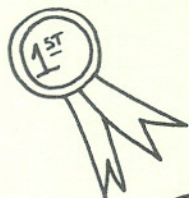


# \* DELTA TALE \*

JULY/AUG 1991  
Vol. 22 #4

OFFICIAL PUBLICATION OF

## potomac valley aquarium society



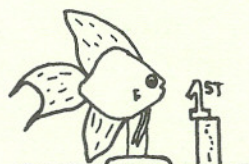
### SPRING SHOW WINNERS!



BEST  
GOODEID  
JOHN  
MANGAN

BEST  
LOACH  
BOB  
PALANSCH

BEST  
NEW WORLD  
LARGE  
CICHLID  
THE  
TRAMMS



BEST  
IN  
SHOW

ANNE LINDGREN

SECOND  
BEST IN  
SHOW  
TONY  
FITZ

BEST  
DISCUS  
RICK  
MCKAY



MORE WINNERS INSIDE ....



The Delta Tale is published for the benefit of the membership of the Potomac Valley Aquarium Society, Inc, a non-profit educational and social organization. The Society was founded in 1960 for the purposes of furthering the aquarium hobby by the dissemination of information and advice, and to the promotion of good fellowship among the membership by organized activities and competitions. All correspondence to the Society and to Delta Tale should be directed to Box 6219, Shirlington Station, Arlington, VA 22206. Original articles and artwork appearing in Delta Tale may be reprinted by other non-profit organizations if credit is given to the author, Delta Tale, and PVAS. Two copies of the reprinting publication should be sent to Delta Tale; please include the author's name so that a copy of the publication can be forwarded to him or her. The Society disclaims any responsibility for the content or availability of merchandise or services advertised in the Delta Tale. Customer satisfaction is a matter to be worked out between the advertiser and the buyer. All material for inclusion in Delta Tale must reach the editor by the 10th of the month preceeding the issue month.

#### 1991 PVAS OFFICERS

President	Rick McKay
Vice President	Ray Hughes
Treasurer	Kenny Warren
Corresponding Secretary	Julie Spall
Recording Secretary	John Mangan
Corporate Agent	Gerry Hoffman

#### 1991 BOARD OF GOVERNORS

Steve Buckel	Beverle Sweitzer
Tony Fitz	Larry Wilkie

#### 1991 COMMITTEE HEADS

Auctions	Gerry Hoffman
Breeder's Award Program	John Jessup
Library	Ray Hughes
Membership	Gene Aldridge
Bowl Shows	Larry Wilkie
Programs	
Ways and Means	Pete Thrift
Corporate Agent	Gerry Hoffman
<u>Delta Tale</u> Editor	John Mangan



## Ramblings from Rick

( a message from the president )

The spring show and auction are now history. It was an enjoyable weekend and I think everyone had a good time. I know I did.

The auction was a tremendous success: one of the largest (if not **THE** largest!) we have held. The diversity of items offered for sale reflects the many different areas of interest of our club members. Many people left the auction with some really great buys. But the weekend was not without it's disappointments.

I was personally discouraged by the low number of entries we had in the show this year. We only had a little over 100 entries. How come?

For a variety of reasons we did not have a show in 1990, and a lot of members complained. So we decided that no matter what, the club was going to have a show this year. Unfortunately, many of the people who complained did not bother to enter fish this year. That's too bad, as I think it reflects poorly on the club.

We had a tremendous amount of traffic through the show Saturday, a result of the classified ad in The Washington Post and the mention in the Weekend section that promised a wide variety of unusual fish on display for viewing. Many of the people drove from a good distance to see the show, and I found it embarrassing that the display racks were only about 1/4 full.

The saving grace however was that many of the fish entered were magnificent. The numbers may have been low, but the quality of entries was high.

I would like to thank the judges for doing a great job. Allen Reed, Sharon Boone and Gerald Pottern--**Thank-you**, not only for judging the show, but also for your tireless dedication to the hobby.

I would also like to thank all of the club members who gave their time to make the show and auction possible. There are too many to mention individually, but you know who you are. There is a tremendous amount of work associated with putting on a show and auction, from hauling the display racks out of Kenny Warren's attic on Friday night, to assembling them at 7 am Saturday morning. From registering the show entries to calculating the judges scores. From organizing the auction room layout, to registering the auction entries. From auctioning the fish to helping with the auction paperwork. And most importantly, to those who stayed behind after everyone else had left and helped clean up and put things away, a special thanks.

