

modern AQUARIUM



April 2019
volume XXVI
number 2

Greater City Aquarium Society - New York

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Series III Vol. XXVI, No. 2 April, 2019

ON THE COVER

In honor of our originally scheduled speaker, our cover photo this month was to have been a goldfish. However, our rescue speaker, Mark Denaro, will be talking about cichlids. So instead of a goldfish, our cover photo this month is a gold severum, *Heros efasciatus*. We're still going for the gold! Hopefully this isn't one of the cichlids that Mark hates!

Photo by Dan Radebaugh

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From the Editor

by Dan Radebaugh

This month, between **Modern Aquarium** and our guest speaker, we cover some of the major ‘food groups’ of the fishkeeping hobby. Our speaker, Mark Denaro, will be talking about cichlids, and in this issue of **Modern Aquarium** we have articles on a catfish, a tetra, and a pupfish, while Tom Warns gives us a look at *really* old-school fishkeeping in his article, “A Brief History of the World (Of Ancient Roman Fishkeeping).” Who knew?

Our Exchange article this month, which features the “Candy Cane” tetra, is by Don Kinyon, of the Aquarium Club of Lancaster County, and was originally printed in the July, 2017 issue of their publication, **Tank Talk**. For the pupfish article, look for this month’s episode of The Undergravel Reporter. Saving fishes from extinction can be complicated!

The catfish article is one that I wrote back in 2006, though it wasn’t published at that time. It describes my experience with keeping *Pseudoplatystoma fasciatum*, popularly called the tiger shovelnose catfish. I was reminded of this article when I saw a recent article in another exchange publication that described its care requirements.

That article recommended a minimum tank size of 180 gallons(?!). While it isn’t my goal here to get into an argument with anyone, this is one of the larger catfishes you’re likely to come across in the hobby. A 6-foot long tank such as my current 240 is only about 22.5 inches on the short axis, so a 3-foot fish would be hard pressed to turn around in it, much less face directly out.

At the time I was keeping mine, one of the online forums I belonged to carried a narrative of a woman in Canada whose husband, a contractor, took several feet of their living room and made of it a very large floor-to-ceiling aquarium. While I don’t precisely recall the capacity, I seem to remember that it was in the 750 to 1,200 gallon range. I think they *still* ended up rehoming the fish when it began snacking on her African cichlids.



Other hazards to consider with fish this large and powerful are that glass heaters are out of the question. They’ll simply be smashed—most likely at night, when these fish are most active. Filter intakes had better be sturdy. Any decorative rocks need to be bigger than a baseball so that they won’t be ingested during late-night munchies. Should this fish become startled and attempt to jump out, your glass aquarium lid is not likely to prevent it. Be careful out there!

This year marks the beginning of our magazine’s 26th year of publication. One thing that has not changed in all that time is that we need articles. We *always* need articles! From you, our members. Every month! As Editor, I put the magazine together, but **Modern Aquarium** ultimately depends on you, our members, for its content. With the exception of a few exchange articles, all of the stories in **Modern Aquarium** are written by you, our members. None of us knows everything, but as a group, learning from one another, we can all benefit, and we can in turn use the magazine to share and increase our own 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 don’t believe me, ask them! Just talk with one of the members whose articles you’ve seen in **Modern Aquarium**. They’ll tell how to begin. None of us knows everything about keeping every kind of fish. 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	Mark Denaro <i>Cichlids I Hate</i>
May 1	Harry Faustmann <i>Live Foods</i>
June 6	TBA
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 at (718) 458-8437, email gcas@earthlink.net, or fax at (877) 299-0522. For more information about our club or to see previous issues of *Modern Aquarium*, you can also go to our Internet Home Page at <http://www.greatercity.net>, <http://www.greatercity.org>, or <http://www.greatercity.com>.

President's Message

by Horst Gerber

I can hardly believe it! It was only four months ago that we were singing "Feliz Navidad!" Time flies when you're having fun. Or are busy. In my case, I am too busy. Retired, and things to do are piling up. How is that possible? I must be getting old and slowing down. Or am I doing the things that are "more fun" first? Yeah, Prez, keep on making excuses!

Our first meeting of this year (March, 2019) went without a hitch. I was worried when it began to snow Sunday into Monday that we would have a repeat of our snowed out meeting back in 2018. But the weatherman was on our side. By Wednesday it was brisk, but the streets were clear.

Anyway, GCAS members are a tough bunch—cold weather won't stop them. Besides, after the two month layoff we were all ready to roll! What new tanks did Santa bring? It's our duty to fill them up! So we had a large turnout of more than 90 people, as rowdy as always, out of hibernation and panting for new auction items!

As always, Gary Lange delivered a fantastic program, showing us photos of remote collecting sites in New Guinea, and bringing eggs of many of the rare rainbow fish that he brought back. He also mentioned some critters that he didn't bring back, leeches! I remember once while playing in a swamp back in Germany when a leech came by. I took my hand out of the water and let it go by. In New Guinea they fall on you from the trees, and "*vant to trink your blood!*"

Our auction was a huge success! With over 100 lots, it really exceeded my expectations! Thank all of you who made this possible! Gary brought numerous bags of new and rare rainbowfish eggs. One of those bags was bought by a new member for a record-setting price of 103 dollars!

Looking forward to seeing you all in April!

Horst



An Aquarist's Journey

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

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

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

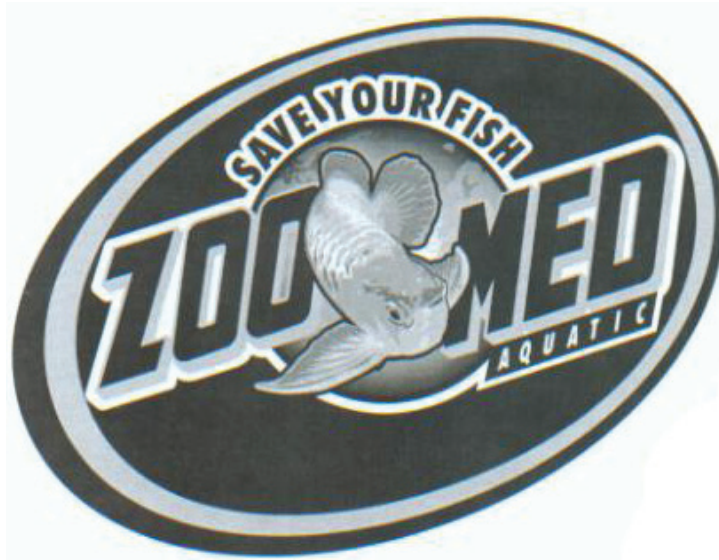


March's Caption Winner:

