DELTA TALE

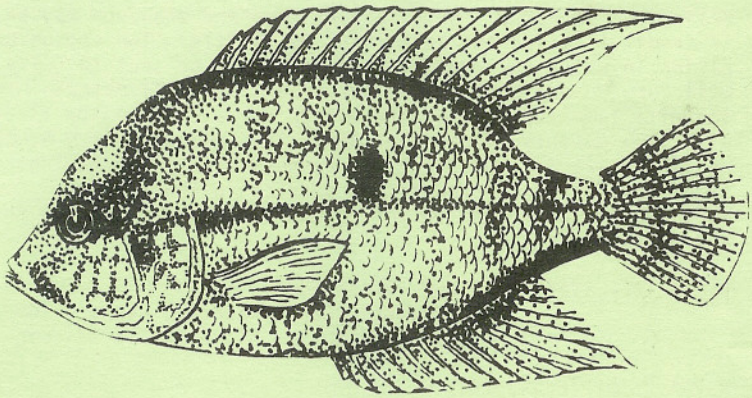
OCTOBER, 1981

VOL. XII, ISSUE 10

OFFICIAL PUBLICATION OF

potomac valley aquarium society

FIFTY CENTS



Guest Artist: Tony Benages,
Indianapolis Aquarium Soc.

ANNUAL FALL

BANQUET & AUCTION ISSUE

P.V.A.S. 1982-83 Nominees for Officers and BOG (See Page 19)

Delta Tale is published for the benefit of the Potomac Valley Aquarium Society (formerly the Potomac Valley Guppy Club), a non-profit organization, 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: Secretary, P.V.A.S., P.O. Box 6219 Shirlington Station, Arlington, VA 22206. Original articles and drawings may be reprinted if credit is given the author and Delta Tale. Two copies of the publication in which the reprint appears should be sent to Delta Tale, which will forward one copy to the author/artist. All material for inclusion in Delta Tale shoud reach the editor no later than the first Saturday after the monthly Monday meetings. The Potomac Valley Aquarium Society and the Delta Tale disclaim any responsibility for content or availability of advertised merchandise or service in these pages. Customer satisfaction is a matter to be worked out exclusively between the advertisers and buyers.

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P.V.A.S. OFFICERS, 1981

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MEMBERS OR NON-MEMBERS HAVING QUESTIONS ABOUT FISH, AQUARIUM KEEPING, AND BREEDING CAN CALL ONE THE THE OFFICERS LISTED ABOVE, WHO WILL BE GLAD TO ASSIST YOU, OR REFER YOU TO SOMEONE WHO MIGHT.

Printed by TOP CAT PRINTING, 164 Colburn Drive, Manassas Park, Virginia

MINUTES OF THE BOARD OF GOVERNORS' MEETING, SEPTEMBER 3, 1981

The September BOG Meeting was held at Woody and Nancy Griffin's home and was called to order by Woody at 8:00 P.M. Attending were Vince Edmondson, Chryss Guiler, Darrell Holman, Ken Fisher, Pat and Maggi Mahoney, Kenny and Sandy Warren, and Woody and Nancy Griffin.

Ken Fisher presented his plans for bidder registration and tallying at the annual fall auction, on October 18, 1981. It should be a much more systematic and efficient operation this time around.

Maggi Mahoney and Ruth Brewer will have the fliers and posters ready by about the middle of September, and will mail a flier to each member and to others who may be interested in the Fall Banquet and Auction. Charlie Grimes of Indianapolis will be our guest speaker.

A long discussion ensued on how to at least break even on the fall auction. An inventory will be taken of the supplies and prizes on hand before we spend any money into raffle prizes. Tee shirts will be used for prizes, and each member will be asked to purchase ten dollars in raffle tickets to help defray the expenses.

Ruth Brewer will donate a gift certificate for a Tropical Fish Hobbyist subscription as a raffle prize.

Ken Fisher and Pete Tietjen will recruit their own personnel for the auction.

There was a Show Committee Meeting on Sunday, August 30, at Woody and Nancy Griffin's home. A written proposal will be made to the 1982 board and officers with regard to the Spring Show and Auction. Among the recommendations will be that we replace our current air system, at a cost of approximately five hundred dollars. The next Show Committee Meeting will be held in November, and anyone who might be interested would be welcomed.

Woody presented the criteria for the FAAS Ribbon, significant of the "Aquarist of the Year," and to be awarded at the Christmas Party. If you are 1) A Bowl Show participant, 2) A BAP participant, 3) A regular attendee at meetings, and 4) An all around good club member, then there's a good chance that you'll be nominated at the November Board Meeting, where two or three candidates will be chosen. The election will be held at the November General Meeting, and the results will be announced and the award given at the Christmas Party.

The October Board Meeting will be held on Wednesday, October 7, 1981 at Ken Fisher's home.

The meeting was adjourned at 8:45 P.M.

Respectfully submitted,

Margaret E. Mahoney
Recording Secretary

THERE'S GOTTA BE A BETTER WAY!

John E. Jessup PhD

Those of you that have participated in the Breeder's Award Program know that you eventually reach a point where the books no longer tell you what you need to know, or your experience fails to tell you what to do, or, in the case of some, you run out of the dumb luck that has gotten you this far. You reach a point, in other words, where you do not know how to go about spawning a particular species of fish.

Let's face it. There is a hell of a lot we do not know about fish and their breeding habits and, at least it has been my experience, many of the articles published in recent years in the popular hobby journals, that report the spawning of some particular species of fish, are often inaccurate at best and, often, are outright fabrications. There was, for example, a report published some years ago in one of the magazines about the spawning of Rasbora heteromorpha. The author stated that he had witnessed the event and that R. heteromorpha was a livebearer!

There are obviously many sides to this story, not the least of which is, of course, the responsibility of the purportedly "expert" publishers of the journal not to publish nonsense. That much said, it still leaves you with the problem of what to do to try a get a difficult -- sometimes, impossible is abetter word, species to spawn. From this point onward, this article will be a philosophic discussion of that particular point which is written in the sure and certain knowledge that, having applied most of the precepts set forward here in my own fishroom, I still can't get my hoplo's, or my botia's, or my Crenicara filamentosa to spawn!

Thus, the term philosophic is the operative part of the phrase, and it is the most important part. If you approach the task of trying to spawn a difficult species with the outlook that many others have probably also tried, and most likely failed, you can be more objective in your approack to the problem. It might be wise at this point to get one point clear. What I am talking about is the deliberate and methodical preparations one makes in attempting to get a particular species to spawn and not an ipso-facto discovery of fry in a tank of hitherto undetermined environmental characteristics. The dumb luck is bad enough -- it always seems to happen to the "Wrong" people -- that is to say, never to you. What is important is the fact that valuable data has been lost on the conditions prior to and at the time of spawning. Some years ago, I spawned Arnoldichthys spilopterus. I should say, the fish spawned, I had no part of it. It was a community tank heavy in plants and rocks.

