

* DELTA TALE *

August 1988
Vol. 19 #8
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OFFICIAL PUBLICATION OF

potomac valley aquarium society



The Delta Tale is published for the benefit of the Potomac Valley Aquarium Society, Inc. (PVAS), a non-profit organization, was established in 1960 for the purpose of furthering the aquarium hobby by dissemination of information, encouraging friendly competition, soliciting participation in its shows, and promoting good fellowship. Correspondence should be addressed to PVAS, PO Box 6219 Shirlington Station, Arlington, VA 22206. Original articles and artwork may be reprinted by other non-profit organizations if credit is given to the author, Delta Tale and PVAS. Two copies of the publication should be sent to the Delta Tale c/o PVAS. Please place the author's name on one copy to ensure that it gets to him/her. PVAS and Delta Tale disclaim any responsibility for content or availability of advertised merchandise or services in these pages. Customer satisfaction is a matter to be worked out exclusively between the advertiser and the buyer. All material for inclusion in Delta Tale MUST reach the editor by the 18th of the month prior to publication.

1988 PVAS OFFICERS

| | |
|--------------------------|---------------|
| President: | Gene Aldridge |
| Vice President: | Pete Thrift |
| Treasurer: | Gerry Hoffman |
| Corresponding Secretary: | John Mangan |
| Recording Secretary: | Bob Pallansch |

1988 BOARD OF GOVERNORS

| | |
|-------------|-----------------|
| John Jessup | John Stierenger |
| Ray Hughes | Kenny Warren |

1988 COMMITTEE HEADS

| | |
|----------------|-----------------|
| Auctions | |
| BAP: | John Jessup |
| HAP: | Alex Cummins |
| Library: | Pete Thrift |
| Membership: | Pat Gore |
| Spring Show: | Pete Thrift |
| Fall Workshop: | Gerry Hoffman |
| Bowl Shows: | Barrie Farmer |
| Programs: | |
| Ways & Means: | John Stierenger |
| FAAS: | Gerry Hoffman |
| Delta Tale: | Tom Hetzel |

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The following list was downloaded from Fishnet - the Aquarium and Tropical Fish Forum on CompuServe Information Service. I'm leaving the header in so you can see how messages are stored and on the system. I've deleted those entries that have already passed. [Editor]

#: 28885 S8/News/Shows/Meetings
30-Mar-88 22:47:38
Sb: Meetings (Apr-May)
Fm: Sally Van Camp (FAAS) 73167,2625
To: All

This listing compliments of the Federation of American Aquarium Societies.

| | |
|------------|---|
| Aug 20-21 | Southwest Michigan A.S. Age of Aquarium '88 Southland Mall, MI; info: 616/385-4972 |
| Aug 26-28 | Am. Livebearer/FOTAS Annual Conventions (tentative) Hilton Hotel, Bryan, Texas |
| Sept 3-5 | Calgary A.S. Annual Show info: 803 Allandale Rd. SE, Calgary, ALB T2H 1W7 |
| Sept 23-25 | FAAS Convention Regency Best Western, Blasdell, NY; info: 716/941-3701 |
| Oct 1 | Michigan Cichlid Assn. Fall Auction |
| Oct 7-10 | Saskatoon Bi-Annual Public Show Saskatoon Forestry Farm Auditorium |
| Oct 16 | Greater Detroit A.S. Fall Auction |
| Oct 17 | Bettas of the North East Certified Show Grenich, CN |
| Nov 5 | Motor City A.S. Fall Auction |

PVAS BOARD MEETING - JULY 7, 1986

Kenny Warren hosted the July Board meeting, convened by President Gene Aldridge at 7:45 p.m.; also present were Ray Hughes, John Mangan, Bob Pallansch, John Stieringer, and Pete Thrift.

Gene announced:

That Lea Spickler's nominating committee will include Pat Gore, Tony Fitz, Larry Wilkie, and Tom Hetzel.

That the 400-copy printing of The Delta Tale is now inadequate; the board considered increasing to 500. Deadline and mailing/postage problems were discussed.

Re the Fall Workshop:

Ray Hughes summarized the Sheraton contract and was authorized to sign it; dinner arrangements will be made separately.

Speaker suggestions included Jack Wattley, Ron Reed, Jon Burleson, Paul Speice, and the president of Aquarium Products.

The question of local/outside speakers was discussed.

