

modern AQUARIUM



June 2023
volume XXX
number 4

Greater City Aquarium Society - New York

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Series III Vol. XXX, No. 4 June, 2023

ON THE COVER

Our striking cover photo this month is by Jules Birnbaum, and features a "Triple Red Cockatoo" Dwarf Cichlid, *Apistogramma cacatuoides*. What can I say that the photo doesn't? Wow!

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From the Editor

by Dan Radebaugh

Well, here we are at the end of 2022. Covid hasn't gone away, but the current strains of the virus don't seem to be as deadly as those that typified the early pandemic. It's still causing worldwide problems, but certainly not on the same scale as did the earlier versions of the virus. Those who have cloistered themselves at home certainly were not wrong to do so, as a review of the worldwide death statistics will verify, but nevertheless, we're in a better place now than we were not so long ago.

Sound familiar? It should! That was how I began this column back in December of 2022. Things have surely changed since then, and yet Covid is still profoundly affecting the way we live our lives. To be sure, we've made some progress. Many more people have been vaccinated, and the current strains of the disease don't seem to be as



lethal as the earlier forms. Nevertheless, it may yet be too soon to declare total victory, so be careful out there, and check with your physician to assess your own risk level.

You'll see several familiar names among our authors in this issue. On page 17 Jason Gold contributes another entertaining article in his series on a "Life In Fish," Steve Sica describes (p. 11) his experiences with some new little bitty buddies in "Downsized," and Dan McKercher discusses "Inbreeding and Line Breeding" on page 13.

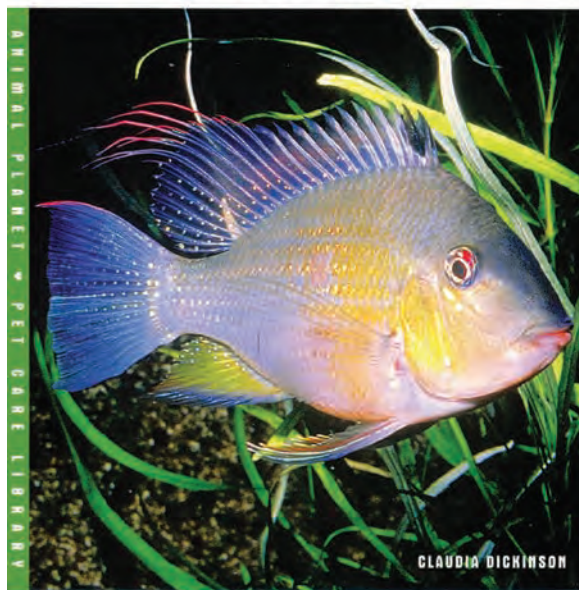
Denver Lettman challenges us with a new Cartoon Caption Contest entry on page 8, and on page 14 Joe Ferdenzi chips in with another terrific historical article—this one on "The First Fish of the New York Aquarium." I have to say that I was astounded by some of the species he mentions, as well as by where they were collected!

We have two exchange articles in this issue. The first, on page 9, is a news article explaining that for the first time, UN members have agreed on a unified treaty to protect biodiversity in the high seas. The second is an article from Mike Hellweg. Several of you here know Mike, a prolific author who has also been a speaker for us at Greater City.

The issue closes, as it has since long before my time here, with The Undergravel Reporter ("An Alien Among Us") and our Fin Fun puzzle page (this one entitled "Green Wet Thumb.") Enjoy!



Aquarium Care of Cichlids



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

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





GCAS Programs

2023

March 1	Tom Keegan <i>Fish Biology 101, Part 1</i>
April 6	David Banks <i>Lake Tanganyika Cichlids and Appropriate Tankmates</i>
May 3	Emiliano Spada <i>Antique Aquariums and Equipment</i>
June 7	Karen Randall <i>Sunken Gardens</i>
July 5	Dr. Paul Loiselle <i>The World of Jewel Cichlids</i>
August 2	Night At the Auction
September 6	Sebastian Alvarado <i>Color Changes In Fish</i>
October 4	William Guo <i>Freshwater Shrimp</i>
November 1	Tom Keegan <i>Fish Biology 101, Part 2</i>
December 6	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 (347) 379-4984. Copyright 2023 by the Greater City Aquarium Society Inc., a not-for-profit New York State corporation. All rights reserved. Not-for-profit aquarium societies are hereby granted permission to reproduce articles and illustrations from this publication, **unless the article indicates that the copyrights have been retained by the author**, and provided reprints indicate source, and that two copies of the publication are sent to the Exchange Editor of this magazine (one copy if sent electronically). For online-only publications, copies may be sent via email to gcas@earthlink.net. Any other reproduction or commercial use of the material in this publication is prohibited without prior express written permission.

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

President's Message

by Horst Gerber

It is exciting to know that Greater City continues to move forward even with the pandemic still looming in the rear-view mirror. We are seeing good turnouts at our meetings, while unfortunately many other clubs are still suffering from the chaos of Covid. Not that we aren't feeling the pain as well, but we've been luckier than many. Our attendance has continued to grow, even as many members remain understandably cautious about attending live meetings. The mild winter was a positive factor, and our large auctions have helped to draw both buyers and sellers. But human beings are social creatures, and fish people are no exception. Much of our happiness derives from connecting with friends and fellow hobbyists. Our shared interest in this hobby helps us to 'rejoin the world' perhaps sooner than others.



Over the past few years people have asked me what possessed me to become President of Greater City. Well, after long presidential terms by Joe Ferdenzi and Dan Radebaugh, I noticed that neither of them had (so far) died from the experience, so I said to myself, "What the heck? Why not?"

Overall, it has been a positive, even joyful experience, and I hope that you all have felt that way as well. But now it's time for me to go back to being a regular member and let someone younger than I take over the reins.

If you feel you can step up and help the club as we move into another century of service to the members of Greater City, and to the fishkeeping community at large, please talk to me (or Joe or Dan, or anyone else on our Board) and let us know that you'd be willing to help the club by taking on a new and important role. There is of course more to do than just showing up for our meetings, but I have to say that it can also be a very rewarding experience, and sometimes even fun!

Horst

P.S. GCAS member Temes Mo is now a **citizen** of the United States of America! Congratulations, Temes!





GCAS Thanks You!

