

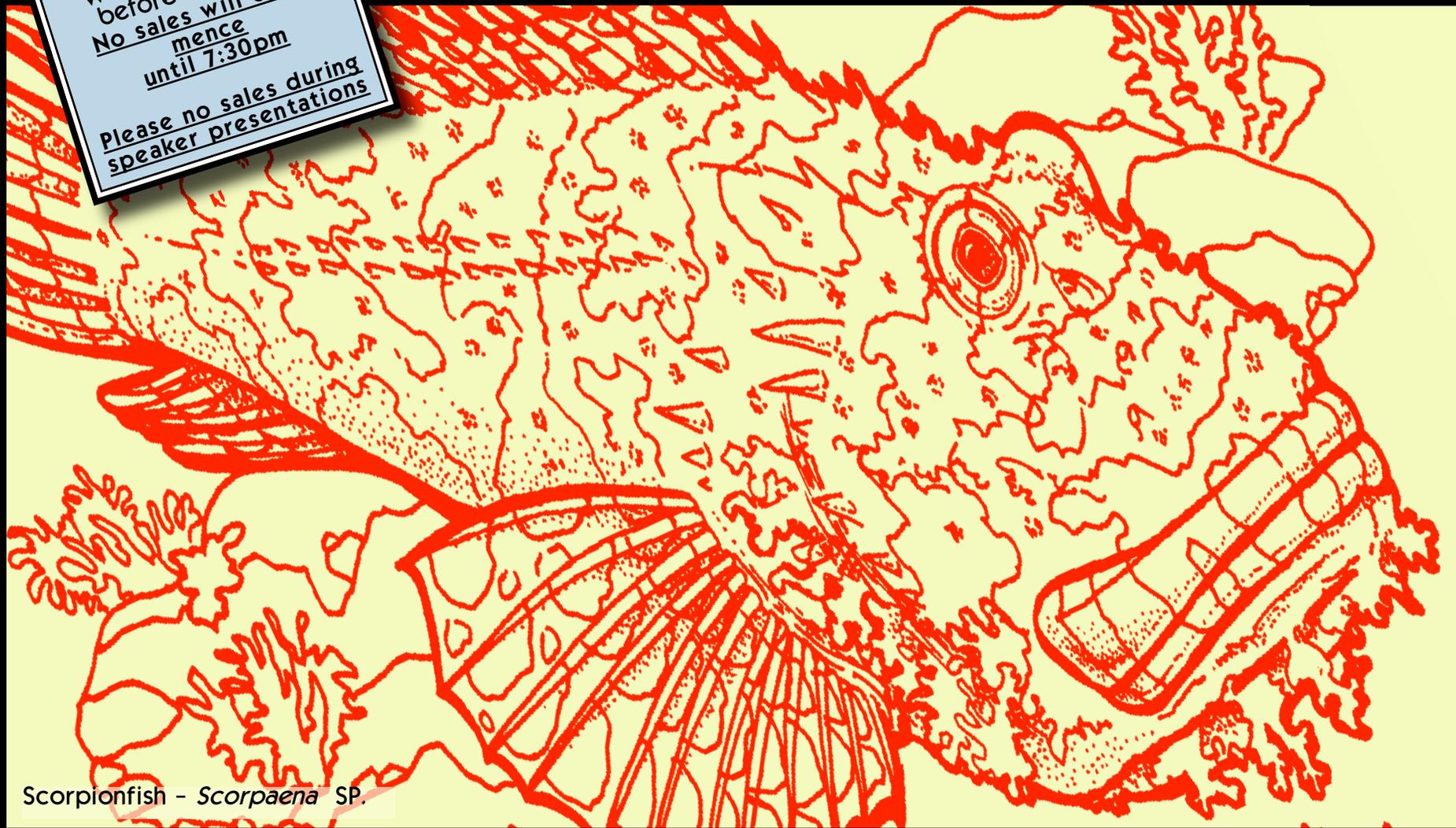


# AQUATICA

THE JOURNAL OF THE BROOKLYN AQUARIUM SOCIETY  
VOL. XXIV MARCH ~ APRIL 2010 No. 4

All BAS meetings  
begin at 7:30pm.  
No members, other  
than those donating  
their help setting up or  
items for the auction,  
will be allowed in  
before that time.  
No sales will com-  
mence  
until 7:30pm

Please no sales during  
speaker presentations



Scorpionfish - *Scorpaena* SP.



# AQUATICA

VOL XXIV • MARCH/APRIL 2010 • NO 4

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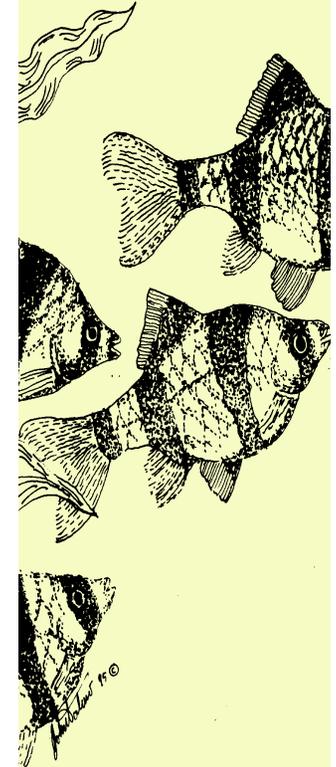
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The **Brooklyn Aquarium Society Inc.** is a non-profit organization 501(c) (3) for people interested in the aquarium hobby and the study of aquatic life. The Society meets the 2nd Friday of each month except July and August at the Education Hall of the New York Aquarium at Coney Island, Surf Avenue at West 8th St., at 7:30 PM.

Meetings are open to visitors. Refreshments are served. Membership is \$25 per year family/\$20 individual/\$15 for students under 14. Send inquiries or membership checks payable to:  
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On occasion, the Brooklyn Aquarium Society uses its mailing list to send notices of interest other than society business to our members. If you do not wish to have your name used in this manner call **the Hotline** 718 837-4455 and leave a message.

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# BROOKLYN AQUARIUM SOCIETY CALENDAR OF EVENTS 2009-2010

**APR 9 Tony Pinto ~ Knee Deep In Fish: Collecting Bettas & Anabantids In Borneo** • Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction. Discount books & sales • Door prize • Raffles.

**MAY 14 Spring Auction Extravaganza** ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods auction including a new 55 gallon tank & stand  
• Discount books & sales • Raffles • Door prize and much more.

**JUN 11 Meet The Experts: You Have Questions? ~ We Have Answers!** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales • Door prize • Raffles.

**SEPT 10 Jeff Bollbach ~ A Year In The Fish Room** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales  
• Door prize • Raffles.

**OCT 8 Fall Giant Auction** ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods auction including a new 55 gal. tank & stand • Discount books & sales, Raffles • Door prize.

**NOV 12 Pat Donston ~ Reef Care Conflicts, Who's Right?** • Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales • Door prize • Raffles.

**DEC 10 BAS Holiday Party** ~ Members, their families and friends, all you can eat sit-down dinner • Fish Bingo & Prizes • BAS Awards presentations

2011

**JAN 14 Rit Forcier ~ Freshwater fish**

**FEB 11 Christine Williams ~ When Aquariums Attack! Bites, Stings, Infections & Other Unfortunate Events & What To Do!** • Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales • Door prize • Raffles.

**MAR 11 TBA ~ Freshwater Speaker**

**APR 8 Leslie Harris Life Styles Of The Wet And Spineless** Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales • Door prize • Raffles.

**MAY 13 Spring Auction** ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods auction including a new 55 gallon tank & stand • Discount books & sales • Raffles • Door prize and much more.

**JUN 10 Possible Speaker: Ad Konings ~ African Cichlids**

**JULY 8 100th Anniversary Party**

**SEPT 9 TBA ~ Marine Speaker**

**OCT 14 Fall Giant Auction** ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods auction including a new 55 gal. tank & stand • Discount books & sales, Raffles • Door prize.

**NOV 11 Anthony Stissi ~ Lake Tanganyikan Tropheus Species** Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount book & sales • Door prize • Raffles.

**DEC 9 BAS Holiday Party** ~ Members, their families and friends, all you can eat sit-down dinner • Fish Bingo & Prizes • BAS Awards presentations

All Events held the 2nd Friday of the Month at 7:30pm at the Education Hall of the New York Aquarium ~ Surf Avenue & West 8th Street ~ Brooklyn, NY (unless stated)  
We request a \$5 Donation for non-members, good towards membership the night of the event only.