The pending revision of PVAS' Constitution and By-laws was considered, including changes necessary to gain tax-exempt/non-profit status, and other administrative streamlining.

The meeting was adjourned at 9:15 p.m.

Respectfully submitted,

Robert J. Pallansch
Recording Secretary

TRADING POST

For Sale: Proven breeding trio of L. brichardi
Barrie Farmer (804) 448-4079

NOTICE

Anyone interested in joining a newly forming "mini-reef" group call Peter Crawford at (301) 946-2441. The group is considering meeting in Silver Spring once a month.

!!!! PVAS MEMBER ARTICLE !!!!
(It happens sometimes)

Dormancy in Brine Shrimp Embryos
or
The Glorification of Cheapo Rock Salt
by
Tony A. Fitz

The scientific literature recently provided information that may be useful for aquarists who hatch brine shrimp (artemia). Science magazine of 18 March 1988 contains an article concerning dormancy in artemia embryos. During times of unfavorable environmental conditions, artemia embryos can go into a state similar to suspended animation. This dormancy occurs while the embryo is in brine and should be distinguished from the well-known and convenient dormancy which occurs when the cysts are dry. The suspended animation during the wet state is related to changes in the levels of acidity inside the embryo, in which the intracellular pH decreases markedly (the amount of acidity goes up). The state of suspended animation helps the embryo survive until the world outside is not quite so cruel.

Why is this of interest to the aquarist? It means that brine shrimp cysts are unlikely to hatch during unfavorable conditions, which is not surprising. Of greater interest is that the cysts can survive during bad times, hopefully to hatch when conditions improve. Of importance, this implies strongly that acidic water will decrease the hatching rate.

The tap water in my neighborhood tends to be slightly acidic and various metabolic events in water tend to increase the content of acidity. I have heard complaints from other area aquarists of strongly acidic aquarium water. Acidic water should not be used to hatch brine shrimp, since this instead will promote dormancy in the artemia embryos.

Pure "salt" (sodium chloride) has no buffering capacity. Pure salt therefore has no effect on water pH; if the water is acidic to start with, it will remain acidic after the addition of any amount of sodium chloride. To ensure alkaline water conditions for our artemia hatching vessels, we should not use pure salt unless we also add an appropriate buffer to keep the water at a slightly alkaline pH. Several adequate buffers are available commercially to buffer water into the slightly alkaline region. I believe that the easiest, and therefore the best, way to achieve slightly alkaline pH is to use plain old cheapo rock salt in artemia hatching containers.

Common, ordinary, generic rock salt is great for several aquatic purposes. I refer to the stuff that is sold in any grocery store for melting ice off sidewalks and other "nonconsumable" purposes. Yes, I refer to that nasty looking stuff with black somethings in it that never completely dissolve in water. The cheaper it is and the junkier it looks, the more I like it.

I don't know exactly what is in cheap rock salt, but after using many different brands from many sources for many years (e.g., buying whatever was cheapest on the shelf of whatever store I was in at the time), I have never had any problems with rock salt and am convinced that it's impurities are not harmful. The junk in rock salt may even be valuable for our aquatic uses. Not only are we undoubtedly getting trace minerals (maybe megatraces) but the rock salts that I have tested contain "secret ingredients" that conveniently tend to buffer water into the slightly alkaline region (interesting, isn't it, that this is just what we want for hatching brine shrimp). I use rock salt not only for hatching brine shrimp, but I also put one teaspoon per gallon into all of my fry tanks (use caution for certain mineral-intolerant species such as Corydoras). This amount of salt in fry tanks keeps most newly hatched brine shrimp alive for at least 24 hours, so that one feeding daily ensures continuous availability of this most nutritious of fry foods. Whatever are the black stuffs and other secret ingredients in cheap rock salt, they obviously aren't too bad since fragile fry thrive in it. I also add rock salt to all water containing Nothobranchius species, which otherwise quickly become extinct in my tanks.

Of course, it must be possible to get a bad batch of rock salt. To be prudent, one might use care with a new bag until its adequacy is demonstrated. Thereafter, an investment of a very few dollars in several bags of the same brand would secure a huge supply. And you can also use it to make ice cream in the summer, and melt ice in the winter! Viva la cheapo rock salt.