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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!*





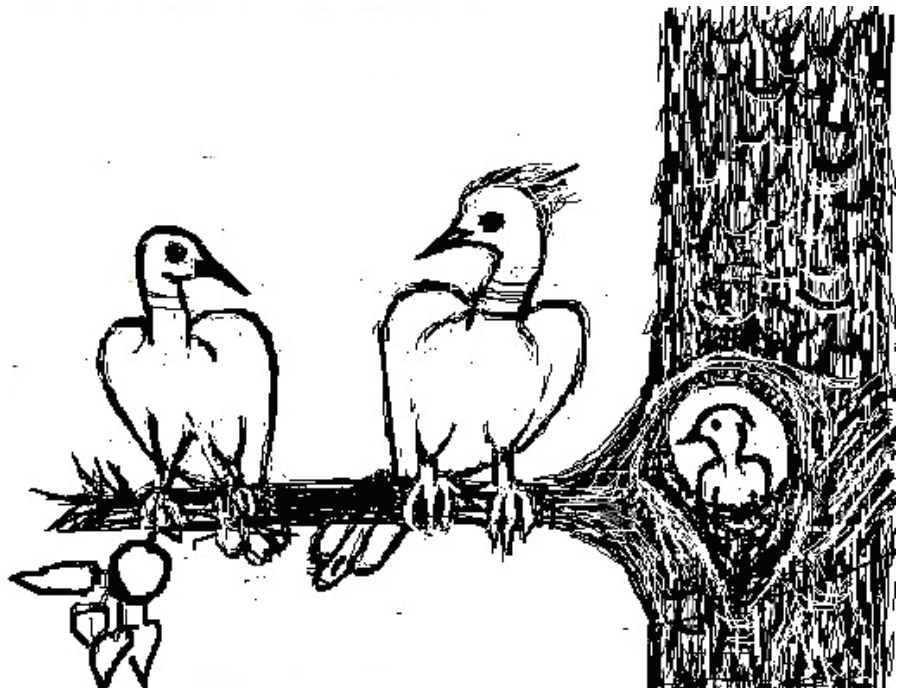
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moaph.org

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May's Caption Winner: Ronald G. Webb



Its about time we “branch out” and find a bigger home!

The Modern Aquarium Cartoon Caption Contest

*Modern Aquarium has featured cartoon contests before, and they're back! 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 may turn in to Marsha or Dan 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:



<https://www.amazonasmagazine.com/>

Accord Reached to Protect Marine Life in High Seas

The treaty will create a new body to manage conservation of ocean creatures and establish protected areas.

By Christina Larson and Patrick Whittle Associated Press



A sea turtle swims over corals on Moore Reef off the coast of Queensland in eastern Australia in November. For the first time, United Nations members have agreed on a unified treaty on Saturday to protect biodiversity in the high seas. Sam McNeil / AP, File

WASHINGTON — For the first time, United Nations members have agreed on a unified treaty to protect biodiversity in the high seas — representing a turning point for vast stretches of the planet where conservation has previously been hampered by a confusing patchwork of laws.

The U.N. Convention on the Law of the Sea came into force in 1994, before marine biodiversity was a well-established concept. The treaty agreement concluded two weeks of talks in New York.

An updated framework to protect marine life in the regions outside national boundary waters, known as the high seas, had been in discussions for more than 20 years, but previous efforts to reach an agreement had repeatedly stalled. The unified agreement treaty, which applies to nearly half the planet's surface, was reached late Saturday.

"We only really have two major global commons — the atmosphere and the oceans," said Georgetown marine biologist Rebecca Helm. While the oceans may draw less attention, "protecting this half of earth's surface is absolutely critical to the health of our planet."

Nichola Clark, an oceans expert at the Pew Charitable Trusts who observed the talks in New York, called the long-awaited treaty text "a once-in-a-generation opportunity to protect the oceans — a major win for biodiversity."

The treaty will create a new body to manage conservation of ocean life and establish marine protected areas in the high seas. And Clark said that's critical to achieve the U.N. Biodiversity Conference's recent pledge to protect 30% of the planet's waters, as well as its land, for conservation.

Treaty negotiations initially were anticipated to conclude Friday but stretched through the night and deep into Saturday. The crafting of the treaty, which at times looked in jeopardy, represents "a historic and

Shared from the 3/6/13 Philadelphia Inquirer; this article is reprinted from the Bucks County Aquarium Society's The Bucket - April, 2023 / Volume 68, Issue Number 4

overwhelming success for international marine protection," said Steffi Lemke, Germany's environment minister.

"For the first time, we are getting a binding agreement for the high seas, which until now have hardly been protected," Lemke said. "Comprehensive protection of endangered species and habitats is now finally possible on more than 40% of the Earth's surface."

The treaty also establishes ground rules for conducting environmental impact assessments for commercial activities in the oceans.

"It means all activities planned for the high seas need to be looked at, though not all will go through a full assessment," said Jessica Battle, an oceans governance expert at the Worldwide Fund for Nature.

Several marine species — including dolphins, whales, sea turtles, and many fish — make long annual migrations, crossing national borders and the high seas. Efforts to protect them, along with human communities that rely on fishing or tourism related to marine life, have long proven difficult for international governing bodies.

"This treaty will help to knit together the different regional treaties to be able to address threats and concerns across species' ranges," Battle said.

That protection also helps coastal biodiversity and economies, said Gladys Martínez de Lemos, executive director of the nonprofit Interamerican Association for Environmental Defense focusing on environmental issues across Latin America.

"Governments have taken an important step that strengthens the legal protection of two-thirds of the ocean and with it marine biodiversity and the livelihoods of coastal communities," she said.

The question now is how well the ambitious treaty will be implemented.

Formal adoption also remains outstanding, with numerous conservationists and environmental groups vowing to watch closely.

The high seas have long suffered exploitation due to commercial fishing and mining, as well as pollution from chemicals and plastics. The new agreement is about "acknowledging that the ocean is not a limitless resource, and it requires global cooperation to use the ocean sustainably," Rutgers University biologist Malin Pinsky said.



DOWNSIZE!

Story and Photos by Stephen Sica

About three years ago, I went online and solicited a company in Tennessee to custom manufacture, according to my specifications, a small acrylic fish tank in the 17 gallon range. I set up the aquarium in our home's den and used a twin C5 compact fluorescent fixture for lighting. As you all know, sooner or later these bulbs dim and need to be replaced. Earlier this year, I noticed that the aquarium's brightness was dimming. Upon examination, one bulb had burned out. Less than a week later and before I had an opportunity to replace it, the other bulb burned out too. I promptly purchased two bulbs and the fish and plants got light again.

A day or two later Donna said that I was letting the water in the tank get low. I told her that I had just replaced the bulbs and the added heat from new bulbs might be evaporating the water just a bit faster than in the past. I glanced twenty feet from where I was standing in the kitchen, through the rear hallway into the den and saw that the water level had sunk by four inches.

I told Donna that I didn't let the water go low, and it was not evaporation—it was a leak! I hurried down to the basement to fetch two plastic buckets and immediately began bailing. After I rescued my eight zebra danios and assorted live plants at the expense of a nice, almost new blue carpet, I mentioned to Donna that the tank was only three years old, and it had become a leaker. I was quite annoyed! I put the fish and plants in a three gallon bucket in the basement, which I placed near the heating unit to keep the fish warm, since it was already evening. I wasn't going to work on the problem that night. With the fish safe, I decided to contemplate my next move in the morning.

The next day when the sun rose on a cloudy day, I mostly cleaned out the leaking tank, wrapped it in a clear plastic recycling bag and stored it in the garage. I admit that I was lazy. With it being cloudy and cold outside, I didn't want to take the tank into the yard and fill it with water to find the leak, or even clean the algae on its backside.