How old the young were when I discovered them is impossible to determine. What was more disturbing was the fact that I did not have the slightest idea of the conditions that triggered the spawn and, therefore, could not reproduce them to get the fish to do it again -- they never did.

These are a few suggestions that I believe ought to be considered when you prepare to spawn a difficult or target level fish. These are suggestions, they are not immutable, and they most likely will need some modification as you proceed.

1. Read all you can about the species, noting particularily any reports that outline failures. Reports of failures are usually more accurate than reports of success. Use these facts in determining what not to do more than as positive guides.

2. In your reading, attempt to acquaint yourself with the type of habitat in which the species naturally occurs. Do this so that you can as closely as possible approximate the same conditions in the tank. This includes types of aquatic flora, bottom conditions, and the abundance or lack of hiding places. Granting the fact that your fish may never have lived in the wild, there is still a need to conform to the environmental factors in which the particular species has prospered. Remember the fact that, if the fish was easy to breed, there would be no need for this type of reasoning.

3. Do the same thing with water conditions. Try and determine the type of water in which the species is found in nature. This should include temperature, pH, DH or hardness, and color. We are not talking about the particular conditions of the water that came with the fish, nor with the water conditions in which the fish may have thrived in your fishroom thus far. These are important starting points, but they do not signify the particular water conditions in which the fish will.

It would take a nomographic display to demonstrate that fish live within certain parameters of temperature, pH, and hardness. Other elements of water chemistry must be ignored, and are generally not so important, when understanding the way fish behave. Imagine a three-dimensional box, the boundaries of which are formed by the three factors of water condition. This box constitutes the broadest limits within which the particular <u>species</u> of fish will <u>survive</u>. The underlined words are significant. The word species means the general run of fish within the species -- in other words, the average limits at which a percentage(in other biological tests - 50%) will die, or as the second underlined word

4. With the information you have gathered it should now be possible to assemble a relatively convivial environment for your fish. As to the tank size, there are several ideas that might be considered.

a. For two fish under 2 inches, a ten-gallon tank might be the best BUT remember the problem of crowding when the hatch is free swimming. It is always easier and safer to move the adults and leave the fry alone for as long as possible.

b. For fish over two inches in length, the size tank needed is proportionate to the size of the fish. Obvious, you say, not necessarily. Remember again the problem of spawn rearing. Most of cannot afford the luxury of dedicating very large tanks to the rearing of young, unless, of course, the young are extremely rare or valuable. Thus, the decision on whether the fry will have to be moved must be added into the calculations on what size tank to use.

5. Introduction of the fish into the new set-up also requires some thinking. First of all, how many fish should be used and in what ratio? With very difficult fish there may be no guidance in the literature. Whatever you can discover will, of course, be of assistance. If there is no guidance start with a pair. Pick the best and the seemingly healthiest fish you have. Enter the male first, and allow him time to "stake-out" the tank. Always drip acclamate the fish, taking at least thirty minutes for the process. Do the same thing two or three days later when you enter the female, but do it at a time when you can watch what's going on. This may save you the lose of a very valuable female. It is obvious in some species that varying numbers of males or females must be used. Consider that will almost definitely take some losses, if this is the way the particular species spawns, especially if there is a pairing process involved. You should also consider the use of "dither" fish as another tactic to use,

6. From this point on its pretty much up to you and, of course, the fish. The key points at this phase are patience -- on your part, and a willingness to experiment. Above all, if you intend to be a good hobbyist, or if you intend only to be able to replicate a particular spawning sequence, the keeping of good records is essential. This is the hallmark of the good aquarist. I would like to tell you more, but I forgot to write it down.

indicates, will survive.

This does not mean that the fish will be happy, nor that they will prosper. They will also be more subject to secondary causes of death, such as disease, or organ failure. The dimensions of this box will vary greatly between species and it relative "shape" will also differ greatly. We know, for example, that some fish have broad tolerances in all three factors. This does not, in any case, mean that the toleration is infinite, however, and all animals, man included, will reach a temperature level, or a level of acidity(or alkalinity), or a condition of water hardness that will surely -- without question, kill him.

Within this imaginary box, or window, if you prefer, there is a smaller box, not necessarily proportionate to the outer box. Within this more confined environmental area, the fish will thrive and be happy. They will grow, show good color, and exhibit those other traits that mark a healthy fish. This area may be called the "maintenance window or box, and conforms generally to the environment in which the fish are found in nature.

Again, within this inner region, there are one or more small boxes or windows within which the fish will spawn -- all other factors being considered as having been optimized. That there may be more than one of these spawning windows is speculative at this point, but some evidence was collected some years ago -- which I have not yet processed that seems to indicate that phenomenon.

Hence, by way of illustration, we may postulate the following:

Fish Species X

	Survive	Maintain	Spawn
Temp.	50-90°F.	65-78°F.	74-76°F.
pH	6.6-8.0	6.8-7.6	7.2-7.3
DH	2-8	2-6	4-5

This example is hypothetical and is meant to describe the asymetrical nature of the three environments. The only way to determine these parameters in your particular neighborhood is to keep accurate records throughout the preparation, actual spawning, incubation/brooding, and early growth stages. This will insure the ability of reestablishing those same conditions again.

SPAWNING THE ORANGE CHROMIDE
Etroplus maculatus

by Woody Griffin,
PVAS

This beautiful little cichlid is the only dwarf that originates in Asia; to be more specific, from India and Ceylon. It attains a maximum size of three inches and it's colors vary from lemon yellow (my pair) to orange with black spots in the upper body. To my knowledge, there is no sexual dimorphism. The chromide seems to be a good mixed community fish, but when maintained together, or in pairs, they are quite shy. They require plenty of caves, some floating plants, and a few poecilids as dither fish.

My pair was maintained as above with the exception of the dither fish. They were in a five gallon tank with a pH of 7.2 and a temperature of seventy- eight degrees. I have heard a teaspoon of Kosher Salt per gallon adds to their stability, but as I had none, I let it go.

The pair was fed mosquito larvae, frozen brine shrimp, and flake food. They spawned on the third day in their new home, so my conditions must have been to their liking. The clutch of about forty opaque eggs were placed on -he underside of a rock, leaning against the tank. The eggs hatched in three days and hung by a slender filament, where they were actively tended by both parents. The fry were free-swimming at ten days post-spawning, and the neatest fry that I have ever seen.

The babies are black and white and look like little bumblebees. They readily accepted newly-hatched brine shrimp as a first food, and I saw no evidence of them nipping at the secretion on the parents' sides. It has been reported that they do so, but my particular fry did not. I maintained this set up for two weeks with daily partial water changes and four daily feedings.