**FREE REFRESHMENTS AND FREE PARKING AT EVERY MEETING - UNLESS STATED**

## NOTICE TO ALL MEMBERS

A motion was made, seconded and passed at the March board meeting (3/7/08) that membership cards be made up and handed out the night a person joins the BAS. If you join or renew by mail you must come to the next general meeting to get your card. Publications will still be sent by mail.

Web memberships do not get a card, and only get publications that may be on-line. The cost of mailing has gone up and this is a cost-saving measure.



## Spawning Angels

I have been keeping fish for a long time, actually as long as I can remember. I have kept many different species from reef, to salt, to fresh. I have bred many types of livebearers over the years, but never egg layers, at least not until recently. My Koi angels recently spawned (given to me by a friend and B.A.S. member Bob Strazzulla), Bob had given me some angelfish from his personal supply. I really wasn't even trying to breed them, but it happened anyway.

About two months ago my wife woke me up to tell me the angels were laying eggs, and I had to come down and look. I'm glad she did, because it is a pretty cool thing to watch. I have seen a lot of livebearers have babies, and that also is a great thing to watch, but this is about a male and female working together the female laying the eggs and the male following up to fertilize them, working together as one. They picked a leaf on the *Anubias* plant in the tank to deposit the eggs. The first thing I did was to put up a divider to keep the other fish away. The other fish were trying to get to the eggs, and the parents were

defending them. It shows you how the parenting instinct takes over. I used some egg crate material covered with an air conditioner filter to keep them separated.

The next day I called another friend and B.A.S. member, **Joe Cingari**. Joe has tanks all over his house filled with his own spawn of angels, so I figured he has to know a little something about rearing the fry. I would pick his brain a little. After all, that's one of the great things about being part of an aquarium society - sharing ideas and experiences with each other.

I have also picked **Joe Graffagnino's** brain on

many occasions, and I don't want to leave him out. Take information from different breeders, and then use what you want to come up with what works best for you.

I have tried a few different ways of rearing the fry. First thing was to set up a five gal tank with 100% of the water from the parents' tank. Only fill it half way at first because it's easier for the fry to find food. Use an air stone, box filter, or sponge filter, set the aeration low, but enough for movement around the eggs.

Take the eggs out as soon as the parents are finished. This works well, as long as you keep removing the eggs that turn white (which



is fungus) because they are not fertilized, and will in turn spread the fungus to the fertile eggs. The best way to remove fungused eggs is to knock them off with a thin rigid tube, and siphon them out. I used this method with the first batch. The problem I found is when the eggs are removed, the parents started fighting. It appears that they were blaming each other for the loss of the eggs, so I had to separate them immediately. It's a good thing fish have short memories. After three or four days I put them back and they seemed to forget all about it.

Like clockwork, two weeks later they started spawning again. This time I wanted to try a different approach. I would leave them in to see how their parenting was. I watched them as often as possible, and they appeared fine. They were taking turns blowing on the eggs, and guarding them even though they were the only fish on that side of the divider. In a couple of days, you could see the fry trying to get out of the egg sacs. The parents

## Spawning Angels

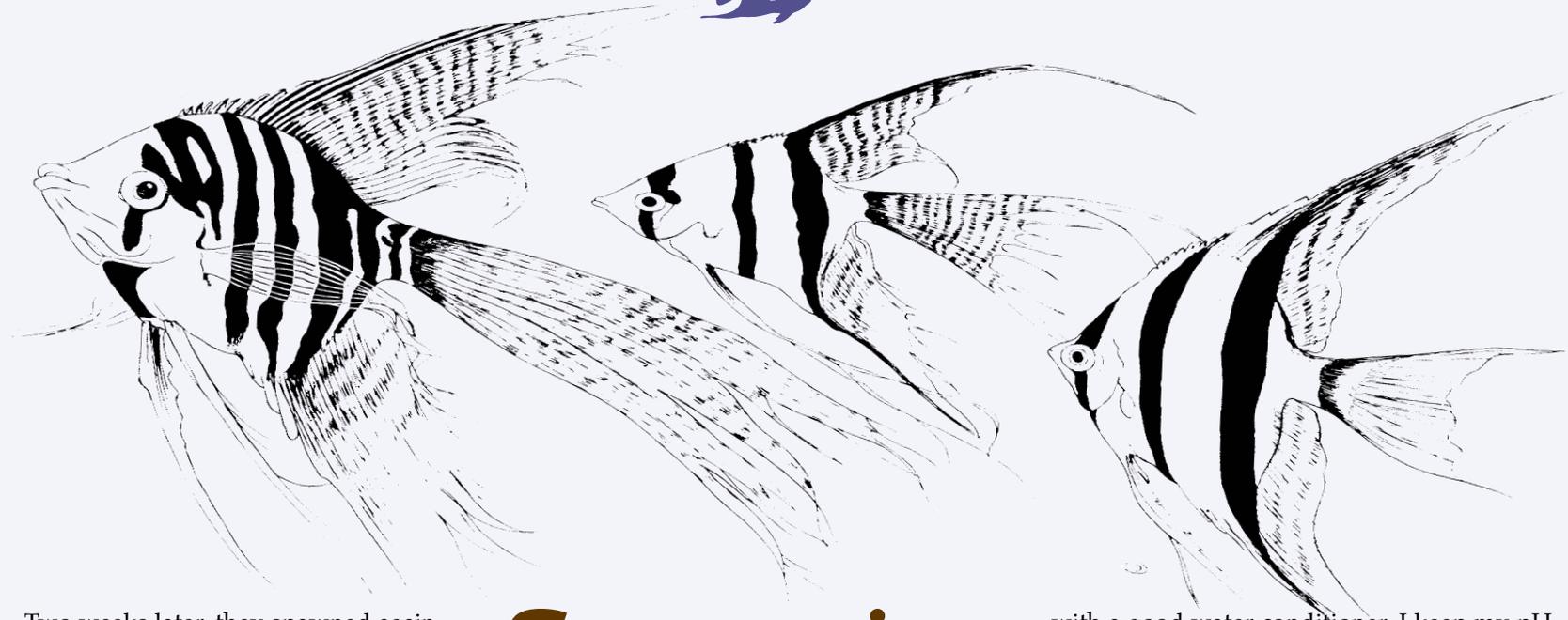
**They picked a leaf on an *Anubias* plant in the tank to deposit the eggs. The first thing I did was to put up a divider to keep the other fish away.**

were still watching over them like hawks. I kept a close eye on them, and a few days later they were hopping on the plant leaf, but still not able to swim. In a few more days, I saw

they were all swimming, and surrounding the parent. A hundred or so-like a swarm of bees around the parents, was another very cool thing to witness. If the fry would swim too far away, the parents would take them in their mouths and bring them back to safety.

I figured I had great parents, and I would leave them to see what happened. Unfortunately, what happened was two days later they ate all but four of the fry. I wasn't very happy with this method. I would try something different next time.

Two weeks later, you guessed it, they spawned again. I wanted to try leaving the eggs in again, but this time I would remove the fry as soon as they were free swimming, but I was afraid they would fight again. I removed about half the fry the first night and the rest the next day. The parents seem to be fine... when I removed only half, they were not fighting. With this method, I was able to get about fifty fry out, but the parents probably ate some.



Two weeks later, they spawned again. This time, as soon as they were free swimming, I removed all of the fry. The parents started fighting again, as soon as I removed the fry, so I separated them for about four days to prevent the fighting and also give them a break to recuperate before putting them together again. It's a good idea to separate them just so they could get a rest from spawning. If you don't, they will just keep spawning until you burn them out. The male I have is relentless (like most males), so I have to separate them or he will torture the female.

Raising the fry was another issue. I did not want to start raising brine shrimp, so Joe had given me some vinegar eels. He also told me to try frozen baby brine shrimp. They both work well, so I would switch off to give them a little variety. As the fry get a little bit bigger, you can crush flake food very fine or buy fry food. As long as the fry are eating, it's ok. Either way, it is very important to remove uneaten food or dead fry, as it will pollute the

## Spawning Angels

water. No matter what you do, you will lose some fry so don't be discouraged.

Keeping the water as clean as possible is crucial in raising the fry. This means lots of water changes. I change about 10% almost every day. Keep in mind the fry are very sensitive to change. The water temperature and pH must be the same. I find the best way to do this is to use the water from the parents' tank for water changes. You kill two birds with one stone. You are doing water changes in the parent tank as well as the fry tank at the same time. As the fry get bigger, you can mix fresh water in with the water from the parent's tank. Just don't forget to adjust the pH and temperature and of course remove chlorine or chloramines

with a good water conditioner. I keep my pH at 7.0 and my temperature about 78-80° degrees Fahrenheit.

