

modern AQUARIUM



March 2019
volume XXVI
number 1

Greater City Aquarium Society - New York

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Series III Vol. XXVI, No. 1 March, 2019

ON THE COVER

Our cover photo this month features a porcupine fish, *Diodon hystrix*, another of Steve Sica's favorite fish, commonly known as the "spotted spiny puffer." See Steve's article "P Is For Puffer" on page 19.

Photo by Stephen Sica

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From the Editor

by Dan Radebaugh

Welcome back to another year at Greater City, and another year of **Modern Aquarium!** I hope everyone is in good spirits and good health, and ready to talk about fish! I've commented on this before, but as much as each issue looks similar—you know, familiar format, articles about fish and fish food, what's going on with the club, exchange articles from other clubs' publications—within that familiar structure can be quite a bit of difference. For instance, this issue contains two articles that could be called exchange articles, but are not exactly typical of that genus.

The first of these is in fact a reprint, but unusual in that it came to me through the American Cichlid Association's Newsletter, not from their **Buntbarsche Bulletin**, from which we have from time to time reprinted articles of interest. I was in fact a little surprised to find this Newsletter in my inbox. Maybe I just haven't been paying attention, but I don't recall receiving many of these. In any event, the news carried by this article is that the Central American cichlid *Parachromis loisellei* has been found to be synonymous with *Parachromis friedrichsthalii*. The article consists of a letter from Dr. Paul Loiselle, explaining the background of the species, and how the old and new nomenclatures came to be. I hope you find this as interesting as I did.

The second 'reprint' is not a reprint at all, even though it has been and will also be published in other club publications. The author is tonight's speaker Gary Lange, and the subject is how to successfully hatch rainbow fish eggs. Gary is presenting this talk to several aquarium clubs this year, and he sent the article to each of these clubs so that members who purchase the eggs he will be bringing will have a guide for successfully hatching them. In fact, there is a version of this article that, by the time that you read this, will have been posted on our Facebook Fishy Friends page so that you can read it in advance, and set up your hatching tanks accordingly.

A fish story with a slightly different angle is Jules Birnbaum's "How The Zebrafish Earns Its Stripes." This is well worth a read, as Jules gives us a brief overview of how the familiar little zebrafish (*Danio rerio*) is used in medical research—particularly cancer research.

Steve Sica follows with a photo essay on one of his many favorite fishes, in this case the very attractive *Diodon hystrix*, the porcupine fish. Steve, in these wonderful photo essays, combines three loves, scuba



diving, photography, and aquatic life. We are fortunate to be the beneficiaries of these passions. See page 19.

For those who have not heard the sad news, Ed Vukich's brother Anton, a former member of GCAS and friend to many here, recently lost his life in an accident at his home. You will find a brief tribute to Anton on page 22. We join with Ed in mourning his loss.

The 2018 **Modern Aquarium** index of articles begins on page 23. If you are looking for a particular author or subject in our magazine, this annual index is a great way to find it. Moving on, pages 28 and 29 contain our listings of discounts offered our members by area vendors, and our Classified ads. Our GCAS Happenings page is on 30. On page 31 The Undergravel Reporter tells us why "Bigger IS Better," and the issue closes with our FIN FUN puzzle. Good luck with it!

This year marks the beginning of our magazine's 26th year of publication. I would be remiss if I did not remind you that the magazine would not exist if it were not for all of you. **Modern Aquarium** depends on all of us members for its content. We have always, and still do rely on our membership for nearly all of the articles in this magazine. This is an important way we learn from one another. None of us knows everything, but as a group, sharing knowledge with one another, we can all learn things about fish (and plants, and other aspects of the hobby) that we otherwise might not know much about, or even be aware of at all. As we learn more, we can in turn use the magazine to share that knowledge! I believe that every one of our member/authors whose stories you read in this magazine would tell you that becoming an author has been a positive experience for them. If you need further encouragement, just talk with one of the members whose articles you've seen in **Modern Aquarium**. They'll tell you what you need to know. We are all eager to hear from you!





GCAS Programs

2019

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 accompany each meeting.

March 6	Gary Lange <i>Cruising Papua - Following New Roads and Exploring "The Bird's Head"</i>
April 3	Gary Hater <i>Goldfish</i>
May 1	
June 6	
July 3	Joseph Ferdenzi <i>The Story of Endler's Livebearer</i>
August 7	A Night at the Auction
September 4	Tom Keegan <i>Spawning Various Types of Tropical Fish</i>
October 2	Jim Cumming <i>TBA</i>
November 6	Greg Steeves <i>TBA</i>
December 4	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. Copyright 2019 by the Greater City Aquarium Society Inc., a not-for-profit New York State corporation. All rights reserved. Not-for-profit aquarium societies are hereby granted permission to reproduce articles and illustrations from this publication, **unless the article indicates that the copyrights have been retained by the author**, and provided reprints indicate source, and that two copies of the publication are sent to the Exchange Editor of this magazine. For online-only publications, copies may be sent via email to gcas@earthlink.net. Any other reproduction or commercial use of the material in this publication is prohibited without prior express written permission.

The Greater City Aquarium Society meets every month except January and February. Members receive notice of meetings in the mail or by email. For more information, contact: Dan Radebaugh (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.net>, <http://www.greatercity.org>, or <http://www.greatercity.com>.

President's Message

by Horst Gerber

There is no better time than the beginning of our new year to tell you how important you, the members of Greater City Aquarium Society, are to your Board members and to me, El Presidente. We are working hard to maintain the high standards of this club, but we can't do it without your participation and input. This great club is the oldest continuously operating aquarium society in the USA, and we are only three years away from our one hundredth anniversary! Three years! We can't even pretend any more that that's a long way off! So it is time for us to all put our heads together and come up with a way to celebrate such a tremendous milestone. If you have any thoughts on how to properly celebrate this centenary event, talk to me or to any of our Board members. Whatever your thought is we'll consider it! Hundred year anniversaries are a big deal! It means we've been doing something right. So let's do this celebration right, too!

Our Holiday Awards Banquet was held at a new venue for us, the New Georgia Diner. The driving directions were very clear and precise. Naturally, I didn't follow them. Real men don't follow directions, they wing it and get lost! So I had to go a few extra blocks and make a U turn to finally get there. We had a full house, and after all my wandering it turned out to be a greatly enjoyable party. The new diner provided us with delicious cuisine and a very accommodating staff. Please join me in expressing our deep appreciation to Marsha Radebaugh, whose efforts helped make this such a successful event! It was great to get together with friends and their significant others. The conversations ranged from politics to fishkeeping to Christmas ("Was Jesus really born in the winter or in the summer?"). Anyway, it's nice that there was room at this inn for all of us!

Jules reports that the auction brought in a substantial amount of money. Pete d'Orio helped a lot by choosing an array of high priced items from our generous sponsors. Please do take a look at our list of sponsors, which you will find in your copy of **Modern Aquarium**. Many thanks also to our members, who were bidding way above the norm in support of the club. Financially we continue to be in good shape, and dues will remain unchanged for 2019.

