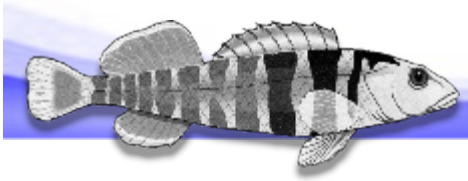
The DARTER

V46#2B

April 2020 EXCHANGE ISSUE #1



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Opinions expressed by the contributors are their own and do not necessarily reflect the opinions of the Missouri Aquarium Society.

The editor reserves the right to edit any article for length, clarity, or content.. Photos provided are by each Author unless otherwise indicated.

EXCHANGE POLICY

MASI will exchange THE DARTER with other aquarium societies.

Failure to receive three consecutive issues of a society's publication will be considered as a termination of our exchange, unless advised to the contrary. Send electronic versions to editor@missouriaquariumsociety.com

MEMBERSHIP

Annual membership in the Missouri Aquarium Society, Inc. is $15 and includes an electronic subscription to The Darter. B&W printed Darter's are available at the meetings for Members: $5; Non-members: $7. Published six times per year.

Join or renew membership at any meeting, most club events, by PayPal from the MASI Website's Membership Page or by contacting the membership chair.

EDITOR Chuck Bremer editor@missouriaquariumsociety.com www.missouriaquariumsociety.com

Cover - Melanie Holmes

New Tank Setup

INSIDE THIS EXCHANGE ISSUE

Article Photos are provided by the Author unless otherwise noted.

Click/Tap this to bounce back here. Then tap/click the article you want to read next!

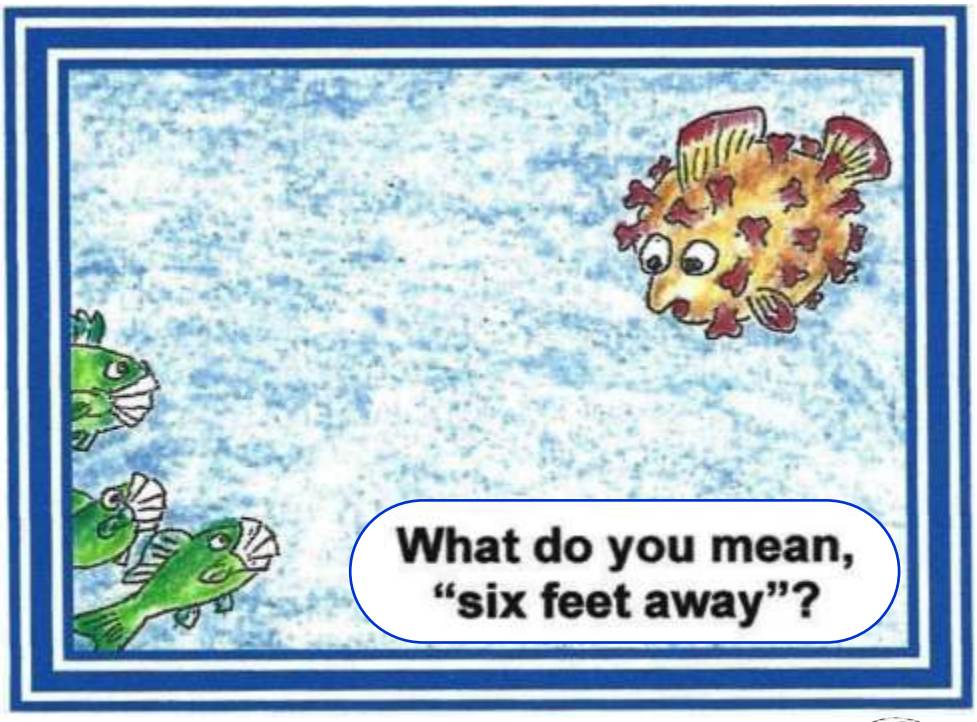
Editor's Message

This Exchange issue of The DARTER consists entirely of articles gleaned from MASI's Exchange library over the past few years.

As Editor, I have tried to live up to our exchange agreements with the club reprints included here, similar to ours found on page 2 of this Darter. These articles are presented with text largely unedited, as per agreement. The layout has been changed to present a similar look and feel within this publication. In some cases photos have been changed or additional material has been added as sidebars to the original. The intent has been to add information, not to change the original.

Many of these authors are well known across the Aquatic Hobby. Where possible, a photo of the original author has been provided. We are a community and the reader deserves to develop a relationship with those who write for them.

These articles are presented to give MASI members additional reading materials during this time of social distancing and self quarantine. Using Exchange articles should give our regular authors time to write for the May issue which will be on schedule and I'm expecting to fill that issue locally. MASI is blessed with many members who like to write. In times when we don't get articles we dip into those from other clubs to help supply a local need. Other clubs, represented here, have also used several recent DARTER articles in their own newsletters.



Cartoon Reprinted from the Bucks County Aquarium Society (BCAS) Newsletter: The Buckette, April 2020

IF YOU DON'T ALREADY WRITE, PLEASE CONSIDER WRITING ABOUT YOUR HOBBY FOR OTHERS!!

There's something for anyone in this issue. This DARTER is for those who still find interest in the hobby, may currently have more time to read, and want to learn more about it. I've tried to include historic articles, breeding, DIY and many segments of the hobby.

Because of changes in the hobby and society over the past decade, many sources of such articles are disappearing. Even some of the publications represented here are no longer published or if they are, no longer contain such informational articles.

This prolonged time of social distancing and self quarantine will bring change. Many hobbyists are rapidly developing ways of trading and buying aquatic denizens on-line or at a distance, just as the restaurant industry has had to develop similar methods to remain viable at least in the short term. Similarly, many fish rooms are being renovated and rejuvenated and many say they are breeding fish again! There may be more interest and more local availability for aquaria after this passes. Check out the MASI BAND Swap site, it's links may be found on pages 5 and 45 of this issue.

The Missouri Aquarium Society maintains an active Exchange program with other clubs across the US, Canada and even around the world. The Exchange is used by the aquatic clubs and societies to glean additional information for publication and other ways to meet the needs of their members. Each club logo is hot-linked to their web presence.

Be sure to view the Webinar linked on the fnext page >>

Content deadline for the 3rd regular Darter of 2020 is May 12th.

Watch the Missouri Aquarium Society's March 2020 meeting replacement Webinar now- Online!

Ted Coletti: Spring Tubbing

Author of: "The Tub Pond Handbook" and "Fish Tubbing and Container Water Gardening for the Hobbyist", Ted propagates tropical fish, water lilies and native aquatic plants in multiple tub ponds. His programs inspire hobbyists to participate. Ted founded the Northeast Fish Tub and Water Garden Study Group and changes water as infrequently as possible.

Ted Coletti has been a hobbyist for over 30 years and comes from the NEC's North Jersey Aquarium Society as Master Breeder and Expert Grower. A writer and teacher by passion, you know Ted writings on wild-type livebearers for FAMA and TFH. He is a member and past editor of the ALA and takes a keen interest in the genus Xiphophorus.

WHY VIEW THIS WEBINAR?

THIS WAS THE scheduled March program for the Missouri Aquarium Society and several other clubs before the COVID-19 pandemic suspended events across the country. To keep the fishy fellowship going, Ted offered the program as a LIVE public stream on April 3rd. A very thorough presentation, it remains available as a 2 hour talk at:

https://youtu.be/Ohu2rgy6vho

ABOUT THE WEBINAR:

The beauty and novelty of a backyard pond is on the wish list of people from all walks of life. The solution is the freestanding container pond or water garden, also known as a tub or patio pond. This is no-fail gardening. Take your hobby outside to breed and maintain interesting fishes and other aquatic life with minimal effort and fast grow-out.

ABOUT TED'S BOOK:

Written by the hobby's leading proponent of "summer tubbing,", the critically acclaimed Tub Pond Handbook (2nd Edition-Revised) is the most comprehensive guide to date on the subject. Topics include: advantages vs traditional ponds and fishrooms; tub selection and preparation; design ideas; extensive plant and fish suggestions with planting and breeding methods; pest control; timetables for setup, teardown, and maintenance; and working with natural temperatures, light, and water to create a biologically balanced low maintenance container pond with no moving parts (except the fish). At 150 pages with over 100 color images, The Tub Pond Handbook was written to inspire, instruct, and be a handy reference source for hobbyists for years to come.

Available exclusively on Amazon:
https://www.amazon.com/Tub-Pond-Handbook-Revised-Comprehensive-ebook/dp/B07383CHRS

Interacting with the Missouri Aquarium Society on Social Media

There have been changes on the Social Media scene for clubs like ours and MASI has seen fit to explore other Social Media platforms. Below is a run down of where to find information and social interaction within our Society.

Click or Scan to go to a Site:

MASI Home Page

MASI Club Page

MASI SWAP Page

MASI FB Page

MASI Disc Page

- **Missouri Aquarium Society's Home page** - https://missouriaquariumsociety.com/ - Used as a reference page for our activities with direct links to information about ongoing or upcoming programs and membership information. Go here to join or renew MASI membership or to get details about an upcoming event.

- **MASI BAND Main page** - https://band.us/@masiclub - BAND is a newly discovered App for many societies such as ours. It is a bit more open than Face Book and easy to join and share information within and with others, even for non-BAND members. Discussion so far appears to be open and generally freely supported. This is a Public MASI Group on Band that can be used to post upcoming events and to have general Aquatic Hobby discussions. Use this page to show off your hobby, interact with others about it or to ask Hobby related questions.

- **MASI BAND Swap page** - https://band.us/@masiswap - This is a page specifically for discussion and posting about upcoming MASI SWAPs and other sales efforts by members or others on the platform. Post any sales, rehomes or other livestock exchanges. Do NOT post these to FaceBook.

- **MASI FaceBook Main page** - https://www.facebook.com/MissouriAquariumSociety/ - We still use this page as a posting location for general MASI information and about upcoming events. Visit it to find the latest postings about what we're doing.

- **MASI Facebook Discussion Group** - https://www.facebook.com/groups/MissouriAquariumSociety/ - This is a discussion group that can be joined by FaceBook account holders and is useful for exchanging information about care of fish, setting up tanks, etc. To keep MASI in compliance with FB policy, DO NOT discuss sales, trading or even rehoming of any livestock on that platform. Those posts WILL be deleted. Use one of the BAND groups mentioned above.

When posting or sharing on any portion of any Social Media platform, always consider them to be public and readily readable by anyone. Please let Club meeting rules apply: Keep it PG and respect others and their feelings. We want to encourage others, including kids, in the hobby. Post about hobby related items and questions but do not attempt to sell or transfer any legally banned or prohibited species. (If you can't legally sell it at an auction, do not post if on social media.)

If you have any ideas, questions, suggestions or concerns, please feel free to contact our Social Media Chair, Holly Paoni, email hpaoni@gmail.com.

Please note, from lack of use and to consolidate our Social Media presence, the Council has retired the FORUM.

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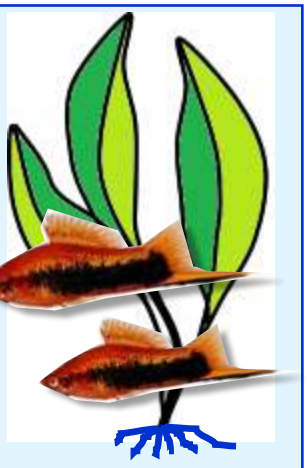

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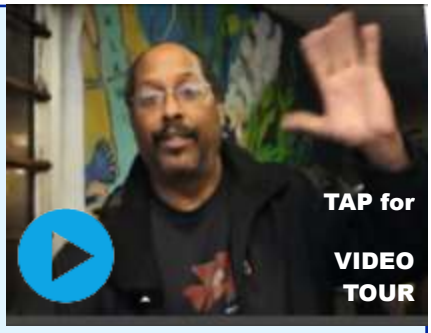

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Five Fun Facts About Dr. John Endler

by Steve Brunn

Photos courtesy of Elsie Swanson

Reprinted from:

The Greater Akron Aquarium Society (GAAS) Tank Topics Newsletter January 2019

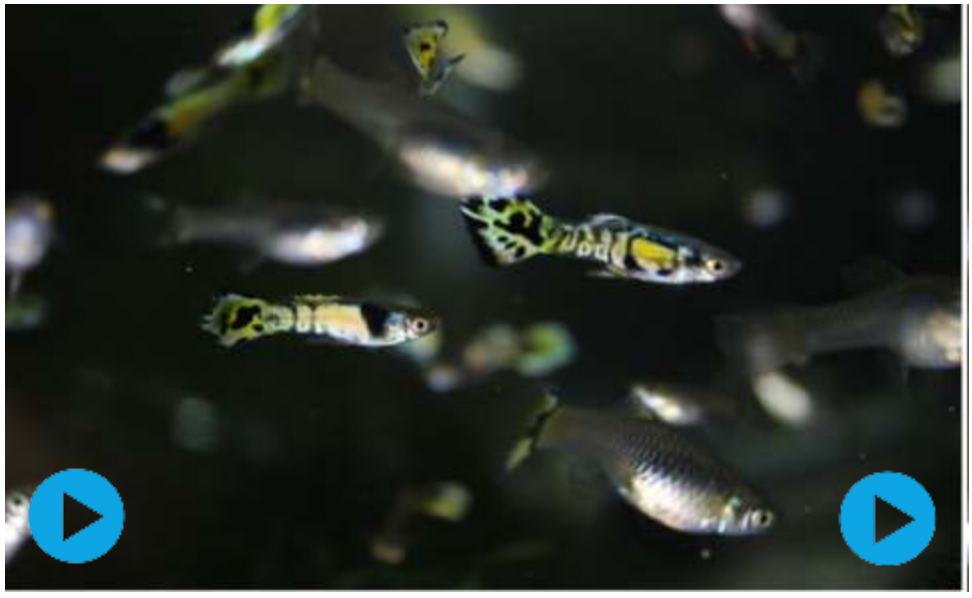
A male tiger Endler's Livebearer. Learn about the namesake of this little fish in this article.