Sue Priest

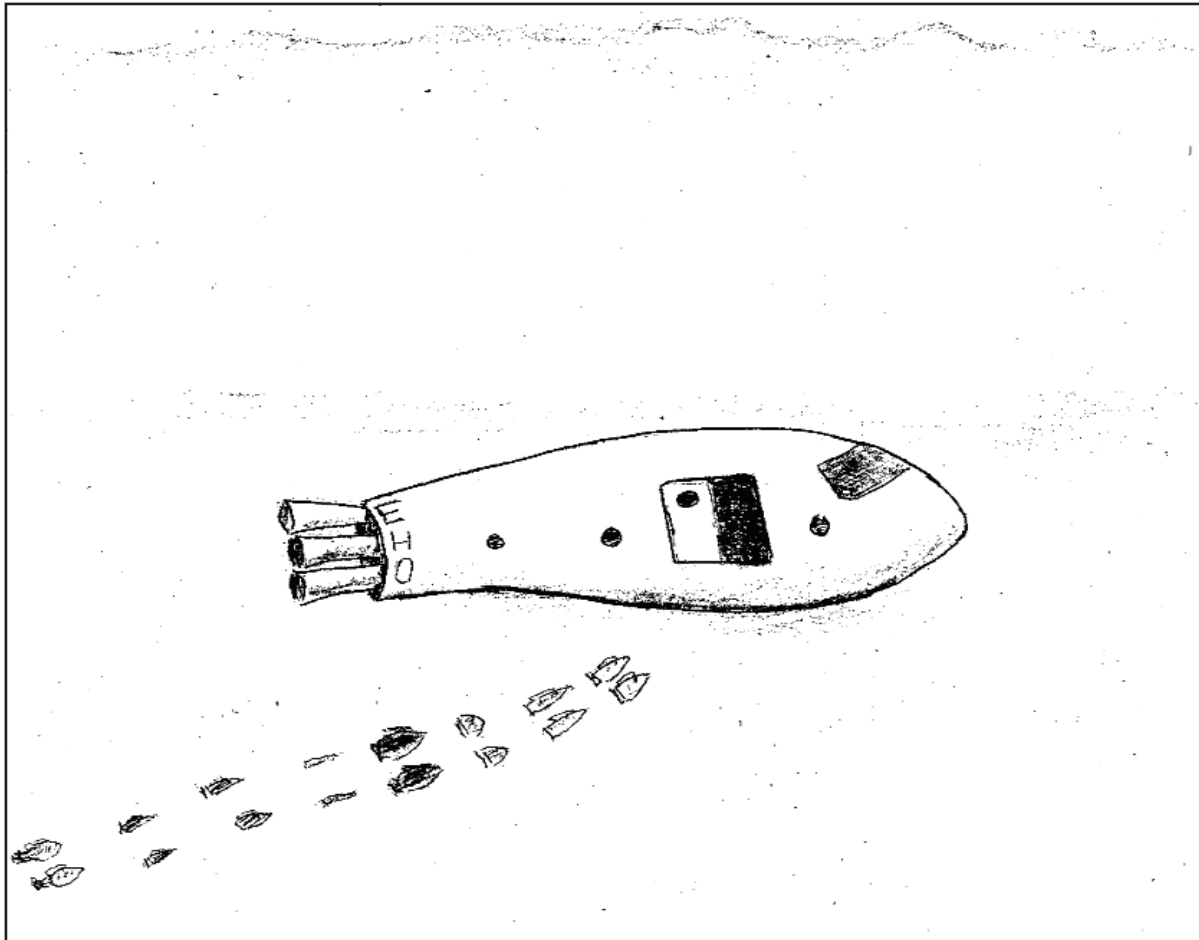


Please! Don't turn us loose in the ocean!



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:

Mark Denaro on

"Cichlids I Hate!"

Mark Denaro has been keeping freshwater aquariums since 1970 and marine aquariums since 1976. Mark has been keeping planted and biotope aquariums since the mid-1970s, and was keeping reef aquariums before that term was coined. He has bred well over 200 species of freshwater fish and propagated over 150 species of aquatic plants. He has spawned 10 species of marine fish and propagated over 40 species of marine invertebrates.

Mark is a co-author of **Adventurous Aquarist Guide to the 101 Best Freshwater Nano Species**, published by Microcosm, Ltd. in September of 2014. He has written articles for several national and international magazines, and wrote the recurring column "Into the Labyrinth" for **Tropical Fish Hobbyist** magazine. He currently writes feature articles for **TFH**.

Mark has been involved in the organized hobby since 1984, and is a past president of the International Betta Congress, the Indianapolis Aquarium Society, and the Bucks County Aquarium Society. He is also a founding member and the inaugural president of the American Labyrinth Fish Association. A well-known speaker and judge, Mark has lectured to more than 50 aquarium societies in more than 20 states plus Canada and Bermuda, and has spoken at numerous regional and national conventions.



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A Brief History of the World (of Ancient Roman Fishkeeping)

By Thomas Warns

The aquarium hobby has exploded over the past century, but you may not realize that the practice of keeping fish in aquaria has existed for millennia.