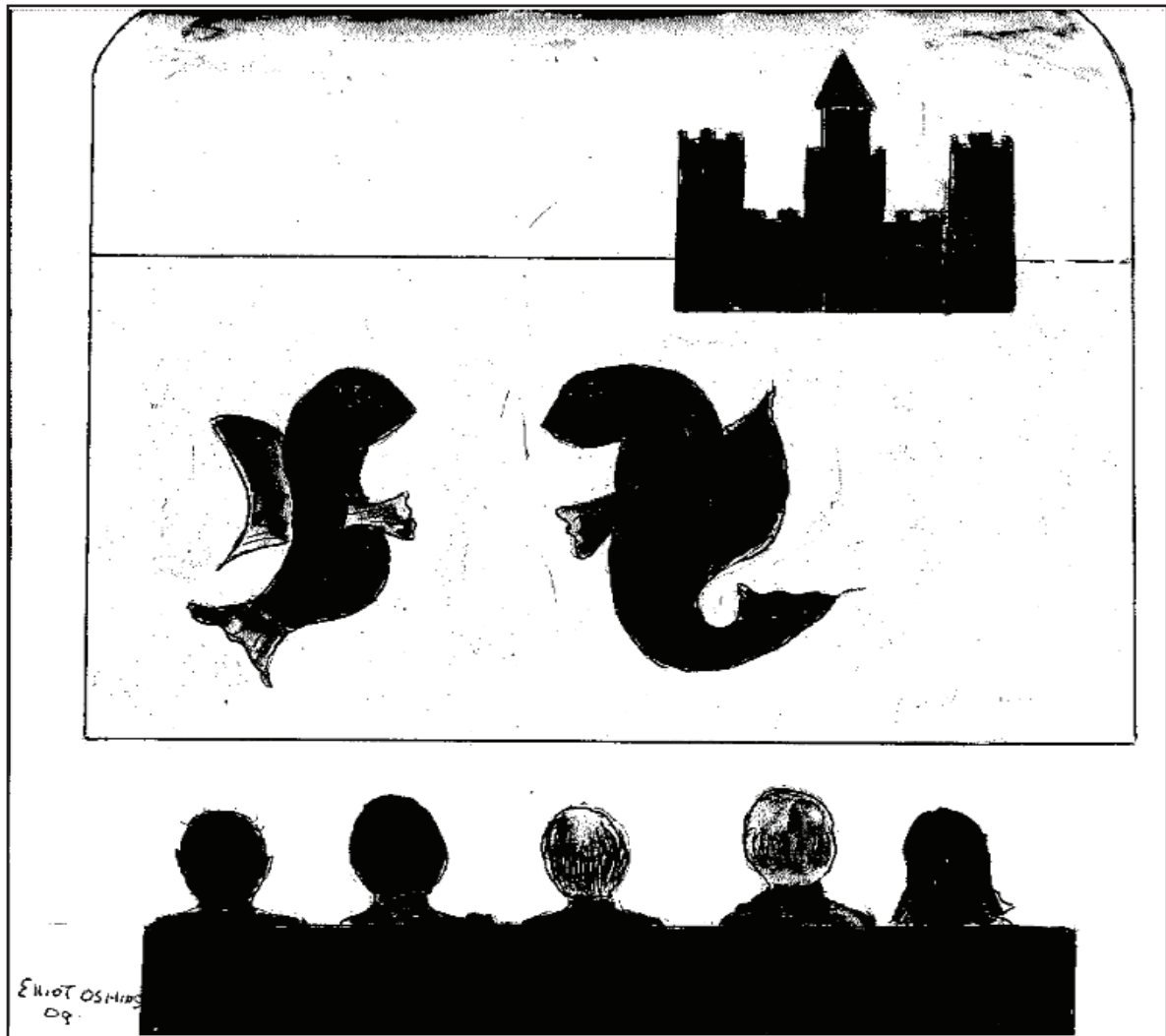
As always, Joe Ferdenzi was the vocal workhorse of the evening. He just can't help himself! Thanks, Joe—you've still got it! With all the joy of being together at this time of year, let's also be sure and remember those who are no longer with us, most recently Sharon Barnett and Anton Vukich. They are gone, but not forgotten!

Wishing you all a happy, healthy 2019!