We hear "Endler's livebearer" (*Poecilia wingei*) multiple times during our spring and fall tropical fish auctions—and you have probably made a bid on a bag full of them—but did you know that the trade namesake of those brightly colored fish, Dr. John Endler, is still actively publishing his research on the reproductive behavior the guppy (*Poecilia reticulata*)? Did you know that he also conducts research on the breeding behavior of birds in Australia? Dr. Endler's professional life has many facets, and five fun facts rise to the top, but to fully appreciate the fun facts, we first need a thumbnail sketch from his academic and research history.

Dr. Endler was born in 1947, in Canada, and studied biology as an undergraduate student at the University of California, Berkeley [1]. He went on to earn his Doctor of Philosophy in zoology at the University of Edinburgh in Scotland (1972) [2], and later did postdoctoral research at Princeton University [1]. He held a series of professorships, including appointments at University of California, Santa Barbara; University of Exeter, United Kingdom [3]; and James Cook University of North Queensland, Australia [4].

Since 2010, Dr. Endler has been Professor of Sensory Ecology and Evolution at the Centre for Integrative Ecology, School of Life and Environmental Sciences at Deakin University in Geelong, Victoria, Australia. At Deakin University, he is an Alfred Deakin Professor, which is Deakin University's highest academic honor [2]. He is regarded as a pioneering evolutionary ecologist with worldwide recognition for his research.

Regarding his relationship with Ender's livebearer, *P. wingei* (not formally described until 2005 [5]) was not initially discovered by Dr. Endler. *P. wingei* was discovered first by Franklyn F. Bond in 1937 in the Cumaná region of northeastern Venezuela [6]. In 1975, while studying guppy (*P. reticulata*) behavior in Venezuela, Dr. Endler rediscovered *P. wingei*, which was known simply as the "Cumaná guppy" at that time [6]. "Endler's attempts at crossing this form with guppies from nearby populations resulted in few hybrid offspring, and he suspected them to be a species distinct from the guppy" [6]. As the story goes, Dr. Endler passed live specimens of the Cumaná guppy to a friend and eventually these specimens went to hobbyists in Europe and the United States, where the trade name "Endler's livebearer" was promoted and has become recognized globally [7,8].

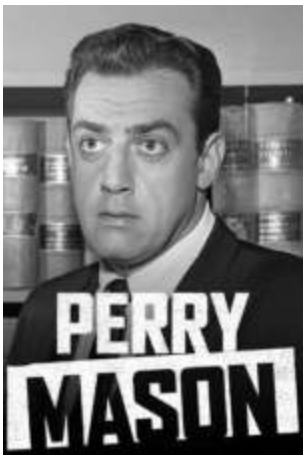


Now to the five fun facts about Dr. Endler:

Fact 1: Dr. Endler was elected as a Fellow of the Australian Academy of Science in 2012.

The primary selection criterion to be a fellow of this prestigious group of scientists is scientific excellence based on a single ground-breaking contribution to science. From his citation at the year of his election, Dr. Endler had multiple contributions to evolutionary biology and he was a pioneer in a new field of sensory ecology: "His experimental evolution studies of sexual seduction and natural selection on colour patterns of guppies were groundbreaking, and his demonstration of the modes and strength of selection in the wild has spawned a generation of research into selection in natural populations" [9]. You can also see a picture of Dr. Endler on the website of the Australian Academy of Science [9].

Fact 2: A big influence in his life was Perry Mason.



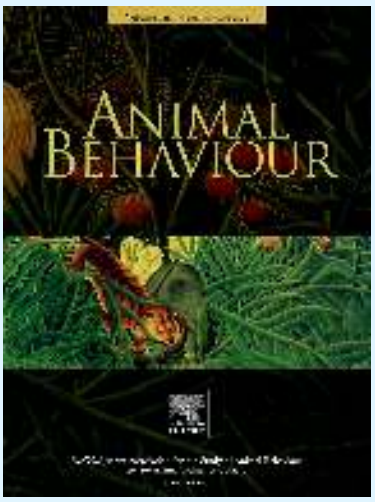
Yes, that is right, the fictional California lawyer, Perry Mason (Perry Mason the television se-ries from 1957 to 1966), who questioned everything and thought outside the box. In a 2012 interview, Dr. Endler revealed that a strong influence on his intellectual development was Erle Stanley Gardner, the creator of the fictional character Perry Mason. In the interview, Dr. Endler noted that the influence came from "Perry Mason's insistence upon considering alternative hypotheses and getting at the truth regardless of what was commonly assumed" [1]. He further revealed in the interview that his students call him a "why monster" because of his persistence in asking "why?" to his students' answers.

Fact 3: There's a website that demonstrates Dr. Endler's major evolutionary discovery [10, 11].

In the 1970s, Dr. Endler was studying wild guppies in Trinidad and he noticed that there was a wide variation among guppies from different streams as well as in different parts of the same stream. Based on his observations of the guppies, their predators, and the color of the substrate, Dr. Endler formed a hypothesis that would account for the variation in color of the male guppies. The PBS website models and demonstrates his hypotheses, with the conclusion being that "the opposing forces of predation and sexual selection are forever pushing the guppy coloration in opposite directions" [10].

Fact 4: Dr. Endler's most recent biologic discovery is that Australia's male Great Bowerbirds create a "false visual perspective" when they build their bowers to attract females [4,12]. When Dr. Endler went to Australia, one of the attractions for him was to study the courtship behavior of bowerbirds. He wanted to learn "how the visual design of bowerbird bowers work, how it is made by the birds, and what is its function" [4]. Dr. Endler concluded that male birds that built bowers with more effective false visual perspective were more successful at mating [4]. Reflecting on this in his 2012 interview, he said, "the common theme in my research has always been: why do animals look the way they do; what causes biodiversity?" [1].

Fact 5: Dr. Endler is still going strong with his research with guppies.



Highlights

- We tested for changes in male behaviour after different previous mating success.
- Mating history significantly affected males' subsequent effort and choosiness.
- High mating success decreased subsequent male effort and increased male choosiness.
- Males adjust their behaviour based on their condition and recent mating success.

In the summer of 2018, at the age of 71, he authored a research article about the effects of male guppy past mating experiences [13]. In this recent experiment, he used male *P. reticulata* to investigate how they changed their sexual behavior after exp

eriencing high or low mating success. He found that when guppy males experienced high mating success with receptive females, then they decreased their courtship displays but increased the frequency of their sneaky mating behavior. On the other hand, guppy males that were rejected by nonreceptive females then showed an increase in courtship and a decrease in sneaky behavior. His research also found that mating history also influenced male choosiness; that is, successful males showed a stronger preference for larger females than did unsuccessful males [13].

Armed with these fun facts about Dr. Ender, the next time you are at a tropical fish auction and you hear "Endler's livebearer," you will not only bid on the fish but also admire the scientist.

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Selected websites:

Guppy Evolution. http://www.guppyevolution.org

The Guppy Project. https://theguppyproject.weebly.com

SHOP HOPPING - St Louis Area, 2020

These Local Fish Shops (LFS) help introduce hundreds of people to the Aquatic Hobby every day. They also help the Missouri Aquarium Society reach those hobbyists and keep them engaged by promoting our programs. **Support their programs too!**

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Super Shellies

by Brett Wimer

Fish Photo by Dave Shumacher

Reprinted from:

Federation Of Texas Aquarium Societies (FOTAS) Fish Tales Newsletter
Vol 9, Issue 1, 2019

WHEN YOU SAY African cichlids most people will think of big aggressive fish in a huge tank. However, that's not the case with multies (*Neolamprologus multifasciatus*). They're one of my favorite fish that I keep because they're a good beginner cichlid, and they have very interesting personalities.

They are also the most common shell dweller, so they're not too difficult to acquire. Multies are easy to keep in the home aquarium because they are very hardy in the right conditions. They're from lake Tanganyika so they will want to be around 80 degrees Fahrenheit which is what I keep mine at. They also need hard water and and a ph of about 7.5 and up.

Multies can be kept in a tank as small as ten gallons. The tank should have a deep sand substrate because they love to rearrange the tank and bury things. Another thing that you need in the tank is plenty of escargot snail shells. At the very least you should have enough shells for each fish to have one but, having extra is highly recommended to reduce aggression.

One of the best parts of keeping Multies is how easy they are to breed. First, you should start with six fish, so you have a good chance of getting the right ratio of males to females but, you should only have one male with four to five females in a smaller tank like a ten gallon.

The males and females look very similar with tan stripes on their sides and bright blue eyes but, the females have darker stripes while the male have duller colors. When they are full grown, the males will be about 2 to 2 ½ inches and the females will be about 1 to 1 ½ inches.

Once you have a ratio of one male to 4 or 5 females, you should feed a high quality sinking pellet and feed a frozen food such as, brine shrimp about once every other day to condition them to breed. Doing a 25 percent water change every week also will also encourage them to breed.

When they are getting ready to breed, the females will split up into different groups and the male will go back and forth between the groups.

They lay eggs in the shells so you won't see them until the babies come out of the shells. When you first see the babies they will be about a quarter of an inch and will look like a pair of eyes with a clear tail lying on the sand near the shells.

You can put java moss in the tank to give them something to graze on. About two weeks after that, they will start to swim more and can eat hikari micro pellets, which the adults will also eat.

Multies have very unique personalities. They will start out being very skittish for the first few weeks and then they will start to get used to you. Once they get used to you, you will be able to watch them remodel the tank by moving shells and sand around. Each colony likes to build different landforms, mine like to build hills in the corners and move almost all the sand away from the shells.

Sometimes during water changes sand will get moved around the tank and get in the shells. The next day the tank will look completely different if they don't like it. Also, they may bury things like the heater, one thing I learned to watch out for.

These small cichlids are amazing little fish. They're active, interesting, hardy and easy to breed. It doesn't get much better than shellies for a beginner fish.

I highly recommend them to anyone who wants to keep cichlids but doesn't want to get a huge tank but, who also wants to try keeping African cichlids.

The Cardinal Tetra Story

by Alan Mark Fletcher

Originally Reprinted from:

The Greater City Aquarium Society (GCAS) Modern Aquarium Newsletter December, 2010.

With Intro by Joe Ferdenzi and Postscript by Rosairo La Corte

- Republished alongside Alan Fletcher's Obituary in May 2019

Introduction

THE CARDINAL TETRA, *Paracheirodon axelrodi*, is undoubtedly one of, if not the most spectacular freshwater fish ever introduced into the aquarium hobby. The story behind its discovery and naming has been shrouded in mystery and controversy ever since its introduction in the mid 1950s.

Joe Ferdenzi

Here, for the first time, is the story as told to us by two men of unquestionable credentials. Alan Fletcher, at the time, was working with the legendary William T. Innes, author of the classic Exotic Aquarium Fishes, and editor and publisher of the best-selling The Aquarium magazine. Alan was also working as an editor on that magazine. Alan knew just about everyone who was anyone in the hobby at the time. He was a trained scientist, had gone on expeditions to South America, and was an accomplished author.

Rosario LaCorte was (and still is) one of the hobby's most accomplished breeders of aquarium fish. He rightfully enjoys a nationwide reputation, and was friends or acquainted with virtually every prominent hobbyist of the day, including Herbert R. Axelrod, with whom he went on several collecting trips to South America. Like Alan, Rosario has also been a prolific writer of articles and books on aquarium fish. These two accomplished gentlemen have combined to present this story.