Ancient Romans kept live fish for the same two reasons modern humans do: to preserve the fish before consumption, and for pleasure. There is evidence that the Romans went to great lengths to keep their catch fresh. Scientists studying a shipwreck off the coast of Italy believe they found a series of tubes used to supply fresh seawater to fish that were stored in an on-board aquarium that could have measured roughly 1,800 gallons. The aquarium would have been able to keep hundreds of pounds of fish alive via the tubes, which were fitted with a hand crank that allowed workers to keep fresh seawater moving into the aquarium as needed. Ships with such aquaria would have been able to keep fish fresh as they were transported to market without having to salt them or dry them out.¹

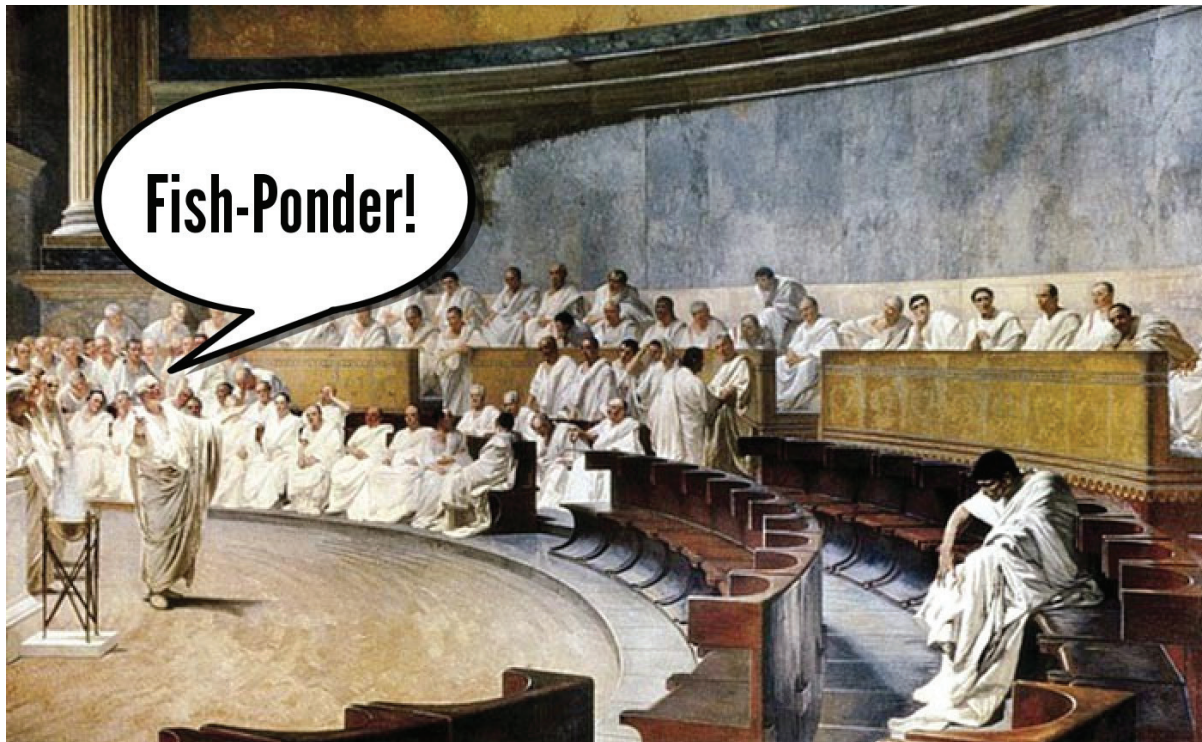
One ancient merchant and aquaculturist, Sergius Orata, was so entwined with fish that he received the cognomen “Orata” after the Latin name for what we call the gilt-head bream, a delicious fish found in the Mediterranean (itself named “Aurata” or “Orata”

from the Latin word for “gold” due to its bright gold coloration). Sources disagree as to whether the name comes from his trade in the Orata fish, prized for its taste by Roman patricians, or if it came from gold jewelry he wore that was reminiscent of the fish’s coloration. Orata is also known for successfully aquaculturing shellfish such as oysters. He had the foresight to surround mature oysters with sticks and branches, which allowed him to seed new fishponds with oysters when the young oysters (“spats”) released from the mature oysters affixed themselves to the branches.

Wealthier Romans also kept personal fish for pleasure and as status symbols. Lucius Licinius Murena, Consul of Rome (essentially the most powerful official during the Roman Republic) in 151 B.C., is said to have been the first Roman to keep fishponds (*vivaria* or *piscinae*) by multiple sources, though the sources disagree on whether he primarily kept lampreys or eels.² In either event, he literally became synonymous with his fish, as he (and his descendants) was given the cognomen “Murena,” which is Latin for lamprey.



A portion of a mosaic in Pompeii depicting a *murena*.



As the hypothesized crank used to pump in seawater for market-bound fishes on fishing vessels suggests, Romans were able to intuit that replacing fishpond water with fresh seawater was important to keeping fish alive and healthy, even if they could not understand the mysteries of the nitrogen-cycle (they likely did not understand oxygenation principles either). Roman author Lucius Junius Moderatus Columella wrote in his agricultural tour de force *De Re Rustica* ("On Rural Affairs") that Marcus Licinius was the subject of great scorn because his fish-ponds lacked any sort of tidal-basin, the water would become quite "stagnant," and as a result his fishes suffered from frequent illnesses. His brother, Lucius Licinius Lucullus, who gained an extraordinarily large amount of booty following a series of military campaigns in the Middle East against the Kingdom of Armenia, poured a significant amount of his war bounty into his *vivaria*. Lucullus had workers dig a channel from the coast through some of the large hills in Neapolis (Naples) in order to provide fresh seawater for his fishes—think of it like a saltwater aqueduct designed for Roman fishes.

Columella's section on fish ponds in *De Re Rustica* suggests that maintaining fish ponds—whether for pleasure or for food—was not uncommon in ancient Rome. There is also evidence that the *vivaria* were quite successful at housing large amounts of fish: Gaius Hirrius, another prominent Roman from the late Republic, was said to have provided Julius Caesar with thousands of eels raised in his fishponds for Caesar's triumphal banquets. While Hirrius apparently refused to part with his eels for anyone other than Caesar himself, some aquaculturists stocked their ponds so

that fresh fish were available to eat when the seas were too rough for fisherman.

Not unlike 21st century aquarists, ancient Roman fishkeepers would also fret over the appearance of their underwater pets. The author Marcus Terentius Varro recounts a friend of his who was more attentive to his off-color fish than he was to a sick slave (modern aquarists can at least relate to the anxiety of having a fish suddenly lose color). Lucius Licinius Crassus, a famed orator who served as Rome's Consul in 95 B.C.,³ was known to have a pet eel (*murena* in ancient sources, but believed to be an eel) of which he was extremely fond. Contemporaries mocked L. Licinius Crassus for allegedly bejeweling his eel with earrings and a necklace. When the eel died, Crassus allegedly held a funeral for his beloved pet and went into a period of mourning as if he had lost a child.