When the fry are first hatched, they do not look at all like angels, but after a few weeks as they get larger, they will take the angelfish shape.

As they start to get bigger, this means larger grow out tanks, or more tanks. If the spawns get too much to handle, you can always separate the parents until you are ready again. If you have too many babies, you can always donate some to the Society. That's what keeps aquarium societies going. It's also nice to talk to other members who have obtained your spawns to see how they are doing, and maybe even breeding them.

Egg layers are an experience you will not forget if you are lucky enough to catch them in the act, so give it a shot and enjoy. I have to go, they are at it again.

Good luck. 

Robert Fenner - Reprinted with permission, from Bob's website in San Diego: [www.wetwebmedia.com](http://www.wetwebmedia.com) Aquarticles

# Treating Tap/Source-water for Marine Aquarium Use

**M**ost municipalities disinfect their drinking water with chlorine or chloramine. These chemicals are deadly toxic to disease-causing microbes, unsightly, distasteful algae, and unfortunately, our desired aquatic life! Present practices result in a highly variable tap-product one that should be monitored and must be dealt with, either by storage/aeration over an extended period, conscientious treatment, or very slow and/or limited water change regimens.

This article will familiarize you with the whys of these sanitizers, your options in dealing with them, and symptomatology & therapy for poisoned livestock. Hey, I'll even give you my version of "the best way" (according to the Fishman) to render tap water usable. Ho-boy!

## Why Do We Have To Deal With This Stuff Anyway?

Always a good question. Answer: Because it's there. Water intended for human consumption: drinking, bathing, washing, what-have-you is rendered biologically zippo (that is, nothing living in it) by semi-unselec-

tively poisoning it with materials that are supposedly not very toxic to us.

As the story goes, there was/is a high positive correlation with the blending of free chlorine with organics, present more and more in source waters, resulting in compounds termed tri-halo-methanes (spelling mine). Tap water in the U.S.A. used to be primarily treated with chlorine as a gas, or liquid (principally as the bleaching agent, sodium hypochlorite, aka hypochlorous acid). Due to the aforementioned problem, linking colonic cancers with tri-halo-methanes, the fed EPA saw fit to pass laws supplanting free-chlorine-liberating means of potable water sanitizing with the less noxious

(as far as colonic cancers go) but more persistent chloramines. But, dear reader, please allow me a short digression:

There are still places where this magazine reaches, like Britain and Japan, where chlorine is still in vogue, and even (gasp!) Western Europe, and some commune(ities) utilize the commie-subterfuge-itself, fluorine(!). And so, let us have a slight review of the ole High School level qualitative chemistry, shall we? As you'll recall, in the most popular presentation of the primary building blocks of the universe (atoms), there is an arrangement of these elements in a Periodic Table, or Chart.

By definition, the vertical columns in the



periodic chart of elements are called Families of elements. Ostensibly, all members of a given family share alike chemistries on the basis of kindred arrangements of electron-cloud configurations. The column immediately adjacent to the far-right family of noble gases, is termed the halogens (note the similarity of halo above and halogen here). Geez, anyway what I'm trying to get to here is that all members of the halogen family (halogenated be thy name?) act (poison) the same. Fluorine, Chlorine, Bromine, Iodine and Astatine. Anywho, all these atom-types are very reactive, wanting only one more electron to fill out their outer electron cloud, but that's another story (thank goodness). They all will kill your fish, inverts, algae, live-rock, whatever you have, in sufficient concentration. On with this story.

Chlorine (Cl 2) bound up with ammonia (nominally NH<sub>3</sub>) we'll call chloramine. This critter is responsible for almost as much captive

mortality as hobbyist-generated-booboos! No small feat. And the reason(s) why? Let's make that a separate article, okay? Suffice it to write here that:

- 1) Chloramine is present in toxic quantities in virtually/actually all city water supplies,
- 2) It takes a good week or so to "dissipate" by "setting," "aeration," "hopeful wishing," or other such means, or
- 3) Can be neutralized by various store-bought or home-made chemical conditioners, some only effective with concurrent contactor filtrants (e.g., carbons, zeolites) to remove resultant ammonia. But most all wanna-be advanced-aquarist-types know some version of this extended-greatest-fish-poisoning-story-ever-told.

Basically, know this, the water district types are not your best fishy buddies. For various reasonings, they fool with the water, very occasionally yielding a more and more toxic product that you must remain vigilantly suspicious of.

### Mode Of Action:

Chlorine, Chloramine, Fluorine compounds, et al. are hemolytic in their action, splitting up blood cells. Additionally, in sufficient concentration, the actual gill membranes will dissolve in their presence. Both these reduce respiratory capacity (no duh!).

What's A Pet-Fish Type To Do? First and foremost, be aware! How else are you going to "get by" in the world, let alone optimize your opportunities? Next, determine whether you're going the intensive versus extensive (lazy) mode. In the former, extend your senses and get a test kit for chlorine/chloramine. How 'bout an advertisement/schpeil here? Okay! Aquarium Pharmaceuticals has a nice inexpensive liquid-reagent variety, Hach and LaMotte have some nicer units for the hoi polloi, and there are even electronic types for the lottery-winning, ultra-tech-ee. The extensive/lazy approach is to MAKE FREQUENT, SMALL WATER CHANGES (boy, that's bright on the old word processor), say 10-15% at weekly/twice-monthly intervals, gambling on absorption, complexing of tap sanitizers with "what's in your system." 3) The last and generally least desirable, but necessary to discuss means are directly chemical in nature. You know their names, the sundry new/tap water conditioners. Let's not name-names directly here, but do let us make a general classification scheme/discussion on the basis of apparent activity, and some letting-on concerning ingredients...

**A)** Dechlorinators: These are the tried and true (sodium) thiosulfate, aka hypo, or hyposulfite compounds. Yes, this is the same stuff you may be familiar with in terms of photographic developing chemicals for (surprise!) removing free chlorine to eliminate interaction with silver... More on this real soon.

**B)** Dechloraminators: Here I mean ones that "really" work, that is, that take care of both

chlorine and ammonia. These typically involve poly-vinyl compounds. This is a big hint!

**C)** Pea Suede Oh (pseudo), read that as phoney "Dechloraminators." Yes, there are products, some quite popular, that profess to "remove chloramine in "one-step." A vital clue here is their formalin/formaldehyde smell. What a scam! These products "work" by 1) poisoning your livestock such that it produces slime and other materials in response to the formalin and thus precludes chlorine/chloramine from entering their bodies, and 2) as a placebo, albeit toxic one, where no treatment was necessary.

Don't believe me? Get a test kit and do the simple experiment. How do these companies stay in business? People buy their stuff out of ignorance. Don't be ignorant.

### Too Late, I Already Blew It:

What can you do if your livestock are poisoned by these sanitizers? You have to act quick, seconds, to minutes, to (rarely) hours. Depending on the source and degree of the problem, do (in order of possibility):

- 1) Move your livestock to a non-toxic environment. Keep your eye constantly on your charges, especially for bullying.
- 2) Treat the water! You twit! With items listed in 3 & 4 below.
- 3) A real dechloraminator, and definitely not with a phoney one. More mucus production and hemolytic activity by formalin poisoning will only exacerbate pushing your critters over the edge. Watch the dosage. Do not overtreat!
- 4) Engage filtrants (carbons, zeolites, appropriate resins) to remove the source of the problem.

5) Flush the whole mess and start over again. Oh sorry, just kidding. Other Sources of These Noxious Chemicals:

Principally from "cleaning" ornaments and tanks with "chlorine bleaches" and household cleaners' fumes and aerosols making their way into your tanks. What you can do to avoid these despicable circumstances should be obvious, and I don't get paid by the word, but here's a gander at poisoning prophylaxis: A) Rinse the dickens out of whatever cleaning stuff you're using, air-dry, use a cheapy bio-assay, break-down and buy/use a test kit, will you? 2) Be careful, don't use ammoniated or chlorine-containing and releasing compounds around your system, geez. 3) Flush the whole mess, no, not this again!