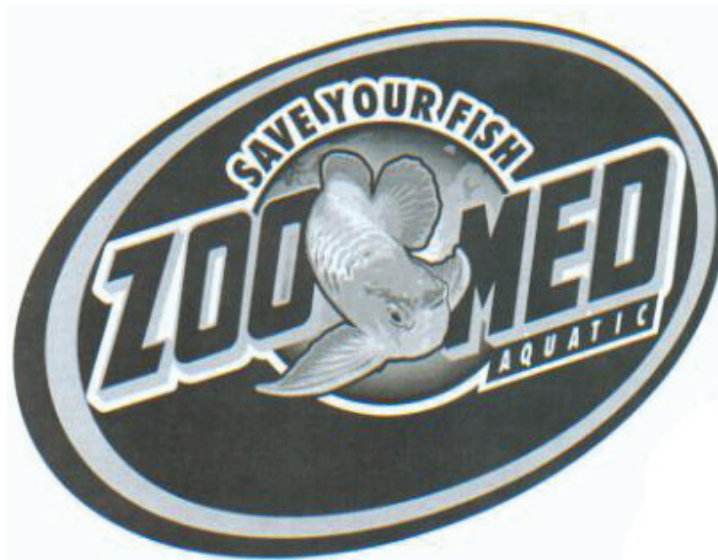
Horst



December's Caption Winner: Al Priest

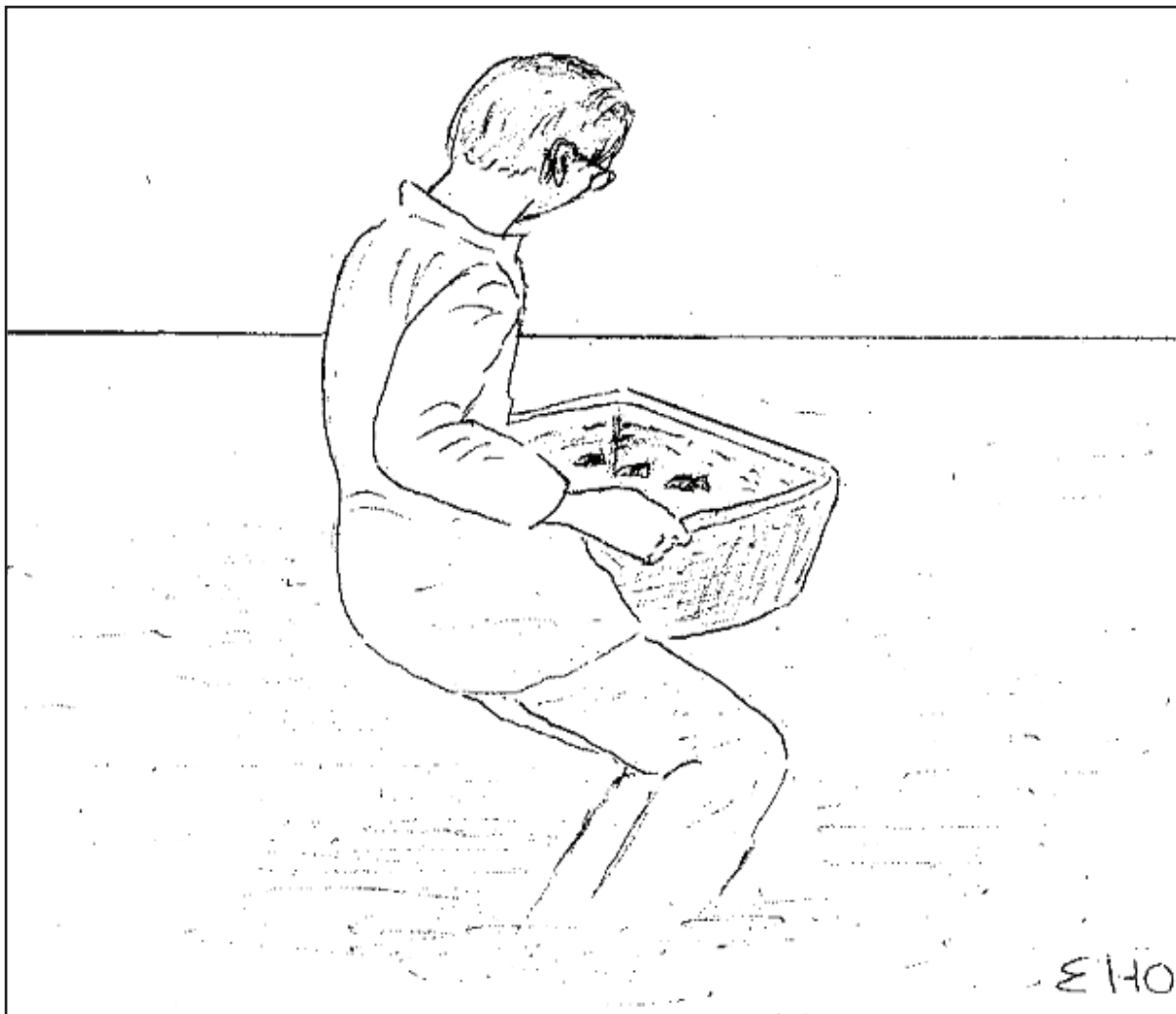


Fear not – our brave knight goby will save the day!



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:

Tonight's Speaker

Gary Lange on: Cruising Papua

Following New Roads and Exploring "The Bird's Head"

All over Papua they are making new roads leading to different river systems that were either difficult or impossible to reach just a few short years ago. This talk will be about my 2015 road trips in Northern Papua and then down the eastern border as far as we could go at that time. The rest of the talk will be about our 2017 adventures. First we'll take a quick trip down to the southern side of the island to the town of Oksibil, which can only be reached by air. Then we'll head to the far western side of Papua, The Bird's Head, home of *Melanotaenia boesemani* and several other interesting rainbowfish, including the elusive blue-eye *Pseudomugil reticulatus*.



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Pictures From our Holiday



Party and Awards Banquet

Photos by Joe Gurrado



More Pictures From our Holiday

The Awards

Author Awards



Bill Amely



Jules Birnbaum



Jeff Bollbach



Joe Gurrado



Elliot Oshins



Ed Vukich



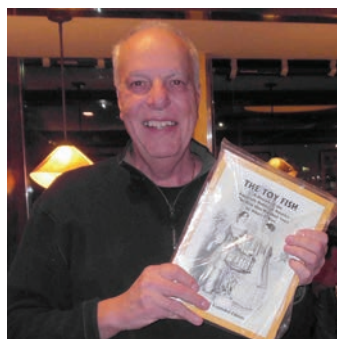
Tom Warns



Ron Webb



Steve Sica



Winner, Author Award Raffle:
Joe Gurrado

Party and Awards Banquet

Photos by Joe Gurrado

The Awards GCAS Society Awards



Recognition Award as past Editor of
Modern Aquarium:

Warren Feuer



Recognition Award as Editor of
Modern Aquarium:

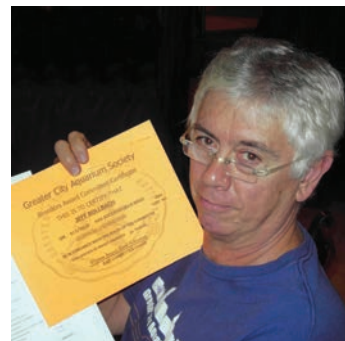
Dan Radebaugh



Breeder Certificate:
Ed Vukich



Breeder of the Year - 2018:
Warren Feuer



Breeder Certificate:
Jeff Bollbach



Bowl Show Champion:
Bill Amely



Aquarist of the Year:
Dan Radebaugh



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How The Zebrafish Earns Its Stripes

By Jules Birnbaum

I started keeping tropical fish as a 12-year-old, more than 70 years ago (Please don't do the math—I know I'm old). It was a similar start to that which Rosario LaCorte relates in his book, **An Aquarist's Journey**. I'm no Rosario LaCorte, and the similarity ends right there—catching some fish in a local pond and being frustrated when I did not know how to keep them alive.

Some of the first freshwater fish I purchased were platies, guppies, cory catfish, angelfish, and the zebra danio, bringing them home in paper containers with thin metal handles, like the Chinese take-out restaurants use for rice. I kept the fish alive, and even bred one or two. I realized that if you give them the right conditions they will take care of the rest. Whatever else I learned was by reading books on the subject.

My first real tropical fish book was **Exotic Aquarium Fishes**, by Dr. William T. Innes, originally published in 1935. I still have the book. In it, Dr. Innes told the reader everything a new aquarist needed to know. On page 166, Dr. Innes shows a black and white sketch of what he called a "zebra fish," or "zebra danio." He says it is "permanently popular," and goes on to write that it swims in schools and has beautiful horizontal stripes.

Another book, that I acquired a few years ago, was published in 1934: **Life and Love in the Aquarium**, by C. H. Peters. It describes zebrafish as a popular fish from India that is peaceful, hardy, and prolific. It is interesting to note that this book has a color sketch of the *Brachydanio rerio* (zebra danio) together with other danios. Before photography was good enough to show the spectacular color of tropical fish there were color sketches.

The small, peaceful, zebra danio was relatively inexpensive, and our local pet shops had tankfuls of them. I purchased a few, and found that they were easy to keep and breed by reading the instructions from Dr. Innes' book. However, as many of us do, I wanted to try other, more challenging fishes, and never came back to the zebrafish. Little did I know how valuable this fish was to become in cancer research.

As contributors to Memorial Sloan Kettering Cancer Center, my wife and I receive their monthly publication, **MSK News**. Our two children and our son-in-law were treated at this wonderful cancer center. The September 2018 issue has an article, "How The Zebrafish Got Its Stripes," that immediately drew my attention. The zebra danio has been used in

research for years, and has earned its stripes by being used for cancer research at Memorial Sloan Kettering Cancer Center, as well as at other research facilities.

In 2013 Dr. Richard White, of Memorial Sloan Kettering, wrote a scientific article about using zebrafish as a model organism for the study of human cancer, in which he relates why this fish is used for cancer research, namely the fact that the fish develops cancer spontaneously following mutagen exposure, as well as through transgenesis (the process of introducing a transgene [an exogenous gene] from one organism into another). The zebrafish tumors resemble human cancers. Fish have been known to develop cancer for more than a century. Other fish, such as swordtails (*Xiphophorus* species), also develop spontaneous melanomas (See Leonard Ramroop's article, "Myron/Mexico/Melanoma," in last December's issue of **Modern Aquarium**), and are being used as a model in cancer research at Texas State University.