The disappointment of this years show is not going to dampen my enthusiasm for another show next year. We will have a show in 1992. Hopefully, the people who did not enter this year will realize they missed out on a good thing and will enter next year. I think each of us should make it a personal goal to enter fish next year.

But now it is time to look ahead to the fall workshop and auction and start finalizing those plans. Though October seems far away, it will be here before we know it. This event too will require a good deal of work, so if you can help and would like to participate, please let me or any board member know.

FRUM THE EDITORZ DESK

Where were you saturday may the 18th? Most of you can't say the PVAS spring show. The number of people participating in the show was very low and disappointing. A lot of effort went into preparing things. Where were all of you that complained last year because we didn't have a show? There were times in the past when we would have the show stands filled to overflowing. Why can't we do it now? We have just as many members, if not more. We're keeping just as many different types of fish, if not more. Our auctions keep getting bigger and bigger so I know you're all keeping and breeding fishes. So what's your problem. Somebody tell me, please!

Those of you that did bring fishes deserve a big thank you and congragulations. All of the fishes in the show were of excellent quality and I'm sure the judges had some tough choices to make. Also a big thank you to all of the workers that made the weekend possible, especially the small, but dedicated (or should that be "just plain dumb"), group that hauled the show stands not only down out of Kenny's attic but also back up.

On a more positive show note- Congragulations to the American Livebearer Association on their 20th Anniversary Convention which was also their first solo effort. Show Chairs Rich Serva and Gina Tash did an excellent job, with the help of a great show committee. The all livebearer show had 173 entries and the auction had almost 700 bags (almost all livebearers). I wonder what it would take to get Rich and Gina to move to Northern Virginia?...

Are your dues due? Most memberships expire in May so check your mailing label and send Gene a check c/o the PVAS po box. Don't put it off and let your membership expire.

After an absence of several years the once popular PVAS Picnic is back. Bob Slodysko has volunteered his backyard and pool for the event. It will be held Sunday July 23rd at 1:00. Directions can be found elsewhere in this issue. Plan to show up and bring the family. Let's make this a success and get the tradition started again.

For the second issue in a row I actually have enough original articles to fill an issue, plus one by my favorite author, George White, to get the next one started (George is my favorite author because he lives so far away that I can say anything I want about him and his cichlids without fear of having him waiting for me in the dark parking lot after a meeting). Keep the articles coming and let's see how long we can keep this streak going. As long as articles keep coming in there will be one less thing you have to listen to me complain about.

Until next time...



P.S. almost forgot- I'd like to welcome Delta Tales new Poetry editor to the staff. I'm glad to get rid of the job and wish him luck with it.



### WHAT'S HAPPENING

- July 8: PVAS Monthly Meeting. The usual good stuff- program; raffles; door prize; mini-auction; bowl show, this month Killifish, and open classes; plus more fun stuff.
- July 23: PVAS Picnic. 1:00 PM at the home of Bob Slodysko. See elsewhere in this issue for directions.
- Aug. 12: PVAS Monthly Meeting. program; raffles; mini-auction; bowl show- Anabantoids and open classes; door prize; elephant races (just seeing if your paying attention); and more.
- Aug. 20- Sept. 1: America Cichlid Association's International Cichlid Conference. See elsewhere in this issue for more details.
- Sept. 27-29: Greater Pittsburgh Aquarium Soc. Show, Auction, Workshop. For more info contact Nancy Slepinski 1 (412) 431-0941.
- Oct. 12-13: PVAS Fall Workshop and Auction. Complete details will be in the Sept/Oct issue of Delta Tale.

### TRADING POST

Ads for the trading post should be sent to Delta Tale C/O John Mangan, 9770 Oleander Ave. Vienna VA 22181. Deadline for the next issue is Aug. 12.

Wanted- Books; Magazines; any tropical fish related material.  
Larry Wilkie: 703 847-7360 or 273-8606.

### A NOTE FROM THE MEMBERSHIP CHAIRPERSON

SEVERAL YEARS AGO WE STARTED TO ALL MEMBERSHIPS BECOMING DUE AT THE SAME TIME 31 MAY. THUS DUES ARE NOW REQUIRED FOR THE COMING YEAR. PLEASE CHECK YOUR MAILING LABEL, THE DATE LISTED IS YOUR MEMBERSHIP EXPIRATION DATE. I HAVE CIRCLED ALL THOSE PAST DUE OR DUE IN THE NEXT COUPLE OF MONTHS. I WILL NOT BE AT THE NEXT COUPLE OF MEETING SO JUST MAIL TO ME AT THE SOCIETY ADDRESS.

