flowing stream which contained some *Astyanax* and *Geophagus*, some *Corydoras*, and of course the species which held our interest, *Pseudocorynopoma doriae*. This is a handsome *Glandulacauda*, known popularly as the dragonfin characin.



Pseudocorynopoma doriae

We also collected from a roadside pond, where a few scoops netted hundreds of the subspecies *Pyrrhulina brevis australe*. Unfortunately, this characin is not very attractive, and therefore not in demand as an aquarium fish, though Marilyn Weitzman, who has maintained a strong interest in these and similar genera, such as *Copella* and *Copeina*, kept some for further study.

Many photographs were taken, including one where I photographed Viggo with Naercio Menezes. Upon my return home I sent him a copy of this photo, and he responded that I should have had my photo taken with him, rather than that "young whippersnapper" (meaning Naercio). I got a chuckle out of that idiom, coming as it did from his extensive reading of American Westerns. It isn't a term you would expect to hear from a German Brazilian.

After our journey with Viggo was complete we began the long trek back to São Paolo. On September 22, we collected along the coast in Torres, coming up with three poecilids that weren't particularly colorful. Stopping in Rio Bique, Santa Catarina, in a shallow, rocky stream that was very scenic, we collected *Mimagoniates microlepis*, a handsome glandulacauda that has a large range along the southeastern coast of Brazil.

Mimagoniates microlepis

On Friday, September 23, at about 11:30 AM, we arrived in Joinville, a very nice, quaint village with cobblestone streets, looking very European, whose inhabitants are mostly of German origin. An outdoor café provided an extraordinary experience, with some of the most enjoyable seafood one could eat. After refreshments, we stopped at some local streams to do water changes, as we were losing some *Diapoma*. After adjusting our collection we proceeded to Rio Vermelho, Barra del Sul, about 40 kilometers southeast from Joinville, to the site where Gilberto Campello Brasil collected *Campellolebias brucei*. His discovery of this fish was rewarded by the creation of the genus *Campellolebias*, named for him.

Campellolebias brucei

At that time this species was quite rare, and Drs. Britski and Menezes generously went out of their way to accommodate my desire to collect some specimens and observe their natural habitat. Unfortunately, our timing was not good. *C. brucei* is an annual fish, and is only seasonally available. We were only able to find a single specimen. It was extremely weak, and looked as though it would soon perish, so we did not try to bring it with us.

Along the way back to Joinville we stopped at a blackwater stream and collected the handsome characin *Mimagoniates lateralis*. This species is usually found in blackwater, and is richly colored in mahogany and yellow, though its beautiful color is soon lost in the aquarium. Axelrod and I collected these in 1958, and upon my return home I did reproduce them, using live sphagnum moss as the spawning medium. But it was to be years later that I would be able to photograph them, immediately after capture in the wild, and capture the rich colors of this interesting fish.

Mimagoniates lateralis

The southeastern region of Brazil is very similar to the pine barrens region of New Jersey. White sand, pitch pine, and many blackwater streams typify the area. Large areas of sphagnum also flourish, giving the appearance of a beautiful green carpet.

From this area we traveled to Guaratuba, and along the way, behind some sand dunes facing the Atlantic Ocean, we collected various specimens such as *Gymnotus, Mimagoniatus tenuis*, some *Poecilids*, catfish, and a single handsome male *Hollanichthys multifasciatus*.

Hollandichthys multifasciatus

On September 24, we traveled north toward Paranaguá, a trip which included a very enjoyable ferry ride. We stopped at a collecting point where

Nothobranchius korthausae

This unusual plant was collected along the stream where we collected *P. doriae* (dragonfin characin). Its upper leaves were red, while the lower leaves were green. All the leaves had a leathery texture.

Carlos Cruz mentioned in his paper on the species, that *Cynolebias aureoguttatus* (now *Leptolebias aureoguttatus*) was found. We, unfortunately, found no species other than a single female, unidentified *Rivulus*, and a single male *Corydoras barbatus* (now *Scleromystax barbatus*). From there we began our long journey back to São Paolo.

On September 29, at 6:15 AM, we departed São Paolo, arriving at 8:30 AM in Brasilia, the capital city of Brazil. We were met at the airport by a friend of Haraldo Britski, who supplied us with transportation. We drove directly to Planatina, passing the habitat of *Simpsonichthys boitoni*, the beautiful annual fish that I wrote about in an earlier chapter. That particular habitat was destroyed by the introduction of *Tilapia mossambica*. Fortunately, there are other habitats where they can still be found.

The terrain outside Brasilia is hilly, and brick red in coloration. One of the first streams where we stopped had a very abundant population of *Otocinclus*, and that brick red coloration of the stream bottom had a profound effect on their coloration. After a few days removal from the stream, their red coloration became subdued.