MORE REPRINTS

BETTA PICTA - a BAP Report

by Frank W. Lisle, CAS

reprinted from Colorado Aquarist

Commonly called the Javanese fighting fish, *Betta picta* is the smallest known mouthbrooder of its genus. It is generally accepted that mouthbrooders come from moving water, as opposed to the stagnant pools where the bubblenest builders are found. In moving water,, a bubblenest would not hold together long enough for the eggs to hatch, thus an interesting modification in the incubation method.

For being a cousin of the *Betta splendens* we are all familiar with, *B. picta* is very drab, with far shorter fins. The adults are about two inches long, with stocky brown bodies. The bodies vary in shading, and mine have a greenish tint to them. The dorsal, caudal and anal fins are reddish brown, the anal fin has a green stripe and black edging along its entire length. The chin area is pale green. Pictures and written descriptions talk of an eye stripe, going through the eye horizontally across the head. Mine do not show any stripes, while the fry have three horizontal stripes running the length of their bodies. (See note No. 1.)

Their disposition is very peaceful. My original 3 pairs have shared a ten gallon tank for over five months, without any signs of fin-nipping or other trouble. They will square off and flare, but not nearly as aggressively as do *B. splendens*. If kept in view of *B. splendens*, they will sometimes flare at them, also. References say they are a good community tank fish. My experience shows them to be very shy, preferring the bottom of the tank near plants or overhangs, and if kept in a well planted community tank, they would probably seldom be seen.

There seems to be no difficulty in keeping *B. picta*. No special attention to water chemistry appears needed, although this might be different if the fish are wild and not tank-raised, like mine. Aged tapwater does nicely. A temperature range of 76 to 80 degrees seems good. My fish have spawned at both ends of the range. Since their natural habitat is moving water, they seem to prefer aeration, but it does not have to be "turbulent". Being labyrinth fishes, capable of breathing surface air, they utilize this far less than their bubblenest-building relatives. Frequent partial water changes are also advised, and all of my spawnings seem to have occurred shortly after the water change.

So far, I have not been lucky enough to observe an actual spawning, so the following description is from reference sources.

These sources indicate that the courtship and spawning are initiated by the female. After choosing a partner, the female will chase any other females away and take on the defense of the spawning site, before and during spawning. Once a suitable site has been found, near the bottom in a clear area, the pair begins circling, which leads to embraces. At first there are no eggs and these false matings can last for an hour or two before eggs appear. The spawning embrace of *B. picta* is very similar to that of *B. splendens*. During a successful pairing the fish remain rigid for several seconds, the female deposits several eggs onto the anal fin of the male. She then picks up the eggs in her mouth, the male staying rigid until the eggs are removed. The female then spits the eggs toward the male, but will catch them before he has a chance. Eventually, the male does gain possession of the eggs. This exchange of eggs can last for up to ten minutes after each spawning embrace. From first embrace to the end, the spawning can take several hours. Once again this previous information is from reference materials. I hope someday soon, to be able to verify it by my own observation of the ritual.

My first indication that a spawning has occurred, is coming up one fish short at morning rollcall. Once the male has spawned, he goes into hiding. I have found the brooding males under plastic plant holders or anywhere they can be completely hidden. The books say the female should be removed five days after spawning, but I have been successful my moving the male to a five gallon tank as soon as I notice his swollen jaws. So far, in five spawns, none have spit out the eggs during transfer.

The first time I saw a male carrying eggs I thought he was sick. The sides of his face, throat and lower jaw were extremely puffed out. Occasionally, the brooding male will make chewing motions, apparently circulating the eggs. Incubation time according to the books, varies from ten to twenty-one days. Having not actually seen a spawning, I have not been able to establish which is correct.

It is easy to tell when the male is ready to release the fry. He will come out of hiding and very actively swim about the tank. After he is satisfied there are no predators in the area, he will release a few fry, usually one to three at a time. The total release can take an hour or so. As soon as all the fry are released, I remove the male and place him back in the tank with the rest of the adult pictas.

B. picta fry are larger than *B. splendens* fry, and are quite able to eat freshly hatched brine shrimp. They should be fed often, 3 or 4 times a day. Live food, I feel, is a must, since the movement attracts the fry. Finely powdered flake foods have been ignored. The fry grow rapidly. One book says they should be an inch long at one month of age. Mine have not grown that fast, but are about one inch at two months. My first spawns have all run between 60 and 70 fry and the mortality rate is very low. How that little two inch fish manages to hold all those fry in his mouth amazes me!