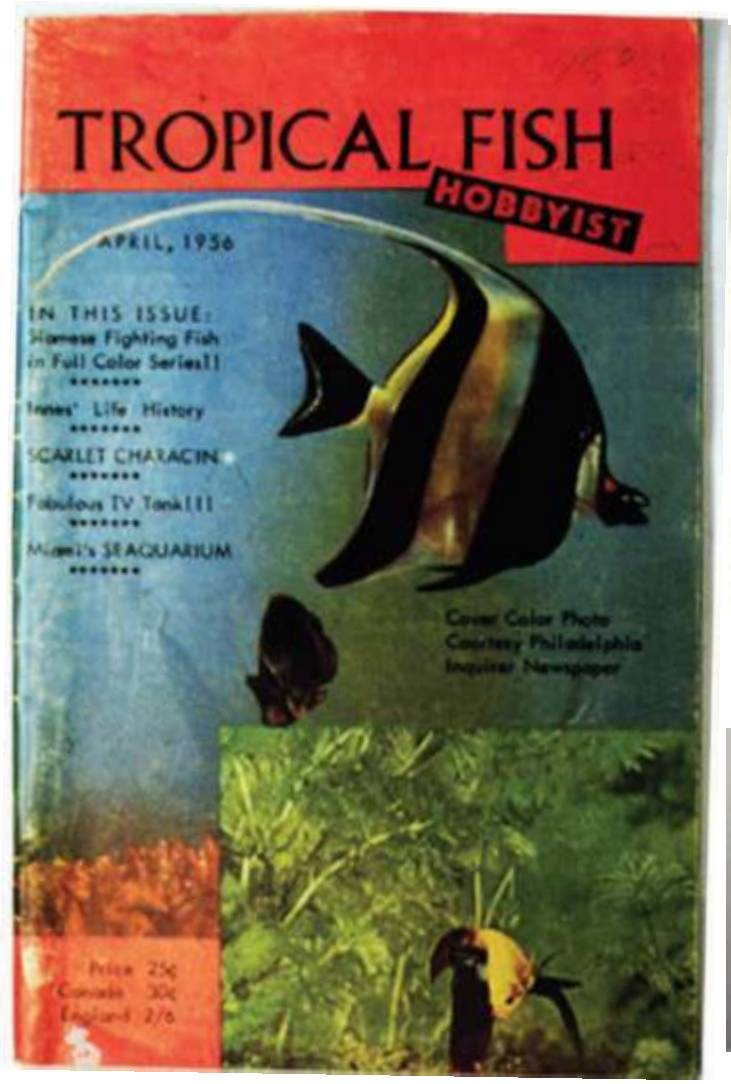
Enjoy. *Joseph Ferdenzi*

Alan Mark Fletcher*

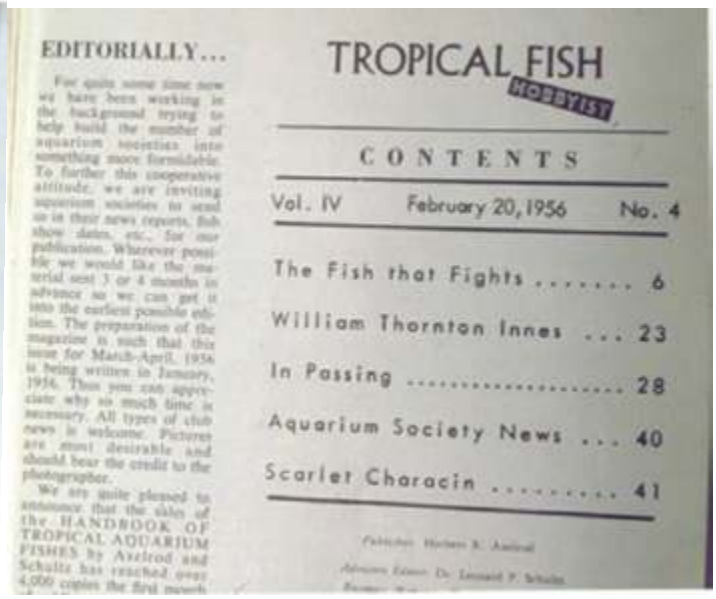
PEOPLE HAVE URGED me to tell the story of Dr. Herbert R. Axelrod's (HRA) and Harald (the correct spelling!) Schultz's visit to our humble Cape Cod cottage in the Philadelphia suburbs in the mid-1950s.

Harald Schultz was a distinguished Brazilian ethnologist. Fortunately for our hobby, he was also an avid tropical fish enthusiast. In the course of his studies of native Brazilian tribal groups, he often found himself in very remote parts of Brazil. We have benefitted greatly, because he netted fishes when he was in those places. He also had a good knowledge of the Brazilian fish-collecting scene in general. HRA had visited Schultz in Brazil (along with Rosario!), so they must have been friends.

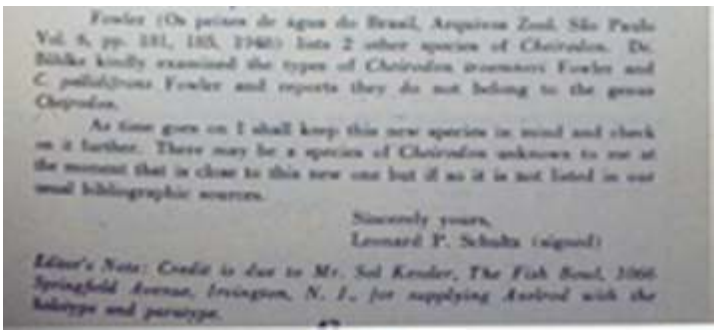
Schultz visited the U.S. as a guest of HRA, and said that, among others, he would like to meet me. I



Cover of the April, 1956 issue of Tropical Fish Hobbyist



Contents page of April, 1956 TFH,cover facing, showing "Scarlet Characin" article.
Note "February 20,1956" date.



From page 43 of the same issue of TFH, a footnote thanking Sol Kessler for supplying the fish to HRA.

believe he also spent time with Rosario on that visit. So Herb arranged to drive Schultz down to our humble dwelling in Amber, PA on a Saturday.

He arrived in a powder blue Cadillac, the largest model short of a limousine, and parked it on our front lawn. He came dressed in a suit and tie, and in his coat breast pocket he had five Corona Corona cigars, each carefully aligned so that you could read the label. For those of you who may not know it, Corona Coronas were Havana cigars that sold for a dollar each—a lot of money for one smoke in those times.

It was obvious that he was trying to impress me with his prosperity, but I always suspected that the Cadillac might have been rented, because it was early in his career, and he could not have accumulated much wealth by that time.

Now for the cardinal tetra.

I am sorry, but either I never knew, or I have forgotten, how the first cardinals got from the Rio Negro collecting site to Paramount Aquarium's plant in Ardsley, Westchester County, New York. Heiko Bleher gives one account in his cardinal article in Nutrafin Aquatic News, and Rosario says he got another story from Harald Schultz. If I had to choose, I would place more confidence in Rosario's version.

I would not be surprised if that first shipment did come via Louis Chung, in Georgetown, Guyana, as Bleher claims. Chung was Paramount's agent in Guyana. I don't believe there was air service between Manaus and Georgetown at that time. Most likely, what happened was that Paramount's own plane picked them up in Manaus and carried them to Chung's establishment for a change of water, repacking, and a rest, before carrying them to Miami. That was a common practice when Paramount brought plane-loads of fish from the Amazon.

We received a phone call from Fred Cochu (president and co-owner of Paramount) saying that they had a new, more brightly colored neon tetra, and that he was going to send us some. He wanted us to find out if it was a new species or just a variant of the neon. Fred sent a carton of cardinals down to our house in Ambler, carried in Paramount's delivery truck.

Some of them went to Innes for his color plate, and I preserved some of them and sent them to Dr. George Myers, at Stanford University. (I believe I preserved them in formalin, because I knew that alcohol dissolves out red and yellow pigments.)

Ad appearing in the April, 1956 issue of The Aquarium, as *H. cardinalis*.

Months went by, and we heard nothing back from Myers. He probably just put them on his shelf for when he got around to it, as is commonly done. One day Fred called again, saying that he had heard that HRA had gotten some of the cardinals, and that he was doing something with them through Dr. Leonard Schultz, at the Smithsonian. Could we please ask Myers to get going on his specimens?

I called Myers, and he agreed to work on them immediately. I think it is likely that he actually passed them along to his graduate student, Stanley Weitzman. Stan could enlighten us on that. I have never asked him, but I understand that he has put the cardinal tetra affair behind him, and he does not talk about it. We all know that they found it to be a new species, and they named it *Hyphessobrycon cardinalis*. A paper describing the new species was written and scheduled for publication in The Stanford Ichthyological Bulletin.

Dr. Schultz also found it to be a new species, and he named it *Cheirodon axelrodi*. His paper appeared in Tropical Fish Hobbyist (TFH) magazine. As it worked out, the TFH article came out (supposedly) a day or two before the Stanford journal. Joe Ferdenzi has pointed out that it was the only issue of TFH that ever had a month-day-year on it. Everyone suspected that Herb had rushed a hand-folded copy of TFH to the Post Office to validate a date.

In any event, the contested names went to the International Commission on Zoological Nomenclature for adjudication. The first decision that had to be made was whether TFH was (at that time) a legitimate publication, acceptable for a description of a new species. They ruled that it was. The commission then ruled in favor of Schultz's paper, solely on the basis of the publication dates.

Members of the commission later told either Innes or Myers that the commission was well aware that something shady had gone on, but they had no direct evidence of it. They had to rule on what was presented to them. If only Dr. Myers had gone to work on those specimens the day he had received them!

I had thought that we might never know how those first cardinals got from Paramount to Sol Kessler's fish shop in New Jersey, to Axelrod, but Rosario LaCorte's remarkable article which accompanies this piece sheds light on this part of the story. Herb admitted in some of his earlier writings that they had come from Kessler. In his later writings he told a grandiose story about how he had discovered them on a trip to the upper Rio Negro.

I have written elsewhere that Fred Cochu had gone to his grave resenting that "his" fish was named for someone who had nothing to do with its discovery or introduction. Considering that Fred had gone to so much trouble to bring in the fish, and that it turned out to be one of the most popular aquarium fish of all time, I think Fred's bitterness about it is understandable. Some have suggested that Fred's attitude was just ego, but it could not have been, since several aquarium fishes carry the scientific name cochui.

So that's it. And, oh yes, in an exquisite twist of fate, Myers's graduate student, Dr. Stanley Weitzman, succeeded Dr. Leonard Schultz as Curator of Fishes at the Smithsonian!

Alan Mark Fletcher

Postscript

SOL KESSLER, WHOM I knew very well, was the owner of the Irvington Fish Bowl. He had a very nice store it was neat, and he always had some interesting fish, which was not common in other stores.

Rosario La Corte**

Sol told me that he had a deal with a number of wholesalers, that whenever they got unusual fish, or "oddballs" collected as "by-catch," they would place them in a holding tank and save them for Sol. He would pay them some extra money for the consideration.

Paramount contacted Sol when they received the first shipment for resale. Sol was a good businessman, and when he bought anything he would purchase a sufficient quantity to make a good first impression. Vic Hritz, of Crystal Aquarium, was another store owner who had a good business sense in knowing the importance of displaying numbers. In other words, a tank of several hundred cardinals or neons, rather than say twenty of the same fish, would impact the first-time viewer with, "Wow! Look at that!"

Upon purchasing the cardinals, Sol contacted Bill Vorderwinkler so that he could pick up some for the TFH office, which at the time was located in Jersey City. Bill lived in Elizabeth, NJ at the time (as did I), so he was not very far from the Fish Bowl, and it was quite easy for him to pick up the specimens for Herb.

I was closely associated with Herb at that time, and I used to bring fish to his office at least twice a month for him to photograph (I was not yet into photography). Many of my fish appeared in his publications, though not once with the notation, "courtesy of R. LaCorte."

Shortly after the naming of the cardinal, I asked Herb why he had not had a species of fish named after him by Leonard Schultz, since they were so closely associated. His exact words to me were, "Schultz offered to name a fish earlier, but I will select the fish that I want when I see it."

Upon receiving the cardinal, he purchased an airline ticket to Washington, DC, and with fish in hand, flew to DC, and showing Schultz the specimens from Sol Kessler, said, ***"This is the fish I want named after me."*** That's how the cardinal got its name.

Rosario La Corte

*Photo by Claudia Dickinson
**Photo by Jules Birnbaum

Aquatic Birds and the Bees

-

The Back Story in Fish Reproduction

-

by Rich Serva

Reprinted from:

The Greater Akron Aquarium Society (GAAS) Tank Topics Newsletter September/October 2019

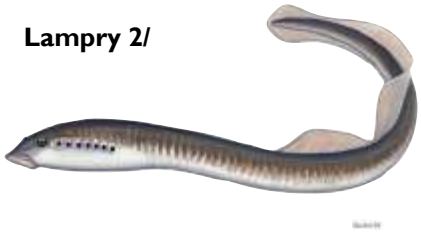
IT SEEMS LIKE any time that I start researching for a hobby article, I become fascinated with the back story.

According to my son, I am a bonafide "Science Nerd" and that is OK by me. This is the age of the Nerd. As I was saying, I wanted to write about what it takes to be a livebearing fish and that called for researching the differences between the egglaying and livebearing bony fish. So it turns out that I was not done researching since I needed to know what are the differences between bony fish and cartilaginous fish since there are livebearing sharks and rays.

This story actually unfolds around 480 million years ago when fish evolved. Those first fish were found in fresh water and they were a very primitive bony fish. The story leading up to the split seems quite vague.

(1) **Class Agnatha** are the most "primitive" of the fishes; they lack a jaw and a bony skeleton. The hagfish and the lamprey are the only living representatives of this once large class. I know of none of those species as livebearing so thus ended my research on them.

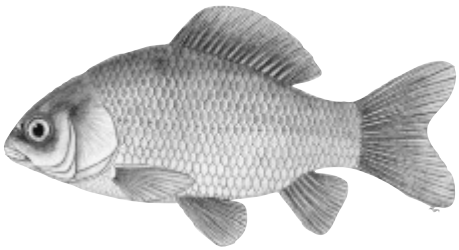
Lampry 2/



(2) **Class Chondrichthyes** which includes sharks, rays and chimeras (fish with skeletons made of cartilage) moved to the seas early on in their evolution.

Chimera 3/

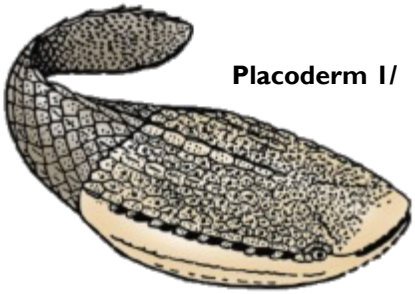
(3) **Class Osteichthyes'**, which includes the modern day bony fish (teleost) and their primitive relatives such as the sturgeon began spreading to the seas at a much later time.



Common Carp 4/

Class Placodermi (armoured fish) and **Class Acanthodii** (spiny sharks) are two of the extinct branches of the fish tree.