### How To Save Your Livestock, Your Sanity, & Your Pocketbook:

My real advice is really to just do frequent partial water changes and not sweat it, but, in reality, if you're changing a lot of water, I would suggest what I and our service company do:

Batch process your water with, I mean cheap, home-made hypo solution purchased from a chemical/lab or photo supply outlet and either pump/drain your supply water over a chemical filtrant (cited above) to remove the remaining ammonia. Sodium thiosulfate at about two pounds dissolved in a total volume of one gallon, used at one-two drops per tap gallon is about right. There are folks who sell this stuff through the magazines, if you won't get off your duff and check out your local "yellow pages."

### And the Very Best Method!? None At All: Premixing/Storing Saltwater

The simplest, most assured way of making sure sanitizers, metals (that can be settled/complexed), excess gasses... are removed from solution ahead of using synthetic salt mixes is to pre-mix and store them for a week or so ahead of use. This is best accomplished by way of buying and dedicating "Fish Tank Only" gear to the purpose. A new (my favorite are the Rubbermaid (tm) Brute) trash can and lid (to keep little hands and stuff out) maybe with their spiffy dolly to roll around... a pump (like a powerhead, but with a nozzle for attaching a bit of flexible tubing to ease moving the water to your system(s)... and possibly a thermostatic heater (make sure and unplug this when doing addi-



tions)... and your trusty hydrometer...

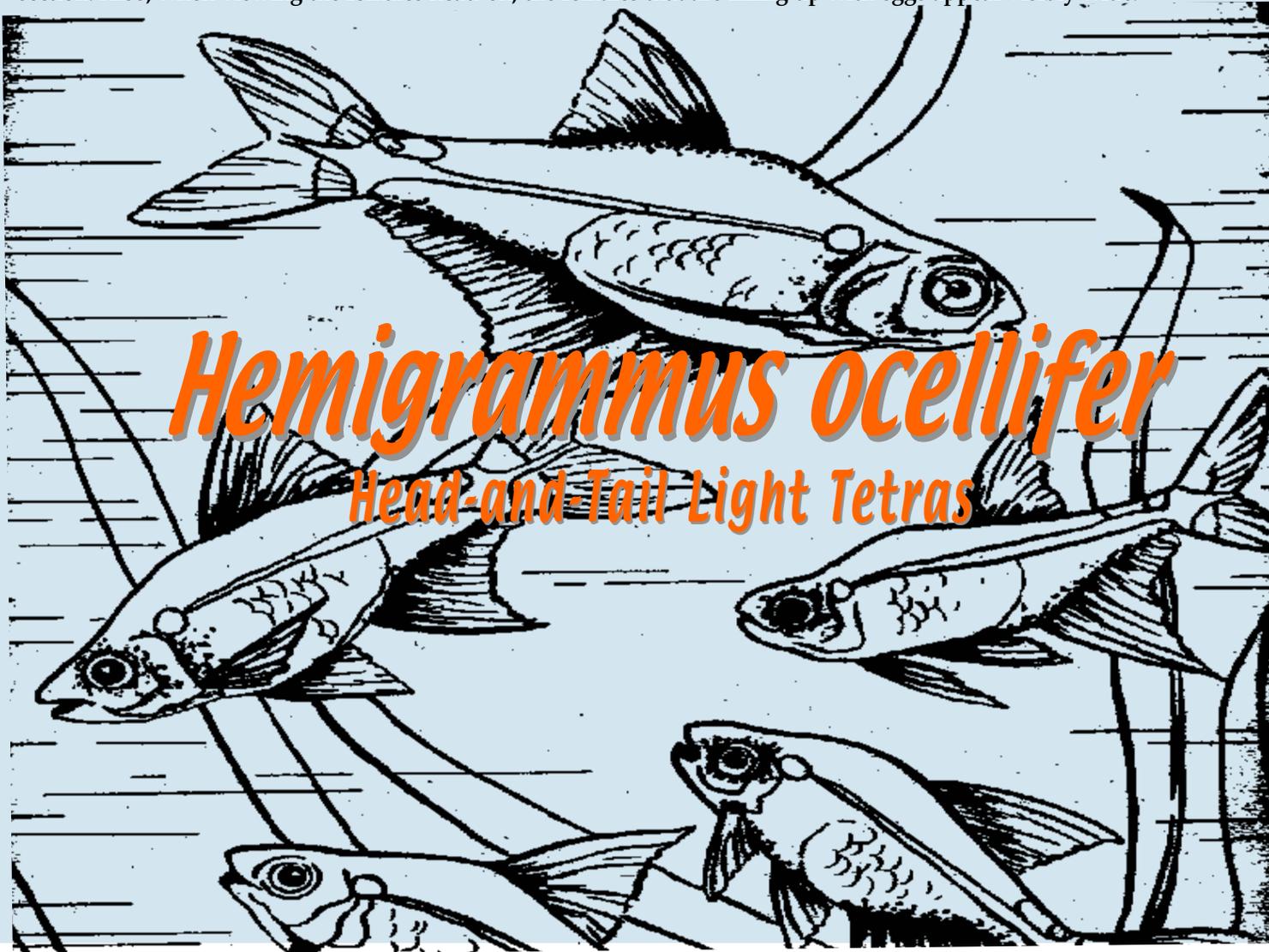
By allowing the new water to mix and circulate, many things are done... chlorine/amine are liberated, perhaps excess gas, metals... and the various soluble and not so components of your salt mix are able to completely solubilize ahead of use.

**Lets Wrap This Thing Up Already:**

Chlorine and chloramine poisoning are significant causes of livestock loss. The sources of these sanitizers and their testing, removal and therapeutic treatment has been surveyed. If you won't invest in and use a test kit, be chary of massive water changing, or at least use "real" dechloraminators. Thanks! 

David Snell From *Delta Tale*, Vol. 32, #3.  
Potomac Valley Aquarium Society Aquarticles

I purchased a pair of Head-and-Tail Light tetras from the Centreville Aquarium shop in late October 2000. I put them into my tetra conditioning tanks. As with other *Hemigrammus* species, it's fairly easy to distinguish the males from the females. The males are more slender than the females, while the females appear to be more full and round in the mid-section. Also, when viewing the females head-on, the females that are filling up with eggs appear visibly wide.





The conditioning tanks had a pH of 6 to 6.3 and a conductivity of 380ms. The tetras were fed mainly frozen bloodworms, live blackworms, newly hatched brine shrimp, and live fruit flies. In a few weeks' time, the female was very noticeably filling with eggs.

For my spawning tank, I had set up a 5.5 gallon tank that was filled with about 3 gallons of RO water, with a conductivity of 50ms, and a pH of 6.3. The water temp. was about 78-80°F. The water was treated with a double dosage of Kent Blackwater Extract. I attached a small piece of Java moss to a small lettuce clip that was attached with a suction cup to the back glass panel. On the bottom of the tank was my home-made spawning grate that would allow the eggs to fall to the bottom of the tank and be separated from the adults above. Since tetra eggs can be light sensitive, the tank was covered with a dark towel to reduce the amount of light.

The pair was placed into the spawning tank on November 19th. Two days later in the morning, the pair had spawned. I noticed there were about 300-400 eggs. It looked like about 10% of the eggs had already fungused. The adults were immediately returned to their conditioning tanks. I was concerned that more eggs would fungus during the course of the day so I left the towel covering the tank.

Within 24 hours, the eggs started to hatch and I could see wigglers on the bottom of the tank. The fry only looked a few millimeters long and they looked like small slivers of glass. Within 36 hours it appeared that all the viable eggs had

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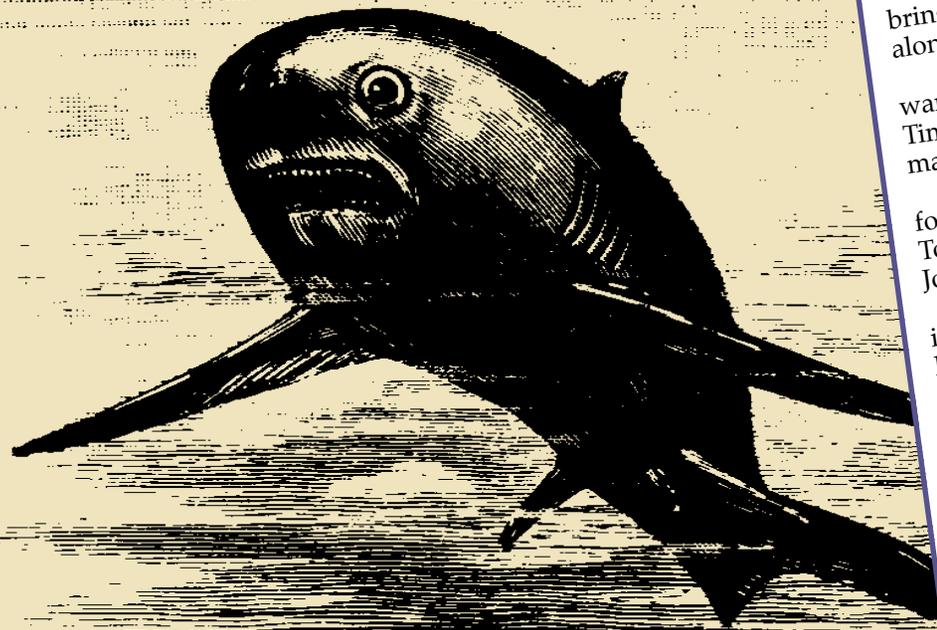
hatched. There were 300 or so fry on the bottom of the tank. By the second day, I added ½ cup of water from my paramecium culture to make food available to the fry when they became free swimming. As with the *Hemigrammus erythrozonus* fry, I found the *H. ocellifer* "hanging" on the glass nearly motionless.