Further down the road we stopped at a large roadside pond with deeply black-colored water. A few inches below the surface any immersed object would disappear from sight. I made several deep thrusts with the net, but came up empty. I just could not accept the thought that such an inviting pond would be devoid of fish life, but finally, after many frustratingly futile probes, I came up with a six-inch *Hoplias malabaricas*, a nasty predator. Well, that was disappointing; perhaps this predatory characin had taken care of any smaller species. Several thrusts more, and Bingo, I hit the jackpot, netting several *Hasemania hanseni*. They were a spectacular, solid, brilliant red-orange. The black water of course had a profound effect on their color. I managed to return home with them, and maintained them for several years. They are closely related to the well-known silvertip tetra, *Hasemania nana*.

We collected several other characins, most silvery and uninteresting. One unidentified characin had possibilities, having very red patterns in their fins. Only five were found, in a fast-flowing stream. I particularly wanted to return with them, but within a day or so they died.

Sentimental favorite: This *Geophagus braziliensis* was the very first fish we caught on our long trek along the southeast coast of Brazil.

From Brasilia we flew to Belo Horizonte, arriving at 6:30 PM, stayed overnight, and the following morning we did some searching, but did not find anything of interest. Our stay was short—after a day or so we returned to our home base in São Paolo.

NORTH JERSEY AQUARIUM SOCIETY

GIANT SPRING

TROPICAL FISH AUCTION

DAYS HOTEL & CONFERENCE CENTER

195 ROUTE 18, TURNPIKE EXIT 9...EAST BRUNSWICK, NJ 732-828-6900

SUNDAY ... APRIL 19, 2015

KEEP UP WITH REGISTERED FISH IN AUCTION ON FACEBOOK

RARE AND TANK BRED FISH

AUCTION STARTS AT 12 NOON

VIEWING 11:30 AM ... REGISTRATION 9:30 AM

njas.net for pre-registration starts 4/12/15 ends 4/18/15

GCAS Member Discounts at Local Fish Shops

The fish shops listed below offer discounts to members of Greater City Aquarium Society. To take advantage of these generous offers, just present your Greater City ID before checking out.

10% Discount on fish.

20% Discount on fish. 15% on all else.

10% Discount on everything.

10% Discount on everything.

10% Discount on everything.

10% Discount on fish.

GCAS Happenings

April

Last Month's Bowl Show Winners:

1	Richard Waizman	Blue & White Betta
2	Mario Bengcion	Blue Acara
2	Mario Bengcion	Blue Bicolor Betta

Unofficial 2014 Bowl Show totals:

Richard Waizman	5	Mario Bengcion	4

A warm welcome back to renewing GCAS members Shunmugan Al, Tamer Altan, William Amely, Mario Bengcion, Steve Berman, Jules Birnbaum, Jeff Bollbach, LaMont Brown, Joe Ferdenzi, Artie Friedman, Michael Gallo, Walter Gallo, Joe Graffagnino, Al Grusell, Joe Gurrado, Jaspon Irizarry, Andrew & Jillian Jouan, Denver Lettman, Rich Levy, Ruben Lugo, Michael Macht, Donita Maynard, Temes Mo, Jerry O'Farrell, Elliot Oshins, Dan Puleo, Dan & Marsha Radebaugh, Vinnie Ritchie, Donna & Steve Sica, Gilberto Soriano, Ed Vukich, Herb Walgren, and Ron Wiesenfeld!

A special welcome to returning GCAS member Steve Chen!

Here are meeting times and locations of some aquarium societies in the Metropolitan New York area:

GREATER CITY AQUARIUM SOCIETY

Next Meeting: May 6, 2015
Speaker: Richard Pierce
Topic: *Seahorses, Seadragons, and Pipefish*
Meets: Meets the first Wednesday of the month (except January & February) at 7:30pm:
Queens Botanical Garden
43-50 Main Street - Flushing, NY
Contact: Dan Radebaugh (347) 866-1107
Email: gcas@earthlink.net
Website: http://www.greatercity.org

BIG APPLE GUPPY CLUB

Meets: Last Tuesday each month (except Jan, Feb, July, and August) at 7:30-10:00pm.
Alley Pond Environmental Ctr.: 228-06 Northern Blvd.
Contact: Donald Curtin (718) 631-0538

BROOKLYN AQUARIUM SOCIETY

Next Meeting: April 10, 2015
Speaker: Todd C. LaJeunesse
Topic: *TBA*
Meets: 2nd Friday of the month (except July and August) at 7:30pm:
NY Aquarium - Education Hall, Brooklyn, NY
Call: BAS Events Hotline: (718) 837-4455
Website: http://www.brooklynaquariumsociety.org

LONG ISLAND AQUARIUM SOCIETY

Next Meeting: April 17, 2015
Speaker: TBA
Topic: *TBA*
Meets: 3rd Fridays (except July and August) 8:00pm.
Room 120 in Endeavor Hall on theState University at Stony Brook Campus, Stony Brook, NY
Email: Margaret Peterson - president@liasonline.org
Website: http://liasonline.org/