I went down into the basement (sometimes my favorite room) to search for the 8.3 gallon open top rimless glass tank that I had once set up as a nano tank to house ember tetras. I think that I wrote an article about this tetra aquarium for **Modern Aquarium** back around 2020.

I find that the worst part of cleaning or changing a tank is the gravel. I liken it to sludge. I set up the small tank with about half of the saved water from the leaker. I used aged water that I save in plastic gallon containers to finish filling it up.

Since my replacement tank is slightly more than eight gallons, and I was being forced to downsize, I decided that I would forego gravel and only use aquatic *Annubias* and fern plants where no substrate was needed. These are the plants that I favor anyway for this very reason. Plus,

no light is needed—well hardly any. Furthermore, the fish inhabitants were eight zebra danios about three years old, so I decided to also forego a filter. I cleaned out all the large plants in my ten gallon, plants-only tank in the basement, and threw them in the smaller tank. I added four gold mystery snails. With all the plants, I decided that the snails would have sufficient camouflage and their own territories, assuming large snails require territories. Plants and snails... now I had a filter...in my mind!

After a week or so, I used a small siphon to clean the tank. It was so easy to see detritus on the clear bottom being sucked up! There was neither gravel nor any lightweight plant nutrient substrate that could be sucked up and clog a house drain, if all the large



When my expensive custom aquarium sprang a leak, I hauled out an 8.3 gallon seamless, open top glass nano-sized tank. Since it was initially housing 7 adult zebra danios, I left off filtering for the first month.



A view of the tank width. The aquarium is next to windows facing east. Algae started to grow after slightly more than one month so I keep the light on, using a timer, for only 90 minutes each day.



To keep aquarium cleaning simple, but mostly easy, I decided not to use substrate material in future aquariums unless I wanted to grow rooted plants or another reason. As you know and can see here, java ferns and annubias plants require no substrate. The mystery snails can easily vacuum food and debris on a clean bottom.

particles are not removed. As of this writing, I am only using a small LED gooseneck light and a heater. I'll decide in the future if I should add a very small sponge filter.

I was so excited that I downsized a 20 gallon long tank in the basement to my all-time favorite small size tank—a twenty-four inch 15 gallon! Many of my favorite fish once inhabited a similar tank. Those are some of my favorite memories. The new 15 gallon aquarium has no substrate, but I did add a small sponge filter that is supposedly adequate for aquariums up to 10 gallons.

Anyway, it's time again to feed the fish. They've been so hungry lately that it's getting difficult to quit adding just another pinch. Somebody, please save me from myself!



Tonight's Speaker: June 7, 2023

Karen Randall, Speaking on **Sunken Gardens**

Karen travels frequently to study aquatic plants in the wild. She has traveled extensively in South and Central America, Asia and Australia, as well as the southern parts of the U.S. In Brazil she has assisted with Project Piaba, a conservation program in the Amazon centered on the aquarium fish trade. She regularly does programs on these topics as well as aquatic gardening for groups ranging from aquarium clubs, school children, garden clubs and church organizations. Her book, **Sunken Gardens, A Step-by-Step Guide to Planting Freshwater Aquariums** is available from all major book retailers. She maintains a website, where she blogs on additional planted aquarium subjects at: www.sunkengardens.net She also blogs on the newly revamped Florida Aquatic Nurseries website as well—www.floridaaquatic.com/news.



Karen's interests have expanded to include terrestrial enclosures, using both aquatic and terrestrial plants in terrariums, vivariums, and paludariums. These lovely enclosures have gained headway around her home! She has also started a sister website for this side of the hobby, www.glassjungles.net, though this site is still very much a work in progress. Karen's other interests include, well...



Inbreeding and Line Breeding

by Dan McKercher

Years ago I did a talk on inbreeding and line breeding guppies. I found the subject very interesting. Serious guppy folks get right down to the genes of fish in an effort to come up with what they want in a guppy. Their results are amazing to say the least. Many have also done some very interesting manipulation of *Betta splendens*. The results can be seen in many pet shops. There are other fishkeeping types who have put their personal touch on other breeds of fish. Things like crossing sword tails with platys has been a thing for over 100 years, according to Google. Rift lake cichlids crossbreed all the time in our hobby. It is thought by some that they are all related, and that they become a species because of the areas in their lake that they live in. Makes sense to me, because if you give them a chance they will interbreed without a thought.

Then there are things like GLO fish. It is said that scientists injected the eggs of the Zebra Danio with fluorescent genes of jellyfish and other such aquatic critters. It was originally done to detect pollution in waterways, but it turned out to be way more profitable to put them into the hobby trade. At first some folks (myself included) were against such a fish in the hobby. They were called things like Frankenfish and such. I eventually came around when I was reminded that we, as the little mini-gods that we are, have been playing with nature ever since our first guppy tank. IMHO the parrot fish is nothing more than a genetic mutation. I've kept them in the past, and they seem to be very personable in spite of their limitations.

Let's take a look at some of my fishroom favorites as I write this.

Apistogramma cacatuoides

These fish come in a bunch of color types. The first ones I had many years ago were red. Then came double red. Then triple red. Then super red. In the super red I understand that the males are red on all fins, and the females also show red. There is also something called the orange flash. The orange flash have orange fins instead of red. Right now I have *super orange flash*.

This fish is, I feel, a combo of line breeding/inbreeding. The line and/or inbreeding happened before I got them to the point of super red. I added an orange flash male to the super red females, and after a few generations I have the super orange flash. Some could consider this a cross breeding because of

injecting the orange color from the male. Others could consider it nothing, because they are the same species, just different colors.

Bushynose long fin super red plecos

I've been breeding bushynose plecos for years. The stock that I have now throw all kinds of fry. Albino lemon drop, brown, short and long fin. I call them Heinz 57. I picked up six longfin super reds a while ago because I found them interesting. Inspecting them, I see that they are a super red bushynose pleco. Some proved to get the calico super red look as they got older. These fish are a cross between a longfin bushy nose and a super red. I think that these fish are a cross, but some may just see them as a hybrid. Either way they are very cool.

Albino Corydoras aeneus

I breed them because they are very productive and the pet shop can't seem to get enough of them. They breed true. IMHO these are nothing more than a color variant. I'm sure they have been inbred for many generations with no ill results.

Guppies

I've had many types/color variants of guppies over the years. They are amazingly easy to breed, but don't hold their shape/color much more than three to four generations. If you want to maintain a strain you need to stay on your toes. I've found that Dumbo-ear guppies are the hardest to keep their looks. Line breeding seems to be the best way to keep their looks for a few generations.

Swordtails

I have a line of pineapple swordtails that tend to get large, and about 50% have long fins. I've been inbreeding them for about four years now, but can't seem to get the long fins on much more than 50% of the fry.

I haven't even come close to scratching the surface with what is possible with our wet pets. Yeah, we would have a hard time dressing them up like we do with our other pets/children. But there are other things we can do to get one to win in a bowl show. Line breeding, inbreeding and cross breeding are a good start.