THANK YOU!!!

EUGENE ALDRIDGE  
MEMBERSHIP CHAIRPERSON



# PVAS 1991 SPRING SHOW RESULTS

	<u>First</u>	<u>Second</u>	<u>Third</u>
<u>I. Livebearers</u>			
a. Guppies (1)	O'Bannon		
b. Mollies, Swordtails, & Platies	No Entries		
c. Goodeids (6)	Mangan, J	Mangan, J	Mangan, J
d. AOV Livebearing Fish (2)	Buckel	Mangan, J	
Best Livebearer - O'Bannon			
<u>II. Egglayers (Non-Cichlid)</u>			
a. Catfish, Corydoras (9)	Tramm	Buckel	Buckel
b. Catfish, Loricariidae (1)	Aldridge		
c. Catfish, Synodontis (1)	Lindgren		
d. Catfish, Naked (3)	Pallansch	Roberts	Lindgren
e. All Other Catfish (2)	Buckel	Tramm	
f. Betta Splendens (10)	Duley	Duley	Buckel
g. AOV Bettas & Anabantoids (2)	Buckel	Buckel	
h. Sharks & Loaches (5)	Pallansch	Lindgren	Pallansch
i. Characoids, Under 3" (3)	Hoffman	Mangan/Mangan	(tie)
j. Characoids, Over 3"	No Entries		
k. Barbs (3)	Buckel	Buckel	Mangan, M
l. Goldfish & Koi (5)	Mangan, M	Roberts	Roberts
m. Danios & Rasboras (1)	O'Bannon		
n. Killifish, Aphyo/Fundulo (6)	Fitz	Fitz	Wilkie
o. Killifish, Notho/Annuals (3)	Fitz	Fitz	Fitz
p. All Other Killifish (4)	Fitz	Wilkie	Fitz
q. North American Native Fish (2)	Fitz	Fitz	
r. AOV Non-Cichlid Egglayers (6)	Pallansch	Buckel	Hoffman
Best Non-cichlid Egglayer - Fitz			
<u>III. Cichlids</u>			
a. New World Large (over 7") (2)	Tramm	Cook	
b. New World Medium (4-7") (2)	Lindgren	Aldridge	
c. New World Dwarf (under 4") (1)	McKay		
d. Angelfish (4)	Lisher	Lisher	Lisher
e. Discus (3)	McKay	Thrift	Tramm
f. Mbuna (1)	Cohen		
g. Tanganyikan (5)	Cohen	Cohen	Allyn
h. Cichlid Pairs (3)	Cohen	Cohen	Pallansch
i. AOV Cichlids	No Entries		
Best Cichlid - Lindgren			
<u>IV. Marine Fish &amp; Invertebrates (1)</u>			
V. <u>Family of Fishes (3)</u>	Allyn	Cohen	Buckel
VI. <u>Plants (3)</u>	Fitz	O'Bannon	Mangan, M
VII. <u>Photography (12)</u>	Hester	Fitz	Buckel

BEST IN SHOW - ANNE LINDGREN - AEQUIDENS RIVULATUS

RESERVE IN SHOW - TONY FITZ - PTEROLEBIAS PERUENSIS



PVAS PICNIC PVAS PICNIC PVAS PICNIC PVAS PICNIC PVAS PICNIC

### DIRECTIONS

From Rte 95

Exit 4B Marlow Hgts.

When you pass McDonalds go two lights and make a right. That will be Temple Hills Rd.

When you cross over 95 get into the right hand lane.

At the first light- go ~~thru~~ the light, then make a right (Holton Ln).