EAST COAST GUPPY ASSOCIATION

Meets: 2nd Tuesday of each month at at 8:00 pm.
Alley Pond Environmental Ctr.: 228-06 Northern Blvd.
Contact: Gene Baudier (631) 345-6399

NASSAU COUNTY AQUARIUM SOCIETY

Next Meeting: April 14, 2015
Speaker: TBA
Topic: *TBA*
Meets: 2nd Tuesday of the month (except July and August) at 7:30 PM
Molloy College - Kellenberg Hall ~1000 Hempstead Ave - Rockville Centre, NY
Contact: Mike Foran (516) 798-6766
Website: http://www.ncasweb.org

NORTH JERSEY AQUARIUM SOCIETY

Next Meeting: April 16, 2015
Speaker: Jerry Smith
Topic: *Introduction to Aquatic Gardening: Plant Selection & Growth*
Meets at: Quality Inn, 10 Polito Ave, Lyndhurst NJ
Contact: NJAS Hotline at (732) 332-1392
Email: tcoletti@obius.jnj.com
Website: http://www.njas.net/

NORWALK AQUARIUM SOCIETY

Next Meeting: April 16, 2015
Speaker: Chuck Davis
Topic: *TBA*
Meets: 8:00 P.M. - 3rd Thursday of each month except for July & December at: Earthplace - the Nature Discovery Center - Westport, CT
Contact: Sal Silvestri
Call our toll free number (866) 219-4NAS
Email: salsilv44@yahoo.com
Website: http://norwalkas.org/

May The Force Be With You!

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.

A newly described catfish from the Gurupi River in north central Brazil has large dark eyes, protruding bristles, a sucker mouth, and a unique story behind its name. Jonathan Ambruster, a biological sciences professor and curator of fishes for the Auburn University Museum of Natural History in Alabama was trying to come up with a name for a new species of catfish he discovered in a museum collection in Brazil. His colleague, arachnologist Chris Hamilton, said the fish looked a little like a **Star Wars** character.[1]

In the original **Star Wars** movie (now retitled **Star Wars Episode IV: A New Hope)**, a bounty hunter named Greedo is killed by Han Solo, using a concealed blaster. And, that's why *Peckoltia greedoi* is described in the newly published paper **Three new species of saddled loricariid catfishes, and a review of Hemiancistrus, Peckoltia, and allied genera (Siluriformes)** as being "Named for Greedo of Rodia, a bounty hunter killed by Han Solo in Chalmun's Spaceport Cantina in the movie "Star Wars: Episode IV – A New Hope" (Lucasfilm, Twentieth Century Fox, 1977) with whom this species shares a remarkable resemblance."[2]

This is not the first species named for a Star Wars character, to date there's:

- *Calponia harrisonfordi* - a California spider
- *Yoda purpurata* - a deep sea worm
- *Han solo* - an extinct trilobite from China
- *Aptostichus sarlaac* - a trapdoor spider
- *Tetramorium jedi* - a Madagascan ant
- *Darthvaderum* - an Australian arboreal mite
- *Polemistus chewbacca* - a wasp
- *Agathidium vaderi* - a species of beetle

Live long and prosper. (Oops, wrong movie franchise!)

The new species of catfish, *Peckoltia greedoi* (left), has large eyes and a sucker mouth much like the bounty hunter Greedo (right) featured briefly at the start of the first installment of the original Star Wars films

Photo: DailyMail.co.uk

References

[1] http://www.bbc.co.uk/newsbeat/31950906

[2] http://zookeys.pensoft.net/articles.php?id=4632

Fin Fun

Animal or Vegetable?

In the left column below are scientific names of plants and animals that could be found in a home aquarium. Your task is to correctly identify whether a scientific name belongs to a plant or an animal.

Scientific Name	Animal	Plant
Clea helena		
Vesicularia dubyana		
Carassius auratus auratus		
Tonina fluviatilis		
Sagittaria platyphylla		
Heterotis niloticus		
Branchinecta mediospinosa		
Marosatherina ladigesi		
Etheostoma fusiforme		
Cladophora aegagropila		

Solution to our last puzzle: **You Can Count On It!**

Common name		Scientific name
Onespot betta	----------	*Betta unimaculata*
Twospot ctenopoma	----------	*Ctenopoma nigropannosum*
Threespot cichlid	----------	*Cichlasoma trimaculatum*
Four-eyes	----------	*Anableps anableps*
Five-lined cardinalfish	----------	*Cheilodipterus quinquelineatus*
Sixbar panchax	----------	*Epiplatys sexfasciatus*
Sevenfinger threadfin	----------	*Polydactylus multiradiatus*
Eight-banded butterflyfish	----------	*Chaetodon octofasciatus*
Ninelined goby	----------	*Ginsburgellus novemlineatus*
Ten-tooth wrasse	----------	*Decodon pacificus*

source: http://www.fishbase.org/

Koi Organisation International

We can help!

Learn Online

www.KoiOrganisationInternational.org


Greater City Aquarium Society
Established 1922