Thanks for reading, and don't forget to fill it with water and put a fish in it!

Photo from AquaticArts.com



The First Fish of the New York Aquarium

by Joseph Ferdenzi
President Emeritus, Greater City Aquarium Society

The main floor of the New York Aquarium in its early days at Battery Park



15. MAIN FLOOR VIEW, NEW YORK AQUARIUM

COPR. N. Y. ZOOLOGICAL SOCIETY

The municipally-owned New York Aquarium first opened its doors to the public in December of 1896. But of course before that it was engaged in acquiring the fish that would be on display. Even after it opened it continued to obtain fish to exhibit to the general public.

What were these fish, and where did they come from? Fortunately, some of the answers to these questions are provided by a report published in Volume IX (1897) of the **Bulletin of the American Museum of Natural History**. The article is entitled “Notes Upon New York Fishes Received At The New York Aquarium 1895-1897,” by Tarleton H. Bean. In his day, Bean was a highly-regarded ichthyologist, and he was Director of the New York Aquarium from 1895-1898.

The report lists no less than 165 species, both marine and freshwater. Most of the entries contain a brief description of how and where the fish was obtained, and how well it did in captivity. The vast majority of the marine fish were captured in the bodies of water surrounding New York City (which, to be precise, did not actually exist in its present form until 1898, the year after this report was published). Gravesend Bay in Brooklyn was a favorite location for collecting marine species, and most of the collections were performed by local fishermen. Most of the fish were very common, but occasionally a fish from tropical waters was found, undoubtedly having been transported north by the Gulf Stream.

My focus in this article, however, will be on the freshwater fish listed in the report. The first three, a bullhead catfish and two species of

suckers, were all captured in the Bronx in 1897. How different must the Bronx have been in 1897! Many of these fish are reported to have acclimated well in the aquarium, and were principally fed on a diet of clams and earthworms.

Of course carp and goldfish were also collected, the former from Prospect Park in Brooklyn, and the latter from lakes in Central Park (Manhattan) and Prospect Park, as well as various fountains located throughout the city. Some were also obtained from the Cold Spring Harbor fish hatchery, which is now located in Nassau County (Long Island), but which in 1897 was still part of Queens County. The carp and goldfish did very well in captivity.

A fish found in the lakes of Central Park and the Bronx, but not Brooklyn, was the golden shiner. This fish ate chopped clams, but did not like earthworms. Nevertheless, it did so well in captivity that in May of 1897 it spawned, and numerous fry were raised. Another small fish that spawned in captivity, the Irish roach, ate many its eggs (a mishap many aquarists are familiar with). This fish was also captured in Central Park. The waters of Central Park must have been very differently populated back then, as I doubt that you could collect either of these fish now.

The Aquarium was also proud to receive a group of lake shiners from Canandaigua Lake, one of the Finger Lakes of Upstate New York. Apparently this represented the first time that lake shiners were identified as coming from New York waters. This small fish is described as being an often-used baitfish which fishermen would collect by shooting them!

Of course the Aquarium was supplied with all the trout species to be found in New York. These included rainbow trout, lake trout, red-throat trout, steelhead trout, brown trout, and what is now the official fish of New York State, the brook trout. As to this fish, the Aquarium claims that it adapted well to life in captivity. The following passage is of interest as it is a very early example of treatment for fish diseases: "When attacked by fungus in fresh water, the parasite is easily killed by keeping the fish in salt water, and the Trout is not at all injured or inconvenienced by this treatment if the transfer be made gradually, that is, from fresh to brackish, and finally salt water of the salinity here found (about 1.017)."

Included among the collections were no less than five native killifish that are still well-known to hobbyists today by the scientific names in the report. Two were collected in Gravesend Bay, *Fundulus majalis* and *Fundulus heteroclitis*. The *majalis* was reported to not do well in captivity, while the *heteroclitis* was ignominiously used as the principal food for the larger fish housed at the aquarium. *Fundulus diaphanus*, also known as the Fresh Water Killifish, was collected in a lake in Central Park near 110th Street and 5th Avenue—good luck trying to find it there now! Unfortunately, these did not fare well in captivity, unlike *Lucania parva*, the Rainwater Killi, which was collected in both freshwater and brackish environments all over Long Island.

The last killifish listed is *Cyprinodon variegatus*, now known as the Sheepshead minnow. The common name is derived from it being found in Sheepshead Bay, Brooklyn, although it is a very widespread fish, to be found in coastline habitats of varying salinity. It performed so well in captivity that the report states that they "kept a male and two females in a balanced jar for nearly two years."

Of course the Aquarium received numerous other fish to be found in New York's lakes and rivers, including bass, sunfish, perch and pickerel. One additional fish that would have been of interest to the home aquarist was the tessellated darter, which was found "sparingly" in the Bronx River in 1897. They seemed to do well in captivity. If today they were to be found "sparingly" in the Bronx River that would be good news indeed!

It is interesting that so many of the fish first collected for the Aquarium were native to New York. Of course over time, the exhibits were to become mainly of exotic and more brilliantly colored fish. But this glimpse of some of the earliest fishes to be displayed at the Aquarium reveals modest beginnings that nevertheless must have been intriguing to its visitors, who undoubtedly had never seen so many live fish. Soon, however, this fascination with fish in aquariums was to spawn a craze for home aquariums that in turn gave birth to the hobby we are still enjoying over one hundred years later.





BOWL SHOW RULES

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

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

Life In Fish - Diving In Destin

by Jason Gold



As a single father, my life had a lot of constraints. There were the time constraints, the shuttling of my kids to and from school and their friends and activities and their mom's house, meetings with teachers, overseeing homework, shopping for groceries and preparing meals, and of course an engaging and demanding job, and my hobbies, and just taking care of everything in my life totally solo. There were financial constraints. I won't go into the gory details. And there were emotional constraints. Initially, I was pretty depressed at the failure of my marriage. I'd go to and from work each day, and on the nights the kids weren't with me I'd spend hours staring into my aquarium or watching The Weather Channel. I canceled my cable so I'd stop staying up all night watching it. It worked—sort of. Friends would call, "Hey, gosh I'm sorry, I heard what happened. Never would have expected it with the two of you. Let me take you out to dinner." Sounds great, but at some point they always got kind of quiet and serious and asked the same thing: "So, um, what happened?" I'd once more have to reel out my story and my speculations—the reality was I couldn't really put my finger on what had happened—and then I'd head home in worse shape than I'd headed out, feeling like my life was all past and no future. I knew they meant well, but I started to dread having to once again satisfy a well-meaning friend's morbid curiosity.

There were constraints too, on my love of travel and my long-held desire to visit the remote corners of the planet I'd read about in books and magazines as an aquarium-obsessed child (and as an aquarium-obsessed adult). The vibrant and immersive neighborhoods and ethnic enclaves of New York City provided some way for me to satisfy my wanderlust. As the late great Anthony Bourdain

so vividly demonstrated, one way into the heart of a place is through its food, and I definitely lived that idea. I'd chase down any low-budget restaurant tip within reach of a subway. Things like "Look for the guy grilling skewers under a blue tarp on Kissena Boulevard, across from the library. They're killer! Make sure you get the spicy sauce." And I'd be off to Flushing, and I made sure to get the spicy sauce, and they were killer.