On the third day, I added another ½ cup of paramecium to the spawning tank. By the 5th day, all the fry were free swimming. The number of paramecium visible in the tank had declined. On the 6th day, I decided to try and start feeding the fry newly hatched brine shrimp. Although the fry appeared to be too small to consume newly hatched brine shrimp, the fry were able to eat it without much problem. At this point, I discontinued feeding paramecium and continued the newly hatched brine shrimp.

I started doing water changes about once a week with more RO water. The Head-and-Tail Light tetras seem to grow more slowly when compared to the growth of the Glowlight tetras. The 5.5gallon tank was not likely the ideal size tank for raising them.

Over the course of the next two months, it was clear that the number of fry were declining, but the strong remained. At about 6-7 weeks, the color of the fry started to look like the adults with the noticeable "head and tail" light. At about 2.5 months, I had about 80-100 remaining tetras. I moved about half the tetras to my 75 gallon planted tank, and I auctioned off the other half in 4 bags at the PVAS 2001 Winter auction. 

# ...AND IT GETS EVEN FISHIER!



BERJEAU

A Canadian developer is proposing bringing sharks back to Times Square -- along with rays and penguins.

**Jerry Shefsky** said yesterday that he wants to build a seven-story aquarium at 11 Times Square and fill it with a menagerie of marine life.

"It's anything but an aquarium in the format you might imagine," the 76-year-old Toronto-based developer told the Wall Street Journal.

Shefsky said he has signed a preliminary agreement with SJP Properties Inc., landlord of the 40 story tower at 42nd Street and Eighth Avenue.

He said his \$100 million plan, pending for the finalization of a lease agreement, calls for the installation of tanks on the bottom floors that will house sharks, stingrays, otters, penguins and other marine life.

Shefsky told the Journal that the project also includes a pirate museum. His company, Aquarium Developments Corp., built the million-gallon Newport Aquarium in Kentucky. 

Dan Hagan runs [TheShrimp Farm.com](http://TheShrimpFarm.com). This site sells freshwater shrimp. Dwarf freshwater shrimp are the perfect aquatic inhabitants for your under water planted garden. If you're interested in keeping dwarf freshwater shrimp or have a question about them, go to Dan's blog site and ask your question. It's a great site with reliable and accurate information on dwarf shrimp, [ShrimpFarm.com](http://ShrimpFarm.com).

## PUT A TIGER SHRIMP IN YOUR TANK!

**T**iger shrimp History - The Tiger shrimp comes from South East Asia, and was one of the first *Caridina* species to become popular in the United States after the Amano shrimp was introduced. There are 3 color variations of the Tiger shrimp available in the hobby, the wild type, Blue Tiger shrimp and the Black Tiger shrimp



Scientific Name: *Caridina* sp.  
 Other Scientific Names: N/A  
 Common Name: Tiger shrimp  
 Other Common Names:  
 Origin: South East Asia  
 Found in the wild: Yes  
 Ph Range: 6.0 - 7.25 Ideal Ph 6.5  
 Temperature Range: 68-75 Ideal Temperature 72  
 Hardness Range: 2-10 dkh Ideal Hardness 3 dkh  
 Life Span: 1 - 2 years Size 1-2 inches  
 Gestation Period: 30 days  
 Diet: Omnivore

### Tiger shrimp Care

Tiger shrimp are one of the easiest *Caridina* species to care for. They do prefer softer and slightly acidic water. Adult shrimp can adapt to harder more alkaline water, but their lifespan may be affected and breeding will be greatly reduced and sometimes even prevented. As long as the aquarium water is slightly acidic and soft, the Tiger shrimp requires no special attention. As with all Dwarf shrimp, it is important to keep all water parameters constant.

**Tiger shrimp Diet** Tiger shrimp are natural algae eaters and will be seen grazing on algae often. When the Tiger shrimp is kept in larger groups it is often necessary to add extra food for the shrimp. As with most other Dwarf shrimp, the Tiger shrimp will happily accept food intended for bottom feeding fish and any aquatic invertebrates. They are also very fond of blanched vegetables.

**Tiger shrimp Breeding** If all water parameters are kept constantly within the Tiger shrimp's requirements and a male and female are present,



the Tiger shrimp will breed easily. The males and females can be difficult to sexually differentiate, but the female has a bit larger and wider tail section in order to carry the eggs. Also, when the female is sexually mature, you may be able to see a saddle on the female if her coloration allows.

**Tiger shrimp Behavior** Generally a non-aggressive Dwarf shrimp, the Tiger shrimp can be quite a fascinating shrimp to observe. They do not harm any other aquarium inhabitants, and get along with most other Dwarf shrimp

When there are no predators present in an aquarium, the Tiger shrimp will be quite active, foraging and cleaning the aquarium of algae.

**Special Notes** As with all aquatic invertebrates, it is important to make sure copper does not get into the aquarium. Copper is toxic to all Dwarf shrimp. Many medications contain elevated levels of copper, so it is recommended not to medicate an aquarium with Dwarf shrimp in it. 

Dr. William M. Stoke, B.Sc., M.R.C.V.S.  
 (Department of Veterinary Anatomy, University of Edinburgh).  
 Originally printed in Pet Fish Monthly as  
 'How to recognise the existence of ill-health in a fish.'  
 Aquarticles

# DANGER SIGNS WITH YOUR FISHES

**P**REVENTION is better than cure. Few aquarists are not familiar with that age-old adage. Yet how many are aware of its import in modern aquatics?

Too few for their own good and for the good of their stock, for though the last decade has seen many important advances in the treatment of diseases in freshwater fishes, our knowledge of their internal diseases and disturbances is still relatively scant. Certainly scant enough anyway to make the recognition of general disease symptoms of the utmost importance in the treatment of ailing stock, the prevention of tank epidemics and the general understanding of water-borne infections. The intention of this article therefore is to elaborate the general indications by which an upset in aquarium health can be recognised.

Not that the diagnosis of any disease can usually be made without proper investigation and, if possible, extended observation of the 'patient.' And the fish, an actively mobile aquatic creature, necessarily shows its own characteristic range of symptoms.

One of the first to be observed, for instance, is usually a **change in the normal mode of swimming**. Locomotion, obviously out of control, becomes aimless: the fish swims jerkily and in small circles, is unable to maintain an even keel, or to raise itself should it sink to the bottom. In extreme cases, the loss of equilibrium can go so far as to make the fish swim upside down, abdomen turned towards the surface. And if symptoms like these appear amongst fish under observation, one specimen should be sacrificed for investigation, for symptoms of dis-

ease in fishes can differ according to its particular nature

Even so, there are several other common denominators by which it is possible to recognise whether or not a fish is in good health:

**CONTOURS:** Healthy fishes show clean, plump bodies and erect, untorn, not ragged fins. A persistently clamped dorsal fin is a sure sign of ill-health for which a remedy should be sought, be it due to nothing more than too low a tank temperature. Swelling of the belly on the other hand - other than in egg-bearing females or pregnant live bearers - may be due to internal parasites, in which case blood-flecked excrement and associated enteritis should be evident, or more commonly it is caused by dropsy, whereupon the accumulated fluid can often be evacuated by means of a hypodermic needle.