Ancient sources record that people in Ancient Rome enjoyed many of the same activities that aquarists still enjoy today – watching their fish come near when they approach, giving names to individual fishes, and feeding their fishes by hand. There are even stories of fishes that would swim up to their master one at a time when called by name, though ancient sources may be embellishing on that point. While clear glass was invented in the early years of the Roman Empire, there is no evidence that Romans ever made glass aquaria. Observing the fish was strictly from above the fishpond.

Much like with modern fishkeeping, there appear to have been many people in ancient times who just didn't "get it." Cicero, the famous Roman orator, scorned noblemen who imagined themselves in heaven if the bearded mullets in their fishponds swam over to

be touched. Cicero was even known to brand people he didn't like as *piscinarii* ("fish-ponders"). While Cicero was and is famous for his powerful oratory

skills, I can't help but feel that he missed the mark on this particular insult—I would proudly be called a *piscinarii* by Cicero without objection!



¹Students of Roman history will know that Romans had an insatiable appetite for fresh fish, perhaps matched only by their love for a special fermented fish sauce known as *garum*.

²Eels are superficially similar but morphologically quite distinct from lampreys, and many ancient sources confuse the two.

³Modern scholars are uncertain as to which Crassus is referenced by ancient sources, but it seems most likely to be the one identified above. L. Licinius Crassus was likely a distant relative of the Crassus which made up one third of the First Triumvirate, along with Julius Caesar and Pompey the Great.

Sources: Toynbee, J.M.C. **Animals in Roman Life & Art**. South Yorkshire: Pen and Sword Archaeology, 2013; Columella, L. Junius Moderatus. **De re Rustica**. Loeb Classical Library edition, 1941. Accessed March 2019; Charles Q. Choi, "Ancient Roman Shipwreck May Have Held Giant Fish Tank." **LIVE SCIENCE**, June 2, 2011, available at <https://www.livescience.com/14406-fish-tank-ancient-roman-shipwreck.html>

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!*



Joe Gurrado



Peter Goldfien



Andrew Jouan



Ruben Lugo



Joe Gurrado



Dan Radebaugh



THE HY511 TETRA HYPHESSOBRYCON SPECIES

“Candy Cane” Tetra

Text and Photos by Don Kinyon

One of my favorite pet shops is a very small independent store that stocks mostly the bread-and-butter varieties of aquarium fish, but every once in a while will have some more unusual stock for sale. As I was wandering through the place one weekend I found some fish that I'd never seen before. There was a tank full of tetras, similar in body shape to a bleeding heart or a rosy tetra, but more colorful and very eye-catching. Most of the bodies of the fish were a pinkish-white, while their bellies and heads were more gold. Their pectoral fins were almost clear, and the tails were clear with bright red ovals on the upper and lower lobes. The anal, pelvic and dorsal fins were bright red near the body, turning white towards the tips. There was a splash of black on the dorsal fin as well. These were really good-looking fish!

The fish were relatively cheap, so I took ten of them home and put them into a 40 gallon tank that had recently held some *Apistogramma* species. The water was set up for Amazon region fish, so it was soft, acidic, and brown: around 100 PPM TDS, 6.0 pH, and 76° F. Filtration for the tank was an outside HOB filter with a foam block on the intake to keep small fish from entering. Most of the tank bottom was covered with java moss with some java fern mixed in.

These fish would eat anything offered and it seems that they are always hungry. Most mornings they would get flake food and some newly hatched brine shrimp, and in the evening they'd have either live or frozen food: black worms, white worms, daphnia, mosquito larva, blood worms, or glass worms. The type of food didn't seem to matter; as once it hit the water it was history!

My HY511 tetras were fairly young when I first got them and the sexes were hard to tell apart, so there was not much to do but feed them and watch. Once the newness wore off they were pretty much forgotten for a while. What got them back into the forefront of

my attention was quite accidental. I often “spotlight” the fish after the lights go out for the evening to see what's going on with them. It's especially useful with *Corydoras* or other semi-nocturnal fish and shows behavior that the fishkeeper may not see during the daylight. When I was using this technique one evening I happened to look into the HY511 tank and saw what looked like some tiny shards of glass in the java moss near the bottom of the tank. Once I put my reading glasses on, I could tell they were young fish: probably half a dozen or so, and very small.

The next day I prepared another tank for the adult fish and moved them, trying to disturb the rest of the tank and the fry as little as possible. Of course, that never works and I made a complete mess of the aquarium. That night I spotlighted the tank once again and found that about a dozen youngsters could be seen darting around in the moss.

The young fish grew fairly quickly, and soon would take the same foods as the adults, though in smaller sized pieces. There turned out to be about twenty; not a group of tetras, so when they were mature enough I removed them to another tank and picked out two males and one female from the original



Female



Male

Reprinted from *Tank Tales* – June 2017, Volume 46 Issue 6; The Aquarium Club of Lancaster County.

adult fish to go back into the breeding tank. By now the adults are very easy to tell male from female: the males have an extended dorsal and get larger than the females. They also tend to be more brightly colored. The females keep an oval-shaped dorsal fin, same as the young fish and the dorsal tends to have more white on it. They don't grow as large as the males, but are thicker-bodied.

The breeders were fed at least twice a day with live foods and soon the females were robust and all the fish were very active. One day during the evening feeding I noticed the female was no longer as stout as she was that morning; she'd lost a lot of weight! Immediately the breeders were removed and joined the rest of their group in another tank.

Then the waiting started. It was five days before any trace of young could be found, and there were only a few.... at first.

By the next day there were more fry, and the following day; many more. Soon there were far too many to count. When I felt the young fish were mature enough to stand the stress I started daily water changes in their tank; first with rainwater, then a mixture, then with well water. It did not seem to harm the fish at all; they grew faster with the constant fresh water. Soon fish from two other tanks were evicted from their homes in order to find more space for the young tetras and before it was over, the original 40 gallon, a second

40, a 55 and 125 all had HY511 fry growing out in them. Even at that, there was some crowding. The fishroom was being overrun! It's only a guess, but I'd estimate there were easily over 400 of them.