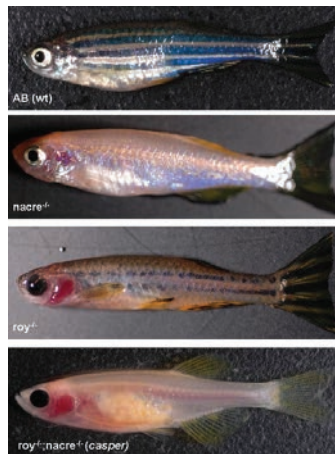
Dr. White runs a lab with many fish tanks using a zebrafish they developed, which they named "Casper." This fish is transparent, allowing the researchers to visualize the tumor-microenvironment interaction at single cell resolution. It is well suited for cancer research for a number of reasons. For instance, the fish can spawn a number of times a year, allowing the researchers to see the results on future generations of the chemicals being introduced into the fish. Second, the fish develops cancers that surprisingly resemble the human disease. Third, the fish they developed is transparent, making for easier observation. Fourth, the fish is small and undemanding.

One of Dr. White's studies has to do with melanoma. The casper zebrafish develop tumors very similar to human melanomas. The lab has screened 1,280 chemicals, four of which worked to make the gene mutation normal again. They were very surprised, because all four chemicals blocked the same pathway, the one that starts with insulin. This was unexpected, as no one expected insulin to play a role in skin pigmentation. The zebra has certainly earned its stripes!



References:

2013 scientific article "Zebrafish Cancer: The State of the Art and the Path Forward" by Dr. Richard White.
MSK News article, September 2018 "How The Zebrafish Got Its Stripes"



Hatching Rainbowfish Eggs

by Gary Lange



Rainbowfish eggs are easy to hatch, and the fry aren't too difficult to raise if you know the right tricks. Buying a mop or a vial of eggs at an auction is an easy way to obtain a whole aquarium full of these amazing fish. There's nothing more beautiful than a tank full of *lacustris* or *boesemani* rainbows.

Before you get started—If you have obtained multiple vials of eggs, **hatch them separately and raise the fry separately**. Different species grow at different rates, and the big ones will eat the small ones! Make sure you write down the name of the species on the tank AND in your log somewhere in case you lose the label. There are *lots* of blue rainbows and yellow rainbows, so asking me to ID that yellow rainbow I brought to your club two years ago will not get you anywhere!

Below is a method for hatching small amounts of eggs in shallow trays. You'll need a small, shallow tray that holds about two to three cups of water. If your water is soft (< ~ 70 ppm) you'll need a little bit of crushed shell or coral to add to the hatching tray, and perhaps a pinch of aquarium salt. Do not use acriflavine in the water. Add 1-2 cups of warm (**80-82 degrees F**) freshly dechlorinated water. Don't use aged tank water, as it contains lots of bacteria and fungi, which can destroy your eggs. A higher hatching temperature promotes fungus, while lower temperatures end up losing eggs. Carefully add the eggs to the tray, taking a few minutes to acclimate them, especially if your water temperatures or conditions are very different than mine (125 ppm GH and 2 degrees KH).

Separate them as much as possible with an eyedropper, toothpicks, or fine point tweezers if they are clumped together. If one egg funguses, remove it before it spreads to another. Protect the tray from strong light. Make sure you keep it warm though, **80-82° F**. You can **float the tray in the aquarium** that you are going to use for the hatched fry, or place it in a warm spot in your fishroom. A freshly prepared, bare 5 or 10 gallon tank makes for a good raising tank. Just add a seasoned sponge filter and you're set. Change the water in the tray at least once every other day.

Large rainbowfish eggs take from 7 to 11 days to hatch from when they were laid. *Pseudomugils* can take as long as 18 days. As fry hatch use an eyedropper or cup to transfer them. Acclimate them to the fry-raising tank. **Start feeding the fry** small amounts of their first food **immediately**. They don't have much of an egg yolk sac, so **if you wait they will die!** I like to use 2.5-5 gallon tanks for 12-50 fry. Be careful with the 2.5 gallon tank—it is easy to lose water quality in a small aquarium. If you have a lot of fry, go to the 5-gallon size or even a 10-gallon. A ten is what I most often use if I'm hatching a large mop of eggs. It is important that the temperature of this fry-raising tank be **at least 80 degrees F, preferably 82 degrees F**. Water cooler than 78 degrees will result in a loss of most of the fry in a few days. I have raised fry in temperatures as high as 88 degrees F without any problems. Higher temperatures actually help them grow faster. Add a few snails and an established

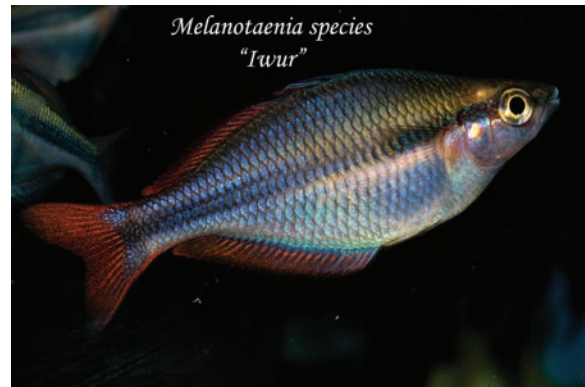
sponge filter to the fry tank. **Bubble the sponge filter VERY SLOWLY!** Rainbowfish fry live at the top 1/8-inch of the water for their first few days, and they will soon drown in the “surf” that you produce by heavy aeration.

For a first food you can use green water (say some), vinegar eels (great, but time consuming) or use what I use. There is a fry food called Golden Pearls, 5-50 micron size, that is perfect for rainbows, that I provide along with the rainbowfish kit. Sprinkle a little on the surface; don't mix it in the water. **Feed twice a day; if possible more often.** You can get it at Brine Shrimp Direct (www.brineshrimpdirect.com). In three to seven days they will be ready to eat newly hatched brine shrimp. Your goal is to get them to eat **LIVE** baby brine shrimp as soon as possible so that they will thrive. I also alternate other first foods with Golden Pearls, or feed a powder mix including Chlorella powder, (health food store) spirulina (not as good as Chlorella though), and Astaxanthin powder (NatuRose, BS direct), which really brings out the reds early in red colored fish. Keep it in a tightly sealed container in your freezer, with just a bit in the fish room, as it does go bad. Same advice for all of the mentioned powdered foods.

Go easy on the feedings, but the snails should clean up the excess. If you feed too much, siphon off the bottom debris. I usually like to wait about two weeks before I do the first water change (about 20%), which is then performed every few days. **Make sure** the water you add back is the same temperature, as **the fry are very temperature sensitive.**

Once they reach about 6 weeks old I increase the percentage of water changed to 30%, especially with a large hatch. For non-rainbows I would most likely be performing weekly 50% water changes. If you can remember to do smaller, frequent water changes, your bows will reward you with good growth. Rainbows certainly grow slower than most tropical fish, but if you keep doing your water changes and keep them warm they will be producing their own eggs in 6-8 months.