To recap the things I feel are important: They need clean water and frequent water changes are a must. I do not think I would try putting one in a "betta jar". Live food, especially for the male, prior to spawning. He does not eat during the incubation period, and do not forget - if hunger overcomes parental instinct, lunch is only a swallow away! Do not overcrowd the fry, and feed them often. Good luck!

Note #1 There is currently a great deal of discussion in Betta circles as to how many actual species there are. Some of the experts feel that a few of the listed species are only variations of one species. Case in point: The Anabantoid Association of Great Britain's Scientific Classification of Bettas, says that *Betta rubra* and *Betta trifasciata* are the same fish as *Betta picta*. Of course, there are others who say not so! This complicates describing the fish's colors, etc. Therefore, the fish described in this article are the ones in my tank, the way I see them.

The native habitat of these fish is also in question. I have read Java, Sumatra, Thailand, Malaya and Indonesia.

I hope this additional information does not confuse anyone, but will serve as some interesting background.

References:

Linke, H., "Betta or is it Pseudobetta?" *Aquarium Digest International*, p.34

Richter, Hans Joachim, *Spawning the Javanese Fighting Fish, Pseudobetta Picta*", *Tropical Fish Hobbyist*, February 1983.

Articles downloaded from CompuServe's Aquarium and Tropical Fish Forum:

SALT FOR THE FRESHWATER AQUARIUM.

By Steve Saunders

It may seem strange to some to talk about salt for the freshwater aquarium, but you're bound to find a good supply of salt in every experienced aquarist's fish room! Why? Because the addition of a small amount of salt to the water of most of our freshwater aquarium fish enhances their health!

What do salts do to help freshwater fish?

- 1) Stimulates the fish to secrete more slime on their body, which impedes parasites and disease.
- 2) Inhibits the growth of some bacteria.
- 3) Relieves the osmotic stress on a freshwater fish.
- 4) It can cure or help cure some parasitic diseases of our fish.

A freshwater fish has a problem of water entering its body due to osmotic pressure. Water travels from the surroundings which are dilute in salt to the fish's body which contains a higher concentration of salts under chemical -physical tendency known as osmotic pressure. (Salt water fish have the opposite problem. The fish must get rid of the water, and does so actively at the expense of energy. Therefore, the added salt in freshwater helps slightly to reduce the osmotic pressure, so the fish has an easier time actively pumping out water.

Salt is benefit to many fish in particular:

- 1) Common aquarium livebearers are healthier in salted water, some like mollies seem to need the salt.
- 2) Similarly many killifish do better with some salt in their water, and again some, like the *Nothobranchius* do not survive long without it.
- 3) African cichlids need water with a high salt - dissolved salts content. This goes beyond the table salt type salt, sodium chloride. Africans need hard alkaline water ie. salts of calcium and magnesium in their water.
- 4) Gobies, such as the bumble bee goby, monos, puffers and scats love salt to. They come from brackish water; that is practically salt water, partially freshwater.
- 5) I have found salt in a betta jar is very helpful. It seems not only to help prevent the growth of spoilage bacteria which foul a betta jar's water, but also prevents the slime build up that often occurs on the sides of betta jars.

Some fish may not appreciate added salt to the water. Tetras are a good example. Catfish, particularly *Corydoras* catfish are said

to be sensitive to salt. But this often quoted tale has no basis! Snails do not seem to like salt. In my experience, ramshorns and mystery snails grow poorly and are less prolific in salty water.

Regarding salt for the freshwater aquarium, you actually have several choices.

By salt we usually mean sodium chloride (NaCl) the same "salt" that you use in the table shaker for your dinner. But chemists have a broader concept of salt ... meaning any two elements or radicals that bind together ionically. This is admittedly a very useless definition for the layman, but, I would at least like to point out that there are two different definitions and meanings for what salt is.

TABLE SALT, the salt one normally uses on the table is iodized salt. It is sodium chloride with iodine added, (as humans need a source of iodine in their diet as do virtually all animals) and have difficulty obtaining it. For years there has been a school of thought among aquarists that iodine in iodized salt is bad for fish. The basis of which I have not been able to uncover, despite

looking. I have asked Mr. John Kuhns, a research chemist with the pet food manufacturer, Kordon. He says non-iodized or iodized, it makes no difference! Its "one of those unsubstantiated "old wives tales" which abound in the hobby; information propagated by folks who never stopped to test their recommendations." Certainly some aquarists have cured fish health problems with iodine!