The adults showed signs of another spawning, so I removed them and continued my afore-mentioned maintenance. In sixty days time, I had twenty-eight fry, one-half to three-quarters of an inch long.

In conclusion, this fish was once considered very difficult to spawn, and still is in some areas. Considering that I did nothing out of the ordinary to induce spawning, I feel that with clean, well-filtered water, partial water changes, and a proper diet, the Orange Chromide can be readily spawned in our area.

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SPAWNING CICHLASOMA MANAGUENSE

by Garland Neese,
PVAS

This fish is a South American Cichlid from Colombia, about ten inches long, speckled black on a silver body which turns almost purple when the fish is in spawning condition.

I purchased six or eight fry so long ago that I don't really remember exactly when it was, and raised them in various tanks, mostly in under floor, round tanks on my patio. I finally decided to try to spawn the fish after having them around for four or five years. I first placed five of the fish in a 125 gallon community tank with many other species, so as to observe them better.

After removing egg-laden stones twice and failing to hatch the fish that way, I decided to leave the eggs with the parents, but to no avail since they were eaten several times. I then removed the breeding pair to a fifty-five gallon tank by themselves, hoping to have more success. Lo and behold, after several days, the parents pair again loaded a stone completely with eggs, numbering close to a thousand. This time the parents did their duty, and about a week later, I removed the parents. The fry steadily decreased in number, and in sixty days time, there were about 110 left in the tank. They were approximately one inch long at that time, and I moved them to a forty gallon tank, where they are presently doing fine.

The breeding pair has again laid about a thousand eggs, but I wasn't fortunate to save them this time. The parents are in a twenty-four gallon tank now, and should be ready to go again soon. I'll let the results be known later.

P.S. While removing the parents after their last spawning attempt, I noticed an abundance of slime in my net and on the fish. I have a suspicion that the fry could and maybe should feed from the sides of the parents, like discus do. I will leave them together the next time and see what happens.

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POTOMAC VALLEY AQUARIUM SOCIETY
Treasurer's Report for 9/1/81

Bank Balance - 7/31/81		$ 2,192.27
Plus Revenues:		
Membership	$ 85.00	
Monthly Raffles	88.25	
Tee Shirt Sales	36.00	
Mini-Auction Proceeds	169.00	
Spring Auction Proceeds	64.18	
		442.43
		$ 2,634.70
Less Expenses: See below for detail		88.50
Bank Balance - 9/1/81		$ 2,546.20

Proceeds to Seller, Mini-Auction	$ 88.50

FIELD OBSERVATIONS ON NATIVE KILLIES IN CENTRAL INDIANA AND POINTS SOUTHEAST

by Charley Grimes

To my frustration and unfulfilled dreams, I have only collected fish in Central Indiana and the Southeastern United States. This is frustrating, but not nearly so much as it must be for those who can't travel to the fish "Mecca" of the United States, which is Southern Georgia and Northern Florida, or to Central Indiana where we collect the most magnificent killie in the world (seasonally), Fundulus catenatus - the Northern Studfish.

I have spent a large portion of my life enjoying nature, but I don't think I ever had a bigger thrill than when I seined up my first Studfish one spring. The fish was in full color and about five inches long. I was seining with two friends, Vern Parish and Eddie Hartle. We almost had a fight over the fish until Vern, our senior citizen, started going on about how old he was and how he didn't have much more time, and (that) we had a lot of years of seining ahead of us, and he made it sound like a death-bed request. To make a long story short, he ended up with a semi-healthy Studfish (the poor fish almost dried up from my holding it to look again and again). It was the first such animal any of us had seen and we wanted to make sure we could believe our eyes.

We eventually caught more, and before we knew it, we were self-acclaimed experts on a misplaced pocket of F. catenatus. According to Eddy's book on Freshwater Fishes (of the U.S.), they only get as far north as Tennessee and the Ozarks.

We actually caught a ten-inch male and entered it in the AKA Convention in Cincinnati, Ohio in 1979. The day we caught "Big Monroe" was one (of) the most fun in my life. Vern and Eddie, while lost, had discovered the "Mother Lode" for F. catenatus and were nice enough to share it with me. It was the third week of May and a magnificent day. Warm and sunny, even though we knew the water would be cold. We had, especially me, shot off our mouths about entering the best native and the Best of Show Killie in the upcoming AKA Convention at Cincinnati. The timing was perfect because the colors of the Studfish are seasonal. They really become magnificent in the spring and start to fade in August and become a silver fish with large fins. But in the spring, they are "Star Wars." Imagine a killie out of the Cameroons, blown up to have a body as big as ten inches on a twelve inch school ruler, and as high as the ruler, and over three-fourths of an inch thick. Imagine what an Aphyosemion striatum that size would look like. In color, the Studfish is a brilliant blue with carmine red spots all over its sides and a bright gold snout. The only fish to come close is the Lamprologus from Lake Tanganyika.

On this day, we could even see the fish in loose schools from the bridge. They looked like swimming jewels. Big jewels--like the Hope Diamond. We caught 'em by the dozens and didn't keep anything less than six inches total length. We knew we had the native class knocked and probably best of show, but we knew some new fish out of Africa or South America would win, because it was knew. All of a sudden, we got "Big Monroe." A ten inch beauty with one flaw. He had a spot of tailrot. I sometimes feel too much perfection is marred to to protect us from having our minds blow. While the tailrot was healing, we knew it was a serious flaw and would be a bar to a smaller Studfish winning because "Big Monroe" dwarfed the other big ones we caught and, of course, with that tail flaw, "Big Monroe" couldn't win. As usual, ego won out over common sense, and we entered "Big Monroe." He didn't win, but our F. catenatus were the talk of the show and convention, and they were up against some new stuff out of Africa.

It was worth it even though I am still convinced we could have won best native with a perfect eight inch Studfish, and we had plenty, and gave any of those "hot tickets" from Africa and South America a run for their money.

Sadly, the Studfish loses it's color by September and will not regain it in the aquarium, and won't get it back next spring. I guess you just can't fool Mother Nature. However, with this fish's color potential, an aquarist who gets the handle on color enhancement will have a fish that will reward his wildest expectations.

We have found the Studfish to be extremely elusive and quite adept at hiding. These fish can dive into sand or gravel in a stream in the blinking of an eye, and quickly put themselves out of reach. They also bury themselves in the aquarium and have you cursing and looking on the floor until you learn their little trick. These fish are spawnable in your tank, but to get the beauty, you have to get them from the wild. The collecting is most of the fun to boot.