For hatching eggs in a mop I do basically the same thing, except I add the mop directly to the rearing tank, with fresh dechlorinated water. A slight



amount of bubbling to avoid surface scum is all that is needed until they are hatched, and then you can add a sponge filter. Once the young juveniles reach about 1 to 1.25 inches in length I start backing off the temperature, especially if I have raised them in the high eighties. Somewhere between 74 and 78 is fairly ideal for juveniles and most adults. Many of your adult rainbows will actually do better at even lower temperatures, but most can thrive in temperatures anywhere between 70 and 80 degrees.

With just a little work up front you can have an aquarium full of constantly moving color. There are still SO many new species of rainbowfish that haven't even been discovered yet! So by all means do a little practicing so you can have a whole school of these magnificent creatures. There's **always** a new one just around the corner that will tickle your fancy.



Gary Lange

Email gwlange@sbcglobal.net

<https://www.facebook.com/groups/rainbowfishaquarium/>

<http://rainbowfish-forum.freeforums.net/>

Take a tour of my fishroom https://www.youtube.com/watch?v=QcO3CG_xh58

ANGFA - <https://www.angfa.org.au/>

Home of the Rainbowfish & Adrian's Book <http://rainbowfish.angfaqlld.org.au/>

<http://www.regenbogenfische.com/>

<http://www.irg-online.de/pages/publikationen/articles-in-english.php>

~~*Parachromis loisellei*~~

Story and Photos by Dr. Paul Loiselle, Introduction by Alan De Angelo

Parachromis loisellei is no more. That's right, it is gone. The powers that be have confirmed that it is a synonym for *P. friedrichsthalii*. When I heard about this, I did the only thing that I thought was right, I contacted the Big Guy himself, Dr. Paul Loiselle, to get his view on the topic. He has given me permission to share this with all of you. He writes:

Mboala tsara!

I have downloaded and read Morgenstern's paper, which includes good photos of all the fish in the Friedrichsthal collection. While the type specimen of *Parachromis friedrichsthalii* is, as is usually the case with material collected in the 19th century, in less than optimum condition, what remains of the melanophore pattern is sufficient to confirm that it is identical to *Parachromis loisellei*.

To understand how we have arrived at this state of affairs, a bit of historical background is in order. Emanuel Ritter von Friedrichsthal (1808-1842) was a representative of the minor Austrian nobility. After a brief stint in the civil service of the Austro-Hungarian Empire, he decided to replicate in Central America the program on exploration in South America carried out by his better-known German contemporary, Alexander von Humboldt. Securing diplomatic status from Clemens von Metternich, the Austrian chancellor, in 1838 he traveled to Nicaragua. He spent just over a year in southern Nicaragua and northern Costa Rica collecting specimens, which he sent back to the Natural History Museum in Vienna.

His collections included a small number of fish collected from either the Rio San Juan or Lake Nicaragua. In 1839, he travelled from Central America to Washington, DC, where he spent several months working in the consular section of the Austrian Embassy. In late 1840, he travelled to Belize, with the object of exploring and photographing Mayan ruins. He entered Yucatan through the port of Bacalar, on the lagoon of the same name. During his stay in Bacalar, he made a somewhat larger collection of fish, which was again sent to Vienna. While in Yucatan, he managed to visit and photograph all of the then-known Mayan sites, returning to Vienna via New York, London and Paris, where he presented the results of his field work and displayed his photos to several learned societies.

He died in 1842, apparently a victim of malaria contracted in Yucatan. Much of the documentation of his travels, which he apparently intended to publish as a comprehensive account of his findings, has been lost and the remaining material was widely dispersed, which makes Morgenstern's success in piecing together an itinerary and timeline for Friedrichsthal's travels all the more impressive.

In 1840, Ernst Heckel described *Heros friedrichsthalii* (photo below). The only collecting

locality given was Central America. Franz Steindachner's description of two new species based upon Friedrichsthal's Yucatecan material was equally imprecise with regard to collecting locality. This lack of precision is difficult to understand, as Steindachner recognized



that several of the fish in Friedrichsthal's collection were conspecific with species described in 1862 by Albert Gunther based on material collected in Guatemala by Osbert Salvin. For no explicitly stated reason, Gunther, in 1868, gave Lake Peten Itza in Guatemala as the type locality of *H. friedrichsthalii*. With the unique exception of Jordan and Evermann, who correctly – but without giving a reason for their action – gave the Rio San Juan in Nicaragua as this species' type locality, subsequent workers, among them Regan, Hubbs, Miller and Bussing followed Gunther and applied the name *Cichlasoma friedrichsthalii* to the guapote native to southern Mexico, Guatemala and Belize described by Regan in 1905 as *Cichlasoma multifasciatus*.

Fast forward to the 1980s, when aquarists were working with two very differently colored guapotes being marketed as *Cichlasoma friedrichsthalii*. This situation was clearly unsatisfactory, and after I had nagged him for several years about it, Bill Bussing resolved it by describing the Costa Rican component of this guapote twosome as *Cichlasoma loisellei*.

Bill never examined the type specimen of *Heros friedrichsthalii*, instead relying upon Heckel's quite misleading description of the type's color pattern when comparing it to Costa Rican material.

Based upon Heckel's description and the generally accepted type locality of *C. friedrichsthalii*, the conclusion that the Costa Rican guapote represented an undescribed species followed quite logically. As it transpires, the logical conclusion was not in this instance, the correct one. *Parachromis loisellei* is a junior synonym of *P. friedrichsthalii* and the correct name for the fish we have been calling by that name is *P. multifasciatus* (photo at right).

The take-home message here is that systematists undertaking any sort of revisionary work should whenever possible examine type material. In Bill's defense, at the time he was working, it was unclear if the type specimen of *H. friedrichsthalii* was still extant. The Second World War was not kind to preserved fish material housed in European museums. Collections were often jumbled-up in the course of being moved to safe locations and many institutions were still actively



engaged in the daunting task of assembling accurate catalogues of their actual holdings.

Kudos to Ricco Morgenstern both for taking the time to find and examine Friedrichsthal's material and for doing the literary research necessary to put together a coherent account of his travels in Central America.

Ho ela velona!
Paul



Meeting Reminders



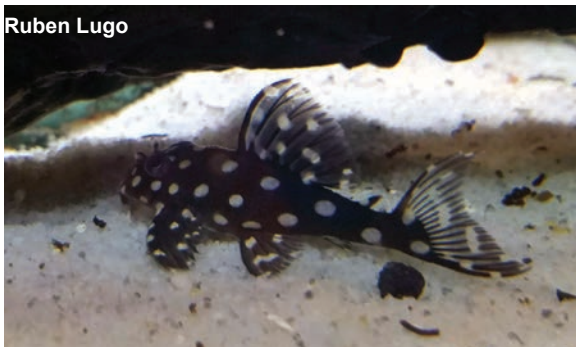
Almost every month at least one meeting reminder postcard is returned undelivered. Sometimes the member moved and just forgot to update his or her contact information with Greater City. Other times, well it's a mystery—the address was correct, but the Post Office marked it as “undeliverable.”

Unlike some aquarium societies, at Greater City there is never a charge for non-members to attend, there is no “bidder card fee” to bid on items in our monthly auctions, the refreshments are free to everyone at the meeting, and anyone can purchase raffle tickets. But membership does have its privileges, including this award winning magazine, door prize chances, the ability to participate in our bowl shows, and advance reminders of our meetings. If you have an e-mail account, please consider getting your meeting reminders by e-mail, instead of by postcard. You will be getting two notices (one a week in advance, the other a day in advance) instead of only one, and the chances of non-delivery are virtually none (unless you change your e-mail address). While it's a very small thing, you'll even help the environment by using less paper. An e-mail sign-up sheet is at the membership/Modern Aquarium table, or send an e-mail to gcas-webmaster@usa.net.