This salt is sometimes called COMMON SALT.

EPSOM SALTS are not sodium chloride, but rather magnesium sulfate, a very different chemical compound. While some aquarist have used this for African Cichlids, or supposedly to help livebearers give birth (?), it is not the salt we generally use in the aquarium.

ROAD SALT or ROCK SALT is basically unrefined table salt, sodium chloride. I have used it extensively for hatching brine shrimp eggs. But it sometimes will contain anti-caking agents, particularly sodium ferro-cyanide. Sodium ferro-cyanide in water under light will liberate cyanide, and although it may be in trace amounts, I would rather not have it in with my fish!

PICKLING SALTS or KOSHER SALTS or COMMON SALT are regular table salt without the iodine. They are indisputably suitable for use in the aquarium.

WATER CONDITIONER SALT, used for recharging water softeners is cheap and easy to obtain in bulk and is similar to pickling salts or kosher salts. I have bought this salt for my tanks, as I have quite a few.

SYNTHETIC SEA WATER SALT is suitable for use in the aquarium too. It does contain a variety of salts, sodium chloride being the most abundant. However, it will add to the total alkalinity and hardness of the water. If your tap water is already hard and alkaline (high pH), it would be wise to use some other salt instead.

SEA SALT also known as SOLAR SALT can be bought in health food and bulk stores. Its produced by "drying" seawater. It would be good for artificial sea water except not all the minerals in "drying" sea water precipitate out at the same rate. Some of our fussier salt water fish and invertebrates don't like it. By the way ... Solar salts are also used in the seafood industry for producing salt fish. It does not usually contain the correct balance of salt for a salt water aquarium, but for use in the freshwater aquarium, you basically have the same problem as for the synthetic sea water salt.

AQUARIUM SALT purchased at the pet store is nothing more than non-iodized salt, identical to pickling or kosher salt! The wrapping and the words "aquarium salt" increase the price by as much as 400 percent. Better to pick up salt in the grocery store and use the change for a brine shrimp treat from the pet store for your finny pets!

HOW MUCH SALT? I usually use about 1 tablespoon of salt to 4 or 5 gallons of water. Mollies, Nothobranchius killifish, African cichlids, gobies etc. will love you if you use two or three times as much. With bettas in the past I also added some acriflavine, to help inhibit bacteria, but lately I have been trying Kordon's Novaqua.

Calculating optimal biological filtration flow rate based on Spotte's design criteria.

HENRY E. KWIOTEK
Detroit, Michigan
CompuServe ID # 76120,1512

For the beginner setting up his first marine aquarium many decisions have to be made. One of the earliest is what type of filtration system to use. Usually some type of undergravel bacteriological filter is selected.

This raises the question of how much water should flow through the undergravel filter. And what method should be used to move the water (e.g., air lift tube, power head, canister filter). There are as many opinions on the best method as there are aquarists. Having a quantitative goal to aim for would at least give the beginner a direction in which to proceed.

One of the recognized authorities on marine aquariums is Stephen Spotte who states the following on page 158 of his book, *Seawater Aquariums: The Captive Environment*.

"The four most important design criteria for bacteriological filters are as follows: (1) minimum depth of the gravel should be 7.6 cm, no matter how small the aquarium tank; (2) surface area of the filter bed should be equal to that of the aquarium tank; (3) gravel should be composed of calcareous material (e.g., oyster shell, fossil coral, calcite, or dolomite), and reasonably well graded with a grain size that falls within the range 2 to 5 mm; and (4) flow rate through the filter bed should be about 0.0007 m/sec."

In another of Spotte's books, *Fish and Invertebrate Culture: Water Management in Closed Systems*, he states the following on page 86.

"The flow rate through any aquarium should be a minimum of 0.0007 m/sec.

This assures dissolved oxygen concentrations near saturation at any temperature or salinity."

Most of what Spotte says is easy enough to follow. But what is this flow rate of 0.0007 m/sec. How can you use it to arrive at an answer to a question like; should I use lift tubes or power heads and how many?, or can I use the same set up on tanks of various sizes?