A more common killie in Central Indiana and the Midwest is Fundulus notatus. This is a pleasant top minnow that is alive color, with a strong black zig-zag stripe running down the lateral line. Adults are often found in pairs and depend on speed and hiding at the edge of the shore to get away. They are often seen holding their bodies in an S-shape to make a power thrust to escape. These fish take to aquarium life quite easily and, while not flashy, are pleasant. They are typical mop spawners and are worth maintaining. While they can't hold a candle to the Studfish in May, they sure beat it all hollow in October. We collected a closely related Fundulus, olivaceus, in the southwestern tip of Illinois. It is a lot like F. notatus, but not so intensely colored. F. notatus is much more to be desired. I was pleased to be able to make an eyeball comparison for myself though.

I now must skip a bunch of states and locate myself in Southern Georgia and Northern Florida. Some day I want to collect Tennessee and Alabama, but my primary interest isn't for killies there. I have also collected in Mississippi and Louisiana, but suggest Georgia and Florida to be the best spots. I also want to collect F. kansae, a fish I am really hot for; F. zebrimus, and F. sciadic are a couple of others that I like a lot, but find them to be really scrappy little rascals. The collecting trip out to the plains will probably never take place because I feel the call of the Okefenokee Swamp getting stronger every day. Someday, I'll find some Yahoo who wants Studfish as badly as I want F. kansae and we'll both be in business.

The first killie I ever collected in the Southeast U.S. was what I felt was F. cingulatus. I, with the aid of my then six year old son really worked our butts off with a couple of aquarium nets to catch a dozen. After we caught them, we had no idea what we had caught. I got out my trusty "Sterba" with its pitiful line drawings and finally decided I had F. cingulatus. Assuming Sterba had listed all the fish in the world, I thought I had a positive lock on the I.D.. Vern Parish and Ross Brock tried to tell me I had F. notti, but I wasn't taking any of their advice because I didn't want the fish to be anything but F. cingulatus. I even entered them in a Chicago AKA group workshop. To my embarrassment, Dr. Jamie Thomerson was there and really slid it into me and I had to finally accept that my fish were F. notti. That really isn't all that bad as F. notti is a quite handsome fish and plenty worth having. I have since learned that Ross and Vern are usually right when we are (in) the "Great Outdoors" and they have probably forgotten more than I'll ever know. It is really a learning experience to be out with

them. While I highly respect their knowledge, I am easily able to resist showing it in my treatment of them. I don't want them to get UPPITY on me.

The first collecting trip that Tony Benages, Vern Parish and I made to visit Ross Brock and (to) collect fish was mind-boggling. We felt we had died and gone to heaven. We have followed that original trip with others and they have all been super. We have collected Cyprinodon varigatus, Lake Eustis Pupfish, which must be a variety of C. varigatus, Lucania parva, Lucania goodei, Leptolucania ommata, Fundulus masalis, Fundulus grandis, Fundulus similis, Fundulus heteroclitus, Fundulus seminolis, Fundulus notti, Fundulus chrysotus, and Fundulus cingulatus in just Georgia and Florida. We haven't yet taken Adinia xenica or Jordanella floridae, but still have hopes for them. There are a few others available in the area, but aren't in my opinion worth tank space. At least ten are really good stuff, though, and along with some of the minnows, especially Notropis welaka and tory and pigmy sunfishes are calling to me to come down for another visit. In fact, I want to bring some of them back up north with me to stay in my fish room as house guests.

As near as I can figure, in larger areas, usually an acre or more, F. notti and F. chrysotus seem to "cruise" out to about ten feet from the shore. F. cingulatus seem to fiddle around in the same general area. Those damn F. notti are the most abundant and seem to swim into the net. The F. chrysotus are the most elusive and immediately upon seeing the collector, go out beyond the reach of a dip net and will head for deeper (water) and zip down to the bottom. F. cingulatus are more secretive, but stick close to their cover and are not too tough to catch. All three do well in the aquarium and are eager eaters. A little extra care must be taken to show F. cingulatus to best effects. A planted tank, not too bright, with peaty water will bring out the red in the fish. All are mop-spawners. These fish are in ponds, low spots along the road, and in slow moving streams all through the area. The little cutie of the bunch is Leptolucania ammata. Common names of Lemon Killie and Pygmy Killie really fit. The name Swamp Killie doesn't seem to fit from my experience. These dinky rascals are found in typically dinky water. Small and shallow weedy streams and ditches are where you find these jewels. An inch of water is plenty to hold a bunch of them. They spawn like and just as easy as Pseudo. annulatus, which means I can't spawn the damn things. They are such pretty little rascals that one can forgive this slight personality flaw.

We actively pursued Cyprinodon variegatus and discovered they actually thrive in very adverse conditions. We found our first ones in a polluted mud hole. We actually did them a favor getting them out of that pit. They spawn best on bottom mops and appreciate a little salt in the water. They don't seem to care what you feed them as long as its often.

We took Lucania parva in brackish water at the edge of the road on the St. John River near Green Cove Springs, Fla. We had to work for them, but they were there by the zillions. This fish is called the "Rainwater Killie" for no good reason that I can imagine. They look like a Bluefin Killie without the color and, in fact, we took a few Bluefins at Green Cove Springs and didn't realize it 'til later. These fish are very undemanding and are prolific mop-spawners.

The other brackish water killies we took were accidental victims while look-

ing for either Cyprinodon variegatus or Adinia xenica, the Diamond Killie. For the most part, they were released as we were after other game. We have yet to collect A. xenica, but still have high hopes.

We actually took the Lake Eustis Pupfish, Cyprinodon hubbsi, from a lake in a city park in Leesburg, Fla. We later discovered the lake is connected to Lake Eustis. We worked hard at it and mainly through Ross Brock's fancy dip net work were able to get a few. They, however, haven't prospered. I think they may have needed more vegetation than we gave them. Unfortunately, I ran out of the fish before this hot idea hit. Maybe next time.

In this area, we also took Fundulus seminolis, which was a big disappointment. They do exceed Eddy's three inches, but that's all that was worth noting. They are just plain dull. We didn't keep any, so that might give you some idea how impressed we weren't.

I am going to wrap this up with the Lucania goodei, the Bluefin Killie. I do dearly love this fish, but have yet to succeed with them. I do know the males are rough on the females, they both eat their eggs, they are picky eaters, and still are worth the trouble. Field experience reveals that they tend to stick to deep water with lots of vegetation. Their color is quite variable and red usually shows up more than blue. Those that I have seen raised in aquarist's tanks for a couple of generations are colorless in comparison to wild fish. Another question we need to figure out just like the Studfish problem.

While I assume that Rosario LaCorte could show me places in Brazil that would be better than the Southeast, and I am sure that Dr. Radda (could) rip me up in the Cameroons, I still think the Southeast stacks up pretty good. When you consider that we were able to collect all our fish within the sight of our car, off paved roads, never more than a few miles from a telephone, motels, good food, and Pepsis, it don't seem too bad. Additionally, you don't have to worry about any disease any more exotic than Poison Ivy, no government overthrows, invasions or rebels and bandits (beyond those at gas stations), or being eaten or having your head shrunken, then it seems better. Its not more than a day and a half drive for over half the population in the United States.