Fishy Friends' Photos

by Greater City Aquarium Society Fishy Friends

***B**elow 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!*



“P” Is For Puffer

Story and Photos by Stephen Sica



From the safety of its “hiding place” amidst a group of soft corals, a porcupinefish (*Diodon hystrix*) peers out into its world.

I have many favorite fish. I guess I am easy to please, though another way to look at it is that I like just about everything. No doubt I am broad-minded. When I go swimming underwater, I try to photograph something unique or something easy. If it is easy as well as unique, I am happy. Keeping these simple precepts in mind, I have decided that I like the pufferfishes. But pufferfishes include a fairly broad range of species. By common name there are several families of these fishes, including boxfish, burrfish, balloonfish, cowfish, trunkfish, porcupinefish, and pufferfish. Most are identified by their squarish shape or their ability to inflate themselves with seawater. By scientific name, there are both variances and similarities. I am not one to let science get in the way of a good story, so let me state for the record that I like all of these fish.

For now, I'll dwell upon the porcupinefish. I have chosen this fish because I really enjoy photographing it—if I can find one! This can be a challenge, because the fish is both uncommon and shy. It likes to hide out in the deep recesses of caves, and will retreat even further when approached. I once stuck my torso into a narrow cave entrance in an attempt to photograph one of these fish. At the time I was wearing a short-sleeved wetsuit, and cut up my head and arms on

coral. This happened in the “good old days” when coral was abundant. When I boarded the dive boat a few minutes later, I sat in my place thinking that I went to photograph a fish and ended up in a knife fight. Needless to say, I learned my lesson and began wearing protection from head to toe. You never know when a current or surge will carry you into something harmful—like poisonous spines!

A prime reason that I like this fish is its unique appearance. Once or twice I found inflated porcupinefish but was not equipped to photograph them. Interestingly, these fish rarely inflate themselves. They would rather flee than stand their ground. When they do inflate, their spines become quite erect. Can you imagine a predatory fish or animal sinking its mouth into a handful of sharp spines? That would seem sufficient to make a seafood lover give up sushi.

A porcupinefish grows to between one and two feet in length. Most of my encounters have been with fish up to eighteen inches. If you are lucky you can find a three-footer. This fish is found throughout the Caribbean, the Gulf of Mexico, and the waters around Florida. They have ridden the Gulf Stream north to Massachusetts, have been seen in Bermuda, and as far south as Brazil. You would think that the porcupinefish would be more common, considering



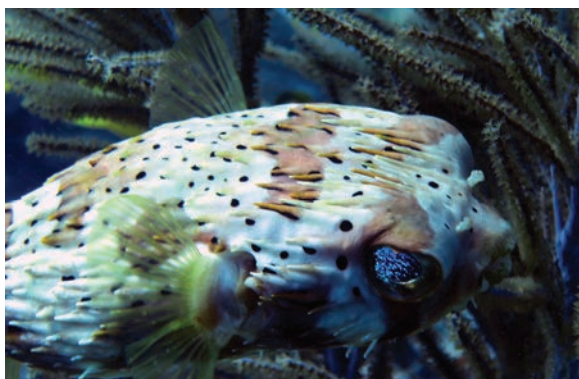
An extremely shy fish, this porcupinefish, *Diodon hystrix*, is openly swimming on the reef in the company of two grunts.



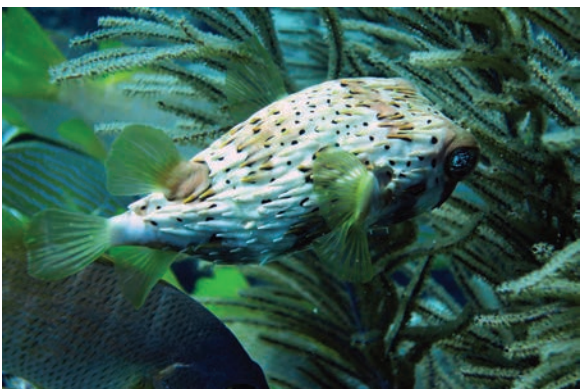
The porcupinefish is a striking animal. Examine its coloration, recessed spines, and the placement and shape of its dorsal, anal and tail fins.



Trying to escape my camera, the porcupinefish uses all of its fin power to swim into a soft coral hiding place. I kept my distance not wanting to frighten the fish.



A porcupinefish closeup. Notice the spots on a mottled beige body, its distinctive spines, and a striking eye.



Another closeup of the "spotted spiny puffer" swimming into soft coral to hide.



Lost in a school of grunts, a porcupinefish becomes just another fish in the vast ocean.

its range. I guess that they are so spread out as to be uncommon. They usually reside on a reef, where there are lots of hiding places. They inhabit depths between ten and sixty feet. Most of my encounters have been in the twenty to forty foot range.

Since Donna and I have done most of our recent diving in the Florida Keys and the Bahamas, I venture to say that these are popular hotspots for the porcupinefish. I like to imagine what it would be like to keep some of these unique saltwater fishes in a home aquarium. For a fish with a twelve to twenty-four inch average size, you would need a pretty large