To help make my choices I have calculated, with apologies to Stephen Spotte, what I like to call the "SPOTTE CONSTANTS". Using them anyone can quickly calculate their hourly water

volume requirement, such that the flow rate through their undergravel filters will be at Spotte's recommended 0.0007 m/sec. The only data required is the length and width of the undergravel filter in inches (or in other words filter area in square inches) multiplied by the appropriate "SPOTTE CONSTANT". The answer will be in gallons per hour or liters per hour.

For output in gallons per hour.. "SPOTTE CONSTANT" = 0.430

For output in liters per hour.... "SPOTTE CONSTANT" = 1.626

As an example in making a choice of lift tubes verses power heads you use the "SPOTTE CONSTANTS" as follows. Your tank size is 48 inches long by 18 inches wide. You follow Spotte's recommendation and decided to use the entire bottom area for your undergravel filter. Your next question is how many gallons of water per hour do you need to pull through the gravel? Subtracting the glass thickness You find that your undergravel filter will be 47.125 inches long and 17.125 inches wide.

$(47.125 \text{ in} \times 17.125 \text{ in}) \times (0.430) = 347 \text{ gallons per hour}$

| FILTER AREA | "S" | ANSWER |
|-------------|-----|--------|
|-------------|-----|--------|

To continue the example lets say you test a one inch diameter lift tube and find that it can lift 60 gallons of water per hour. Dividing 60 into 347 you find it would take about six of these lift tubes to give you the desired flow rate. Next you check the output of a powerhead advertised to supply 400 gallons per hour and find it actually only puts out 195 gallons per hour. Which means you would need two of the power heads to get near the desired rate. Armed with these facts you can now make an informed decision.

You now decide you want to use a European canister filter to set up a reverse flow undergravel filter for another tank. You want to know which size canister filter to use. Your choices are 390, 540 or 840 liter per hour output. This tank has a filter area of 348 square inches.

$(348 \text{ sq in}) \times (1.626) = 568 \text{ liters per hour}$

You now know to select the canister with the 540 liter per hour output, which is closest to the desired rate.

For anyone interested in the calculations used to arrive at the "SPOTTE CONSTANTS" they are as follows.

Spotte's recommended flow rate converted to english units.

$0.0007 \text{ m/sec} \times 3600 \text{ sec/hr} \times 39.37 \text{ in/m} = 99.21 \text{ in/hr}$

Think of this as a column of water 99.21 inches high that must pass through the filter in one hour. The filter area multiplied by the height equals the volume in cubic inches. One gallon contains 231 cubic inches. And there are 3.79 liters per gallon. Putting these all together you get.

$$0.0007 \times 3600 \times 39.37 \times 1/231 = (0.430) \times 3.79 = (1.626)$$

The best of luck with all your fish adventures!

Spotte, S. 1979. Seawater aquariums: the captive environment, New York, John Wiley & Sons, 158 pp.

Spotte, S. 1979. Fish and invertebrate culture: water management in closed systems, 2nd ed. New York, John Wiley & Sons, 86 pp.

Weast, Robert C., Ph.D. 1974. Handbook of Chemistry and Physics (Conversion Factors), 59th ed. West Palm Beach, Florida, CRC Press, inc., F313 - F335 pp.

Submitted 2 Jan 1987, at the request of John Benn(SYSOP).
Dedicated to all my fellow beginners.

IT'S NOT EASY LAYING AN EGG!
Observations of a *Sturisoma* spawning

by Ginny Eckstein, L.I.A.S.

Reprinted from Paradise Press

The incredibly ornate "Royal Farlowella" has been the subject of several recent articles (Catalyst No.38). Authors have described sexual dimorphism, color pattern variations and finnage. Being a catfish aficionado, I naturally purchased some as soon as I saw them. This narration is not intended to cover maintenance of this species. It is merely to relay what I consider one of the most exciting spawnings I have ever witnessed. Upon entering my fish room I noticed several eggs on the front of 20 gallon high tank housing my pair of *sturisoma*. The fish appeared to be lying on top of each other. The female was underneath the male, pushing very hard, nudging repeatedly on his vent area. "POOF", a white cloud appeared from his vent area, highly visible. The female started a furious squeezing of her ventral fins with a visible tightening of her body. I could see the egg trying to come out; it was not really egg shaped, more like an undefined blob. If she stopped her furious motions to rest, the egg was drawn back in. Finally she released it. Was

it possible that the male "prefertilized" the spot the egg was to be laid on? It didn't seem probable to me. I was fascinated. I sat down right in front of the tank; it didn't bother them at all. After spending over three hours watching them spawn, I am sure that the male's milt is released first. They repeated the performance over and over again. Their spawning pattern never deviated and reminded me of a "Fill in the blanks" puzzle. No two eggs were ever actually touching, but they were oh, so close! The pattern is shown at right: The bottom egg was laid first, then the top egg, middle egg last.