I also started going to off-Broadway plays. I'd been a theater kid from fifth grade all the way through college. Haven't been on a stage since, but I still love the theatre. Movies are great, but in a lot of ways they're too good—they give you too much information. Live theater is a construct, a volume of light in a dark space, patently artificial. Kind of like an aquarium, come to think of it. They both make me work for that willing suspension of disbelief that the movies, with their super-reality, take for granted. Live theater is also immediate, present, happening in real time. My laughter and my silence are more meaningful in a theater because I know the actors can hear it. I spent years on stage. I know the actors can hear it. Theater makes me an active partner in the illusion and thereby transports me. And my hobbies—fish and plants—became a mode of travel for me as well. I knew enough about both that seeing something special and rare and in its wild, unaltered state—even in a plastic bag—can beam me to the Peruvian Amazon or the African Rift Lakes or the jungles of Borneo. I mean, albinos are cool and sometimes quite beautiful, but you won't find any in my tanks; they break the illusion that I'm looking at a slice of some faraway place. It's amazing how far you can go with an aquarium, a MetroCard, and a little imagination.

My kids were growing up, as kids do. When my daughter hit high school, it occurred to me that

one day they'd actually go off to college and head out into the world to start their own adult lives. I needed to get ready for that, and my hobbies became a framework for that process. I'd been smitten with fish since I was 8 and had done some resort diving in my 20's, and one of the things I decided to do was get certified in scuba. As a hobbyist, I've always been a freshwater guy. But at aquarium stores with a saltwater section, I always check those out as much as I do the freshwater. I live in New York City, not exactly a diver's paradise, but when I looked into it there were a surprising number of options. Gotta love this place!

I chose Adventure Scuba on York Avenue in Manhattan because (1) I could do all the training over the course of one intensive weekend, Saturday in class, Sunday in the pool, and (2) that second day was in the big public indoor pool at Asphalt Green, which is a straight shot across town from my apartment. Besides, August was coming up, and there would be a family vacation with my parents, and my sisters and their families, and of course my kids too. A gathering of the tribe. And this year, we'd be returning to the Florida panhandle, the Redneck Riviera, that gorgeous stretch of cornstarch sand and turquoise water between Panama City and Pensacola! It didn't take long to find a dive shop in Destin, ScubaTech, that could take me through my open water certification dives. Once the trip was set, I booked the diving. Then, super excited, I told my parents about my plans.

Mom freaked out. "There are sharks out there! You're going to be eaten by a shark!" Geez, I had not anticipated this at all. She's usually so intrepid. "Um, Mom, diving is incredibly safe, and thanks for planting that idea about sharks in my head, it really helps me feel great about this whole thing." She totally did not catch the sarcasm. "Good, you should be thinking about how dangerous it is." I hit the internet. I checked out the statistics on shark attacks and lightning strikes and being hit by a falling piece of a building and other freakish occurrences. I checked out various natural and unnatural causes of death and compiled a bunch of statistics. I called Mom to let her know what I'd found out. "You know, Mom, I looked into it, and it turns out the diving is in fact, incredibly safe. Shark attacks are not only extremely rare—there's only a handful each year on the whole planet—but they're practically unheard of with scuba. Surfing, that's the dangerous sport if you're worried about sharks. And I looked into something else. Driving. It turns out that when you compare deaths from sharks per hour in the ocean vs. deaths from auto accidents per hour on the road, you are in exponentially more danger driving six hours from Atlanta to the Gulf

than I am spending a couple of hours looking at fish in the Gulf. I'm actually the one who should be worried about you." She listened, and then said, "Don't be ridiculous." Ah, that old parental ploy, the ad hominem rejoinder—I give you facts and statistics, and you tell me I'm ridiculous. End of conversation.

We were staying in a house in Sea Grove, Florida, a short walk from the beach. I had to leave at 6 AM to get to Destin in time for my check-out dives. I woke up kinda nervous and kinda excited, similar, in fact, to the opening-night feeling. I grabbed the bag I'd packed the night before and crept into the kitchen to scrounge for a bit of breakfast before heading out. My dad was already there. He had breakfast laid out for me on the table. It was incredibly sweet. "Mom is really scared, Jason." "Don't worry, Dad, I'll be careful. You know I'm always careful." He kissed me on the forehead, handed me a thermos of coffee and a cheese Danish wrapped in a napkin, and I was off, bound for Destin on a deserted Highway 30A through the hazy, flamingo-pink Gulf dawn.

The certification dives were at the Destin Jetties at the mouth of Choctawhatchee Bay. The water was clear and calm and not more than 40' deep. There weren't a lot of fish, but there were tons of small harmless jellyfish, drifting about like confetti at a parade. And it was a great place for the instructor to put me through my paces. I got my certification, and back at the dive shop I signed up for two more dives the next day, these in much deeper water in the open Gulf. I also got out my flip phone and called my parents. "I'm back at the dive shop. Yeah, did two dives, and I got my certification! It was great! Nope, no sharks. And I'm diving again tomorrow." On the way home I stopped for a banana milk shake, my fave, to celebrate. And when I got back to the house I was peppered with questions and got to tell my story over and over. This one I was glad to tell. I was not only excited about the day, but I was excited about the future. I had this new skill, and I was hoping it would take me to some incredible places!

That stretch of the Gulf of Mexico is too far north to support coral reefs—they might not have much of a winter, but it's more than a poor polyp can handle. So all the diving is on man-made structures. The next day, newly minted certification in hand, we descended 60' to an artificial reef, a 95' push tug that had been purposely sunk parallel to the shore to help prevent beach erosion during hurricanes and to provide a home for the smaller creatures that supported the larger creatures that supported the area's active sport and commercial fishing. The density of undersea life depended on

how long the sunken boat or barge or train cars or piles of demolished concrete had been down there. This boat, we were told, had been on the bottom for about ten years at that point and was already totally encrusted in sea life. There were yellow sponges and pink and white anemones and industrious crustaceans and huge schools of small silver and purple fish. There were also some bigger fish like barracuda and mackerel cruising around. And once I got close there were some familiar faces from the saltwater hobby, blennies and gobies and angelfish, darting among the encrusted life.

When I thought about it, it was actually kind of amazing that ten years before none of this had been here. I mean, the sunken boat was obviously a human artifact, but that entire underwater community had just, what, appeared from nowhere? Somehow, on land, it's easier to understand how a cleared landscape starts to regenerate over time. First come the seeds, nature's portable packages of replication and regeneration. Then the insects fly and crawl in, then the smaller vertebrates, and so on. Over time, a forest flattened by a tornado or landslide or incinerated by a lava flow or wildfire will once again be a forest, although it will take way longer than ten years.