Species Pair

When no more than a few days old, the young HY511 would eat newly hatched brine shrimp until their bellies bulged a bright orange. They are ravenous even at this age. Growth was fairly rapid, and at 10 days the fry had grown into the same ovate body shape of the adults. Finely crushed flake food was added to their diet about this

time and they ate it with almost as much vigor.

When the tetras were around four weeks old and one half inch in length, I started selling them at aquarium society auctions, labeling them as "10 juveniles", but putting 15 or 16 in the bags. This made a lot of bidders happy and gave me some breathing room in my tanks. Once they were down to occupying only two tanks (one of them a 125 gallon), I slowed the sales to a more moderate pace. Pet shops won't give too much for most tetras, but I found that most local shops were happy to trade HY511 for at least some store credit. Finally, months and months later, things have calmed to normal and only one tank holds the now-adult remnant of the HY511 brood.

This morning I set up two pairs in a 40 gallon tank with some java moss.



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Journey to the South

A Cautionary Tale

Story and Photos by Dan Radebaugh

Author's Note: The following article was written back in 2006, but not published at that time. I recently came across it again, and thought that it might still be of some value, particularly with respect to the advisability of keeping larger fish. At the time of purchase, this fish was around four inches in length. I eventually put him in a newly purchased 6-foot, 210 gallon tank, reasoning that even though the fish was capable of reaching a very large size (five feet or more), it would probably take several years to attain that size, giving me time to make better arrangements for him at some later date.

That reasoning turned out to be quite flawed. He (or she) grew **much** more quickly than I anticipated, and even with a substantial filtration system, keeping the water quality within acceptable parameters became a losing battle. So this article is intended as a warning to those of you who may be contemplating the purchase of any fish that will eventually challenge your present resources. In short, I strongly suggest that if you can't **right now** adequately house the full-grown version of the fish you are contemplating, don't make the purchase!

A few years ago (this was written in 2006, so "a few years ago" probably translates to "2002") I was window shopping at Coral Aquarium, a pet shop near our home, and came upon a very appealing (to me, anyway) young catfish. It was about four inches long, but still obviously a juvenile. The sign said Tiger Shovelnose Catfish. No, I didn't immediately buy it. I went home, dialed up Planet Catfish, and got the skinny on this skinny little fish (*Pseudoplatystoma fasciatum*).

Turns out that it was unlikely to stay either skinny or little for long, and in fact might come to need the entire spare bedroom to itself. Nevertheless, I reasoned, we needed a bigger tank anyway, so why not go for it? So when my stepson Alex asked me what I wanted as a birthday present, I told him that if the catfish was still there the next week (thus leaving room for divine intervention), he could buy that for me.

As Providence would have it, no one else bought the fish in time to save me, so I delightedly quarantined my new birthday present in a spare 10 gallon, and began plotting to obtain a new tank large enough to keep my new prize for at least several years.

Eventually we bought as large a tank as the budget and the living room would support. The catfish graduated from the 10-gallon, first to a 55, and ultimately to the new 210 gallon, along with a pleco, a severum, a rainbow shark, a *Geophagus*, and an Oscar. As time passed everyone grew, and we added a few more fish. The tiger shovelnose became bigger and stronger, and was a really good citizen in the aquarium.

A very mellow fellow, he didn't bother his tankmates, and was really a joy to keep, especially once he grew large and confident enough to stop hiding under his roof tile (see photo below).

Eventually of course, and rather more quickly than I expected, he started closing in on the two foot mark, and we had to seriously consider where his next home was going to be. Even at rest, these are big,



powerful fish, and we started to feel rather like we were keeping a racehorse in our back yard. Could he stay there? Possibly, but he'd obviously be happier with more room to roam. The situation was complicated by his tankmates. My pair of severums was now

spawning regularly at one end of the tank, and my Oscars at the other, so Tiger was pretty much limited to hanging out in the center, as he'd be attacked when venturing toward either end. This aversion therapy was so effective that he left the fry strictly alone, even when they wandered into his space. I have a picture of him with a dime-sized severum right in front of his nose, while he makes no appearance of caring. I'm pretty certain though, that this laissez-faire attitude would not have lasted forever.

Clearly the 210 would not be enough tank in the long run. While we have space in the room for a larger, wider tank, I just don't see a way to get a wider tank through the doorway into the apartment.

The real problem at this stage was the water. Even with robust filtration and an aggressive water-change regimen, you can see from some of the photos that all was not well. At length, we felt it was time to



find him a better home, so we contacted several local public aquaria, but had no luck. I remembered someone online mentioning that the Tennessee Aquarium had a great Amazon collection, including some of the big catfishes, so I sent them an email. A day or two later I was surprised and delighted to get a reply from Carol Farmer, who was at that time Assistant Curator of Fishes. Carol told me that, as they had a quarantine tank available, it was National Catfish Month, and their own shovelnose had recently been eaten by a red-tail, they would love to give Tiger a home. So Carol sent me a large cooler, Marsha and I made vacation arrangements, I bought a power inverter to run a small air pump from the car's cigarette lighter outlet, and we were ready to roll!

This was in August of 2005. Remember Hurricane Katrina? Well, the night before we were to begin our journey Katrina hit New Orleans. This gave us pause, but there seemed to be some things in our favor. The projected path of the storm looked like it would move north and then east, so I judged that we would probably pass it to the southeast, which in fact we did (Whew!). Not wanting to keep Tiger in that cooler any longer than necessary, we left around nine in the evening, and drove pretty much straight through, albeit with a couple of long rest/sleep stops.

Arriving in Chattanooga in the mid-afternoon, we connected with Carol by cell phone, and made our delivery. As it turned out, I think Carol had slightly misunderstood what species I was talking about, and was expecting a *juruenae*, but she nevertheless accepted Tiger very graciously. We drove him over to their quarantine facility, and got him loaded into a nice big tank of his own. His immediate neighbor was a large flathead catfish (*Pylodictis olivaris*) some angler had hooked and injured. That fish recovered, and was eventually transferred to the rebuilt New Orleans Aquarium.

We spent a little time meeting some of the staff and admiring all the fish in the quarantine facility, which is in a separate warehouse-like building several blocks from the Aquarium proper. Finally, we checked ourselves into a hotel, got a good meal, and then an even better night's sleep!