The best part (about collecting) is that I can afford to go in both time and money, my wife doesn't worry near as much as if I went to a foreign country, and I not only have fun and collect really desirable fish, I am able to visit with some really special friends. Additionally, on a two-week collecting expedition, a person could, if forced to, work in a half-day for Disney World to make the spouse and kids happy.

I hope I have another forty years of this to do. So far, the thrill hasn't diminished one bit. Each sweep of the seine is an adventure.

REPRINTED FROM: Tropical Topics, published by the Indianapolis Aquarium Society, March, 1981.

Charley Grimes, Chairman of the Board of Directors of the IAS, and the author of the preceding article, will be our Guest Speaker at PVAS' Fall Banquet, October 17, 1981. Plan now to hear Charley, who is regarded by many to be the most entertaining speaker on the circuit.

NEWS and NOTES

Membership Chairman Wayne Hilburn advises that he has just accepted the job as Chairperson of the National Aquarium Liaison Committee for the Federation of Aquarium Societies (F.A.A.S.), and we can only state that John R. Benn, President of F.A.A.S. could do much worse in his choice of staff. Congratulations, Wayne!

Wayne also advises that we have several new members, and we'd like to welcome the following ladies and gents to PVAS:

1) Susan D. Oglebay, 810 - Forest Glen Road, Silver Spring, Md. 20901; 593 - 4612; Susan keeps cichlids, livebearers, Angelfish, and saltwater fishes;

2) Robert J. Goldstein, 5500 Holmes Run Parkway #910, Alexandria, Va. 22304; 751-0460; Bob has twenty years in the hobby, and houses Guppies, Corydoras, Killifish, Badis badis, Discus, Betta splendens, and Gouramis, both Honey and Dwarf;

3) Theresa and Fred Hoffman, 9221 Long Branch Parkway, Silver Spring, Md. 20901; telephone number is 431-6675;

4) Barbara L. Ward, 3611 Gallatin Street #232, Hyattsville, Md. 20782; 277-3149

5) Arthur F. Lembke, 3316 Memphis Lane, Bowie, Md. 20715; 301/464-0359

New Exchanges include John R. Benn, President, F.A.A.S., 1204 Firestone Ave., Muscle Shoals, Ala. 35660, and The Daphnian, the excellent publication of the Boston Aquarium Society, Inc., c/o Phil Nathanson, 71 Forest Hill Street, Jamaica Plain, Mass. 02130.

New Addresses: Dan Cohen, 2733 St Paul Street, Baltimore, Md. 21218; telephone number is 301/366-1371;

Darrell Holman, 1051 N. Liberty Street, Arlington, Va. 22205; telephone now 533-7750.

Two study groups which have formed recently are the Cichlasoma Study Group and the Discus Study Group. I joined the CSG through Ginny Eckstein and Mike Sheridan made available to me the first bulletin (edited by Mel O'Mera and produced by Bob and Mary Lou Agel) just so I'd see another reprint of his "Hidey-Hole Method of Spawning" article. The bulletin, titled Cichlasoma Power, includes some general information on the purpose of the group, and includes articles on C. nicaraguense and Petenia splendida, which I found of great interest. For more information, contact Woody, one of the above-mentioned parties, or myself.

The DSG publishes a bimonthly newsletter called DISCUSsions, and was formed to gather knowledge and promote the exchange of information on Symphysosdon discus. For further information, call or write to either John R. Benn, whose address appears above (telephone 205/381-4945), or Jerome T. Olds, Route 26, Pitcher N.Y. 13136.

The upcoming Fall Banquet and Auction promises to be a smash, with only limited seating available as I write, since approximately twenty New Yorkers, New Jerseyites, and other visitors promise to be there. Remember, first come, first served. Don't miss out by procrastinating! Make your reservation(s) today!

The Auction on Sunday should be outstanding, too, with the promise of some new foods and different fish, but you have to be there to see for yourself!

'Til next month, keep fishin' so I can keep writin'....

BREEDING PELVICACHROMIS PULCHER

by Vince Edmondson
PVAS

One of the truly beautiful Dward Cichlids is the "kribensis," formerly Pelmatochromis kribensis, but re-classified as Pelvicachromis pulcher about ten years ago. Hailing from the lower range of the Niger and Kribi Rivers in West Africa, the ever popular "Kribs" have been found occasionally in brackish waters, an indication that just about anyone could house them without too much concern in regard to water quality.

I obtained several males and females over a six month period and finally selected a pair from a community tank, placing them in a fifteen gallon tank inhabited by a pair of Keyhole Cichlids and a few small Corydoras catfish. I also placed a small flowerpot, with several holes knocked out of the sides, on the gravel bottom and in an inverted position. The female "Krib," easily identifiable by the black dot(s) in the dorsal fin, took almost immediate residence within the flowerpot. The male, also easily identifiable by the presence of one or two dots in the top half of the caudal fin, soon joined his future mate in the flowerpot.

For a week or so, the pair moved in and out of their new home and I then noticed the female removing mouthsful of gravel from the flowerpot, with only occasional assistance from the male.

An intense red, swollen belly region told me that the female was gravid, so I divided the tank, leaving the pair of "Kribs" alone on one side of the tank. Soon the male's colors were almost as intense as were the female's, and he spent just about as much time in and out of the flowerpot as did his smaller companion.

A few days passed and the male was no longer welcome within the confines of the flowerpot, and soon got the message as to his mate's temperament when she repeatedly threatened and postured at his every approach, occasionally physically attacking him if he ventured too close to the entrance. At this point, I removed the other inhabitants of the tank and then the divider.

Approximately seven days later, I observed a swarm of babies swimming in a rear corner of the tank, zealously protected by the proud mother, while the father swam in a semi-circle about six inches from the free-swimming fry. Within two days, both parents were quite involved in the rearing process, alternately guarding the fry and eating the varied offerings of frozen brine shrimp, assorted flake foods, and live blackworms.

On a diet of the above-listed foods, following an initial diet of Kordon Fry-Diet, frozen baby brine shrimp, crushed flake foods, the baby "Kribs," numbering around fifty, grew to approximately one inch within sixty days.

LORICARIA PARVA

Pat Mahoney, P.V.A.S.

The whiptail catfish is a native of Paraguay and Southern Brazil. In the wild, the whips attain five inches in length. Mine had reached four and a half inches by the time they spawned.

Joe Paull, a former member, was the first P.V.A.S. hobbyist to successfully breed L. parva. Joe was also our first Master Breeder in the Breeders Award Program.

I picked up a half dozen two inch juveniles from Joe and soon accepted their non-activity as a way of life. The whips folded fins and remained motionless on the bottom of the tank, at least while the lights were on.