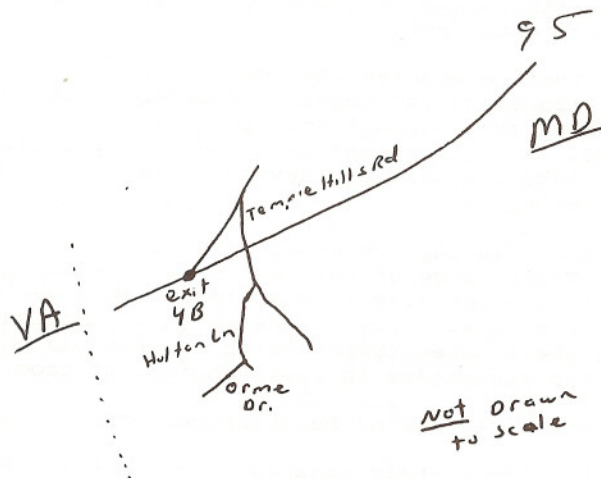
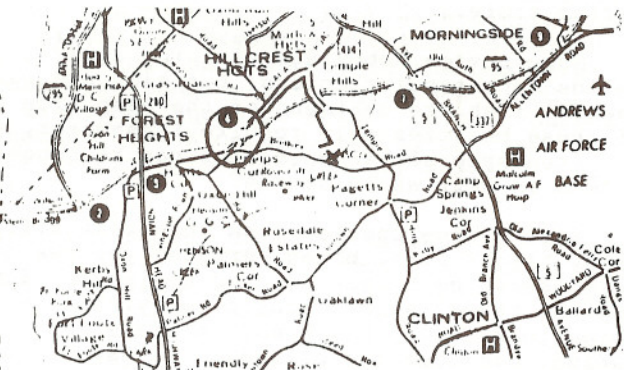
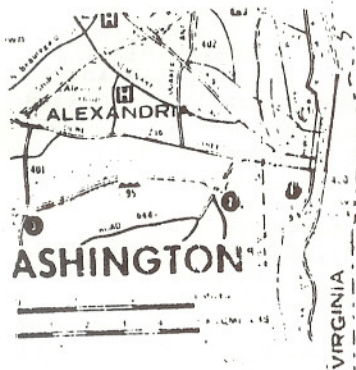
Go to the first stop sign and make a right (Orme Dr.)

First house on the left facing Orme Dr.

3603 Orme Dr. 1 (301) 894-1912. Bob Slodysko

ed. note- see maps below. I don't know how well Bob's map is going to reproduce so I've attempted to draw one of my own also. Bob's house seems pretty easy to find but take along a quarter so you can call Bob and say "that #@&! Delta Tale editor got me lost."

J.m.



Not drawn  
to scale



## African Cichlids by Dr. Paul V. Loiselle

a book review by George White, PVAS

A Fishkeeper's Guide to African Cichlids by Dr. Paul Loiselle provides a splendid overview of this fascinating group of freshwater fish whose flashy colors rival those of saltwater fish. This well researched and precisely written guide book contains valuable information which makes it a "must have" for beginners and very useful for experienced Cichlid fanatics. This is, without a doubt, the best inexpensive book a hobbyist can buy if she or he wishes to be successful with African Cichlids. (Dr. Loiselle's other recently published book, The Cichlid Aquarium, contains more than twice as many pages and is also packed with useful information. It, of course, costs more than this smaller book, but is also an excellent buy.)

A Fishkeeper's Guide to African Cichlids, is item no. 16037 published by Tetra Press, 201 Tabor Road, Morris Plains, New Jersey 07950, ISBN 3-923880-39-1 and may be ordered through your local aquarium store.

Many novice hobbyists visiting aquarium shops admire African Cichlids' spectacular colors, but sigh and pass them by believing these wonderful fish are denizens of the deep blue sea. Once they realize that these beauties only require freshwater, a whole new world opens up. Often spectacular specimens can be bought at aquarium club auctions as well as in stores.

Some of the species from the great rift lakes of East Africa display bright reds, blues, greens, yellows or combinations of colors. Those possessing bright colored bodies and fins of another tint rank among the favorites of Cichlid hobbyists. Species with bright combinations, e.g., black and yellow stripes, add sparkle to the show aquarium. In some cases, the males may be one color (often blue) while the females are another (often yellow or orange). This sexual dimorphism aids the fishkeeper in breeding the fish and adds to the conversation value of show tanks.

The African riverine species and species from other lakes usually have subtler, but also beautiful colors. However, some of the non-rift lake Cichlids, such as the *Astatotilapia* species, will wow you with their bright colors. But, in almost all cases, they should not be mixed in with rift lake Cichlids who have different water requirements and behavioral patterns.

African Cichlids display wonderful diversity in behavior as well as in coloration. Their range of adaptations to various biological niches makes Cichlids especially interesting. (This evolutionary capability is due in no small part to the extra set of "teeth," a pharyngeal mill in their upper throat which contributed to Cichlids' ability to evolve and specialize in their choices of food.)

Some of the more interesting behavior patterns include:

--Cichlids that brood their eggs in their mouths. Most are maternal mouthbrooders, but a few species are paternal mouthbrooders or switch hitters. In some species, small fry retreat into their parents' mouths when confronted with danger.