Placoderm 1/



Acanthodian 5/

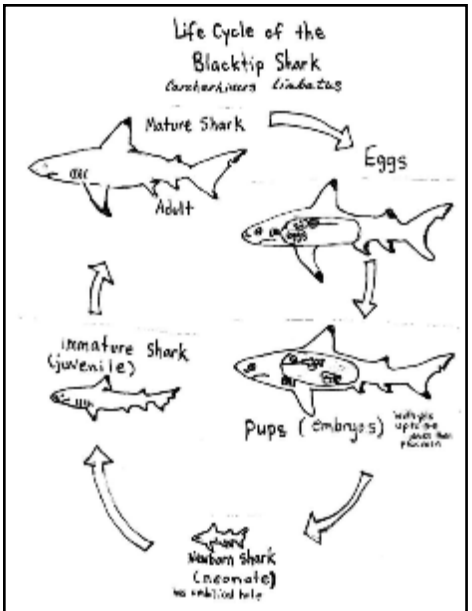
Teleosts are some of the most abundant vertebrates on the planet with nearly 25,000 living species. The chondrichthians represent only about 1,100 species; however, the fossil records contain many extinct cartilaginous fish.

Although everyone seems to know that, teleost fish have a calcified bone skeleton whereas the skeleton of sharks and rays is made of cartilage, there are many other differences between the groups of fish.

Cartilage vs Bone

Their skeletons are also different in that the upper jaw of a shark is not attached to the skull as it is in bony fish and can move independently. Some bony fish also have a secondary set of jaws, pharyngeal jaws, which are used to further breakdown food, an element absent from sharks. Like mammal's, the bony fish have ribs whereas sharks do not. In addition sharks have 10 cartilaginous plates that cover the skull where bony have around 63 bones making up the skull. The gill slits of a shark are exposed and visible; however, bony fish have a protective bony plate covering their delicate gills.

Unlike bony fish, sharks have eyelids. Because bony fish have bone marrow, they produce much of their



From NOAA Teacher at Sea Blog

read bloods within the bone marrow. Sharks have no bones so their red blood cells are made exclusively in other internal organs. Although all fish have 4 chamber hearts there are differences in muscle structure.

Shark skin is covered by dermal denticles, toothlike placoid scales which are very successful in minimizing drag and maximizing swimming efficiency. Bony fish are covered in flat scales that grow as the fish grows. Shark fins are stiff and lack the fine bony spines and muscle control found in teleost. As a result bony fish can swim forwards and backwards but sharks only go forward.

Bony fish have a swim bladder that helps them stay at one level in the water column. Sharks lack this structure but rely on a lighter skeleton, hydrodynamic planing, the low density oils in their relatively large livers, and even some gulp air from the surface to keep neutral buoyancy.

Shark kidneys and genitals empty into only one opening called the cloaca. Bony fish have separate openings, a rectum, an anus and a genital pore. The digestive process takes much longer in sharks. The water in the marine environment is saltier than the water inside a fish, both bony and cartilaginous and each group has developed a distinct pro-cess to cope with this.

The two groups are very different from a life history point of view. Most bony fish grow up quickly and grow old quickly. Most sharks and rays are very slow growing and live a long life.

Around 97% of the bony fish externally fertilize their eggs whereas almost 100% of the cartilaginous fish internally fertilize theirs. Also most of the male sharks and rays have the ability to clasp the female during breeding using modified fin structures whereas only a handful of bony fish have that ability. Both bony fish and sharks deposit eggs through oviparity or give birth to live young through viviparity but only 1% of bony fish have developed that reproductive mode whereas around 60% of the sharks and rays are livebearing.

Although the Chondrichthyes fish may not be as modern as the Osteichthyes, they have evolved to be efficient predators with an evolved mode of reproduction, livebearing. From an efficient reproductive point of view, livebearing is considered a more evolved situation.

As you might expect this is not just a simple split and the developmental path from egg laying (oviparity) to livebearing (viviparity) will keep researchers busy for years to come. All livebearing fishes fertilize their eggs internally but not all egglaying fishes externally fertilize their eggs; some egglayers perform internal fertilization. Livebearing is considered just one reproductive tactic that may be practiced by fish.

Reproductive Tactics

One of the reproductive types is the broadcast spawners or pelagic egg scatterers. The eggs may be swept along by the current or eventually slip to the river or stream beds. The egg, developing embryo and hatched fry are left to their own with no parental protection or care. Usually this type of fish lays the most numerous and smallest eggs. The ocean sunfish can produce over 300 million eggs which will become part of the ocean plankton swept along with the current.

The next reproductive type is the benthic (on the bottom) egg scatterers. The eggs are heavier than water.

- **There are the egg scatterers which breed and let the eggs fall.** The eggs could be adhesive or non adhesive. Normally this type exhibits no parental care.
- **There are egg depositors which seek out a surface** to deposit the eggs and they may or may not exhibit parental care
- **There is also the type that lays its eggs in a cavity** or cave and the parents may exhibit parental care.

There are the reproductive types that show parental care whether it is maternal, paternal or biparental. These can be further broken down into the mode of care:

- **Body Slime Feeding.** The parent produces a specialized mucus on its body surface which is used as food by the young fry.
- **Brood Pouch egg carrying.** Seahorse and pipefish males have a sac/pouch where the female places the egg until it hatches.
- **Cleaning spawning site.** Taking eggs into the cheek area, cleaning the site then returning eggs to the site from which they were taken.
- **Coiling.** The parent coils its body around the egg mass while guarding them. This guard-ing

posture reduces the eggs' exposure to air at low tide, when the oviposition site is intertidal.

Egg burying. Depositing eggs beneath the substrate surface or covering eggs with substrate material. Peat spawning killifish would be an example of this type of spawning.

External egg carrying. Eggs attached to the parent externally during some or all of the embryos development. *Oryzias* (Ricefish) carry their eggs.

Guarding. Displaying toward and/or actively chasing away threat to the eggs or fry, or the site where they are located.

Livebearing. Eggs are retained internally until hatching and mothers may or may not provide additional nourishment (beyond the yolk sac) to the developing embryo.

Moving. Taking eggs or fry by mouth from one location to another, often from one nest to another.

Nest building and maintenance. Building or using structures to hold eggs and/or fry.

Digging a depression in the substrate, a burrow, or making an elevated mound with substrate materials.

Assembling a cup or tube structure with pieces of vegetation.

Blowing mucus-covered bubbles that form a floating mass.

Oral brooding. Holding eggs and fry in the mouth or gill cavities during their development, typically ending with the release of well developed fry.

Removal. Dead or diseased eggs removed by mouth from the egg mass.

Retrieval. Taking eggs or fry that fall or stray from the nest or school into the mouth, and returning them to the nest or school.

Splashing. Splashing water on eggs deposited out of water or eggs exposed at times of low tide.

Substrate cleaning via mouth. The removal of debris, algae, and animals from the site where eggs are to be deposited.

Fanning. Moving the pectoral, pelvic, anal, or caudal fins over the egg mass or fry, thereby aerating them and removing sediment. Aeration and removal of sediment may also be accomplished by forcing water over the eggs or fry through the mouth or gill cavities.

Of course there are modes of reproduction that do not neatly fall into these categories. The swordtail characin internally fertilizes eggs prior to laying them. Males of two species of Cynolebias posses modified anal fins that are believed to be for internal fertilization so the ability to internally fertilize eggs is too simple of a criterium to separate egglayers and livebearers.

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4/ By From webpage http://fisc.er.usgs.gov/Carp_ID/html/carassius_carassius.htmlCredit: U.S. Geological SurveyDepartment of the Interior/USGSU.S. Geological SurveyFigure 15. Crucian Carp, UF 30247, 101 millimeter SL, from Yeosu, South Korea., Public Domain, https://commons.wikimedia.org/w/index.php?curid=941390

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Trichopsis pumila: Sparkling Gourami

by Brian A. LaNeve

Reprinted from:

Youngstown Area Tropical Fish Society (YATFS) Youngstown Aquarist Newsletter October 2019

The Sparkling Gourami is a species native to Southeast Asia. This Gourami's habitat is tropical ditches, small ponds, rice paddies and slow-flowing rivers and streams.

This species is often found in standing water with heavy vegetation, and low oxygen levels. The Sparkling Gourami can endure really low oxygen levels since it is equipped with a labyrinth organ and can breathe oxygen directly from the air above the water's surface. The Sparkling Gourami habitat usually consists of water that is covered by floating plants, and the Sparkling Gourami will therefore appreciate this type of cover in the aquarium.

Sparkling Gourami description: The Sparkling gourami reaches a total length of 1.6 inches, but there have been some reports of them growing as large as 2 inches. Mine on the other hand maxed out around 1 inch in total length.

The body of the Sparkling Gouraim is arrowhead shaped and not as deep as the body of other gourami species. There is a lateral dark band or dark spots running through the mid line of the body, and the fish is also decorated with sparkling spots of blue and green. Just like the other gourami species, the Sparkling Gourami has a long and thread-like pelvic fin. Sexing Sparkling Gouramis is not easy, especially outside the breeding period.

The Sparkling Gourami is also known as the Purring Gourami, the Dwarf Croaking Gourami and Green Croaking Gourami, since it can produce a distinct croaking sound. I used a diet mostly of chopped live black worms and baby brine shrimp.

Breeding Tank: I used a bare bottom twenty (20) gallon tank, with a well-seasoned sponge filter, but turned the air down to where it almost stops. A heater set to 82 degrees, and only about 5 or 6 inches of water. I also placed some live plants floating in the tank.

Breeding: I placed the male in the tank the day before the female. The following day I placed the female in the tank, but put her in a clear breeding box. I left her there for two (2) days. On the morning of the third day I released her into the tank and watched. It didn't take very long for the male to show a great deal of interest in her.

During breeding, both sexes will display enhanced colors. You can coax your Sparkling Gouramis into breeding by increasing the water temperature and lowering the water level to about six (6) inches. When the breeding period begins, the male Sparkling Gourami will start building his bubblenest from air and saliva. The male will then start courting the female by dancing near her and wrapping himself around her.

During the mating, the male Sparkling Gourami will embrace the female and their bodies will become tightly intertwined. The female releases the eggs, the male fertilizes them, and the eggs are placed inside the bubblenest. The spawning process will be repeated over and over until the female is exhausted of all eggs. After spawning was completed, I removed the female, I left the male in the tank until the fry hatched.

Care of Fry: After a few days, the eggs will hatch. The emerging fry is really small and must be feed microscopic infusoria. As the fry grow larger, you can start giving them newly hatched brine shrimp and then gradually increase the size of the brine shrimp. The water must be kept clean and frequent water change will be necessary when you are raising Sparkling Gourami fry

Astatotilapia sp. Chizumula

Article & Photos

by Greg Steeves

Reprinted from:

Federation Of Texas Aquarium Societies (FOTAS) Fish Tales Newsletter Vol 7, Issue 3, 2017

Lake Malawi contains an amazing array of haplochromine cichlids. We are quite familiar with the colorful mix of mbuna and utaka that have been available in shops for decades however, now and again, a new species is found causing much excitement. Everyone suddenly has to have it in their aquarium. One such fish is the beautiful Astatotilapine dubbed "Chizumulu" and named for the location it is found at.

It was a photo by Larry Johnson, Lake Malawi explorer and conservationist, that gave me my first look at *Astatotilapia* sp. "Chizumulu" and began my quest to obtain it. After several years of waiting for it to show up on some availability list, that I finally spoke to Larry directly to ask about where I might find it. He informed me that our mutual friend Steve Lubland was working with the species and was successful in spawning it. A quick email to Steve and I found out that not only was he working with the fish, he was overrun with fry. I spoke to Dave Schumacher, who informed me that he would get this fish from Steve for me. A few days later, Dave called to inform me that my fish were in!

I got about a dozen inch long fry and they were placed in a bare 20-gallon aquarium while I prepared a permanent aquarium for them. As always, I was not fully prepared for the fish. The fry grew quickly and in the month, it took me to prepare their home, they had doubled in size.

At an American Cichlid Association Convention, I got to speak with Ad Konings about his first-hand observations with this fish. *Astatotilapia* sp. "Chizumulu". Ad refers to this haplochromine as *Astatotilapia* sp. "calliptera chizumulu". He relayed to me that even most of the smaller lakes surrounding Lake Malawi have a "calliptera-type" fish. Some are rather plain looking, and others are spectacular.

All are undescribed. Almost certainly these fish are all from a common ancestor. Whether or not they have differentiated enough to be distinct species or are local variants of *Astatotilapia calliptera* I don't know. I would expect that genetic tests will assist in figuring this out soon. I personally have noticed differences in temperament and certainly coloration to think these should be considered a distinct species from the closely related *Astatotlapia calliptera*.

Ad states that Astatotilapia sp. "Chizumulu" is found in the heavily planted shallow waters around the eastern portion of Chizumulu Island at Same Bay and Mkanila Bay in Lake Malawi. Observations show that this insect eater tunnels under rocks. It is in these burrows that spawning occurs. I have never witnessed this in the aquarium, but it is possible that conditions are not conducive for the fish to construct such a structure. Although the fish is common in the areas it is known from, these areas are small, and care should be taken to ensure this location remains environmentally intact so that *Astatotilapia* sp. "Chizumulu" and the other fish native to here survive.