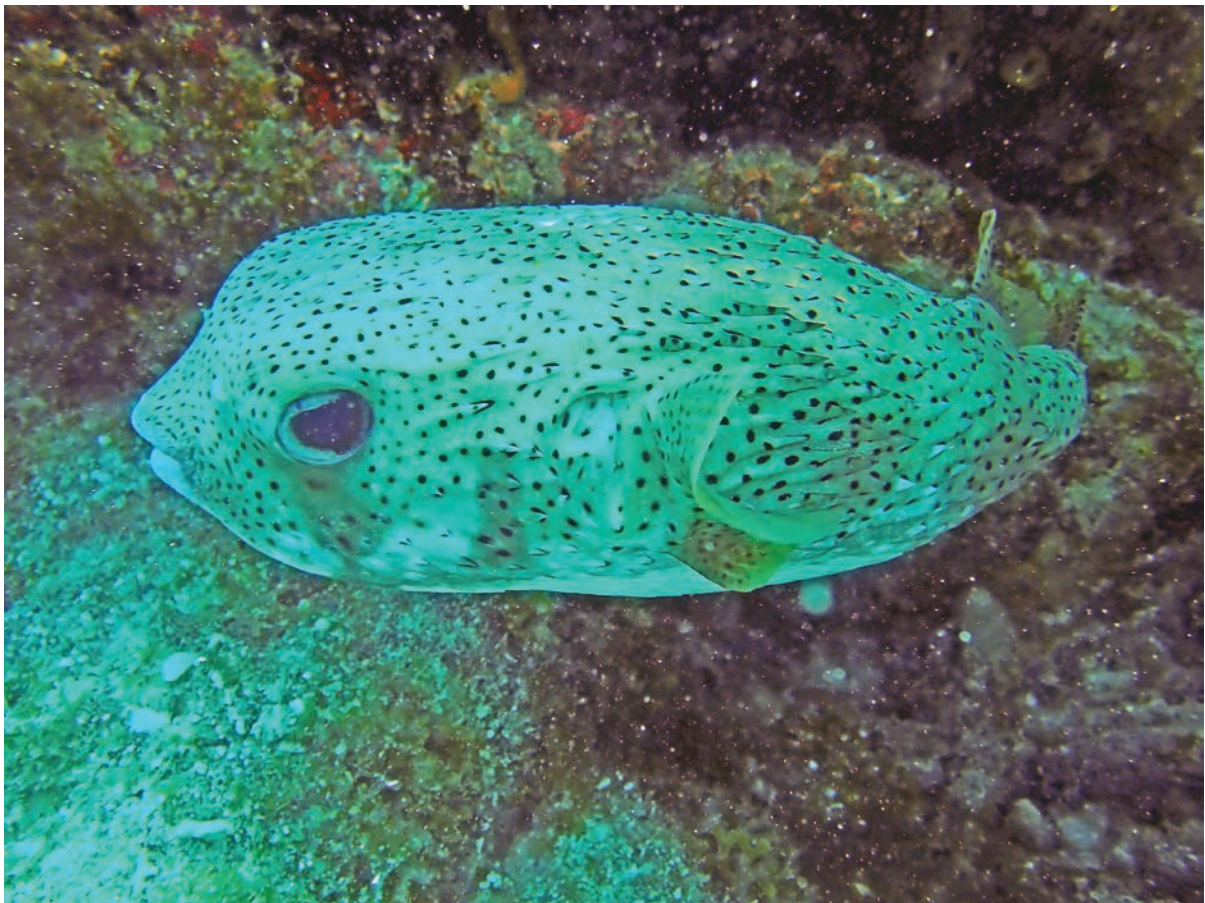
tank. Also, I believe that this would be a one per tank fish. It would probably get along with all sorts of non-aggressive tankmates, because in the wild I have seen it swim freely with vast assortments of fish. I have never seen it with another porcupinefish, so I am fairly certain that they do not pair off. I also suspect that there is only one pair of fish together when they mate. It seems unlikely that porcupinefish aggregate to mate, but I would find it interesting to learn if there are group encounters. The probability is not high, judging from their solitary behavior.

There does not seem to be much recorded information about the porcupinefish. A few other salient facts are that it is the largest spiny pufferfish in its general family. It also has the longest spines when inflated. It makes perfect sense that larger is usually longer. Some puffers are considered a delicacy in Japan, but if improperly cleaned, they are deadly to eat.

I guess that I should have named this article “P Is For Porcupine,” but doesn’t “Puffer” sound much better? Besides, the relationship is close enough when you consider that the porcupinefish is commonly known as the “spotted spiny puffer.” I rest my case!



I stuck my torso into a cavern while holding my camera at arms length to take this "pot luck" photograph. I decided that a closeup of a porcupinefish is not so pretty—especially in the dark!



Last fall I encountered another cavern entrance where I was able to photograph a porcupinefish. This one’s spines are hardly noticeable. I wonder if there are degrees of retractability, or if it’s the photo angle. The water was murky and dark inside the cave.



RIP Anton Vukich

Back in January we received the sad news that Anton Vukich has passed away, as the result of a head injury suffered in a fall at his home in Sherman, Connecticut. He was 63 years old, having been born on July 21, 1955. He is survived by his brother Ed Vukich, who serves on the GCAS Board and is our monthly auctioneer. He was a member of the Long Island Killifish Association and once a very active member of GCAS. The following description of Anton, written by Claudia Dickinson, appeared in the February 2004 issue of **Modern Aquarium** when Anton was a featured expert at our monthly meeting. The photo at right is also from that issue.



Anton Vukich needs little introduction, as he towers over the GCAS as one of our leading stars, not only in height, but in wisdom and merit, as well as with his stunningly beautiful fish!

As Anton began to count the gallons of water of the tanks in his fishroom, the number just kept growing, and before we knew it, Anton had reached 1600 gallons, with approximately 50 aquariums! These range in size from the smaller 5 and 10 gallon tanks, many medium 20, 30 and 40 gallon tanks, and then up through the larger sizes, to his largest, at 150 gallons.

It is within these tanks that Anton exemplifies oneness with his fish, as they are exquisite and most certainly prolific, the results of which we have the great fortune of the opportunity of adding to our own tanks, through his most generous monthly donations to our auctions!

The talented and studious linebreeding of Koi Angelfish, as well as German Blue Angelfish, which make up one of Anton's major focuses, take up a great deal of the larger tanks in Anton's fishroom, as these lovely creatures are most productive here.

Killifish are another one of the major focuses in Anton's fishroom, with a great number of the smaller tanks being devoted to these. Anton is noted for his skill and knowledge in the breeding of these fish, as well as the hatching of the eggs and the raising of the fry, the methods of which are vast and varied within this group. An assortment of other fish, such as livebearers, catfish, and five or six species of Julidochromis inhabit the remainder of Anton's tanks.

For his major breeding achievements, Anton was presented with the Don Sanford Breeder of the Year Award for this past season, as well as reaching the level of Advanced Breeder. He has also reached the Advanced Breeder Level at the Norwalk Aquarium Society. Anton's smile lights up our meetings, and his kindness and generosity matches his wealth of insight and knowledge!



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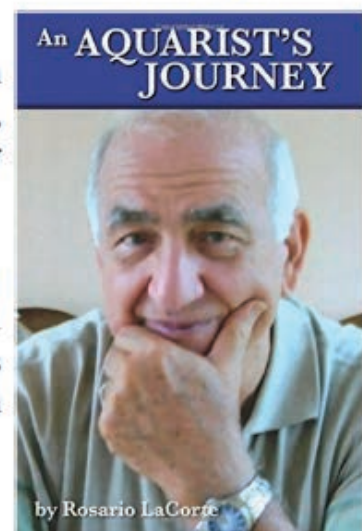


An Aquarist’s Journey

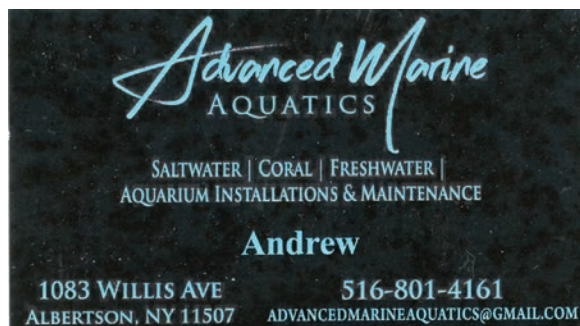
Rosario La Corte is one of the world’s leading authorities on breeding fish and he has written numerous articles and books, contributing greatly to our understanding of fish and their habits.

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GCAS Happenings

March

A SPECIAL WELCOME TO OUR YOUNGEST NEW MEMBER, KENNETH LEO WARNS!