After breakfast the next morning we met Carol at the Aquarium, and she treated us to our own backstage tour of this very well-kept facility. This is a tour that visitors to the Aquarium can sign up for at the door, and for fishkeepers it's really a treat! One of the things you get to see is the food preparation area. They have lots of different critters, with widely varying dietary needs, so feeding them all is quite an ongoing challenge. The Aquarium is very involved in conservation efforts, and Carol showed us some examples of their breeding program. They have sustainable populations of Malagasy killifish and Malagasy rainbowfish, as well as sustainable breeding programs for about four species of seahorse: *Hippocampus zosterae*, *H. erectus*, *H. reidi*, *H. abdominalis* and if all goes well with their current brood, *H. whitiae*.

They also culture moon jellies, mysis shrimp, rotifers, and algae. Tiger's current tankmate, a black ray (*P. leopoldi*), is due in September. The Aquarium's big conservation project is the Barren's topminnow, on which they work in conjunction with their research arm TNARI as well as Conservation Fisheries, USGS, the Nature Conservancy, and others. So it isn't all glamour and showbiz!

The Tennessee Aquarium is located in the newly revitalized riverfront area of Chattanooga. Marsha and I found the city to be a vibrant, clean, and thoroughly enjoyable place to visit. The Aquarium alone was worth the trip, and provides an impressive centerpiece to the Riverfront. The exhibits are well organized on a theme basis in two large buildings, River Journey (total of 400,000 gallons) and Ocean Journey (total of 700,000 gallons).

As my own collection of tanks totals somewhat less than this, I was naturally curious about what they do for filtration, and since they're pretty far from an ocean, I wondered how they supply themselves with saltwater. Turns out that they mix it themselves! I didn't get the complete recipe, but in Carol's words, "Basically it's sodium chloride and all the other elements found in natural seawater. This is used in our shark touch tank and our Secret Reef (flower garden banks) exhibit. For the inverts, we have an RO system that creates water to mix with Instant Ocean. We also use RO freshwater for the stingray exhibit."





OK, no long pipeline to the ocean. But what about filtration? That's an awful lot of fish in an awful lot of water! Well, most of the exhibits use reverse flow undergravel filtration, with sand filters providing the primary mechanical filtration. They also use fluidized bed filters for additional biological filtration, cycling them prior to setting up a new system. If a system is new and has no animals in it, they will often use ammonium chloride to artificially cycle it. Some of their larger systems use ozone for water clarity as well as disinfection (keeping bacterial levels down). They use UV sterilization in the seahorse tanks and freshwater touch tanks. Water quality is tested in all exhibit and backup tanks each week, with newer or problematic systems being tested more frequently. Parameters tested include pH, ammonia, nitrite, nitrate, DO and salinity. Hardness and alkalinity are checked on an as-needed basis.

A point of interest here for our cichlid keepers. During the backstage tour, Carol showed us a smaller tank of around 5,000 gallons, mostly inhabited by a shoal of red devils (*Amphilophus labiatus*), who just looked fantastic! She wanted us to see what great

shape these fish were in before we saw the Small Amazon exhibit, pointing out that the severums in that exhibit didn't look as impressive as the red devils due to the ozonization of the water in the Small Amazon. Ozone, while it has many virtues as a means of keeping bacteria under control in a large system, seems to make cichlids prone to HITH. Oh, well! I guess I'll cancel my order. That fluidized bed filter though, hmmm...

Getting back to Hurricane Katrina, Carol was in ongoing telephone contact with the aquarium in New Orleans, and kept us updated about the fate of the animals and staff at that beautiful facility. We had just visited there the previous summer, and were of course dismayed by the scope of the catastrophe. Several aquaria around the country, including the Tennessee Aquarium, lent what support they could, but thousands of animals perished once power was lost and the cooling, circulation, and filtration systems shut down. They ran on standby generators for as long as they could, but fuel ran out, and the staff was forced to evacuate.

It's now been almost a year since our trip to Chattanooga (*Remember, this was written in 2006*).



Tiger in his temporary holding tank that he shares with a black ray, *P. leopoldi*, which is due to deliver soon. Photo from Tennessee Aquarium.

Tiger has graduated from the quarantine facility, but isn't on view yet. He's too big and predatory to go into the smaller Amazon exhibit, and not yet big enough to avoid being eaten in the larger one. Marsha and I thank Carol and her colleagues at the Tennessee Aquarium for their hospitality during our visit, and for the information used to compose this article. I hope I didn't introduce too many factual errors.

Our trip continued with a week's vacation near Gatlinburg and a visit to The Aquarium of the Smokies, but that's another story.



Pictures From



GCAS President Horst Gerber welcomes our speaker, Gary Lange



Now, Gary Lange is an Honorary GCAS Member



Closeup of rainbowfish eggs



Joe Ferdenzi auctioning off rainbowfish eggs

Bowl Show Winners:



1st Place: Rich Waizman



2nd Place: Rich Waizman



3rd Place: Bill Amely

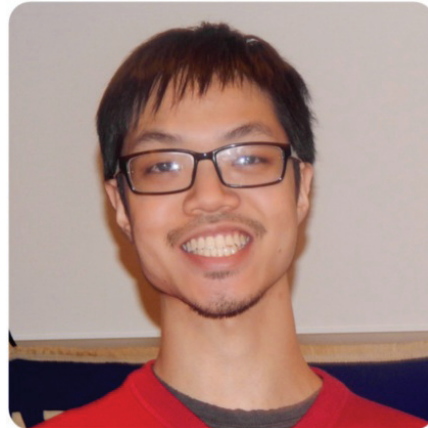
Our Last Meeting

Photos by Al Priest, Sue Priest, and Jules Birnbaum

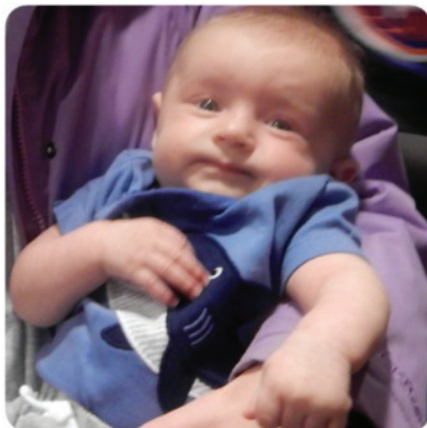
We warmly welcome our newest members:



Ali Abdullah



Chris Tam



Kenneth Warns



Venus Deng



Al Priest accepts past Editor-In-Chief Award



**Doorprize winner:
Leonard Ramroop**

Happy 96th Birthday!