--Some Cichlid species dwell in empty snail shells. These shell dwellers pick their shells carefully and often will move them to just the right position in the aquarium. Some even spawn in the shells.

--One species (*Haplochromis Livingstoni*) with a blotchy appearance catches its prey by lying on the bottom mimicking a rotting cadaver. When unwitting small fish come by to graze, the "dead body" suddenly disposes of them.

The diversity of behavior and water requirements have led some hobbyists to claim that Cichlids are difficult to keep or to breed. Actually, they are as easy to maintain as fancy Bettas and the spectacular Killifish. If the hobbyist provides the proper environment, the fish will show their best colors and actively propagate.

A Fishkeeper's Guide to African Cichlids covers all the topics that a hobbyist should know in concise language. This precision of expression enables Dr. Loiselle to pack the book with a number of experts' tricks for maintaining and breeding even the so-called difficult species. The titles of the chapters in the book are: introduction; general considerations; water requirements and filtration; heating and lighting; aquarium selection and aquascaping; feeding; routine maintenance; health care; breeding and rearing; and, species section (this last section is a bit short, covering only 40 of the most popular species).

A Fishkeeper's Guide to African Cichlids surpasses other books on Cichlids in several key areas. It goes beyond the superficial presentation of information often found in other books. For example, Dr. Loiselle does not just give the reader a brief note on the water chemistry in the natural habitats of the various species--he explains how this knowledge should be applied in the aquarium. Riverine species from forested areas have evolved in aquatic habitats in which only minimal fluctuations in pH and hardness occur. These fish obviously fare best in the aquarium when not subjected to abrupt changes in pH or hardness.

The chapter on aquarium selection and aquascaping provides an excellent four page chart with rules of thumb on how to design habitats best suited for the various types of African Cichlids. Size of the species, territoriality and breeding behavior rank as the key factors in planning the tank setup. A similar chart provides recommended diets for the various feeding groups, omnivores, micropredators, piscivores, and herbivores. It also lists the most popular species that comprise these various categories.

In summary, anyone who buys a nice aquarium and some fine African Cichlids, would be well advised to purchase one or both of Dr. Paul Loiselle's books, A Fishkeeper's Guide to African Cichlids or, The Cichlid Aquarium. These are cheap insurance for your investment. And, you owe it to your fish.

Anyone wishing to join the American Cichlid Association should contact Glenn Eaves, P.O. Box 32130, Raleigh, North Carolina 27622.



## My Secret

I was first introduced to fish by my third grade teacher. We had a science day "Show & Tell", and one of the other students had brought a pair of Guppies as his contribution to the festivities. By the end of the day, the small tank containing the Guppies was full of baby Guppies! We all gathered 'round and watched as the parent guppies ate the baby guppies...

When the teacher observed the carnage, she decided this was not the sort of thing that young impressionable minds should be subjected to. At any rate, she removed the baby guppies and gave them to the class to take home. I carried my three little guppies home in a coffee can, and sat them proudly on my dresser.

Even at that young age, I had a vague understanding of Life and Death. I knew that those little guppies wouldn't live forever. However, if you had asked my opinion on their life expectancy, I would most certainly have guessed it to be longer than the actual two days! I was heart-broken. I moped around the house for the next week, lamenting my loss.

My grandmother met me at the door, as I came in from school about a week later. She said she had a surprise for me... I looked in my room, and there sat the biggest aquarium I had ever seen! There was no fish, no water, just the aquarium. But what a tank! I had all the equipment that I needed! Just add water! I grabbed my grandmother's hand and begged her to take me to the pet store to buy some fish. She just turned and picked up a big, thick book that was on the dresser, and gave it to me.

Then she told me that she would buy some fish...only after I had read the book, and could keep them alive. Well folks, I have to give credit where credit is due...if my grandmother had bought me some fish to start with, I would not be in the hobby, today. The fish would have died, the tank would

have smelled, and I would have lost all interest in keeping fish in very short order. Instead, she understood that the only way to truly appreciate the underwater world...was to study it. To her I have to say: "Thank you, G/mom!"

I have weathered all sorts of experiences in my 25 years of keeping fish. I have seen many new advances in technology that were unheard of short years ago. I have seen all kinds of new species of fish that seem to be more readily available to the public, now. I have seen the development of plastics, acrylic tanks, submersible heaters, and canister filters. I have seen all this, and much more! Not because I am rich and can buy all the latest equipment, on the contrary...I am poor. I have not traveled the world's waters to discover a new species...I could not afford that either. I have not experienced all these things because I am special, or in a position to get first crack at new things...I am very ordinary.