Maintaining these fish in captivity poses no problem so long as you are familiar with the husbandry of

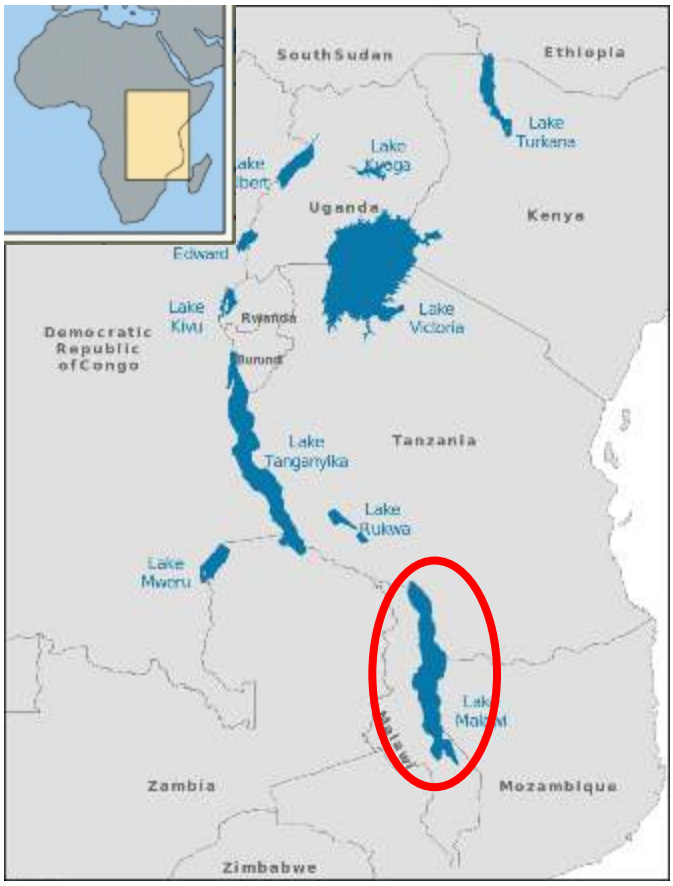
similar haplochromines cichlids. Experience with *Astatotilapia calliptera* or some of the other Astatotilapines such as *A. burtoni* from Lake Tanganyika, and *A. latisfasciata* from the Kyoga Basin. One must be prepared to react to the inevitable results from the establishment of a breeding colony being established. This could include injuries and even death particularly among males struggling for dominance.

My dozen two-inch-long young were placed in a 55-gallon aquarium. Décor consisted of various large rocks placed in such a manner to break the line of sight from other members of the colony. I planted the aquarium with *Anubias bateri* and various *Cryptocorynes* including *C. wendtii* and *C. lucens*. Plants were not bothered in any manner and being able to maintain these beautiful fish in a planted aquarium, only adds to their appeal.

The aquarium was filtered by two large air driven sponge filters. This is standard fare for most of my aquariums. Our water is very hard with a high pH and ideal for supporting rift lake cichlids without alteration. Temperature varies throughout the year but ranges through the high 70's to high 80's Fahrenheit.

Food was varied however most of their diet consisted of a good quality flake mixed 25/75, protein type flake/ spirulina. Within a week of being introduced to their permanent home, a young male colored up brilliantly.

Interestingly, any other male that showed even an inkling of coloring up, would be attacked by the colored male who, incidentally, was not the largest fish of the group. My first spawning occurred quite quickly. I was not surprised to notice a female with an extended buccal cavity. The male had excavated a large pit on one side of a rock and spent his time between digging, "flashing" to the ripe female, and chasing off all other fish that came to close to his project.



I did not witness this spawning however, in the time since, I have been able to observe multiple spawning. These occur in a manner typical of most haplochromines. The male lures the female to his pit, they circle each other, the female drops eggs and quickly turns to pick them up, then the male extends his anal fin along the substrate. The female mouths at the egg spots triggering the male to release milt. The eggs are then internally fertilized within the mother's mouth.

I have both let the fry remain with the group and isolated the holding females so that they may release their fry and I could save the batch. The fry released in the community aquarium did not survive for more than a couple of days. The fry proved to be very hearty and survival rate was high.

As the breeding group grew to their full adult size of nearly 5" for males and 3.5" for females, the dominant male ended up killing all other males that I left in the aquarium with him. I ended up removing several fish with torn fins and missing scales, all males. Those fish eventually made a full recovery but could not be added back to the established breeding colony.

Once Zen had been reached within the colony (one male, 6 females) aggression was not a large problem anymore. I have since added some mbuna to the colony in adult sized *Labidochromis caeruleus* and *Synodontis nyassae* and have removed the plants and added additional rockwork.

***Astatotilapia* sp "Chizumulu" has turned out to be well worth the search** I went through to obtain it. I am pleased that they have provided me with ample fry that I have been able to pass along to others to enjoy. Now to see what some of these other calliptera-type fish from the smaller waterways, that Ad told me about, look like!

Some Cool Fish I Got From Lawrence *Lamprologus tigripictilis*

By Steev Ward

Reprinted from:

Greater Seattle Aquarium Society (GSAS) Northwest Aquaria Newsletter April 2020

WHEN I WAS young cichlids were a big deal, and the 1970's was a very exciting time if your were into cichlids from Africa.

Lake Nyassa had changed its name to Lake Malawi, they were bringing in fish from Lake Tanganyika and Victoria, and some fascinating fish were being found in the Congo River System. New cichlids were making their way into the hobby on a regular basis and Seattle had a lot of cichlid nuts who snatched them up and tried to breed them and share with other hobbyists.

From time to time I saw never-heard-of species become common seemingly overnight. *Pseudotropheus microstoma* was one of the first mbuna cichlids to become widespread here, along with *Melanochromis auratus*. *Pseudotropheus zebra* became very easy to come by, and one of our members flooded the market with Red Zebras. A cichlid named *Iodotropheus sprengeri* (the Rusty cichlid) was suddenly everywhere. For may part I raised as many *Haplochromis burtoni* as I possibly could, until I couldn't give them away.

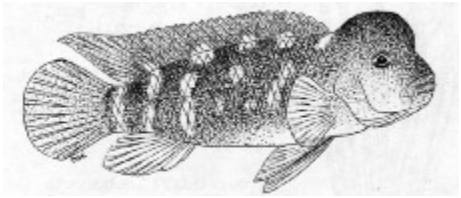
Down in Tacoma Bill and Lillian Kuhlman got hold of a Congo River cichlid called L*amprologus mocquardi* (actually from the Upper Ubangi), that had popped up in one of the loal shops. Bill was president of the Tacoma Aquarium Society, and he was heavily into breeding. He and his wife wrote a lot of articles, and he not only popularized *L. mocquardi* but spread them far and wide.

That was almost 50 years ago. I never kept any because I had just come across some *Steatocranus casuarius*, the Buffalo Head Cichlid, which was the love of my life at that time.

Then recently Lawrence Kent showed this picture on Facebook:

Lawrence wrote "*Lamprologus tigripictilis*, a rheophilic cichlid from the Congo River. We netted a couple south of Kinshasa about 8 years ago but the group I'm currently keeping came from the auction at the American Cichlid Association convention in Connecticut! They are breeding..."

I thought "Hey, these remind me of Buffalo Heads." Someone else remarked on that. Here is the picture



***Steatocranus casuarius* Male**

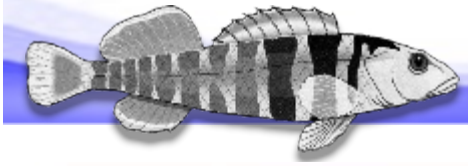
that Dianne Elliott drew for my article back in '74:

Later Lawrence posted the picture of *Lamprologus tigripictilis* at the top, and I thought "Wait - those look like the old *Lamprologus mocquardi* from back in the 70's!" A mention that they were cool, a bit like *Lamprologus* and a bit like *Steatocranus* and Lawrence said that he would GIVE me some. Of course I didn't have room for new fish, but how could I refuse?

So here is one of the little guys I got. End of story ... for a while. I hope to breed them when they are a bit bigger.

Editor's Note: Lawrence Kent was a long time member of the Missouri Aquarium Society now living near Seattle. He recently gave a program highlighting his collecting while on the Congo river.

Did anyone get similar fish from those brought to that MASI meeting? Did you reproduce them?



Word Search

by Allison Brizburk

fish keeping

ALLISON

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HARD
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MASERS
MIDWAY
PLANTS
SHRIMP
SOFT
THE
WORMS

Reprinted from:

Greater Seattle Aquarium Society (GSAS) Northwest Aquaria Newsletter April 2020

The Care and Feeding of the Mosquito Fish

–

Gambusia holbrooki

By Ken Sedars

Reprinted from:

Atlanta Area Aquarium Association (AAAA) Fish Talk Newsletter May 2018

When I think of it, this may have been one of, if not the first, fish that I kept when I was but a wee lad. I was raised in Southeast Florida. The Mosquito fish is ubiquitous in every place in Florida I have been.

Most people call them minnows, but that term usually includes any of the little fish seen swimming in nearly every body of water. When I was a youngster, parents didn't give their children everything, and spoil them rotten, like they do now (at least mine never did), and there were most always better things to spend money on than fish. Most certainly if you couldn't even eat the fish!

Being like most kids, I had to find a suitable (meaning affordable) way to get fish to keep in buckets, kiddie pools, large jars, and whatever other water holding implements I could find, including tanks I was able to get from people who no longer wanted theirs. Since there were plenty of canals, ponds, parks, and other assorted waterways in South Florida, I was able to reap the richness of aquatic life they afforded. *Gambusia holbrooki* were the easiest to catch, so I had plenty of those.

Mosquito fish are easy to keep, easy to tell the sexes apart (or sexually dimorphic for those who are smart), easy to feed, easy to raise, and if you were lucky, you could catch one of the black and white males. They were the ones you wanted. Those males were more attractive than the bland old regular ones, which were the same drab color as the females.

Fast forward a decade or so, when I am an adult (or at least older than I was then). I move to Southwest Florida, install a pond in my yard, and knowing the reproductive rate of mosquitoes, decide to put fish in the pond to eat the mosquito larvae. What to do but go to the wilds of Southwest Florida and catch feral fish to populate the pond.

Again, the *Gambusia holbrooki* were the easiest to catch, so they became the residents. In a pond, they can live on the naturally occurring flora and fauna they find, making them the perfect residents. As I was often in Georgia, they could fend for themselves while I was away. Here are pictures of the untamed wilderness in which the denizens were caught, at great risk of life and limb.

Let me tell you, I was amazed at the rate at which they reproduced. I know they are capable of producing an abundance of offspring, but this was amazing. With no care at all (except a filter on the pond that ran while I was in Florida) the 5 original fish (3 black and white males and 2 females) I put in the pond quickly became, in less than 4 months, over 100 fish. No wonder they are considered invasive in many of the places they have been introduced.

Things were going swimmingly (no pun intended) until the onslaught of hurricane Irma. In addition to the tree near the pond that was knocked over, Irma dropped lots of branches, leaves and assorted flotsam into the pond. The debris remained in the pond until I could return to clean it.

By the time I returned, there was a decided stench to the water, and creatures I have never seen living in the pond. (Think rat-tailed maggots, which can be researched on the internet if one is so inclined.) I was saddened by this, as I could only see one or maybe two *Gambusia* swimming in the pond. I assumed they had all died, or were going to quite soon. The stench of the water was so bad, and the water was so black, I did not entertain any hope for them at all.


Author's Pond Photo

Amazingly, these little fish had the hardiness to survive. Not all of them mind you, but enough that the population continues. Where I could never count more than a few, they are now at their pre-hurricane numbers. It is just difficult to get rid of these fish unless you really try!

I suppose that makes them the perfect aquarium fish. They can survive conditions that would certainly eradicate more delicate fish. I have not tested the water in the pond, so don't know if it is hard or soft, but since it is in Southwest Florida, I assume it is hard. I don't know any of the parameters of the pond, except that it is full of water. With *Gambusia*


Author's Pond Photo

holbrooki, that is really all you need to know.

Give them water and they'll somehow manage to survive. Of course, if they're not outside in a pond, they will probably need food too! Then leave them to their own devices, and they will breed quite easily. The parents will attempt to eat their young, but if there are hiding places for the young, enough of the babies will survive to form a thriving community. The babies will hide in floating plants, or anything floating near the surface.

If you feed the adults, the babies will find enough to eat (and eat, and eat). These fish eat whatever food is available, so feeding them is simple. The temperature in the Florida pond is mostly in the 70s (occasionally in the 80s) so they like it warm, but they thrive in the pond in Georgia through the winter, showing they have a wide range of temperature tolerances.

Need an easy to breed, easy to accommodate species with which to get B.A.P. Points? Give *Gambusia holbrooki* a whirl, you'll find them delightfully simple.

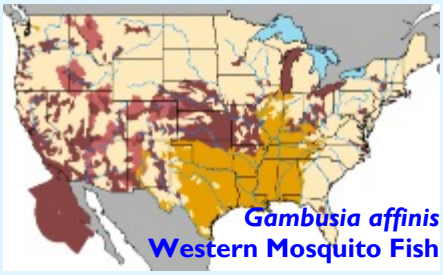
Additional Reference: A sex-linked allele, autosomal modifiers and temperature-dependence appear to regulate melanism in male mosquitofish (Gambusia holbrooki), Lisa Horth - Department of Biological Sciences, Old Dominion University, Norfolk, VA 23529, USA, 16 October 2006. http://forum.nanfa.org/index.php?app=core&module=attach&section=attach&attach_id=19280

Editor's note: For folks in the St Louis area or other parts of North America, these fish, or the closely related *Gambusia affinis* are often available as an aid for mosquito control from Garden Centers in the spring.

If you prefer to collect in the wild, as did this author, both are temperate species with several wild gray populations established in the wild over much of the Midwest and South.

USGS Maps
Orange = Native; Red =


Gambusia holbrooki
Eastern Mosquito Fish


Gambusia affinis
Western Mosquito Fish

A Pocketful of Pencils

–

An overview of some *Nannostomus & Nannobrycon*

By Tony Kroeger

Reprinted from:

Brooklyn Aquarium Society (BAS) Aquatica Newsletter Nov 2017

PENCILFISH ARE UNDERRATED! Peaceful, beautiful, usually available at reasonable prices, small, fairly hardy and a good community tank fish…so what's not to like?

In this article, we will look at several commonly available species in the aquarium trade. But first let's look at some general family information. Pencilfish are divided into 2 species groups *Nannostomus* and *Nannobrycon*. Each group has several species in it, with *Nannostomus* containing the greater number of species.