But this was not the recovery of a devastated place surrounded by undamaged areas whose plants and animals are already right there, ready to move in and start the regeneration process. In fact, this is sort of the opposite. The bottom of the northern Gulf is mostly just sand—sand that used to be the Appalachians and the Rockies and comes pouring out of the mouth of the Mississippi and is still on the move. As on land, vast areas of shifting sand don't support much life, and in a lot of ways the sandy bottom of the northern Gulf is a desert. But if you abandoned a pile of old vehicles in the Sahara or the Kalahari or the Atacama, they'd still be there in a hundred years, as lifeless as the surrounding desert, like the abandoned colonial mansions of Kolmanskop in the Namib Desert, the buildings still pristine but now inhabited only by the constantly shifting sands. Whereas if you drop that same pile of industrial leftovers 80' deep in the ocean, an oasis will sprout. In only ten years, this old boat had become the anchorage for an entire complex ecosystem.

The waters of our planet are alive with untold zillions of planktonic larvae of sponges and corals and sea stars and urchins and fishes. When creatures spawn in Misool or Bonaire, their larvae ride the ocean currents for thousands of miles. If they manage not to be eaten but settle on a patch of sand, they still die. But if they settle on anything solid and stable, that's now home. And if the

waters stay warm enough as the seasons change, they thrive. In August, you can collect tropical reef fish off Montauk as they ride the Gulf Stream north. But in the chill of October, they're gone. The same with the corals in the northern Gulf. It's not that their larvae aren't there, attaching themselves to every rock and soda can, it's that they can't make it through the winter. But the sponges and anemones and worms and industrious crustaceans can, and in short order they are also sheltering schools of fish and feeding grazing sea turtles and attracting the larger predators just like a natural reef. It is a spectacular explosion of regeneration that plays out throughout the world's oceans now as it has for the eons since life began on this Goldilocks planet, where everything is just right.

As the climate changes, this stretch of the Gulf may well become warm enough to support reef-building hard corals. But it takes thousands of years for tiny coral polyps to accrete into a reef, and only one or two years of inhospitably warm temperatures to kill it. In the meantime, where will all those larvae come from and where will they settle down? Witnessing nature's powers of regeneration on this hunk of metal at the bottom of the Gulf is awesome, but if the reefs of the Caribbean are dead, no larvae will come and this place will remain as desolate as the Sahara. Or will the sponges and tube worms fill the void left by the corals until they are able to build new reefs in their new Goldilocks Zones? Life on Earth is a powerful force, yes, recycling everything, finding generative opportunities, filling the voids left by destruction and death. But it's also incredibly fragile. Remove one of the foundational building blocks—like the tiny coral polyp—and the whole structure can come crashing down. What will the sharks and turtles—and we humans—eat once the reefs have died?

But those are all reflections in retrospect. In that moment, on my first deep-water dive, I was in an ecstasy of exploration and discovery, peering intently into hollows and crevices and admiring the majesty of the larger creatures cruising above. My only previous diving experiences were shallower dives in the Atlantic off Barbados. The Gulf is way calmer, and at that time of the year way warmer than the tropical Atlantic. Bathtub warm, with an occasional thermocline of cooler water as we moved between the surface and the bottom. With no currents to fight, and crystalline pale green visibility, it was easy to explore all the life that had gathered there, however and whenever it had arrived. It was a great place to get started with diving!

Back again at the dive shop, I saw a schedule of all the available dives. I was sorely tempted to sign up for more, but I'd already spent two mornings

away from my kids and family. Then I noticed that they also offered resort diving at the Destin Jetties for anyone ages ten and up—no experience required. The youngest of the four kids—my two and my older sister’s two—was ten. I started to wonder if they’d be interested in that. Or rather, I knew they’d be interested, but would my mom and older sister go along with it? I figured out how to handle it. The diving was off a boat, and if we all went together and I went diving with the kids, then they could see them in the water, and maybe that would be reassuring enough. They could even get snorkels and fins and watch them from the surface if they wanted to—that’d be cool. And I’d already been there for my check-out dives and could affirm that it was safe, devoid of the scarier inhabitants of the sea. I took a brochure.

Yes, the kids were totally thrilled with the idea. And when I laid out the plan—we’d all go together, etc., it turned out that just the offer of having everyone come along was reassuring enough. My parents and sisters actually didn’t want to go and sit on a boat while the rest of us were underwater. I’d come back not only safe and sound but effervescent with excitement from my own dives, which seemed to dispel some of their anxiety about the whole scuba thing. I called ScubaTech and it was a done deal.

The kids and I headed out to Destin the next day, mid-morning. Diving at the Jetties is best at high tide, when the bay is full of clear Gulf water rather than the siltier, murkier stuff that washes out of the rivers and bayous when the tide is heading out. So that set our schedule. Everyone was pretty juiced up about this Dadventure, as my kids called it, but especially me. I was thrilled at the prospect of sharing the wonder of the undersea world with my whole family, especially since they’d always countenanced my hobby but never really engaged it. It was always, “Oh yeah, he’s into fish.” And after years of dragging my kids to aquarium stores amid waves of eye-rolling and not-again’s and do-we-have-to’s, here was a fish-y activity that they were actually excited about. In the back of the car as we trundled along 30A, they were chatting away with their own opening night butterflies.

In a room at the back of the dive shop, the guides showed us a video and taught the kids and a few other folks who’d signed up for the expedition the diving basics. Then we piled onto a wide, flat boat and headed to the mouth of the harbor, right by the jetties. It was pretty hilarious loading the clunky equipment onto their skinny kid bodies. The contrast was absurd. But then we were in the water, and just as I’d discovered the first time I went

diving, all that awkward stuff suddenly became weightlessness. They got to take their first regulator breaths underwater. So far so good. We made our descent. At that spot, it wasn’t much deeper than a big swimming pool. The kids were all wide-eyed with excitement that they were now breathing underwater, and we headed to where it was a bit deeper. The space of the water was filled with the light of the high summer sun ricocheting between the blue sky above and the white sand below, with the dark streak of the rocky jetty along one side. As with my certification dives in the same area, the water was full of festive little jellyfish. There were a few schools of silvery fish darting about and some larger fish cruising the middle of the water. A pair of rays winged their way gracefully across the sandy bottom.

In a few minutes, the kids had a bit more confidence and started to explore. Mostly it was just swimming around among the jellies, maybe pointing to a school of fish or a lobster scurrying across the sandy bottom or some eels peeking out from their lair among the dark boulders of the jetties. Seeing the kids’ slight figures, with the tanks on their backs and the fins on their feet, that classic scuba profile but in miniature, as they got the hang of moving around underwater, was just one of the greatest thrills for me ever. This wasn’t the thrill of coming upon something rare or exotic or of some singular accomplishment like reaching the peak of a mountain or graduating from college or beaming in the applause after a successful opening night. This was the far more profound pleasure of passing on something of value from one generation to another. I was seeing the youngest generation in our family experience and embrace something completely new and other, expand their boundaries of what was possible, break the bonds of expectation, immerse themselves in the beauty and wonder of our planet. I’d always strived to expose my kids as much as possible to the variety of people and experiences we have available to us in NYC, but here was something I’d never imagined or anticipated. Taking my kids diving was not on my parental bucket list. And here we all were, suspended weightlessly in the sunlit waters of Choctawhatchee Bay amid constellations of jellyfish, joyously sharing a watery experience, reveling in wonders, making new things possible, free of constraints!