So, you ask, what the heck is this guy talking about! I'll tell you my secret, folks. It is something that will guarantee your success in keeping fish. It will not only help you understand the basics of aquarium management, but will broaden your horizons with new technology. It will not only give you everything you need, it will prompt you to ask for more!

Here it is, folks. Books. Go buy a book. If you already have one...great! Read it, and go buy another... There are many, many great books out there. Some are specialty books dealing with a particular species, or condition. Some are general topics that cover a wide range of information. Whatever your particular field of interest, whether you are just beginning on this watery expedition, or whether you're an old crust like me...there's a book out there, just for you.

Bill Hester  
Aqua Perfect Systems  
Walkersville, MD



## EHEIM CANISTER FILTER TIPS

Pete Thrift, PVAS

I am one of those unfortunate individuals who always seems to be at least one step behind the times, and my fishkeeping hobby is no exception. For the last several years I have been slowly converting the filtration of my larger tanks to Eheim canisters. Now that I have just about completed my goal, the state of the art in aquarium filtration has advanced past canister filters to the trickle or "wet/dry" filter concept. While the trickle filter is a definite improvement, I don't feel that the benefits gained by them justify scrapping the considerable investment I have made in Eheim canisters, at least for my freshwater tanks. So, until my Eheim's wear out, I'll stay with the "obsolete" canister technology. And since I have a seven year old Eheim which is still running strong, it may be some time before a trickle filter is underneath one of my tanks. Anyway, here are a few tips for those of you who have Eheim canisters, or are thinking of investing in one.

The first tip is to use a foam block in your canister. While several canister filter manufacturers offer such blocks for their products, Eheim does not. Fortunately, I have discovered that a Fluval 403 foam block fits perfectly inside an Eheim 2215 canister, and a Fluval 303 block will fit a 2213 canister. Using these blocks in lieu of the Eheim media has greatly increased the biological capacity of the canister, even to the point where you may be able to use a smaller canister for a given tank size. For example, with the Fluval blocks in my 2213 canister, I have found that it will easily filter a 50 gallon tank. Previously, I used the larger 2215 canister for a tank of that size. The Fluval blocks last a long time - at least two years on my tanks. They are also excellent mechanical filters, yet their porosity is coarse enough that they don't plug up too quickly.

One headache of using canister filters is insuring that the rubber O-ring sealing the top to the body of the canister stays in the proper position when the canister is reassembled after cleaning. It is a real pain to connect a canister to its hoses, start the syphon, and turn the filter motor on, only to find that the filter is leaking around its top. An easy way to determine if the O-ring has made a tight seal before you reinstall the filter is to block one hose connection point (either intake or exhaust) with your finger, and blow into the other connection point. If the O-ring is properly seated, air will not easily leak around the top.

A third tip concerns the Eheim surface extractor, an accessory which skims the film from the surface of the tank water. This is an excellent addition to an Eheim canister system, but it can be annoyingly noisy. The noise is caused by the weighted valve in the lower intake of the extractor, which rattles as water is drawn past it. To eliminate the rattle, attach a length of fishing line to the valve, and thread the line up through the body and out the top of the extractor. The drag of the line itself greatly reduces the rattle, and lifting the valve partially with the line will completely eliminate it, while allowing the unit to still draw water from the surface of the tank.

My last tip comes from some very painful personal experience. Just like airline tubing, Eheim hoses in time age and lose much of their flexibility. This loss of flexibility will weaken the security of the friction-fit hose connections to spray bars and intake tubes. In my case, an old output hose popped off its spray bar, and the filter then pumped all but one inch of the tank's water onto the floor until the intake siphon was broken. This resulted in several of my adult discus having to pretend they were flounders, with truly awful consequences. Either invest in hose clamps, or check the condition of your hoses frequently, and replace them when they no longer tightly connect to pipes, elbows, and other fittings. The cost of clamps or new hose is cheap insurance against the loss of valuable fish, burning out the canister motor, damage to carpeting and floors, and facing a **REALLY** angry spouse!

#### BOARD MINUTES- April 22, 1991

The meeting was hosted by Bevele Sweitzer. Those present were: Rick McKay, Ray Hughes, Kenny Warren, Julie Spall, John Mangan, Gerry Hoffman, Beverle Sweitzer, Larry Wilkie, Tony Fitz, John Jessup, and Pete Thrift.