# DANGER SIGNS WITH YOUR FISHES

**COLORATION:** Loss of colour and general pallor is a typical and alarming sign usually caused by metabolic or circulatory disturbances. Bacteria and microsporidia, affecting the skin or the muscles, may also cause the same symptoms. On the other hand, discoloration may occur temporarily through lack of light or oxygen, or both: it can occur if a fish is frightened, or if a strong light is shone into a tank which has been in darkness for some time, while females of some species often lose colour after spawning. If discoloration occurs without apparent cause, however, and if it continues for some time, it can be taken as symptomatic of disease.

**DISEASES OF THE SKIN** such as fungus, 'ich' and 'velvet' can frequently be recognised not only by discoloration of the body, the appearance of

small blood-stained patches (echymoses) in the skin and muscles and the formation of a grey slime, white spots or ragged white or brown patches, but by the behaviour of the affected fish, when irritation causes it to rub its body against stones, plants or other surfaces. The latter can also be indicative of minor digestive upsets in greedily-feeding fishes like barbs though, when a pinch of bicarbonate or a few drops of whisky added to the water prove ideal remedies.

**RESPIRATION AND APPETITE:** The respiratory rate of healthy fish depends largely on their size, metabolic rate and surrounding water temperature. Irrespective of pace, however, the rate should be regular and without any bursts of gasping. Otherwise, pale gill sheets is an inevitable sign of ill-health, those

of healthy fishes appearing bright pink unless the gills are pigmented as in the fighting fish *Betta splendens*. The recognition of feeding anomalies is extremely difficult, for complete refusal to feed is not necessarily a sign of illness. Many fish fast while their ovaries mature simply because their enormously swollen ovaries leave no space for the dilation of their stomachs and intestines - so, many fish, notably the *Pterophyllum* species, may take only one kind of special food and starve to death if this is not available. On the other hand loss of appetite (anorexia) may be subsidiary to several other causes, the least harmful of which can be a simple rise in tank temperature. If accompanied by swelling of the belly, however, particularly amongst fish with laterally compressed bodies, it is usually indicative of constipation.



# OPENING MARCH 20, 2010

**WILDLIFE CONSERVATION SOCIETY'S NEW YORK AQUARIUM  
ANNOUNCES SEASON OPENING OF 4D EXPERIENCE PLANET EARTH: SHALLOW SEAS™**

**L**earning about the amazing undersea world is fun for the whole family at the Wildlife Conservation Society's New York Aquarium in Coney Island. We are pleased to announce the March 20 season reopening of an exciting attraction that will add a whole new dimension to our guests' Aquarium visit: Planet Earth: Shallow Seas™ 4-D Experience. This epic 4-D adventure gives guests the opportunity to hear the power of the ocean's waves as they crash along the shoreline. "Adventurers" will feel the salty spray as they surf the coast with Atlantic bottlenose dolphins in search of food while gliding alongside a cast of balletic sea lions diving through vast swirling bait balls of anchovy. Meanwhile, aquarium-goers can track a mother humpback whale and her calf as they navigate from their tropical nursery to the Arctic Circle. And, participants will be able to experience the greatest gathering of seabirds and whales ever captured in Digital HD.

WCS's New York Aquarium's 4D Immersion Theater combines the visual drama of a 3D film with a variety of sensory effects, which are built into theater seats and the theater environment. The theater brings on-screen images to life with added effects such as water mist, a neck air blast, snow, bubbles, leg ticklers, scents, enhanced floor lighting, and seat vibrations. The experience is \$6 per person, \$4 for members, and reopens on March 20.

Sense the pressure, feel the perils and smell

the triumph celebrating the earth as never before in Planet Earth: Shallow Seas™ 4-D Experience.

Wildlife Conservation Society's New York Aquarium opens every day of the year at 10am, and closing times vary seasonally. Admission is \$13.00 for adults, \$9.00 for children ages 3-12 and \$10.00 for senior citizens (65 and older); children under 3 years of age are admitted free. Fridays after 3pm, admission is by suggested donation. The Aquarium is

located on Surf Avenue at West 8th Street in Coney Island. For directions, information on public events and programs, and other Aquarium information, call 718-265-FISH or visit our web site at <http://www.nyaquarium.com>. Now is the perfect time to visit and show support for the New York Aquarium, Brooklyn's most heavily attended attraction and a beloved part of the City of New York. 

**FAMILY:** *Scorpaenidae*

**SCIENTIFIC NAME:** *Scorpaena* SP.

**COMMON NAME:** Scorpionfish

**REGION:** Mediterranean & eastern Atlantic

**SIZE:** up to 10 inches.

**Diet:** Live foods; small fish, can be switched to fresh frozen shrimp and fish in time.

**WATER QUALITY:** Clean and well-aerated

**HABITS:** Lies in wait for prey.

**SEX:** There is no known external sex differences between males and females.

**BREEDING:** They have not been bred in captivity.

**REMARKS:** This fish lacks the ornate finnage of the tropical Scorpionfishes (Lion fish). They are just as dangerous. The spines in the head are very dangerous. These fish are nocturnal and spend most of their time sitting on the bottom waiting for a meal to swim by. If you are stung, use very hot water to bathe the wound and see a doctor. . Should only be kept by experienced marine aquarists. 

**References:**

- *The Marine Aquarium*, Dick Mills, Salamander Books Ltd 1987
- *Exotic Marine Fishes*, Dr. H R Axelrod, TFH 1973

# Scorpionfish

## A Dangerous But Interesting Marine Fish



**Charles Drew** First published in the newsletter of the Hamilton and District Aquarium Society, March 2000 - Aquarticles

## Breeding The Licorice Gourami *Parosphromenus paludicola*

**T**his little Licorice Gourami species comes from the eastern Malaysian Peninsula and north to South Thailand where it inhabits slow moving streams and swamps. Barely an inch in length, it is a timid little cave spawner, preferring soft, acidic water.

I first acquired these fish in September 1999 in an auction at the Canadian Killifish Convention. They had been brought to the auction by one of our guest speakers **Allan Brown**, a hobbyist and collector from the UK who has a *Parosphromenus* species (allani) named after him and a Betta species (*brownorum*) named after him and his wife. The fish were young and immature and badly stressed when I took them home, but I placed them in a tank of soft, slightly acidic water that I had prepared in anticipation of possibly buying some killifish. I was delighted and surprised the next morning to find all five fish still alive.

A couple of months went by and the fish grew and matured. They were fed live baby brine shrimp and the occasional meal of white worms. Then one day I noticed a fish guarding a bubble nest inside a three inch long piece of three



2006 Michael Lo

quarter inch plastic pipe. I moved the rest of the fish to another tank. Two days later he started acting 'funny' and died.

I then did a little research and discovered that the water they come from is as acidic as 5.5 pH. and as soft as one degree of hardness. I also learned that they are best kept in pairs.

Sexing is not too easy although the males are said to have longer ventral fins. I took my guess and split my remaining four into two pairs, each with their own two and a half gallon tank with a sponge filter and plastic pipes to hide or spawn in.

The tanks were on a top shelf at 80°

degrees and had only room light. A week went by and then one day a fish appeared to be guarding a dime sized bubble nest in a pipe. A couple of days later with the aid of a flashlight, tails could be seen hanging

down.

About five days later the fry, numbering about fifteen, left the pipe. The parents were moved to another tank and repeated the performance; this time at least twenty fry. At the time for writing, they have spawned for the fourth time. The other two are abstainers and are having a platonic relationship.

The fry are about an eighth of an inch and are able to eat live brine shrimp and microworms. They appear to be easy to raise just as long as the water is kept clean and is of good quality. These fish were a great find and are a good challenge for the experienced aquarist.



Rich Grenfell, *Wet Pet Gazette*, Norwalk Aquarium Society  
<http://norwalkas.org>

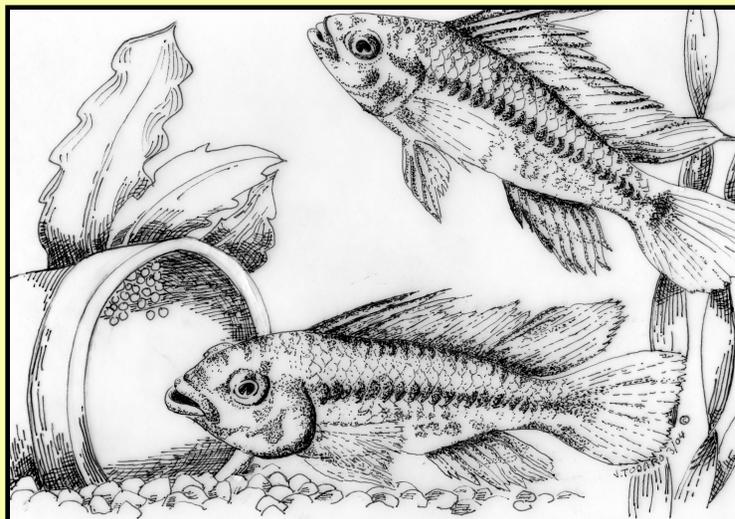
# The Genus *Apistogramma*

## (My Experiences in Care and Breeding)

### INTRODUCTION

Of all the fish I have ever kept, I'd have to say that I have enjoyed apistos the most. I was bitten by the apisto bug back in June of 2000, and haven't looked back since. To date, I have had successful spawns of *A. agassizii* (Iquitos), *A. viejita*, *A. Cacatuoides*, *A. hongsloui*, *A. agassizi* (Alenquer), *A. sp. Rio Mamore*, and *A. sp. Belem*. I am also housing several other species for future breeding.