| | |
|--|-------|
| | 5 2 8 |
| It would be repeated on each side. After a brief | 6 3 9 |
| rest the sturisoma would slightly relocate and | 4 1 7 |

repeat the pattern again. The process continued until 73 eggs were laid. At that point the male started roughly nudging the female on her side. She swam away, landing on a sponge filter. She noticed me, I'm sure for the first time, and moved behind the filter. The male positioned his body over the eggs, furiously moving up and down and roughly mouthing the eggs, actually appearing as if sucking them. Not at all like the protective parental care he has exhibited in prior spawns. We've both noticed it at the same time; one totally clear egg off to the right side. (All the other eggs are clear with a tiny cloudy white spot contained within). He "pops" it, not other possible description, and it's gone! Now he "appears" normal; that is relaxed with his body covering the eggs (Not mouthing) and gently fanning them with his pectoral and ventral fins.

**BOWL SHOW REPORT FOR
AUGUST**

CICHLIDS

New World Medium
1st Barrie & Raymond Farmer -
Aequidens maroni

Haplochromis
No Entries

Open
1st Jason Hoffman
Orange Chromide

EGGLAYERS/LIVEBEARERS

Guppies
1st Jason Hoffman

Barbs
1st Bob Pallansch
Rosy Barb
2nd Bob Pallansch
Checker Barb

Open
1st Barrie & Raymond Farmer
Darter
2nd Jason Hoffman
Dwarf Gourami

* Judge's Choice

Totals through August 1988

| | <u>Month</u> | <u>Quarter</u> | <u>Annual</u> |
|------------|--------------|----------------|---------------|
| K. Muller | - | - | 1 |
| R&B Farmer | 6 | 18 | 19 |
| G. White | - | 10 | 33 |
| R. Hammond | | 6 | 6 |
| J. Hoffman | 6 | 6 | 6 |

| | <u>Month</u> | <u>Quarter</u> | <u>Annual</u> |
|---------------|--------------|----------------|---------------|
| T. Fitz | 12 | 43 | 79 |
| R. Hughes | - | - | 9 |
| K. Muller | - | - | 5 |
| R&B Farmer | 6 | 24 | 37 |
| T. Williams | - | - | 1 |
| J. Stieringer | 6 | 6 | 17 |
| T. Hetzel | 6 | 6 | 11 |
| J. Mangan | - | 3 | 16 |
| R. Hammond | - | 2 | 2 |
| L. Spickler | - | 4 | 4 |
| B. Pallansch | 10 | 11 | 11 |
| J. Hoffman | 10 | 13 | 13 |

August Classes: Egg/Live: Killifish, Catfish, non-Corys, Open
Cichlids: New World Dwarf, Rift Lake, non-mbuna
(except Haplochromis)

September Classes: Egg/Live: Livebearers (non-guppy), Sharks &
Loaches, Open
Cichlids: Angelfish and Discus, Non-Riftlake
African, Open

APPLICATION FOR MEMBERSHIP

Date: _____ 19 _____

Name: _____

Street: _____ Apartment: _____

City: _____ State: _____ ZIP: _____

Telephone H: _____ W: _____

Occupation: _____

Where did you hear about PVAS/get this application? _____

What fish do you keep/topics are you interested in?

Number of tanks: _____ Time in hobby _____

What can this club do for you? _____

What do you want to do for the club? _____

Membership dues for the Potomac Valley Aquarium Society are:

Family/Individual: \$12/yr

Corresponding: \$ 9/yr

Junior (under 18): \$ 5/yr

Please send application and check for dues to the address above.