All pencils come from the Amazon basin in South America. All are small fish, sizes ranging from 1 1/3 inches to 2 1/2 inches. 2 inches is an average size.

All pencils are shy, timid and peaceful. Never house them with boisterous fish like tiger barbs or hyperactive fish like zebra danios. In nature, they stay motionless between leaves, grasses, twigs, etc. floating in their water. In nature they eat small insects.

Being small fish; pencils do not need a lot of room. Dwarf species such as *N.marginatus* can be kept in nano tanks, but really I prefer to keep my pencils in groups in 20-gallon long tanks. Their coloration and behavior is much more natural that way.

Being shy, pencils always must have well planted tanks. Use floating plants to enhance their sense of security. I use anubius, crypts and sword plants with water sprite and duckweed floating on top. Use black sand substrate and black background and their color will really shine forth. Not the best jumpers, but cover their tank anyway as species such as N. espel and N. eques can jump quite well if they want to.

A small power filter or large sponge filter is fine for their needs.

All pencils prefer soft, acidic water with some tannins (from peat moss/extract) added. Keep their pH at 5.5 to 7.0, medium hardness. Temperature should be between 74. and 80.F, They will tolerate harder alkaline water, but will show much less color if kept in such water. What they will not tolerate is ammonia or nitrite, Keep their water quality high; change small portions of their tank water frequently to keep their water sweet and clean. I change 10% to 15% of their water two or three times per week. Never change more than 20% of their tank water at a single time. If you exceed 20%, you run a risk of putting your pencils into shock from which they rarely recover. Shock in pencils is usually fatal!

All pencils have small mouths and need small foods, micropellets, crushed flake foods, baby brine shrimp, tubifex, daphnia and other small high protein foods should be offered. They love live fruit flies as a treat and frozen daphnia will definitely help bring out their best colors. Pencils shoal together in a loose school. Never keep any pencil alone. 4 to 6 is good, more is better. Pencils are very peaceful fish and mix well with other small quiet fish. They do especially well with neon tetras, black neons, lemon tetras and harlequin rasboras.

Some popular Pencilfish:

- Hockystick pencil
- Beckford's pencil
- Barred pencil
- One line pencil
- Three lined pencil
- Coral Red pencil

Some pencil fish have an adipose fin (between the dorsal and caudal fins) and some do not. All have very different night time (sleep) and daytime colors. The horizontal bands

of day disappear at night and are replaced by vertical bands.

All species discussed here have been bred, but it is not an easy task. Most specimens offered for sale are wild caught.

To breed them you need very soft water 2° GDH, acid 6.0 pH water, a temperature of 78° to 80° F. condition them on frozen mosquito larvae and live fruit flies. Use a 5-gallon tank per pair. cover the bottom with marbles or a screen and add Java moss on top of the marbles. Keep the light dim and their water level low (4 inches).

Some of the popular species:

Nannobrycon eques

The original- Hockeystick pencilfish! Up to 2 inches, commonly available at reasonable prices. Standard care. A pretty fish. Golden brown nape, gold stripe snout to tail, dark broad chocolate band underneath snout to tail, anal fin red with blue/white edge, Pelvic fins blue/white tipped on males only. Lower 2/3 rds of caudal fin chocolate/red edged in black. Blue iris with black eye. Sometimes sold as black lined pencils. Healthy fish always swim tail down. Never buy one that swims head down, as it is sick.

Nannostomus espei

Barred pencil up to 1 1/3". Admittedly the rarest, most expensive and most sensitive of the pencils discussed here. You must look to find this pencil online or in stores. Highly seasonal and expect to pay when you do find it. Standard care, but hyperly sensitive regarding water quality. If your water quality drops, it will die enmass with no warning.

Very sensitive to light and water change shock. This cannot be emphasized enough! Do everything very gradually with this fish! Very sensitive to moving. Golden honey brown nape and flanks. White belly. Flanks adorned with 5 broad, irregular backwards leaning blotches. Random green metallic spangled scales overlay along flanks. Iris; silver/orange top. eye black. A rare sensitive fish. **Definitely not for beginners.**

Nannostomus beckfordi

Beckford's pencil. Usually available at reasonable prices. Standard care. Up to 2 1/2 inches. A really pretty pencil! Milk chocolate body, broad nose to tail dark chocolate stripe, males have a broad red stripe above the dark chocolate one. Males nape overlaid in royal purple. Dorsal and caudal bases are bright red. Anal fin solid fire red. Pelvics broadly tipped neon blue. Iris gold, eye black. Swims slighty head down. A stunning fish!

Spawns are small - a few dozen eggs. Adults are voracious eggeaters. Remove adults immediately once spawning is complete. Keep the tank dark and use a flashlight to search for glass silver like fry. Once you see fry (one to three days) gradually increase light and feed with rotifers and infusoria and baby brine shrimp after 10 days. Fry are light and water quality sensitive.

More popular species:

Nannobrycon unifasciatus

One line pencil up to 2 11/2". Seasonally available. Standard care. Green/gold nape, broad black line nose through center of caudal fin, black edging on lower caudal surrounding diffuse red and white swath. Small black spot on upper caudal just above black stripe. Spot is surrounded with red on lower side, white on upper. Males have black anal fin tipped in white. Females have red and black anal tipped in white Reasonably priced, but expect to look a bit to find this pencilfish.

Nannostomus marginatus

Dwarf pencil. Beautiful! Smallest pencil; up to 1 1/3 inches. commonly available. Reasonable prices. Standard care. Greenish/brown nape and flanks. White belly. Two broad longitudinal black bands nose to tail base along the flanks. Thin black edge around entire body. Neon red dorsal anal and pelvic fins. Dorsal and anal - thin black edge. Partial red stripe mid flank just before dorsal base.

Nannostomus trifasciatus

Three lined pencil - stunning! I saved the best for last. Up to 2" inches. Seasonally available. Expect to hunt a bit to find this pencil. Reasonable prices. Standard care. Honey/gold body. Two broad black horizontal nose to tail stripes separated by broad metallic gold stripe nose to tail. bright red large swaths on all fin bases extending out except for pelvic fins. Ventral and anal fins gold stripe has sporadic neon red incomplete overlay mid stripe area only. Neon red snout. Black eye. Black -lower, gold upper iris, brown topmost iris. This pencil is simply stunning!

Nannostomus mortenthaleri

Darter Editor's additon:

The Coral Red Pencilfish is another, fairly recent, introduction to the hobby. Preferred by many because of its bright red colors and intermediate size. This pencilfish is relatively easy to keep, similar to the Beckford's pencilfish and is often available locally from hobbyists or our LFS. Several in MASI have turned them in for BAP and an article on their care and breeding can found in Volume 45, Number 1, The DARTER January/February 2019.

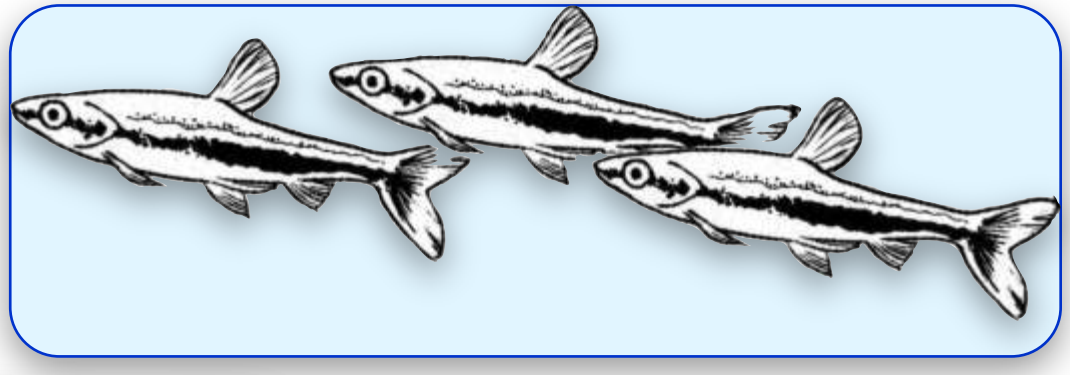
One final note on pencils:

All pencils are very susceptible to ich. Do not chill pencils. Ich is usually fatal to barred pencils, N. *espei*. All pencils are susceptible to dye drug treatments. Use all dyes at half strength, except methylene blue, chelated copper is the best treatment to use for ich on pencils. Pencilfish have much to recommend them.

Try some; you'll be glad you did.

Happy fishkeeping!

Tony



Classic Cichlids:

Former Heavyweight Champion...

Jack Dempsey

by Joel Antkowiak

Reprinted from:

Aquarium Club of Lancaster Co. (ACLC) Tank Tales Newsletter

March 2018

Fig. 1—Adult male Jack Dempsey from cichlids.com

ONCE THE WORLD champion of cichlids, the reign of the Jack Dempsey in the aquarium hobby spanned several decades in the early to mid 1900s. It has been known by several scientific names over the years, with the currently accepted name being *Rocio octofasciata*. The common name hales from its perceived aggressive nature in its early years in the trade, as well as its strong facial features, likening it to the great boxer Jack Dempsey. While many species of cichlids have been described since the Jack Dempsey that are much more aggressive, this species can hold it's own with most of them, and certainly with those that are of similar size.

A mature Jack Dempsey is a beautiful fish. The adult will have a dark purple-gray to black background contrasted with iridescent light blue or greenish spots all over its body. The male Jack Dempsey tends to have more of this iridescence than females, and they also have bright red edges on their dorsal and anal fins which make for a striking contrast. In addition to the normal wild coloration, several color varieties have also been developed and are available today.

Of course, the most notable is the electric blue Jack Dempsey which has been fixed from a natural color mutation in the species. It is one of the bluest freshwater fish in the hobby, and the electric blue pattern varies greatly.

Fig.2—Adult male Electric Blue Jack Dempsey. Credit unknown

Fig. 3—Adult male gold morph—credit unknown

Its development has led to the development of several other "electric blue" cichlids, including the electric blue acara and electric blue ram. If trying to breed this variant though, remember that the electric blue gene is recessive, so you must at least have a female that is carrying the gene in order to get electric blue offspring. If not, you may be waiting a long time to get those electric blue young.

Another less commonly seen variant is the gold Jack Dempsey. This fish is really kind of bland in color compared to the normal and electric blue variants. It is not really gold, but more pinkish like an albino but with a black eye, with varying amounts of gold iridescence on the body.

The Jack Dempsey is native to slow moving waters in Central America, from the Yucatan peninsula in Mexico southward through Guatemala and into Honduras. Feral populations also exist in various locations in the United States, as well as Australia and Thailand. In Thailand, the fish is sometimes called the 'Mexican Blue Frontosa.'

The Jack Dempsey is one of the easiest cichlids to keep and breed. It does get large and can approach 10 inches in length, so a large aquarium is necessary. While aggressive, like with most aggressive species you can crowd the tank to spread the aggression. They tend to be more territorial if the aquarium is sparsely populated. But they are not too particular as to water conditions. Spawning can be induced in a well conditioned pair by a water change and raise in temperature to the 80s. They are very good parents with both male and female usually contributing to the care of the brood. The eggs will hatch in 3 to 4 days, with the fry becoming free swimming in another 2 days. They are easily raised on baby brine shrimp and crushed flakes.

While the popularity of the Jack Dempsey has waned over the years due mostly to a huge influx of newly discovered species, it still has a strong foothold in the hobby. The heavy weight champion may have been dethroned, but it remains in contention to reclaim the crown.

One of Steve Coxan's much smaller *Neolamprologus multifacieatus* Shelly Cichlids from BAND

Betta Barracks

by Bob Hargis

Reprinted from:

Circle City Aquarium Club, Indianapolis (CCAC) Newsletter

Fancy Fins March 2018

IF YOU PLAN on breeding *Betta splendens*, keeping the males separated can be time consuming and labor intensive. I prefer neither choice. I saw this barrack system many years ago and this is my attempt at the idea.

Materials needed are plastic guttering, leaf guard for the guttering, end caps and PVC piping with fittings. These materials can be purchased at your local home improvement store at a fairly cheap price. In fact my local store usually has the guttering free with rebate. You will also need rigid airline tubing and regular airline. The containers I use are display cases for Beanie Babies and can be found online. A quick search found them for $90 for 25 containers. You might be able to find similar cases for a little less. These measure 4 x 4 x 8 inches.

Here is shown the guttering placed and the drain cemented in place. The leaf guard is placed on the lower one. This end is slightly lower to make a good drain.

Here is a close-up of the water manifold. I simply cemented rigid tubing into the PVC. I used one manifold for two rows of barracks. One of these lines must be short and out of the water, if not the top row will siphon into the lower row. A hole is drilled near the top of the container. The water simply overflows out of the hole and into the guttering.

I connect a hose to the manifold to change water. The valve is to shut down two of the four banks of containers. I have well water so I don't worry about chlorine. If you have chlorinated water then you should use a holding container to treat the water and then pump into the system. Before changing the water use a turkey baster to pull the waste out of the container.

This system could also be used for axolotl's.

Breeding the Red Lizard Whiptail Catfish *Rineloricaria* sp L10A

or Why I Travel Far and Wide For A Tropical Fish Auction

by Barbara Romeo

Reprinted from: the Danbury Area Aquarium Society (DAAS) Newsletter
GILLS 'N GOSSIP
4Q 2015

SOME OF YOU may know I travel far and wide for a tropical fish auction. I attended the Central New York Aquarium Society (CNYAS) auction in East Syracuse, New York in the spring of 2014.