These little guys come to us from South America. Their range is a bit wider than first thought. Not only are they found in the northwestern and Amazon regions of the country; but also in the catch basins of the Rio Paraguay, and the Parana. These waterways are clear on the other side of the country! This gives these fish a very wide overall distribution! \*



some water sprite sprinkled across the top completes the setup. One word of caution when housing these fish - the females of this genus look quite alike. There are differences, but they are very subtle. For this reason, males and females of different species should not be housed together.

### HOUSING

One of the good things about these fish is that they can be kept in small to medium sized tanks. Some need more room than others, but for my purposes thus far, a 15 or 20 gallon (long) aquarium has done the trick. I have been able to spawn some pairs in 10-gallon tanks, but suggest larger tanks if groups of them are to be housed. Most species of apistos are harem spawners and the females will need enough room to stake out their own breeding territories. My tanks are fitted with a sponge filter and box filter in either corner. I use submergible heaters, as I find them more dependable and easier to work with. Small sized (dark colored) gravel is spread on the bottom, and for shelters small broken flowerpots, and some slate is used to construct caves. Some Java moss covered driftwood, a large *Anubias* in the center, and

### WATER

My tap water has proven to be perfect for the fish I have kept. The pH usually runs between 6.8 - 7.0 and the general hardness at 4 degrees. Since most all of the fish I have are tank raised, this water has proven just fine for both maintenance and breeding. I did keep some wild caught fish once; they did fine in my tap water, but I had to bring the pH down to get them to spawn. I did so through the use of peat. Ideal temperature is 78 - 80° degrees. Water changes are of course a must. I do 30% of the tank volume weekly.

### DIET

As with any fish, good health means a varied diet. This is the one area of fishkeeping where I spare no expense, and my fish enjoy a wide range of food items. For the most part, I use frozen foods and paste

# The Genus *Apistogramma*

(My Experiences in Care and Breeding)

foods. The frozen items include brine shrimp, blood and/or glass worms, daphnia, and I use a GREAT paste food made by some of the members of my club. I also use some dried food, including freeze-dried krill, a great little pellet type food called Spectrum, and on occasion, flakes. Larger fish will get an occasional treat of live brine, and/or blackworms. I use live food only as a means of bringing fish into breeding condition, or as an occasional treat.

## BREEDING

Here is where all the fun begins! Nothing has satisfied me more than seeing a mom leading a herd of fry around in one of my tanks! As stated above, caves are necessary, as these fish are cave spawners. Flowerpot caves seem to be the most popular choice of breeding site, though I have had a few spawn in a cave made of slate. I also make my own caves out of terra-cotta clay.

### A. BREEDING BEHAVIOR

The fish show signs of an imminent spawning and these should be watched for. They will swim up to each other (parallel) and shake their heads, with the fins erect, and sometimes they will flap their tails at one another. During this time, the male's color will be VERY bright and intense. The female (if she is interested) will take on a bright yellow color as well.

If all is well between the two, a breeding site is chosen, and a spawning occurs. The eggs are laid on the ceiling of the cave, and the female guards them and the cave relentlessly. The male is in charge of guarding the breeding territory. This territory (in my experience) usually measures about 6 inches x 6 inches.

One of the most interesting breeding behaviors I ever witnessed came from a group of *A. agassizii* (Alenquers). There were three females and two males. The male spawned with one of the females, and not only did the parents take up the protective behaviors, but also

so did ALL three females! I had never seen such a behavior before, so I watched closely. The mom stayed mostly in the cave with the eggs, only coming out to eat. The other two females took up guard just outside the entrance, and had on the breeding colors as well. The male defended the territory, and also became a bit obsessed with chasing the other male around. I had never seen this type of group effort before, and I must say it was certainly interesting to watch! This all ended when the male began to spawn with the other females.

### B. EGG AND FRY DEVELOPMENT

It takes from two to three days for the eggs to hatch. The fry are now in larval stage, and will have an egg sac as a source of nourishment. This stage of development takes another four or five days. During this time, they are generally kept on the floor of the cave till they are free swimming. I did have one female *cacatuoides* that kept her fry in pre-dug pits, and moved them from place to place once or twice per day.

Once the fry are free swimming, they need to be fed, and I have found that new hatched brine shrimp is the best. I also use microworms, but mainly stick to BBS. I feed my fry three times per day, and usually up the water changes to 50% twice per week. I have found that this helps by removing uneaten food, and the fry seem to grow quicker when I do this. As they grow, the size of the food grows with them, until they are taking paste food and frozen brine.

I have found these fish to be quite hardy when properly cared for. Also, their breeding behavior is quite entertaining! Great little fish to keep and breed. I hope this article will inspire you to do the same!



One of the good things about these fish is that they can be kept in small to medium sized tanks.

I have been able to spawn some pairs in 10-gallon tanks, but suggest larger tanks if groups of them are to be housed.



### • SOURCE:

Horst Linke; Dr. Wolfgang Staek. "American Cichlids I - A Handbook for their Identification, Care, and Breeding" Tetra Press 1994

Deborah & Rodney Ralph

First published in *Tank Talk*, Canberra and  
District Aquarium Society, Australia  
reprinted from Aquarticles

# LETTUCE HAVE INFUSORIA

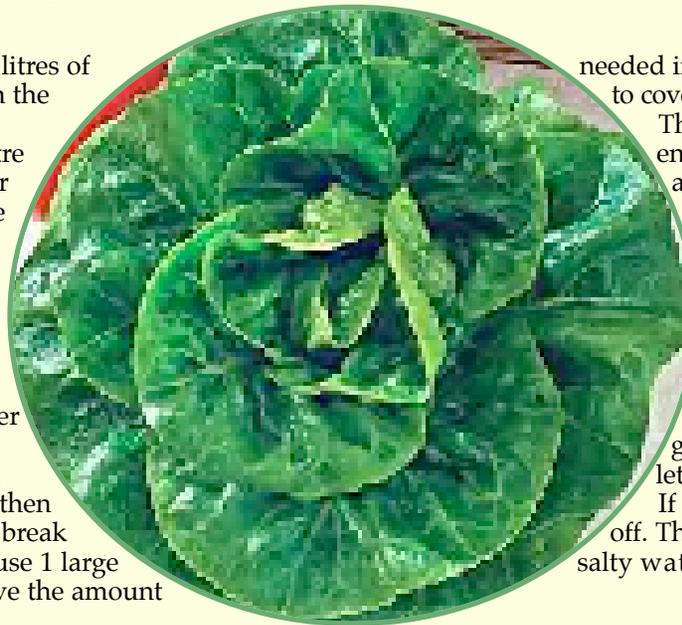
**T**his is one way of getting infusoria easily, quickly, cheaply and without much fuss. Bits and pieces of the information have come from books and ideas other people have had and also our own, mixed together, which have given us good results.

Before you start, you'll need 30-40 litres of aged tap water which will see you through the early stages of keeping this culture.

Items needed are 1 large 24-36 litre plastic tub, the size may be larger or smaller to suit your particular needs. This should be washed out well with warm salty water, then rinsed well.

Now we want the main ingredient, lettuce. We go down to a fruit and vege. shop and just ask for the lettuce leaves they throw away and get a bag full costing nothing; you can't get it any cheaper than that and they don't seem to mind.

Pick out the best whole leaves and give them a quick wash to get the dirt off, then squeeze the excess water and scrunch and break the leaves up and place into a bucket. We use 1 large lettuce leaf per litre of water. After you have the amount



needed in your bucket pour on enough boiling water to cover, then place this outside and allow to cool.

The next day pour this into the tub and add enough aged tap water to fill the tub. Place in a shady position that is sheltered. In about a week, you should have green water with some infusoria. In about 2 weeks, it should be booming.