Image from Shutterstock.

Tatia intermedia

The False Galaxy Woodcat

by Mike Hellweg, CFN
(Certified Fish Nut)



False Galaxy Woodcat, *Tatia intermedia*, Male

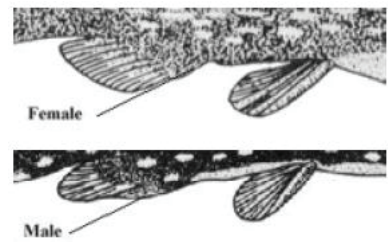
There are over 430 families of fishes, but we aquarists regularly keep members of only a couple dozen of those families in our aquaria, with nearly 50% of them being from just one family - Cichlidae! That leaves literally thousands of species of fishes that are rarely, if ever, encountered in the aquarium hobby. Even if you weed out the marine and estuarine fishes, there are still several thousand species in dozens of families that we don't know! One of those families that is gaining in popularity is the woodcat family, *Auchenipteridae*, which consists of about 90 species of catfish that live in South America. All of them are fairly nondescript. Of the dozen or so species in the genus *Tatia*, there are two species that really stand out in pattern — *Tatia galaxia* (the Galaxy Woodcat) and *T. intermedia* (the False Galaxy Woodcat). They both have a dark brown to almost black basic coloration with a pattern of creamy to whitish spots or splotches covering their bodies. For the subject of this article, *Tatia intermedia*, the blotches are elongated ovals.

Tatia intermedia grows to about 5 inches in the wild, though most specimens that I have seen or kept have been a bit smaller. Females generally grow larger than males, and are thicker bodied. Males have the first two rays of their anal fin modified into a grasping organ that they use similar to the way half beaks and Goodeids use their andropodia (the modified first rays of the anal fin), to grasp the female's anal fin and line up their genital pores so they can fertilize the female internally. It is still unclear exactly



how the woodcats accomplish this, so more study is needed. The fertilized female then goes off and lays the fertilized eggs several hours to a few days later. Several hobbyists have reported purchasing heavy (apparently gravid) females and having them lay fertile eggs without having a male. Don't think you can get away with forcing them to be out in the open by not giving them plenty of hiding spots. All they will do then is sulk in the corners, not eat, and eventually waste away. Be aware of their hiding habits from the start and be amazed at the explosion of life when food is added. Be content with that and you will come to really appreciate these wonders of nature.

In the wild they spend much of their time trying to hide in crevices or under bark in fallen trees in the water, hence their name "woodcats." Native fishermen have



Reprinted from the May-June 2019 issue of the Missouri Aquarium Society's *The Darter*, Volume 36, issue 4

come to recognize where local species are found, and carefully return pieces of wood to the water after inspecting known hiding places in the various pieces. Oddly, they can regularly harvest individuals from prime hiding spots, so as one individual fish is removed another moves in to take over the suddenly vacant real estate!

In aquaria care is simple and fairly straightforward. In order to really see them at their best give them a single species tank. If you want to have companions in the tank so that it doesn't always look empty add medium sized tetras, rasboras or similar fishes. Avoid species that are hyperactive, as they might intimidate the woodcats into hiding more.

It is best to start off with a group of a half dozen or so juveniles if you can, or young adults if juveniles aren't available. A 20 gallon long or larger tank is perfect for a small group of them. Provide them with plenty of piles of wood, ceramic caves, and similar habitat. Plants and lighting are unnecessary. A sponge filter or small power filter works well to help maintain water quality, but regular water changes are most important. They do not seem to tolerate the buildup of nitrogenous waste, so I give my specimens a 50 percent water change at least twice a week.

Water temperature should be kept in the mid to upper 70s Fahrenheit. They prefer water with parameters on the soft and acidic side of neutral, but aren't super demanding. They seem to be happy in our local water without any modifications, making water changes easy.

They are micropredators, so feeding is really easy. They will eat anything meaty that will fit in their mouths, with a strong preference for frozen brine shrimp and bloodworms. They love live blackworms, *Gammarus*, and small cherry shrimp. They will also readily consume sinking pellet foods and even flake foods.

Once sexually mature, they will spawn pretty regularly for several months, then stop for several months,



Spawning Female

then start up again. I have no idea what triggers them to start this cycle. They usually spawn within hours of a large water change, and often I find balls of eggs the day after a water change.



3 weeks old

The females lay a golf ball to tennis ball sized clump of eggs that look similar to the spawn of a frog. The individual eggs are covered and connected by a mass of clear jelly. Apparently it tastes bad, as the first time they surprised me with a spawn, the other fishes in the tank were staying far away from the eggs! Some breeders report that the female guards the eggs for a few hours, but I have not seen that in my fish. Perhaps I missed it. By the time I find the eggs, the adults are all in hiding again. I remove the eggs into a 2-gallon tank set up with water from the adult's tank and a small Hydrosponge filter.

I had over 300 young fish all crowded together inside a Hydrosponge II filter. When I added microworms to the tank, just like the adults, within seconds they began piling out of the sponge and the tank became a swirl of activity. About 20 minutes later they had all eaten their fill and returned to their hiding spot.

The young fish eat microworms, newly hatched brine shrimp, finely ground powdered fry food, and after a few days will even attack larger pellet foods. It's amazing to see a pile of fry devouring a large pellet!



Gelatinous mass of eggs

I do large, daily water changes on the fry tank with water from the adults' tank, and after a couple weeks I move them to a 10-gallon tank for grow-out. I add a pile of coconut fry hides and PVC pipe pieces to the tank, too, to give them plenty of places to hide. Growth is fairly rapid, and within a month they are about three quarters of an inch long.

Several breeders that I have talked to report losing a large number of fry in the first few weeks, but I did not have that experience with them. Maybe they need to have a lot of space to hide, and without that they are stressed. I'm not sure. I just know that from each spawn I had several hundred juveniles to find homes for a couple months later!

Fortunately they are easy to sell, make great trade-bait, and finding homes isn't too hard. So if you come across a group of juveniles or young adults at a club auction, it might be a fun project to bring them home and see the explosion of life for yourself!