Status of judges for spring show- Dave Herlong can't come due to other commitments. Gerald Pottern has said he will come, this will be confirmed. Alan Reed will be coming. Other possible judges were discussed and will be contacted.

Show set-up will begin at 7:00 Sat. morning, volunteers will be asked for at the May meeting. Kenny will need help loading the show racks into his truck Fri. night, this will also be asked for at the May meeting.

Pete will make sure we have signs to direct people to the show sight. He will also make sure we have enough registration forms, stickers, etc. A roll of tubing and airstones has been bought.

Registration forms will be available at the May meeting so people can fill out their paper work ahead of time.

New auction rule will be tried- any item that sells for over \$100 the club will take its 1/3 from the first \$100 only, anything over \$100 will all go to the seller. For example- if an item sell for \$125 the clubs share will be 1/3 of \$100, the seller will receive 2/3 of \$100 plus all of the extra \$25.

The National Wildlife Federation is being looked into as a future meeting site. Rick McKay is handling this.





## Notes on the Biology and Aquarium Spawning of *Rivulus marmoratus* Poey

Ron Burch, PVAS

In the January/February, 1991, issue of *Delta Tale*, Tony Fitz hoped for a demand for killifishes for scientific research. His comment caused me to recall such a fish, *Rivulus marmoratus*, a native American killifish that has received scientific attention, both as an experimental animal used to assess the teratogenic and carcinogenic potential of chemical wastes discharged into aquatic environments, as well as the subject of numerous studies on its unique spawning behavior - *R. marmoratus* is the only vertebrate ever described to be a self-fertilizing hermaphrodite! In nature virtually all individuals that are caught are the offspring of a single parent, and virtually all will serve as the single parent of all their offspring. If *R. marmoratus* still sounds like just another fish, let me also note that it has the marked tendency to leave its a body of water if it is unhappy, and travel over land to a neighboring body.

*R. marmoratus* was described in 1880 by Poey, from specimens collected in Brazil. Unfortunately the type specimens were misplaced. The fish is rare throughout its range, and no further specimens became available. Thus, the name was retired until 1945, when Rivas discovered the original types in the U.S. National Museum. However, it still remained unknown as a living fish until 1958, when Harrington and Rivas reported finding specimens in southern Florida. From that time until his death, Harrington studied this fish in his laboratory.

Because of the scarcity of specimens, the taxonomic status of *R. marmoratus* has been unclear. In 1982, Seegers reported that comparison of several species of *Rivulus* collected near Rio de Janeiro revealed *R. marmoratus* to be a junior synonym of *R. ocellatus* Hensel. Seeger feels that *R. myersi* Hubbs may also be a synonym of *R. ocellatus*. Seeger found the aquarium *R. ocellatus* (which is not a hermaphrodite) to be *R. caudomarginatus*. In recent scientific works *R. marmoratus* is often referred to as *R. ocellatus marmoratus*, although many works still refer to the fish as *R. marmoratus*.

*R. marmoratus* is widely distributed in South America, Central America, and many Caribbean islands, and in North America in Mexico and the Florida keys as far north as Vero Beach. As emphasized by the lack of living animals for scientific studies for many decades, the fish has often been considered rare wherever it is found. In the one collecting trip in which I participated, on the mainland intertidal area across from Pelican Key at the far northern limit of their range, 5 specimens were captured in less than a day. Huehner and colleagues collected 51 specimens at Big Mangrove Key. Thus, the fish is perhaps better described as uncommon.

*R. marmoratus* is a colonizing species. It lives in full sea water and brackish water in most localities where it has been collected. In aquaria, *R. marmoratus* lives quite happily in fresh water with no added salt. It is quite capable and willing to leave a body of water if it is unhappy with conditions there and to head cross country to the next pool. Locomotion is accomplished by serpentine movements. When a fish is encountered on land, it can use its tail to flip out of the way just when one reaches for it. *R. marmoratus* also leaves the water when antagonized by other fishes. This may occur as a jump from the water toward an overhanging branch, resulting in sticking to the branch. The fish also tend to leave the water when the temperature falls below 70 °F.