Each time after you have drawn the amount you want for the day's use, top it up with aged water. Keep a bucket of aged water next to the tub for this. This helps to put oxygen into the infusoria and keeps it going and fresh. Every now and then more lettuce should be added also to keep it going.

If it is not used regularly, it will probably go off. Throw it away, clean the tub thoroughly with salty water, rinse, then start all over again. 



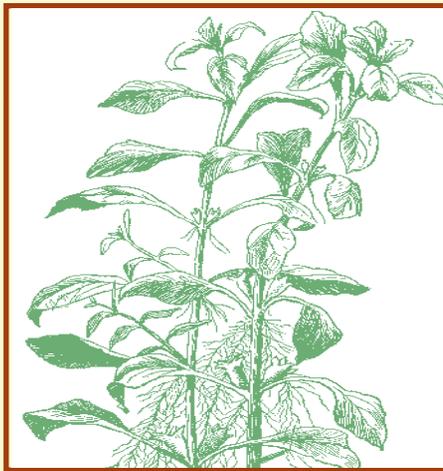
# The Practical Plant

## 1 Propagating: *Ludwigia peruviana*

**T**his plant is a show stopper. When grown in sufficient lighting, it is a deep, rich burgundy color. If your lighting is more moderate, it will start to turn green. It is a stem plant with a relatively thick stem. The leaves are lanceolate in shape and about two inches long. If the plant is crowded and the lower leaves do not get enough light, they will fall off. In general, the plants in the *Ludwigia* genus are not too difficult to grow, but *L. peruviana* is somewhat more challenging. The plant will grow rapidly and branch nicely if you meet its needs.

While the plant is not especially demanding on water parameters, it will require strong lighting.

I am keeping *L. peruviana* in a 15 gallon tall aquarium with very intense lighting. This aquarium has 96 watt Compact Fluorescent lighting (Coralife "Aqualight" Quad which gives me 6.4 watts per gallon) and CO2 enrichment. The pH is about 6.8, temperature is kept at 78° and the GH runs about 4-60. A Fluval canister filter (model #104) with the output being directed through a submerged spray bar is doing my filtration. I am using the Estimated Index system of fertilizer dosing. This means that once a week I perform a large water change (50-75%). This is usually done on



*Ludwigia peruviana*

Saturday. Don't worry about the large volume of water being replaced every week. Your fish are going to love it. This large water change is necessary to reset the system and prevent nutrient imbalances. Then on Saturday, Monday and Wednesday I dose the macronutrients, and on Sunday, Tuesday and Thursday I dose the micronutrients. Friday I take the day off. The lighting and CO<sub>2</sub> are timer controlled and on for 12 hours a day.

Under these conditions, the *L. peruviana* exhibits good strong growth. To propagate this plant, just take a stem cutting and insert into the substrate. It's that easy.





# The Practical Plant

## 2 Propagating *Hemianthus micranthemoides/micranthemum*

**T**his is a very nice and versatile plant. Its common names include “Japanese Pearlgrass” and “Baby’s Tears.” Despite its common name, this plant is a native of North America. *H. micranthemum* has very fine stems with dense foliage of small bright green leaves. It will grow to about eight inches in height.

At eight inches, it is perfect as a midground plant. It looks especially well planted in the gaps between rocks and other such decorations. But I also did call it versatile. This is because the plant is tolerant of aggressive pruning. Because of this nature, the plant can do double duty as a foreground plant. You may keep it pruned to a couple of inches tall.

*H. micranthemum*, as long as it receives lots of light, is not an overly fussy plant. It will do well in temperate to tropical temperature ranges. It is also tolerant of GH, doing equally well in soft or fairly hard water. You should avoid alkaline pH values though. The stems are thin and delicate so you need to handle the plant gently, but they can be planted a couple of stems at a time in the

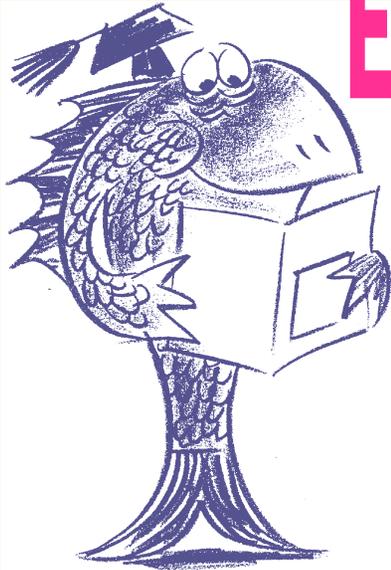


same hole. A finer grained substrate will make the planting a bit easier. It does not require a rich substrate so root fertilization is not called for. The plant will feed almost exclusively from the water column, and can even be grown as a floating plant if desired. This should make it a good plant for breeders as well. Even though it feeds from the water column, it does not need high levels of fertilizer in the water either. The plant can be propagated by either of two different methods. You can let it spread via runners, or take stem cuttings to root.

The bottom line is that if you can meet the needs of *H. micranthemum*, it is an attractive and well behaved plant.



Stu Hershkowitz - BAS



# Exchange Editor's Report

New Hampshire Aquarium Society, *The Granite-Fisher* Volume 19, Number 1 & 2, January 2010, "Larry needs help to move" is published about how raising is work, but it is fun too. The

out raising a new fish "Class D" in order to move to expert status.

Fish Room by **Don Van Pelt** pens an interesting story of his personal experiences in his fish room. It is worth a look.

I was dismayed to read that their Holiday party in December was cancelled due to snow. Does that mean that they will double up on their party in 2010?

North Jersey Aquarium Society, *The Reporter*, January & February 2010.

Ever hear of Piranha Stew?? Oscar Creole? There is a recipe for it. Anyone interested?

**Ray Wetzel** has do-it-yourself article about building your own tank rack.

**Chuck Davis** had the pleasure of entertaining **Alesia Visconti** while she was visiting Miami Beach on business. **Mark Weiss** got involved and off they went to visit the wholesalers. He also pens a nice story about an

African Catfish a.k.a. *Synodontis eupterus* or in regular English "Featherfin Syno."

Don't forget their spring auction, Sunday April 18, 2010 at the Elks Club.

Diamond State Aquarium Society, Inc.- *The Gravel Gossip* Volume 47 Number 1 & 2, January 7, 2010. **Paul Marcus** has a table titled Life Span of 44 Popular Tropicals. Did you know that Oscars live between 10 and 18 years? As far as I'm concerned, they tell me how long they want to live.

They have an interesting feature each month called "Mystery Fish" where they describe traits of a certain fish and then solve the mystery in the next month's issue. Very cute and worth a look.

**Len Thomas'** Guppy Mania article says what we all feel sometimes – FRUSTRATED. Very nice reading.

Congratulations to Diamond State Aquarium Society's President **Rachael Hurley** on completing her thesis and orals.

Missouri Aquarium Society, Inc. *The Darter*, Volume 26, No. 1 Jan/Feb 2010, President **Mike Hellweg** is finishing his 5th term in a row and 13th overall as President of their club and describes his "job" as just plain fun. He says he surrounds himself with good people who work hard and that makes life a lot easier for him.

**Gary McIlvaine's** "Vacation Time" is right on the money. He goes on vacation for two weeks and doesn't worry about his many fish tanks. He prepares and has someone watch out

while he is away. The break away from your fish balances your life and makes you miss your fish. I thoroughly enjoyed this one.

**Reet Thomas** reprinted some more selections of "You Know You're a Fish Nut When..." Does that make it a re-reprint? Funny nonetheless.

Ever hear of "*Otoparynx tetrastigma*"? Is it a virus? Is it a bird, a plane....? No, it is a fish. **Joe Reich's** article is good reading as usual and worth a gander. And I thought my last name was a problem.

This issue is actually very informative with articles titled "Fish Collection Follies in Tanzania" by **Lawrence Kent** (the pictures are great), "Breeding the White Seam Fighter" by **Charles Drew**, "the Northern Swordtail of Tamaulipas Mexico" by **Rich Serva**, and "The Goods on Goodeids" by Wayne Toven.

**Steve Deutsch** is the editor and he does a great job.

That's it for now. See you all next month. Happy fish reading. 

If you're interested in reading any of these articles, contact Stu at a meeting or on line [stublue36@yahoo.com](mailto:stublue36@yahoo.com) There is a small copying fee of 25¢ per page plus postage if articles are mailed. No postage if you pick up the article at a meeting.

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