The auction typically is held on a Saturday, which is very fortuitous for me since I can then drive up very early the day of the auction and rent a hotel room if I stay until auction's end. If I stay the night, I go to dinner with friends from the auction and also go on a shop hop before the drive back home on Sunday. Basically it's a whole weekend of tropical fish and friends!

Besides the auction itself, CNYAS in recent years has also held rare / expensive fish raffles (such as L-numbered catfish) on the auction day and one year has even allowed sellers to submit for auction "mystery boxes" of fish &/or plants that the crowd seemed to really enjoy.

For example, the auctioneer tells the crowd that the mystery box is a group of 8 African cichlids, what lake they are from, and who the seller is. Then the bidding starts. If you use how high the bidding went as an indicator of "enjoyment", then the crowd "loved it".

I actually took a chance and won the bid on one of the aquatic plant mystery boxes and was very happy I did so. Besides a nice grouping of various aquatic plants, I even received a group of livebearers as one of the surprises in the box.

In regards to the type of fish at the auction, I never know what will be seen and there is usually a couple of fish that I try to obtain. Besides tropical fish sellers from the area and the local fish stores that give very nice donations of fish and equipment; CNYAS attracts sellers from north and west of Syracuse. Typically I have seen many from Buffalo at the auction.

It was my lucky day when I noticed 5 bags of 4 Red Lizard Whiptail Catfish among the auction bags scattered throughout the various tables. I have never seen this fish before and was quite intrigued. Some were very red while others were rusty brown but they were all odd but beautiful looking fish. I knew nothing about them and conducted a quick Google search on my iPhone before they were auctioned to see if I could maintain them in my soft water.

I learned the following…

- The origin of the species is controversial. Some believe they are collected from the wild while others believe they were created in the hobby.
- Favor soft water with a pH range of 6.0-7.5
- Favor well-planted tanks
- Very peaceful fish
- Are paternal cave spawners

I quickly realized I could easily maintain these fish and wanted to try to breed them. So I decided to try to obtain 2 bags to increase the chances of at least 1 pair. I had a bidding war with some hobbyists at the auction but since I counted 5 bags, I was victorious and won the bags for a total of 8 fish.

I then had to figure out where to keep them and quickly decided to dedicate one of my very planted 55-gallon tanks to these fish and only these fish. Therefore I had to move quite a bit of fish from the 55 gallon into other tanks when I got home.

I learned the L10A whiptail is a very peaceful and docile fish most of the day. So I am grateful I moved the other fish from the tank. The L10A usually hangs on the Amazon Sword plants and one of the taller varieties of Anubias plants in the tank. They are

omnivores and do “nibble” on the plants but this tank was so packed with mature specimens that it did not cause detrimental damage to the plants. I suspect these fish would harm new growth so that daughter Amazon plants (offshoots from the mother plant) should be moved into another tank to give them a chance to establish.

I mainly fed them a lot of flake food. I made a mixture of different varieties of Ken’s flakes foods and added them all together to create a variety of foods at each feeding. I then add the food near the bubbles at the sponge filter or near the power filter so that it gets into the current and makes its way throughout the tank. I realized these fish need this type of food movement or they will allow the food to sink to the tank floor and fungus on the substrate. When they see the flake swirling around the tank, they get excited and begin to feed.

I have tried to feed them live black worm a couple of times but be prepared to “lose” some of the black worm to the substrate. The whiptail so slowly feed that they allow some of the black worms to bury themselves in the

Eco-Complete substrate before the whiptails can get to them. The worms began to thrive and have become part of the habitat in the tank. I figured this was fine since the adults can feast on them as they come across some in the tank.

When I purchased these whiptails I suspected to have to wait at least a year for them to get accustomed to their environment and to more fully mature before I would see mating behavior. I was very wrong. They did not want to wait and in four months time, I saw fry. There were a variety of caves in the tank but the male chose to make his den under a piece of driftwood which had a large Anubias tied to it. This driftwood resided in the

back of the tank so I could not see the male when he was lying on eggs. I realized after the second spawn that the only time I could tell he was on

eggs is when I did not see him at feeding time. Also we had a very stormy couple of days at the end of July/early August and along with a 50% water change, I surmised one of these triggered the very first spawn.

The fry varied in colors from beautiful reds, to rusty browns, and a couple of greyish-browns. I presume one will get more reds if you breed two very red L10A but I have not attempted this. The fry in my opinion are “stupid”. They hang on the tank glass and I believe did not realize they needed to feed. I counted at least 20 fry but only 8 survived after 7 weeks. The ones that survived learned to move around the tank, hang on the plants and look for food. I did try to move the second spawn of ~ 25 and intended to place them in a small enclosure so that they cannot miss the food but I was having great difficulty catching them and gave up. I ultimately decided to let them be with the adults as was done with the first spawn. The strongest will and did survive but it was a small group.

I entered a group of 5 after the second spawn to the DAAS Breeders Award Program but kept the rest of the fry to grow out. If you would like to learn more about whiptails, I recommend Norman Behr ‘s articles in the Jan/Feb 2015 issue of Amazonas magazine.

2014 ended up being one of my best years finding novel fish at local fish auctions. I hope the future will be even greater!

Photos by the Author

Setting up a whole new 10 gallon tank

by Marti VanAllen

Reprinted from:

Eastern Iowa Aquarium Association, Hiawatha, IA (EIAA) Fin Flap Newsletter April 2019

Well, I was just going to re-aquascape my 10 gallon tank as I just bought new Java ferns at the EIAA Auction…

For about two weeks, the fish and plants had been in a 5 gallon bucket with a functioning, small, seasoned sponge filter and a functioning heater and a light suspended overhead as I procrastinated, waiting for the right time to set this tank up.

The right time arrived but upon closer inspection, the 10 gallon aquarium had lime deposits on the glass from various water levels. I took counsel with Dennis Sindelar regarding: vinegar vs. single edged razor blades. Tried razor blades; still had Iowa City lime deposits on the glass and I declined the opportunity to use vinegar due to the odor. Decided to buy a new tank. On sale for $1/gallon.

Slight delay, but to continue I carefully taped a black plastic background on the outside of the aquarium back. I prefer to use wide, clear shipping tape. It lasts much longer than plain gift wrapping tape.

The 10" x 11" x 2" Hamburg Mattenfilter that had been in the tank for 2 years needed to be rinsed. Rinsed my filter in a 5 gallon bucket of water that was pretreated with Stress Coat to eliminate the chlorine in the water and not kill the bacteria in the sponge- Squeezing it a lot to get the goo out. Needed a new ziptie to anchor the PVC pipe to the foam, reused the filter with new airline. Hamburg Mattenfilters are available online at Swisstropicals.com. My air pump was still in good condition and pumping out air. Placed the Mattenfilter 2 inches from the right end of the 10 gallon aquarium. See photo above.

Hamburg Matten Filter

New to the hobby? Haven't heard of this kind of sponge filter? Go to YouTube and watch: "Talking Mattenfilters with Swiss Tropicals", an interview with Stefan Tanner. He explains how they work and shows you different shapes of these sponge filters.

Eco Complete

Then the substrate: I went to three shops before I found Eco-


Beginning the Fill

Complete at a chain store. See photo of bag. It contains micronutrients for the plants and has a nice black color to showcase the plants. I used almost all of a 9 pound bag of Eco-Complete. Put it in the tank after the Mattenfilter was in place. (Do not put the substrate behind the filter…this area should be bare tank on the bottom.) I partially filled the tank with tap water, also pretreated with Stress Coat.

Plants were going in at a rapid pace. Be careful not to bury the rhizome, just the roots, or you can tie the plants to driftwood or rocks with brown cotton thread to anchor them. I used a curved upholstery needle and cotton thread to anchor a few *Anubias nana* "petite" to the sponge filter. One of my Java ferns was already attached to a rock and was taller than the others. This plant went near the back of the tank. I put lots of Java ferns in place, three smaller Anubias varieties and two Crypts. Taller plants in the back and shorter plants near the front. Allow swimming room for the fish in the center over the smaller plants. Driftwood has three plants tethered to it with brown cotton thread.

I put the heater behind the Mattenfilter…set on 78 degrees Fahrenheit, within an hour the thermometer reading was 84. "Arrg." I unplugged that heater, removed it after it cooled down a bit and got out my new, extra heater. Put it in the water set on 78 . Let it set for an hour before plugging it in then exchanged some cool water for the 84 degree water, using Stress Coat to pretreat the chlorine.

With the temperature a nice 78 degrees, I added 10 capfuls of Dr. Tim's Aquatics' "One and Only" Live Nitrifying Bacteria (One capful per gallon). Air pump going, with check-valve in place between pump and filter, the Mattenfilter was also running now. Waited two hours and added 6 Diamond Tetras, 10 Harlequin Rasboras, a few *Corydoras panda* - and a *Betta splendens*- of course. Dr. Tim's "One and Only" cycles the tank in about two hours with the filter running, as opposed to waiting weeks.

Plants include 2 types of Java fern, 4 types of Anubias and two types of *Cryptocoryne*. New plants from the auction (thank you Gary Hanson for selling them) and plants from Mike Hellweg (Exotic Aquatics) shipped by USPS from the St. Louis area. I use all low-light plants… they are easy to grow and maintain

I always use a glass top with a strip light. Two years ago, I upgraded to an LED light with white, red and blue LED's. The plants grow better with the red and white lights.

The final few photos show the completed tank from a couple of angles.

That was fun!! I'll probably tweak it a bit as time goes on, but I'm happy with the initial setup.


Completeed Tank!

Being A Fan Of Fan Shrimp

Atyopsis moluccensis

by Derek P.S. Tustin

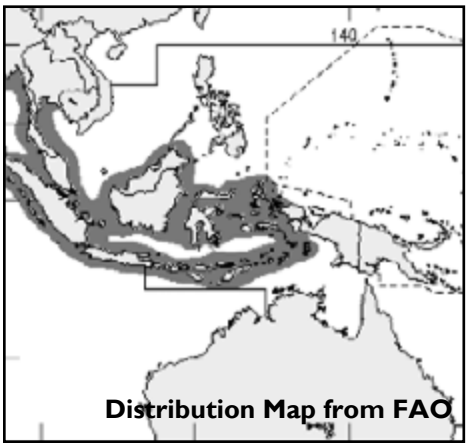
Reprinted from:

The Chatham-Kent Aquarium Society (CKAS) Newsletter: Semper Pisces

January 2018

As our hobby grows, and as more of the unique species of the world are imported to Canada, we as aquarists get the opportunity to consider adding different species to our tanks.

I was in a local fish store a couple of weeks ago, and came across some freshwater shrimp that I had seen and had before in my tanks. Now admittedly they (just like every aquatic specimen) will appeal to some and not to others. My fiancé doesn't care for them, stating emphatically that they look like bugs).



I double checked my tank parameters and, finding that they should thrive under my tank's current conditions, came home with three beautiful (two male and one female) *Atyopsis moluccensis*. Commonly referred to as wood shrimp, they are also sold under the names Singapore shrimp, Singapore flower shrimp, bamboo shrimp, filter feeding shrimp, and Asia filter shrimp.

Wood shrimp are harmless scavengers and are generally considered perfect for the community aquaria, with a potential life span of five years when kept correctly.

When seen in stores, their colouration is generally a wood brown, but when settled, feeling comfortable, and being correctly fed, they may become a dark red with a lighter coloured stripe running down their dorsal surface. Males are identified by a larger set of primary (or first set) of walking legs, and females are plumper and their carapace extends further down to accommodate eggs.

Their rostrum (the beak-like projection protruding from between the eyes of shrimp and crabs) have been reduced and their chelae or clawed legs (think of the primary and secondary pincers or claws in crayfish or lobsters) have evolved into fine fans that filter particles from the water. These fans then contract around the particle (either free floating microscopic micro-organisms or detritus from the substrate) and bring it to the shrimp's mouth. However, this evolutionary adaptation has not left these little critters defenceless, as the fans can be fully closed to form a sharp spike which can be used in defence.

Another advantage of these shrimp in a communal aquarium is their size. Mine are currently housed in a tank containing four *Agamyxis pectinifrons*, or white-spotted

doradids. It is not commonly known, but doradids have a taste for shrimp, and I have seen mine pick off both ghost (or glass) shrimp (*Paleomonetes kadiakensis* – ½" to 1") and cherry fire shrimp (*Cardina serrata* –½" to 1"). However, the wood shrimp is usually available in sizes ranging from 1½" to 2½", with specimens of 3½" not being uncommon. This size is sufficient to

Species Profile

Latin Name: *Atyopsis moluccensis*
Common Name(s): Singapore flower shrimp, bamboo shrimp, Asian filter feeding shrimp
Size: 4 – 12cm (1½" - 4½ ")
Temperature: 23 – 28°C (73 – 84°F)
pH: 6.5 – 8.0
GH: 10 – 24
KH: 3 – 10
Diet: Sinking pellets (crab or shrimp), artemia and daphnia
Distribution: Several countries in Southeast Asia
Source: various

escape most predation (at least from species commonly housed in communal home-sized aquaria), but care should be taken to avoid housing with aggressive species, including most cichlids.

Wood shrimp should be fed an omnivorous diet including sinking pellets crab or shrimp pellets being best), supplemented with frozen foods like artemia and daphnia. As mentioned, even though they are filter feeders, they will use the fans like fingers to lift larger pieces of food from the substrate. Another reason to keep these crustaceans in a communal environment is that the detritus produced by tank mates is necessary for the microorganisms that form a portion of the Wood Shrimp's diet to thrive.

If there is one main disadvantage to these shrimp, it is the difficulty associated in breeding. While getting them to produce eggs is reportedly not difficult, rearing the larvae appears to be exceedingly difficult due to the apparent necessity of salt water to allow maturation into a post-larvae stage. There have been no reports of actually raising these shrimp from larvae and all available specimens are wild-caught.