Elliot Oshins celebrates his 96th birthday with the GCAS



Elliot makes a wish



Steve Chen offers his congratulations



Elliot adds to his collection of Modern Aquarium magazines



We wish you many more!

2019 NANFA Convention
May 30 - June 2, 2019
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2019 ACA Convention
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Dr. Adrian Indermaur
Dr. Paul Loiselle
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Holy Grail Cichlids: The Search Continues

2019 ACA Convention
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Greater City Aquarium Society

Prohibited Species List

This is a list of species prohibited from being sold, given, or traded at any Greater City Aquarium Society (GCAS) auction. These species are restricted by NYS or federally, require special permits, and/or have complicated trade requirements. GCAS will remove any of the listed items, and ethically dispose of, or turn over such items to the proper authorities. Common names may differ, so please check the scientific names of any species you sell.

Prohibited Aquatic/Bog/Marsh Plants:

Golden Bamboo (*Phyllostachys aurea*)
Yellow Groove Bamboo (*Phyllostachys aureosulcata*)
Common Reed Grass (*Phragmites australis*)
Marsh Dew flower (*Murdannia keisak*)
Purple Loosetrife (*Lythrum salcra*)
Reed Manna Grass (*Glyceria maxima*)
Smooth Buckthorn (*Frangula alnus*/ *Rhamnus frangula*)
Yellow Iris/ Yellow flag iris (*Iris pseudacorus*)
Anacharis/ Elodea/ Brazilian water weed (*Egeria densa*)
Eurasian minfoil (*Myriophyllum spicatum*)
Broadleafwater minfoil (*Myriophyllum heterophyllum* X *M. laxum*)
Cabomba (*Cabomba caroliniana*)—any similar species we cannot identify will be removed from the auction.
Floating Primrose Willow (*Ludwigia peploides*)
Frogbit (*Hydrocharis morsus-ranae*)
Hydrilla/water thyme (*Hydrilla verticillata*)
Parrot Feather (*Myriophyllum aquaticum*)
Uruguayan Primrose Willow (*Ludwigia hexapetala* / *grandiflora*)
Water Chestnut (*Trapa natans*)
Yellow Floating Heart (*Nymphoides peltata*)
Slender false brome (*Brachypodium sylvaticum*)

Prohibited Aquatic Inverts:

Asian Clam (*Corbicula fluminea*)
Zebra Mussel (*Dreissena polymorpha*)
Quagga Mussel (*Dreissena bugensis*)
Asian Sea Squirt (*Styela plicata*)
Asian Shore Crab (*Hemigrapsus sanguineus*)
Bloody Red Mysis Shrimp (*Hemimysis anomala*)
Carpet Tunicate (*Didemnum* spp.)
Chinese Mitten Crab (*Eriocheir sinensis*)
Faucet Snail (*Bithynia tentaculata*)

Chinese Mystery Snail (*Cipangopaludina chinensis malleata*)
Japanese Mystery Snail (*Bellamya japonica*)
New Zealand Mud Snail (*Potamopyrgus antipodarum*)
Rusty Crayfish (*Orconectes rutilus*)
Suminoe Oyster (*Crassostrea ariakensis*)
Veined Rapa Whelk (*Rapana venosa*)
All freshwater mussels or clams native to the USA

Prohibited Fish Species:

Bighead Carp (*Hypophthalmichthys nobilis*)
Black Carp (*Mylopharyngodon piceus*)
Large-scale Silver Carp (*Hypophthalmichthys harmandi*)
Silver Carp (*Hypophthalmichthys molitrix*)
Round Goby (*Neogobius melanostomus*)
Tubenose Goby (*Proterorhinus seilunaris / marmoratus*)
Eastern Mosquitofish (*Gambusia holbrooki*)
Western Mosquitofish (*Gambusia affinis*)
Dojo Loach/Weather Loach/Gold/Marbled Loach (*Misgurnus anguillicaudatus*)
Sea Lamprey (*Petomyzon marinus*)
Tench (*Tinca tinca*)
Walking Catfish (*Clarias batrachus*)
Snakehead (All species described and undescribed in the genus *Channa*)
All species of Piranha
Asian Arowana (*Scleropages formosus/inscriptus*)
Zander (*Sander/Stizostedion lucioperca*)

Prohibited Reptiles/Amphibians:

Alligators/Crocodylians
Monitor lizards
Newts/Salamanders

Other Rules:

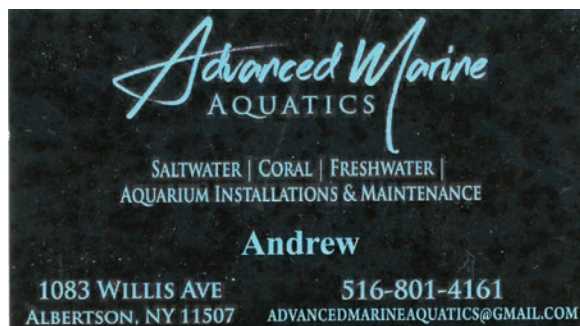
Any species native to the State of New York are Prohibited.
Any Game species defined by DEC or NYS are prohibited.
Any species protected by the U.S. Endangered Species Act are prohibited.
Any species not listed that are prohibited federally.
Any species that violate the Lacey Act are prohibited.
Any species imported or transported illegally are prohibited.
Any species GCAS feels may be illegal or a threat not listed may be removed from auction.
Any species listed as “Dangerous” or “Injurious” are prohibited.
Any species that violate CITES laws are prohibited.