VIRGINIA

PETS-N-THINGS
Pan Am Center
3081 Nutley
Fairfax, VA 22031
(703) 573-4400

TYAU TROPI-CARE
6905 Duke Drive
Alexandria, VA 22307
765-6713

ANNANDALE PET SHOP
Markham East Center
4231-F Markham
Annandale, VA 22003

AQUARIA INTERNATIONAL
1180 Pendleton Street
Alexandria, VA 22314
683-4811

BAILEYS PET CENTER
Leesburg Pike Plaza
3527 S. Jefferson Street
Baileys Crossroads
Falls Church, VA 22041
931-1400

BEACON MALL PET CENTER
Beacon Mall Center
6776 Richmond Highway
Alexandria, VA 22306
660-6100

DISCOUNT PET CENTER
Manassas Shopping Center
9028 Mathis Avenue
Manassas, VA 22110
361-7769

NATIONAL PET & AQUARIUM
Willston Shopping Center
6168 Arlington Blvd.
Falls Church, VA 22046
533-7828

OAKTON PET SHOP
Oakton Center
Rt. 123 & Hunter Mill Rd.
Oakton, VA 22124
281-9622

PET MART TYSONS
8417 Old Courthouse Road
Vienna, VA 22180
893-8181

WILSON'S PARROTS & MARINE LIFE
Shirley Edsall Ins Park
Build America 5
5605-G Gen Washington Drive
Alexandria, VA 22312
922-7358

SUNSHINE PETS
7395H Lee Highway
Falls Church, VA 22042
573-6946

PETS, ETC.

Herndon
Stuart Centre
462 Eiden St.
Herndon
VA 22171
437-0381

Sterling
Hechinger Jamesway Plaza
243C Harry F Byrd Hwy
Sterling
VA 22170
430-9667

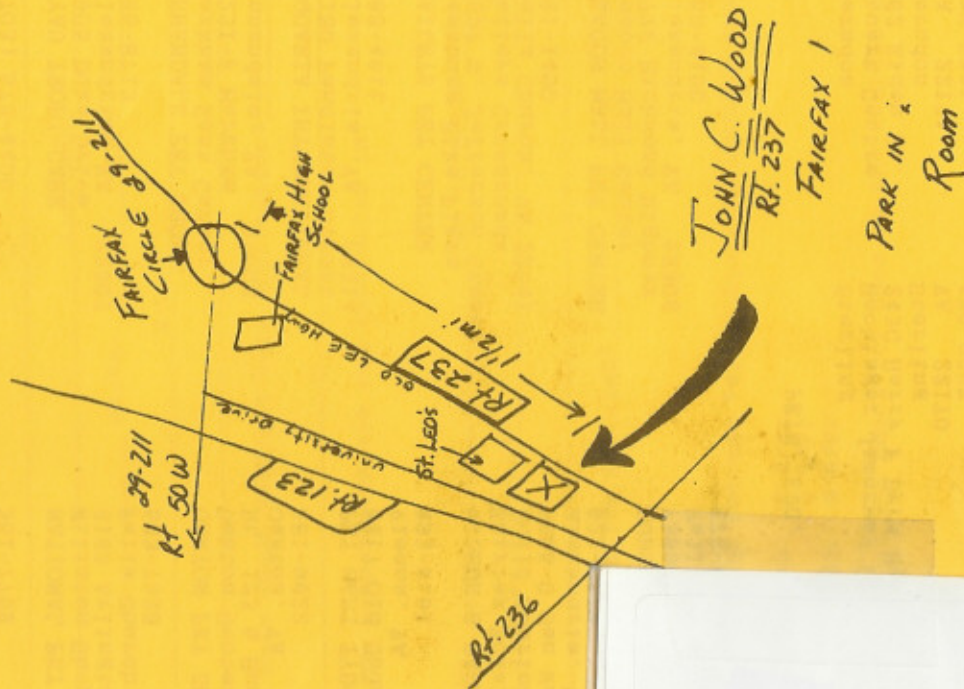
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POTOMAC VALLEY AQUARIUM SOCIETY



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The Potomac Valley Aquarium Society will meet on [redacted] 1988:

| | | | |
|--------|--------|--------|--------|
| 11 Jan | 11 Apr | 11 Jul | 17 Oct |
| 8 Feb | 9 May | 8 Aug | 14 Nov |
| 14 Mar | 13 Jun | 12 Sep | 12 Dec |

Meetings are held at the John C. Wood Facility, Rt. 237 (Old Lee Highway), Fairfax City, VA. Doors open at 7:30, meetings start at 8:00.

Everyone is welcome!!!