I had them for about two years before I decided to try and spawn them. I set up a bare five and a half gallon tank with a jungle sponge filter and allowed it to age for a week. I then added a curved piece of driftwood, anchored by one algae-covered rock from another tank. Within a week the water was amber colored and the pH was 7.2. The tank was not in direct sunlight, so the water temperature was in the 72 to 78 degree range.

I placed five adults in the new tank. Within an hour all of them were attached to the underside of the driftwood. Occasionally I would see one on top of the rock, eating the algae. As the rock became clean, I replaced it with another from a 2 1/2 gallon drum bowl set up on a window sill for the express purpose of generating green water and algae.

Since I had lost one of the whips earlier, my spawning set up consisted of three males and two females. The males usually are distinguished by having broader heads. Their bodies are mottled grayish brown and the underslung mouth is adapted from cleaning algae from rocks and plants.

Mr. Carroll Friswold, of Altadena, CA, supplied the first written description of their spawning. As reported in the Innes Book of Exotic Aquarium Fishes, Friswold recorded forty very large amber colored adhesive eggs placed upon the top of clean rock. The male sits over the eggs, crudely fanning them for the incubation period... about eight days. He will even mouth the eggs to remove any fungus. Once hatched, however, he ignores the fry. Unfortunatly, I did not see mine actually spawn. In fact, after about a week of watching no activity whatever, it suddenly occured to me that these were Southern Hemisphere animals that might not adapt to spawning "out of season". Certainly there must be better times to spawn them than during a hot, humid Washington summer. In other words, I had my doubts.

Thick slices of cucumber (weighted down by a small piece of shale) drew them out from under the driftwood. This seemed to be their favorite food, along with the algae growing on the front glass of the tank and on the rock.

On the 10th of June I noticed the first movement in the tank. At first I thought it was only the tail of one of the adults protruding from beneath the driftwood. Down on my knees with a flashlight, I found myself staring at a half inch version of Loricaria parva. I removed the rock and slowly rotated the driftwood. There anchored by their miniature sucker mouths, "hung" twenty-four more baby whiptails.

I removed the parents immediatly and carefully introduced several more algae-covered rocks. From German aquarists, we have learned that the hardest part was yet to come -- raising the fry who are voracious eaters of algae, green water -- and strict vegetarians.

I made water changesevery other day, a quart at a time, using airline tubing as a siphon and removing refuse at the same time. Aged green water from the 2 1/2 gallon drum bowl replaced the siphoned water. The tank itself was moved into more direct sunlight to help with algae production.

By thirty days, five of the fry were nearly an inch in length. By then, cucumber slices, (duly seeded) were anchored to the tank bottom. Some of the fry ignored this delicacy and remained feeding from a very dirty sponge filter which I was afraid to clean or replace. In addition, Woody Griffin gave me some special food made for Ginny Eckstein, to her specifications. She is a PVAS/ACA friend from Long Island. Two small pellets of the food were broken up and allowed to sink to the bottom twice every day. The fry eagerly accepted it. It smelled of anise which may have contributed to its attraction for the fry. She says its almost entirely vegetable in composition.

At sixty days, nearly all twenty-five babies had attained an inch or more in length and a few made it to 1 3/4". As inactive as their parents where, I was somewhat surprised at the fry. They would literally "shoot" from one side of the tank to the other. I had added a layer of duck weed floating on the top, and at one time no fewer that 19 fry were hanging from the roots of the floating plants, a little like hams hanging in a smoke house.

Exact miniatures of their parents, including the "whip" from the top of their caudal fin, all twenty-five fry made it to the required sixty days. When they reach two inches, I will make them available to other PVAS Members.

P.V.A.S. NOMINATIONS FOR 1982-1983

The November Meeting, on Monday, the 16th, will be our Election Meeting, where next year's Officers and Board of Governors will be chosen from among the nominees. The following members' names have been placed on the 1982-83 slate:

President:	John Jessup
Vice-President:	Darrell Holman
Treasurer:	Ken Fisher
Recording Secretary:	Nancy Griffin
Corresponding Secretary:	Wayne Hilburn
Board of Governors: Two Seats	Pete Tietjen, 1982-83 Gil Baldwin, 1982-83

Kenny Warren will retain his BOG seat for 1981-82, and there will be one open board seat, due to John Jessup's nomination as President. Officers are elected for one year terms of office; board members are elected for two year terms.

Any member may make a nomination from the floor, for any office or for the board, at the November Meeting. The member nominated must either be present, or have expressed his willingness to accept a nomination. If there are no floor nominations, the above slate will be adopted. If there should be nominations from the floor, there will be a ballot vote for only the contested offices or board seats.

AEQUIDENS CURVICEPS

The Flag Cichlid

by Gerry Hoffman,
P.V.A.S.

The genus Aequidens is usually thought to represent medium to large cichlids from South America, but of the few species that can be considered dwarfs, the most popular is Aequidens curviceps, the Flag Cichlid. Usually under three inches in ;ength, these fish can be kept in small aquaria without danger to any plants you may be trying to grow. Being extremely peaceful, curviceps do well in the community set-up as well as being housed alone.

Breeding this colorful gem only requires solving one problem -- determining the sexes. Unless your fish are well matured, size, color, and fin shape don't help a bit. Male and female look alike until the female ripens with eggs or her ovipositor appears. Sometimes the finnage in the male becomes more pointed or extended, but it is not a good standard to go by. Once a pair is established, breeding will commence in typical cichlid fashion, with the eggs being deposited on the surface of a rounded rock. Both parents diligently guard the eggs until hatching, at which time they transfer the fry into pits in the substrate.

Unfortunately, my pair was prone to eating the eggs or newly hatched fry. This seems to be the case in the first few spawns, but this pair continued to do it time and time again. Only by pulling the rock and artificially incubating the eggs was I able to get any fry to survive the first few days. Easily raised on small live foods at first, they grow fairly rapidly and soon resemble their parents.

SPAWNING THE BLOODFIN TETRA

by Darrell Holman

The Bloodfin Tetra is a silvery-blue bodied fish with bright red fins. It is found widely distributed throughout the cool-water streams of Argentina. In the aquarium, it is a very active, peaceful fish that reaches a total length of about two inches. Their only requirements are clean, well-aerated water, with a temperature of about 78 degrees and a pH of 7.0-7.4.

Sexing this fish is relatively easy, as the males have a slender body, deeper colors, and the anal fin develops into a hook. The females have a more rounded belly and their colors are not so pronounced.

I recently obtained six adult specimens of this fish, four males and two females, for the purpose of spawning them for our BAP. The fish were approximately one and three-fourths inches in length, and were carefully hand picked so as to get healthy, well conditioned fish to work with. When I got the fish home, I separated them into two tanks. This was done so that there would be no chance of them spawning before the females had really loaded up with eggs. Then they were conditioned on a variety of brine shrimp, black worms, daphnia, and assorted flake foods. Frequent feeding of this soon had the females bursting with eggs.