**Galaxy Woodcat,
*Tatia galaxia***



Pictures From Our Last Meeting

Photos by Leonard Ramroop unless otherwise noted



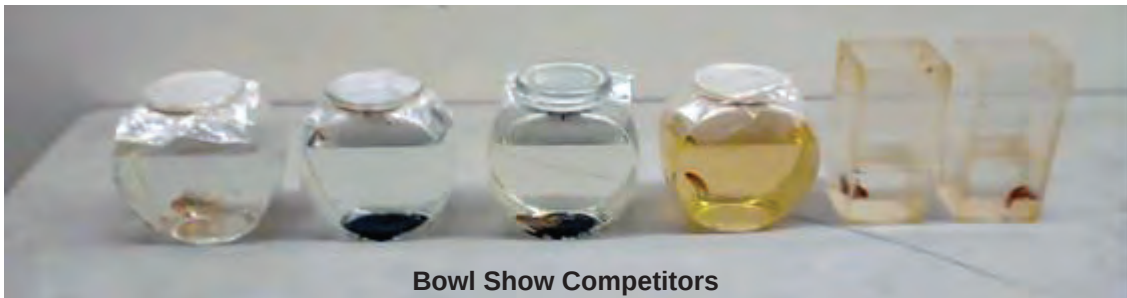
Checking out all the auction & raffle goodies before the meeting starts...



President Horst & Former President Dan confer.

Jason has the program under way, and the audience is settled in.

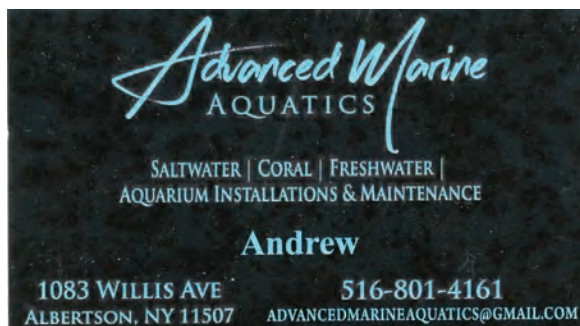
May Bowl Show Winners



- 1st Place — Ed Vukich — *Mikrogeophagus ramirezi* (above)
2nd Place — John Buzzetti — *F. gardneri*
3rd Place — Richard Waizman — Dragon Betta



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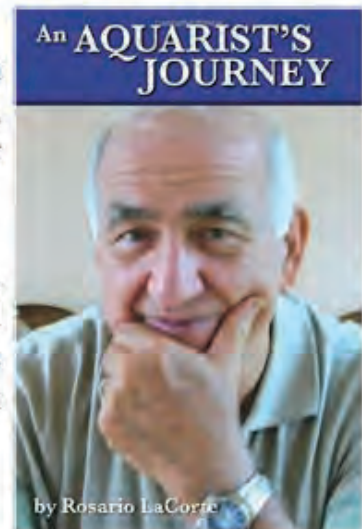
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An Aquarist's Journey

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.

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

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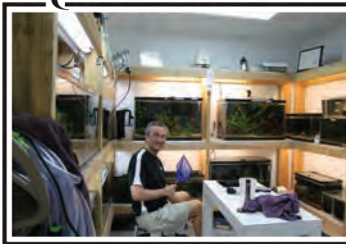
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Microtenopoma ansorgii

Tilapia synydera

Labidochromis joanjohnsonae

Xenomystus nigri

Jules Birnbaum

Hemichromis Sp. "moanda,"

Dario dario

Pterois volitans

Betta ocellata

Trichogaster microlepis

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by Susan Priest



An Alien Among Us

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

With nine brains (each arm of the cephalopod has its own “brain”), blue blood, and instant camouflage, it’s no surprise that octopuses capture our interest and our imaginations. Science-fiction creators, in particular, have been inspired by these tentacled creatures. As one example, consider the SYFY cable channel’s series Resident Alien, in which an alien from another planet comes to earth and befriends (later eats) an octopus, which is apparently a close genetic relative of the alien’s own species.

The brain power of the octopus allows it to unscrew a jar or navigate a maze. But, like many children, the octopus also develops an impish tendency to push the boundaries of behavior. Several aquariums have found octopuses memorizing guard schedules to sneak into nearby tanks to steal fish, and marine biologists have discovered that wild octopuses will punch fish... for no apparent reason.

In a study published by **Current Biology**, researchers analyzed three captive but freely moving octopuses. Using recording electrodes, the researchers found a type of brain wave never before seen, along with brain waves that may be similar to some seen in human brains, possibly providing hints about the evolution of intelligence.

Octopuses are the only invertebrates, besides a few insects, to use tools. They will compress shells around their bodies as a type of proto-armor and camouflage against predators. Octopuses can also mimic human movement by walking bipedally, lifting six of their legs like a skirt, and scooting along the ocean floor.

Dr. Michael Kuba, the project leader for the 2023 octopus brainwave study, who now works at Naples University, stated: “Our closest common ancestor probably resembled a flatworm.” Yet Kuba and his team are looking at the few similarities to learn more about the evolution of mental abilities. Even more surprising was that several brain wave signatures mimicked those in humans and other mammals.



Image of an octopus moving across a coral reef.

A. Martin UW Photography

Through future and ongoing studies, researchers hope to understand how wild octopuses think and survive. Kuba stated: “To understand octopuses and proof of their intelligence, is helping octopuses in the wild, as people will treat them with interest, care, and respect.

The “unofficial” mascot of American Mensa is the owl. Perhaps an octopus would be more appropriate?



Reference:

<https://arstechnica.com/science/2023/04/in-a-first-researchers-track-brain-activity-in-a-free-moving-octopus/>



Fin Fun



Green Wet Thumb

Match the aquarium plants below with their scientific names

Amazon Sword	<i>Vesicularia dubyana</i>
Anacharis	<i>Echinodorus cordifolius</i>
Banana Plant	<i>Hygrophila difformis</i>
Christmas Moss	<i>Hygrophila angustifolia</i>
Duckweed	<i>Ceratophyllum demersum</i>
Hair Grass	<i>Egeria densa</i>
Hairgrass Dwarf	<i>Eleocharis montevidensis</i>
Hornwort	<i>Eleocharis acicularis</i>
Hygro Willow	<i>Vesicularia montagnei</i>
Java Moss	<i>Phyllanthus fluitans</i>
Java Fern	<i>Liaeopsis brasiliensis</i>
Micro Sword	<i>Bacopa monnieri</i>
Moneywort	<i>Lemna minor</i>
Radican Sword	<i>Echinodorus sp</i>
Red Root Floater	<i>Microsorium pteropus</i>
Wisteria	<i>Nymphoides aquatica</i>

source: <https://www.modernaquarium.com/>

Solution to our last puzzle: **COUNTDOWN!**

Onespot betta	_____	<i>Betta unimaculata</i>
Twospot rasbora	_____	<i>Rasbora elegans</i>
Threespot gourami	_____	<i>Trichopodus trichopterus</i>
Four-eyes	_____	<i>Anableps anableps</i>
Fiveband barb	_____	<i>Desmopuntius pentazona</i>
Sixbar wrasse	_____	<i>Thalassoma hardwicke</i>
Sevenband butterflyfish	_____	<i>Chaetodon punctatofasciatus</i>
Eight-striped butterflyfish	_____	<i>Chaetodon octofasciatus</i>
Nineline goby	_____	<i>Ginsburgellus novemlineatus</i>
Tenspine grouper	_____	<i>Hyporthodus exsul</i>

Source: Fishbase.org

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