Meeting times and locations of some of the aquarium societies in the Metropolitan New York City area:

GREATER CITY AQUARIUM SOCIETY

Next Meeting: April 3, 2019

Speaker: Gary Hater

Topic: *Goldfish*

Meets: The first Wednesday of each month (except January & February) at 7:30pm:

Queens Botanical Garden

43-50 Main Street - Flushing, NY

Contact: Horst Gerber (718) 885-3071

Email: pilotcove43@gmail.com

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: March 8, 2019

Speaker: Richard Ross

Topic: *Coral Spawning*

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: March 15, 2019

Speaker: TBD

Topic: *TBA*

Meets: 3rd Friday of each month (except July and August)

at 8:00 PM. LIAS Meetings are held at SUNY Stony Brook's Maritime Science area. Room 120 in Endeavor Hall on the State University at Stony Brook Campus, Stony Brook, NY 11790

Email: president@liasonline.org

Website: <http://liasonline.org/>

EAST COAST GUPPY ASSOCIATION

Meets: 2nd Tuesday of each month at 8:00 pm.

Alley Pond Environmental Ctr.: 228-06 Northern Blvd.

Contact: Gene Baudier (631) 345-6399

NASSAU COUNTY AQUARIUM SOCIETY

Next Meeting: March 12, 2019

Speaker: TBA

Topic: *TBA*

Meets: 2nd Tuesday of the month (except July and August) at 7:30 PM. Molloy College, at 1000 Hempstead Avenue, Rockville Centre, NY, in the PUBLIC SQUARE BUILDING, room 209A. See website for directions.

Contact: Harry W. Faustmann, (516) 804-4752.

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

NORTH JERSEY AQUARIUM SOCIETY

Next Meeting: March 16, 2019

Speaker: Brian Zimmerman

Topic: *Native Fish Husbandry*

Meets: 12:30 PM - 3rd Saturday of the month, at Clark Public Library in Union County, just off the Parkway at exit 135

Contact: NJAS Hotline at (732) 332-1392

Email: tcoletti@obius.jnj.com

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

NORWALK AQUARIUM SOCIETY

Next Meeting: March 21, 2019

Speaker: TBA

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/>

Bigger IS Better

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 series by "The Undergravel Reporter"

In **Love and War: The Morphometric and Phylogenetic Basis of Ornamentation, and the Evolution of Male Display Behavior, in the Livebearer Genus Poecilia**, is a paper published this January in the journal **Evolution**. This paper considered the evolutionary purpose of large dorsal fins in molly and Limia fish species.

The paper concluded that these fins aren't just decorations to attract females. Males also use them to fight or intimidate rivals. For scientists who study evolution, the fins present a chicken-and-egg dilemma. Which came first—ornamental fins for courtship displays, or fighting fins only later used in displays?

Biologists have now concluded that dorsal fin displays arose first for males to compete with other males, only later being used in courtship displays to females. These changes in fin function went hand in hand with enlargement of the male dorsal fin. The fins reached extreme sizes in a few species and appear to be associated with rapid evolution, especially in mollies.



When Charles Darwin proposed his theory of evolution, he noted that some features arise not from natural selection by outside pressures like predators and food sources, but from competition within a species to find mates and reproduce. He called this “sexual selection,” and scientists have used it to explain why males from many species have elaborate ornamentation and are larger than females.

Ornamentation can evolve either because females prefer ornamented males, or because the ornament helps to defeat rivals. The male peacock’s tail, for example, probably evolved through female choice. Deer antlers, on the other hand, probably evolved to compete with other males.

Whether male ornamentation arises through female choice or male-male aggression has implications for how a group of animals evolves into a separate species. In existing species, male-male aggression and

covert or “forced” mating occurs much more often than courtship displays and female choice, leading some biologists to predict that, in general, male ornamentation probably evolved first for aggression.

The researchers found that in both mollies and Limia, males evolved larger dorsal fins first for fighting other males, only later using them in courtship displays. At that point, it was only a matter of time until they reached huge sizes in a few exceptionally ornamented modern species: three species of aptly-named sailfin mollies, and one species of Limia: the humpback Limia.

Is anyone reading this old enough to remember the cigarette commercial: “It’s not how long you make it; it’s how you make it long?” Well, apparently, size **does** matter.



Reference:

<https://phys.org/news/2019-01-size-mattersto-livebearer-fish-big.html>

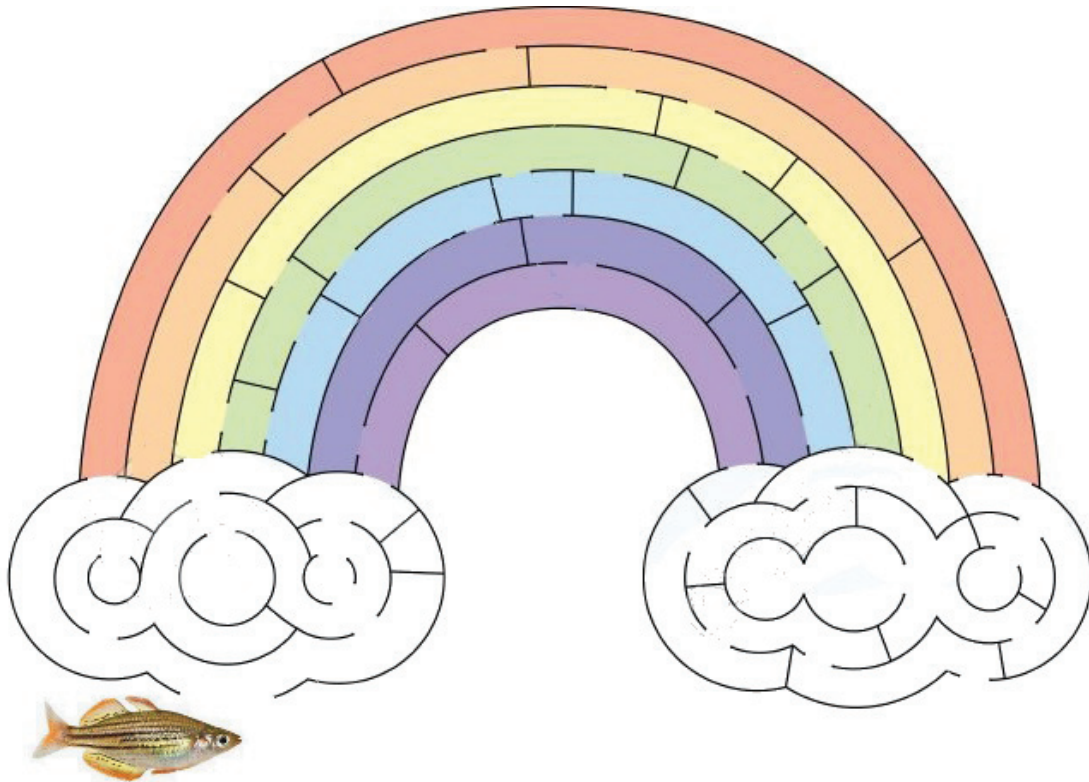


Fin Fun



Over The Rainbow

Guide this rainbowfish from one end of the rainbow to the other



Solution to our last Puzzle: *Trivial Pursuit 2*

Question: "In what year did..."	Year
... the Undergravel Reporter run an article entitled "Open Wide?"	2014
... <u>Modern Aquarium</u> take us on a tour of the opening day of the Madagascar exhibit at the Bronx Zoo?	2008
... GCAS members write letters of tribute to Joe Ferdenzi on his 19th year as President?	2009
... <u>Modern Aquarium</u> 's cover feature a collage of fish stamps from around the world?	1998
... did the cake at our Awards Banquet misspell the word "Holidas"?	2017

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