Bloodfin Tetra(continued)

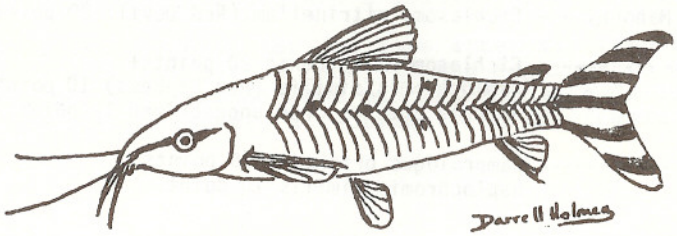
At this time, I started setting up the spawning tank. I used a five and a half gallon tank, with a one-inch layer of #3 gravel as a substrate. The tank was then filled with fresh tap water having a pH of 7.4. Then a small sponge filter was placed in the tank for filtration. A sponge filter is used so as not to trap the developing fry. I then allowed the tank to sit a few days so that the water could age. I then carefully selected the fattest of the two females and the most active male and placed them in the spawning tank, along with a large handful of Java Moss.

In a few hours, I noticed they had started spawning. I observed the pair take a side by side position and pressing their bodies together, start quivering. An explosion of eggs (was) scattered among the plants, some sticking to the plants, but most of them dropping to the bottom. This continued for about one and a half hours until several hundred eggs had been laid. The breeders were then removed, so that the eggs wouldn't be eaten.

The eggs of this species will hatch in about 36 hours, and the fry should be free-swimming in about five days. I did not notice free-swimming fry until the seventh day. I then emmediately started feeding them infusoria and liquid fry. (The feedings were small, but frequent, at least six-eight times a day.) The fry were fed this for five days, then they started accepting newly hatched brine shrimp and very fine powdered flake.

At thirty days, I had about 150 fry about one-half inch in length, and they seemed to be very healthy. On the fifth week, I obtained a shipment of Crenicara filamentosa and didn't have enough tank space to house all of them, so I had to end up using the tank which housed the Bloodfin fry. The Crenicara wasted no time in immediately devouring the fry until not one could be found in the tank. Well, I changed the sponge filter with a conventional type box filter, and turned out the lights and went to bed. The next morning, while feeding the fish, I happened to notice some movement in the box filter which I had placed in the tank which had housed the baby tetras. A closer inspection revealed 29 fry that had escaped being eaten by the Crenicara. I immediately removed them and placed them in a two gallon drum bowl until I could make space for them. Of those 29 fry, I was able to raise 12 of them to sixty days of age.

Sometime in the future, I am going to set the breeders back up for spawning and see if I can raise about 100 or so fry.



BAP REPORT

NAME	POINTS AWARDED
Garland Neese	640***
Pat and Maggi Mahoney	525***
Gerry Hoffman	490***
Woody Griffin	475***
John Jessup	355***
Darrell Holman	345***
Ruth Brewer	305***
Vince Edmondson	280**
Jim Hajdics	190**
Kenny Warren	90*
Gene Aldridge	80*
Tom Wright	80*
Thompson Family	35
Ken Fisher	30
Amy Stirman	20

RECENT POINTS AWARDED

Vince Edmondson --------- Pelvicachromis pulcher (Kribensis) 15 points

Ken Fisher ---------- Mollienesia sphenops (Black Sailfin Molly) 10 points
Xiphophorus helleri (Red Tuxedo Sword) 10 points
Lebistes reticulatus (1/2 Black/Red Guppy) 10 points

Woody Griffin ---------- Etroplus maculatus (Orange Chromide) 20 points+
Gambusia affinis (Mosquito Fish) 10 points
Loricaria filamentosa (Whiptail Catfish) 30 points

Darrell Holman ---------- Heterandria formosa (Mosquito Fish) 10 points
Xenotoca eiseni (Red Tailed Goodeid) 10 points

John Jessup ---------- Gambusia affinis affinis 10 points
" nicaraguensis 10 points
BAP Article 15 points

Pat and Maggi Mahoney --- Cichlasoma citrinellum (Red Devil) 20 points

Garland Neese ---------- Cichlasoma managuense 20 points+
Haplochromis similis (Red Empress) 10 points
Tilapia Species, red undescribed 10 points

Tom Wright ---------- Lamprologus brichardi 15 points
Haplochromis similis 10 points

Fish marked + are Special Assignment Requests, approved by the BAP Committee.

SPAWNING THE RED DEVIL

Pat Mahoney...

About eighteen months ago I was given a trio of Cichlasoma citrinellum by Garland Neese. The trio, all over five inches in length, were siblings of a spawn that Garland had given to other PVAS members as well as to a couple of local fish stores.

The male reached 6½" in length before he considered the propagation of the species. Neither female shared his enthusiasm resulting in their untimely demise in only a month after entering my tank. Garland came to the rescue with another pair of females. These survived for all of six weeks.

Now Garland is generous to a fault, however, I am certain that his sole purpose in life is not keeping me in Red Devils. Notwithstanding, he produced a fifth female. This one was nearly seven inches in length, deep of body and apparently capable of taking care of herself. My big Red Hog was impressed, initially, that is. This lady took two months to get herself killed. That was it! I took the "killer" back to Garland and announced that I was getting out of the Red Devil business.

Interestingly, when I returned the male he was bright red. When I got him from Garland he, like the females, was pale yellow. Now I know that there is a vast difference in water chemistry between Garland's and my area of Northern Virginia, but that alone could not account for the dramatic change in color. Diet variation and uncrowded conditions must also have contributed to the change. I know when Garland returned the Big Red to the 220 gallon tank containing his siblings, he stood out like a red flag.

About four months later, Garland called and asked if I had a free tank. It seemed that the "killer" was showing a definite preference for one 6½" female and Garland believed that Big Red's killing days were over.

So I got him back for one more attempt. Temporarily housed in a thirty gallon tank, it was apparent to me that Big Red had learned some manners while in Garland's tank. He was positively affectionate to the female.

While it took me a half-day to rearrange my other fish so as to free up a forty gallon tank, once the Red Devils were in their new home, it took them about an hour to demolish the tank interior. Gravel was piled up against the front glass so that you could hardly see the fish. Spawning was deferred until they got the tank just the way they wanted it.

The following weekend, Gerry Hoffman and family came over for a swim and during the afternoon he was looking over my fish. He asked if I had ever spawned the Red Devil and I told him that I had not but I had seen tubes extended during the week and expected them to spawn soon. His reply - "They've done it!"