Should you be looking for a unique addition to a communal aquarium, you should take the time to consider these unique and wonderful creatures.

Editor Added References:

https://aquariumbreeder.com/bamboo-shrimp-detailed-guide-care-diet-and-breeding/

FAO Species Identification Guide for Fishery Purposes: The Living Marine Resoures of the Western Central Paific, Vol 2, Cphalopods, crustaceans, holothurians and sharks. *Atyopsis moluccensis* Pg 960. http://www.fao.org/3/w7192e/w7192e13.pdf


Megan Moncure's own invertebrate: A Pile of Nerites, from BAND.


A scene from the MASI Winter Auction. Click the image to view the FB video!!

Betta smaragdina

by Catherine Salmon

Reprinted from:

the Hamilton & District Aquarium Society (HDAS) Newsletter

March 2018

Betta smaragdina is also known as the Emerald Betta because of its emerald colouring.

Their colour may range from Emerald green to blue and even a red variant. The colour variant of the Betta complex is based on its location. If the location is known, it should be recorded, when the fish is bred so that the specific line can be kept pure.

Betta smaragdina is part of the *Betta splendens* complex with the Betta genus being the largest of the Family Osphromidae.

It is very similar to *Betta splendens* in its appearance, colouring and breeding. It may even be one of the betta types used to develop the colours of present day *Betta splendens*.

This wild type Betta is native to the Khorat Plateau in Eastern Thailand. In nature it is found in slow moving water such as rice paddies and swamps. It's ability to survive in low oxygen is due to the labyrinth organ typical of all anabantids.

I picked up a pair over a year ago at one of the fall auctions. You could tell that they were in top condition because of their beautiful colouring. The male was a beautiful blue colour with the typical pointed anal fin and long dorsal fin.

I placed the pair into a five gallon quarantine tank with a sponge filter and several hiding places. A small clump of java moss and half of a Indian Almond leaf was also included. Our water is hard, where *B. Smaragdina* will tolerate water with a pH from 6.0-8.0, but the Almond leaf did help to drop it slightly.

Another indication that the pair were in top conditions was that within a week, I had a bubble nest full of eggs. Like *B. splendens* the male will guard the bubble nest with the eggs, so I removed the female to another cycled tank. The eggs hatched within 48 hours and where free swimming in another two days.

I left the male in with the fry for about a week, making sure to feed him well with white worms and frozen brine shrimp. The fry I started feeding, micro worms, fry starter (Northfin) and a week later freshly hatched brine shrimp.

Mini water changes where done every other day to keep the water clean from the food not eaten right away. I had also added a couple of snails to help keep the bottom clean.

By three weeks the fry had grown so much that I had to move them to a bigger tank. There were about 50 fry in the 10 gallon I had moved them to. They then went into a 20 gallon when they were about an inch in size. By this time I was able to start separating a few of the males.

Meanwhile the original pair kept spawning every two weeks, until I finally had to separate the them. I placed a divider between the pair.

One pair of the off spring was shown in the IBC convention, spring 2018. The interesting thing was that the last spawn I had from the pair, was almost 95% female.

Do You Have Crabs?

Pom Pom Crabs (*Ptychognathus barbatus*) that is...

by Glenn Roberts

Reprinted from: the Kitchener-Waterloo Aquarium Society (KWAS) Newsletter: Fins & Tales September 2018

Ptychognathus barbatus are native to many tropical and subtropical regions including Madagascar, Australia, Africa and Asia.

Pom pom crabs get there name because of the feeding apparatus in the end of their claws. They use these 'pompoms' to help them pick up food particles. These crabs are fully aquatic and freshwater dwelling. There is another species of crab with the same common name that is a marine inhabitant.

Pom poms grow to 2.5 – 3cm, making them excellent additions to a nano tank. The even smaller micro crab, is also a fresh water species, but they only grow to about 1cm making them much more difficult to see. Pom poms are always out and about, cleaning up any uneaten food and exploring the environment.

These diminutive crabs can be kept in a range of water conditions and temperatures. They are quite resilient and adaptable. Generally a neutral pH and average temperatures of 23oC are suitable. Calcium is important for the exoskeleton, as with most crabs and shrimp, so a higher general hardness is required. Some hobbyists keep a cuttlebone in the tank to enrich the calcium content of the water.

Feeding is very easy as these crabs are scavengers and will eat almost anything, including algae. Sinking flakes and pellets, plants/algae and freeze-dried or frozen meaty foods will be readily accepted.

This is a very peaceful species and can be kept with quiet smaller fish, shrimp and snails. I am keeping 4 of them very successfully in a 5 gallon tank with a breeding colony of guppies. They keep the tank clean and have not bothered adult or baby guppies.

Freshwater Crabs - Some may be most suitable for Terrarium/Paludarium or slightly brackish habitats

Common name	*Scientific name*	Size
Thai Devil Crabs	*Clariosoma Camifax*	2-3"
Vampire Crabs	*Geosesarma sp.*	2-3"
Thai Micro/False Spider Crab	*Limnopilos naiyanetri*	1/2"
Gold Leg Matano Crabs	*Parathelphusa ferruginea*	3"
Panther Crabs	*Parathelphusa pantherina*	3"
Red Claw Crabs	*Perisesarma bidens*	2-4"
Tanganyika crabs	*Platythelphusa sp.*	2.5"
Freshwater Pom Pom Crab	*Ptychognathus barbatus*	1.5"
White Claw Sulawesi Crab	*Syntripsa flavichela*	4-5"
Purple Matano Crabs	*Syntripsa matannensis*	1.5"
Fiddler Crabs	*Uca sp.*	2"
Gold Claw Crabs	*Uca sp.*	2"

Aspidora sp. Taurus

by Mark Allar

Reprinted from: the Motor City Aquarium Society (MCAS) Newsletter:

TropiQuarium

May 2019

The Aspidora species looks cool and is a peaceful catfish that keeps your tank hopping with movement. Coming from the waterways of Brazil in South America this guy can get up to 2 to 2 ½ inches long.

Two barbels facing downward from its mouth, hence a bull, you get Taurus- *Aspidora* sp. "*Taurus*". It has a slender beige body with horizontal spots on the bulk of the body, plus a configuration of spots on the head and finnage. Females are plumper when looking at them overhead and the males are slender.

It's nice to have a solid group of 6 to 8 of them so that they can school around with each other. Mine are set up in 5 gallon tank with a potted plant, sponge filter, decor and an extra air stone. They are due for an upgrade to a 10 gallon tank when one becomes available.

These guys do like clean water, and will perish if you let it go too long without a water change. There are about 12 to 15 Aspidoras in my tank right now with a bunch of youngsters in another tank growing out. I have them in a bare-bottom tank, but they would not mind some sand either.

Being omnivores they enjoy a good, varied diet of flakes and misc. pellets, and I keep quite a variety of both. The tank temperature is normally around 70-72 degrees until I give them a nice cold bath and drop it down to 66-67 degrees. Sometimes it even goes a bit lower than that, but just keep an eye on their reaction.

Then I give them a good feeding of live black worms. I am not going to say they will produce right away, but this sure helps kick the spawning into gear. The books say they like to scatter, but mine like to keep a small area with 12-15 eggs in it, the size of a dime approximately.

I have found they enjoy laying eggs in the lift tube of a sponge filter, or in between the glass and a hanging thermometer. It is always spawning time there, so I keep a few thermometers on the tank.

Not everyone is a fan of scraping eggs off the glass, but if you are careful, it can be done. I also keep a turkey baster on hand just in case a few eggs drop to the bottom of the tank.

I use their water and some fresh water with meth blue in a small critter keeper with a sponge filter and some java moss. I have also used almond leaves and alder cones in the fry tank.

Within 5-7 days they will be scurrying around having some fun. I give them crushed flake, golden pearls, spirulina and micro worms for a diet.

Stay on top of the water changes and soon you will have a nice colony of Aspidoras.

Jenynsia onca

By Ben Slocum

Reprinted from:

the Michiana Aquarium Society (MAS) Newsletter: Michiana Tropical Times

August 2016

IN THE WORLD of livebearing fish species, there are several that could be considered "holy grails". Jenynsia, Belonesox, Anableps, or Hippocampus species come to mind as they are fairly hard to obtain and for various reasons, can be very challenging for the hobbyist to keep.

All of these are considered "target" species in the American Livebearer Association Breeder Award Program. A certain number of these target species must be bred as an individual climbs the levels of breeder requirements.

There has been a steady increase of availability of rare species partially due to their showing up on Internet auction or dealer websites. I recently found a listing for juvenile *Jenynsia onca*, on Aquabid but I also was contacted by a friend of mine stating he had an adult group of one female and three males for sale. I bought his without hesitation and made arrangements to pick them up.

I placed them in a heavily planted 20 gallon long aquarium with a sponge filter, box filter (carbon/floss), and a sand/gravel substrate. This tank also holds my breeding colony of Assassin Snails which leave the plants and any fish alone, but wreaks havoc on any rams horn snails I deposit in it. The lighting is a LED bulb (standard base) which is contained in an old incandescent light strip. I use a timer set for 12 hours of light to get the best possible growth of plants and to promote the health of the fish.

Jenynsia Species:

- ***Jenynsia alternimaculat***
- ***Jenynsia darwini***
- ***Jenynsia diphyes***
- ***Jenynsia eigenmanni***
- ***Jenynsia eirmostigma***
- ***Jenynsia lineata***
- ***Jenynsia luxata***
- ***Jenynsia maculata***
- ***Jenynsia multidentata***
- ***Jenynsia onca***
- ***Jenynsia sanctaecatarinae***
- ***Jenynsia tucumana***
- ***Jenynsia unitaenia***
- ***Jenynsia weitzmani***

Jenynsia onca is one of fourteen ALA recognized *Jenynsia* species and is starting to become readily available in the hobby. The 2016 ALA Convention attendees were given the opportunity to purchase these fish which were made available as a donation to the ALA.

According to the California Academy of Sciences http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp) *J. onca* is found in the Ibicuí River basin in Brazil and Negro River basin in Uruguay. Some of the *Jenynsia* species can be found in brackish habitat but *J. onca* is strictly fresh water. They do well in most temperature ranges and water parameters but using caution against extremes is advised.

These cousins to *Anableps* sp. love insects and other aquatic critters that make up a high protein diet. I fed mine frozen bloodworms, flake food, and live mosquito larvae.

The three males kept the female very busy moving around but the plant growths allowed her places to rest and relax. Normally I keep a ratio of two or three females to one male but I didn't have that luxury with this group. Within a month the female started getting very gravid and spent quite a bit of time hiding.

I found seven large fry one evening at the surface of the tank dashing in and out of the clumps of Hornwort. They weren't being chased by the adults but perhaps their natural instinct was taking over. I fed them small pieces of flake food along with feedings of microworms. I have had good luck using microworms with all my livebearer fry as they provide a good fat content allowing for steady growth.

I was able to sex this species at two months old so they mature very early. Females are larger than the males and are much stockier in their body shapes.

I would consider this species to be a challenge to keep and breed but very do-able. Be patient, feed them often and as always, keep their water changed on a regular basis. **Blessings**!

Missing Vowel letters– Plant Wordsearch

Figure out the plant names. The missing letters will be E,A,I,O,U

Reprinted from the Sarnia Aquarium Society Newsletter: Aqua Antics, January 2017

R	A	D	I	C	A	N	S	W	O	R	D	V	E	E	A
S	R	A	E	T	Y	B	A	B	F	R	A	W	D	C	L
Y	O	K	J	A	R	I	M	S	V	M	N	T	L	A	I
D	J	Z	L	A	R	O	I	Y	A	F	N	R	U	L	H
E	R	O	E	E	V	R	W	Z	R	A	M	W	D	R	P
A	J	O	T	L	A	A	O	T	L	I	S	A	W	A	O
X	B	S	W	H	O	N	F	P	R	P	O	T	I	C	R
B	I	M	C	S	S	T	E	E	I	O	C	E	G	S	G
W	L	A	O	W	N	A	S	R	R	F	H	R	I	A	Y
W	N	X	O	B	S	O	A	W	Q	N	W	S	A	G	H
A	I	R	I	N	M	L	L	B	O	S	V	P	V	A	S
Q	D	O	A	M	I	A	O	E	X	R	K	R	M	D	C
O	W	L	I	S	I	Y	C	N	M	X	D	I	O	A	E
D	A	M	O	N	E	Y	W	O	R	T	Y	T	S	M	X
B	T	N	A	L	P	E	L	F	F	U	R	E	S	Q	K

_M_Z_N SW_RD
_N_CH_R_S
B_L_NS_ _ PL_NT
C_MB_MB_
DW_RF B_BY T_ _RS
H_RTW_RT
HYGR_PH_L_
J_V_ F_RN
L_DW_G_ _
M_D_G_SC_R L_CE
M_L_N SW_RD
M_N_Y W_RT
M_SS
MYR_ _
_Z_L_T SW_RD
R_D_C_N SW_RD
R_FFL_ PL_NT
SP_R_L_S
W_T_R SPR_T_
W_ST_R_ _

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Charles Hoppe	Several 10 and 15 gallon tanks, including wooden rack. The stand is steel and it holds 12 ten gallon tanks. It has fluorescent lights and air valves for the 12 tanks. Makes a nice small fishroom. Extras, contact me if interested.		(314) 846-4648 charliehoppe@me.com
Mike Hellweg MiniFins	General Aquarium Support: Dechlor, Coconut Caves, Flake Foods, Plants & Custom Fish Orders Contact by email or buy at the back of the room at MASI General meetings	Contact for Pricing	Email: Mike@Minifins.com

Got $$$$ swimming in those Tanks?

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