For pictures:

www.dec.ny.gov/docs/lands_forests_pdf/isprohibitedanimals.pdf
www.dec.ny.gov/docs/lands_forests_pdf/isprohibitedplants2.pdf



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FOR SALE: Coralife 9-Watt Turbo-Swift U/V, bulb recently replaced.
 Call Kris: 516-282-6677



GCAS Happenings

April

Last Month's Bowl Show Winners:

- | | |
|-------------------|------------------------------|
| 1 RICHARD WAIZMAN | WILD TYPE BETTA |
| 2 RICHARD WAIZMAN | DRAGON SCALE HALF-MOON BETTA |
| 3 WILLIAM AMELY | BLUE PLAKAT BETTA |

UNOFFICIAL 2019 BOWL SHOW TOTALS:

RICHARD WAIZMAN 8 WILLIAM AMELY 1

A WARM WELCOME BACK TO RENEWING GCAS MEMBERS BILL AMELY, JULES BIRNBAUM, JEFF BOLLBACH, JIM BREHENY, LAMONT BROWN, STEVE CHEN, NICHOLAS CAPUTO, CARLOTTI DE JAGER, RYAN ENRIQUEZ, HARRY FAUSTMANN, ARTIE FRIEDMAN, MICHAEL GALLO, WALTER GALLO, ORLANDO GONZALEZ, JOSEPH GRAFFAGNINO, AL GRUSELL, JOSEPH GURRADO, JASON IRIZARRY, MARTIN KARFINKEL, TOM KEEGAN, ROBERT KOLSKY, MARIE & RAY LOPINTO, TEMES MO, RUDY PALERMO, SCOTT PETERS, AL & SUE PRIEST, DAN & MARSHA RADEBAUGH, LEONARD RAMROOP, VINNIE RITCHIE, TONY SIANO, DONNA & STEVE SICA, GILBERTO SORIANO, SANDY SOROWITZ, WAYNE STEPHENSON, AL TURRISI, EDWARD VUKICH, RON WEBB, AND PETER WOLTJEN!

A SPECIAL WELCOME TO NEW GCAS MEMBERS ALI ABDULLAH, JOHN 'BUZZ' BUZZETTI, JAKUB OLSZEWSKI, AND CHRISTOPHER TAM!

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



GREATER CITY AQUARIUM SOCIETY

Next Meeting: May 1, 2019

Speaker: Harry Faustmann

Topic: Live Foods

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: April 12, 2019

Program: CHI OF PACIFIC - The Thriving Aquarium Retail Still Lives

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: May 17, 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 at Alley Pond Environmental Ctr.:

228-06 Northern Blvd.

Contact: Gene Baudier (631) 345-6399



NASSAU COUNTY AQUARIUM SOCIETY

Next Meeting: April 9, 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: April 20, 2019

Speaker: Rusty Wessel

Topic: Central American Cichlid Husbandry & Travelogue

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: April 18 2019

Speaker: 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/>

Beetles vs. Devils

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"

According to an article on [nationalgeographic.com](https://www.nationalgeographic.com)¹ Devils Hole pupfish (*Cyprinodon diabolis*) may be the world's rarest fish. This species was listed as endangered in 1967.

This iridescent blue inch-long fish's only natural habitat is in the 93°F waters of Devil's Hole, located within the Ash Meadows National Wildlife Refuge, Nye County, Nevada, a detached unit of Death Valley National Park.²

The U.S. Fish and Wildlife Service opened the Ash Meadows Fish Conservation Facility, a 100,000 gallon replica of Devil's Hole that can be controlled and protected. The goal was to create a "lifeboat population" of pupfish that could supplement or replace the ones in the wild, if they should ever go extinct.

A fish biologist with the U.S. Fish and Wildlife Service, Olin Feuerbacher, while studying infrared footage at Ash Meadows noted a beetle swimming past and circling a pupfish larva. "Then it just dove in and basically tore the fish in half right while I was watching," says Feuerbacher.



Photograph Courtesy of Olin Feuerbacher,
U.S. Fish and Wildlife Service

Scientists know that diving beetles share the waterlogged limestone cavern known as Devil's Hole with the pupfish. When they built the Ash Meadows facility, the scientists tried to create a mirror image of Devil's Hole, which meant bringing in water, substrate, and algae from the natural environment. So the fact that some diving beetles had hitchhiked along didn't seem like a bad thing at first.

As time went on, the scientists started to suspect that the diving beetles might be nibbling on pupfish eggs. But for one to take down a larva twice its size was surprising. Captive breeding efforts since the facility opened hadn't been going well and no one could figure out why.

Now, they knew what they had to do. In March of 2018, the scientists started actively removing diving beetles from the refuge tank using traps that catch the insects as they surface to breathe. The researchers

concluded that the beetles were eating the eggs. Unfortunately, we're talking about a beetle the size of poppy seed in a 100,000 gallon tank, which means total eradication may be impossible.

The team isn't removing beetles from Devil's Hole itself for a few reasons. For one, the researchers don't

know how that might impact other aspects of the ecosystem. Second, beetle predation on eggs hasn't yet been observed in the wild. Third, there appear to be fewer beetles in Devil's Hole than in the refuge, and it may be that in the artificial environment they have less food and are more apt to eat eggs.

Hmmm, I haven't had some breeding success in a few of my tanks. Maybe I should go on a beetle hunt?



References:

¹ <https://www.nationalgeographic.com/animals/2019/03/endangered-devils-hole-pupfish-breeding-breakthrough/>

² https://www.fws.gov/nevada/protected_species/fish/species/dhp/dhp.html



Fin Fun



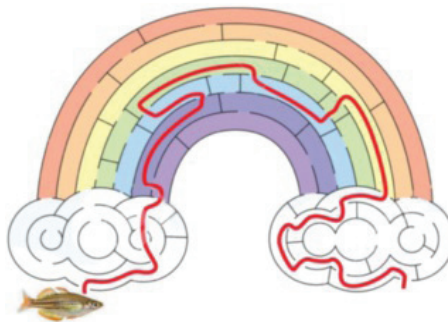
*Finny
Films*



Can you correctly pair up the movie with the species of fish or sea life that made a (sometimes very brief) appearance in that film?

Movie	Species of fish
From Russia With Love	<i>Architeuthis sp.</i>
Jaws	<i>Betta splendens</i>
Finding Nemo	<i>Channa sp.</i>
20,000 Leagues Under the Sea	<i>Carcharodon carcharias</i>
Frankenfish	<i>Amphiprion ocellaris</i>

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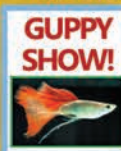
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