It was an interesting spawn. He had dug a hole at the right-center of the tank and had pushed a round stone about three inches across into the hole. She had removed all the gravel from behind a large rock that was touching the left side of the tank. To please him, the female deposited about four hundred eggs in the hole and the remainder (estimated at seven hundred) on the bare bottom of the tank behind her rock. When Gerry had spotted them, they were a mass of eggs and newly-hatched wigglers.

The forty gallon tank was originally set up with an Aqua-King filter. The male, having a most disagreeable disposition, spent most of his waking hours banging away at the siphon tubes thereby ending the filtration. After several days of replacing siphon tubes, I replaced the Aqua-King with two Dyanflow 150's. These have the siphon tube encased between two plastic ridges. Unless the tube is raised upward the siphon is unaffected. Surprisingly, the male gave up on what had been his favorite pastime and the tank remained filtered.

The temperature was more or less constant at 76 degrees and the pH registered 7.6. An eight inch air stone was included in the original set up, however, this was soon discovered by the pair during their excavation efforts. Once stone and tube were exposed, the male pulled on the tube until it parted from the pump. It remained unconnected until the fry were free-swimming.

The fry were less than three weeks old when the parents again exhibited affectionate behavior. That male was insatiable. Imagine exhibiting affection while being surrounded by 1,100 babies. The exhibition was positively HOMERIC!

Considering that the natural urge might be greater than parental responsibility and that the adults might do away with the fry just so they could start all over again, I removed fifty of the babies and put them in a 5½ gallon tank. If the spawn was to be eaten or destroyed, I was determined to protect my points. I was therefore surprised to observe that when the fry reached sixty days, the separated fry in the small tank were smaller than their siblings in the crowded forty gallon tank. Now the smaller group was less crowded, did not have to compete for food as did their brothers, yet they were a quarter inch smaller. I did notice that the fry in the forty swarmed about both parents seeming to feed off the adult bodies much the same as Discus. Perhaps that accounted for the difference in size.

The fry were fed Kordon Fry Diet and frozen baby brine shrimp. With 1,100 babies, feeding the latter can be an expensive proposition. After a month they got Kordon flake, finely shredded. When they reached an 1¼" in length, they were handling live brine shrimp as well as the flake food. The last of my freeze-dried Krill was also consummed. In fact, they will eat just about anything.

At seventy days I got rid of the adults and began distributing the fry among other tanks. Five hundred and fifty are now in a thirty, five hundred more are in a twenty long and the fifty are still in the five and a half. Anyone wanting to try their hand at raising Red Devils has only to ask. PLEASE! I am literally up to my buns in Red Devils.

BOWL SHOW RESULTS AND STANDINGS, SEPTEMBER, 1981

CICHLIDS

Angelfish/Discus

1st - Black Veil Angel - Gerry and Karen Wagner
2nd - Marble Angel - Jim Hajdics
3rd - Marble Angel - Amy Stirman

Non-Rift Lake African

1st - Egyptian Mouthbrooder - Jim Hajdics
2nd - Kribensis - Gerry and Karen Wagner
3rd - No Entry

Open

1st - Ps. socoloffi - Jim Hajdics
2nd - Peacock - " "
3rd - Ps. tropheops - " "

EGGLAYERS/LIVEBEARERS

Livebearers, Non-Guppy

1st - Ilyodon xantusi - John Mangan
2nd - Red Sword Tail - Gerry and Karen Wagner
3rd - Hi-Fin Platy - Michelle Mangan

Sharks and Loaches

1st - Kuhli Loach - Michelle Mangan
2nd - Clown Loach - Gerry and Karen Wagner
3rd - Rainbow Shark - Wayne Hilburn

Open

1st - Cardinal Tetra - Jimmy Hajdics
2nd - Mudskipper - John Mangan
3rd - Split-Tail Betta - Michelle Mangan

CICHLID STANDINGS	M	Q	Y
Jim Hajdics	22	36	72
G&K Wagner	10	20	30
Amy Stirman	2	14	24
Woody Griffin	0	0	12
Wayne Hilburn	0	0	10
Bill Kent	0	0	6
John Mangan	0	6	6
Leslie Stirman	0	0	4
Garland Neese	0	0	4

EGGLAYER/LIVEBEARER STANDINGS	M	Q	Y
Jim Hajdics	0	28	88
Ruth Prendergast	0	0	30
Wayne Hilburn	2	2	26
Gerry and Karen Wagner	8	22	22
Michelle Mangan	10	16	16
Amy Stirman	0	0	16
John Mangan	10	12	12
Woody Griffin	0	0	12
Gerry Hoffman	0	0	10
Jimmy Hajdics	6	8	8
Leslie Stirman	0	0	6
Bill Kent	0	0	2

Novice Class: Unidentified Species - Leslie Stirman
Members Choice: Black Veil Angel - Gerry and Karen Wagner
Judges: No Listing
Quarterly Awards: Cichlids - Jim Hajdics; Egglayers/Livebearers - Jim Hajdics

October Categories:

Cichlids	Egglayers/Livebearers
1)New World Mouthbrooder	1)Goldfish and Koi
2)Pseudotropheus	2)Characins and Tetras
3)Open	3)Open

POTOMAC VALLEY AQUARIUM SOCIETY
PO BOX 6219, SHIRLINGTON STATION
ARLINGTON, VIRGINIA 22206

Date _____ 19 ____

APPLICATION FOR MEMBERSHIP

NAME _____

STREET _____

CITY _____ STATE _____

PHONE _____ ZIP CODE _____

Number of tanks _____

Type of fish _____

Time in hobby _____

Fish you have spawned _____

_____

What you would like to do in this Club? _____

Which sub-group interests you? (guppy, cichlid, other) _____

How long do you plan to be in this area? _____

Occupation _____

Membership dues for the Potomac Valley Aquarium Society are:

Family	$10.00	Corresponding	$5.00
Individual	$ 7.00	Junior (under 18)	$3.00

Completed applications accompanied by your check or money order should be mailed to P.V.A.S., P.O. Box 6219, Arlington, Virginia 22206.

Please attend our meetings at the Cocoa-Cola Bottling Plant, 5401 Seminary Road, Alexandria, Virginia at 8:00 P.M.

FIRST CLASS MAIL

Potomac Valley Aquarium Society
P.O. Box 6219
Shirlington Station
Arlington, VA 22206

1981 MEETING DATES:

JAN. 12	APRIL 13	JULY 13	OCT. 12
FEB. 9	MAY 11	AUG. 10	NOV. 16
MAR. 9	JUNE 8	SEPT. 14	DEC. 14

Meetings are held at the Coca-Cola Bottling Plant hospitality room, 5401 Seminary Rd., Bailey's Crossroads, Alexandria, Virginia.

Meetings start at 8 p.m. Doors open 7:30 p.m. Bowl Show registration 7:45 p.m., to 8 p.m.