The appreciation that *R. marmoratus* is a self-fertilizing hermaphrodite in aquaria, even if several individuals are kept together for prolonged periods of time, has resulted in



intensive study of natural populations to determine whether the fish behave in this manner in the wild. Hermaphroditism is known in many fishes. Many groupers, for example, are hermaphrodites, but during spawning, two individuals participate, one acting as a female, the other as a male. Often, when all the ova have been deposited by the original female, the roles are reversed, with that fish now acting as a male, and the original male now depositing its ova. However, in *R. marmoratus*, ova are fertilized *inside* the body, resulting in the shedding of fertilized eggs.

In usual vertebrate reproductive behavior, each parent contributes 50 % of the genetic material to the offspring. In the offspring each gene is present as two copies (except sex-related genes) one copy from each parent. If such an individual becomes suddenly capable of fertilizing its own ova, then in the next generation, one-half of the genetic diversity is lost, and in each succeeding generation, an additional one-half of the diversity is lost. Thus, if the first generation is 50 % "pure" (i.e. one copy from each parent), then the first self-fertilized generation is 75 % pure, the second self-fertilized generation is 87.5 % pure, the third 93.75 %, the fourth 96.9 %, the fifth 98.4 %, the sixth 99.2 %, the seventh 99.6 %, the eighth 99.8 %, the ninth 99.9 %, and the tenth 99.95 % pure. Thus, after 10 generations of self-fertilization, virtually all of the genes in an individual are composed of two *identical* copies; at this point the individual is essentially homozygous. There are several sensitive biochemical methods that can be used to determine whether an individual is heterozygous (that is each gene is composed of two different copies - one from each parent) or homozygous. In every case, wild *R. marmoratus* have been found to be homozygous. Thus, in the wild, as in aquaria, these fish self-fertilize for many generations, at least 10 to reach homozygosity, at least in the northern Caribbean where they have been studied most extensively.

In the southern Caribbean, a few *R. marmoratus* may result from the fertilization of ova by a second individual outside the body. At several sites, an occasional male has been collected. This leads one to wonder whether these males can potentially fertilize shed ova. In aquaria at any rate, the answer is yes. Harrington collected large series of eggs from individual fishes over prolonged periods of time. While the majority of these eggs were fertile at the time they were shed (an observer sat in front of each tank for 9 hours each day and collected all eggs immediately after they were shed) an occasional egg was not fertile, but did not seem to be defective. Harrington found that sometimes a female appeared to lose synchronization of ova and sperm production, such that for periods up to several days or weeks none of the released eggs were fertile. Harrington also found that he could produce male fish in the laboratory. As already noted, *R. marmoratus* are not happy when the temperature falls below 70 °F. Harrington found that if he incubated eggs at 68 °F, few hatched unless he traumatized them at the normal hatch time. The fry that developed after such incubation often developed into males, up to 75 % of them! Most were also deformed. He further found that if the eggs were incubated in the cold in sea water, *all* of the offspring were males. However, under these conditions there were very few viable fry. Harrington ultimately found that if he kept eggs at 78 °F in fresh water until eye buds could first be seen, then lowered the temperature to 68 °F, he had very few mortalities, and the majority of fry developed into healthy males. Harrington found that these males could fertilize the occasional infertile ovum deposited by the hermaphrodites. Thus, in aquaria, occasional genetic recombination occurs, resulting in heterozygous offspring.

Before leaving the wildlife biology of *R. marmoratus*, one more interesting observation bears repeating. We already noted that *R. marmoratus* is a colonizing species that readily leaves one environment and travels to another. Because the wild fish are homozygous it is easy to determine over time whether the population at a given site remains the same, or whether one population moves on, its place being taken by another population. Turner and colleagues investigated this question. They examined specimens collected at No Name Key



in Florida in 1986 and 1989. In 1986, 5 separate clones ("clone" refers to all the homozygous offspring of one individual; all these individuals are for all practical purposes "extensions" of the same individual) were found. In 1989, not a single fish was found that belonged to any of the original clones. This suggests that the clones present in 1986 had all moved on to other islands, and were replaced by new clones. This kind of study could potentially be extended if one could collect extensively at nearby sites over time to determine the migration of individual clones.

I have kept *R. marmoratus* that I caught in the wild, as well as individuals that had been maintained in captivity for several generations. All originated in Florida. I kept the fish in water to which 1 teaspoon of salt was added per gallon. Other aquarists keep these fish in fresh, brackish, or seawater, with excellent success in all cases. However, it should be remembered that Harrington found young fry to be less hardy when kept in seawater under suboptimal conditions. I kept one or several specimens in 2.5 or 10 gallon tanks. I knew aquarists who kept *R. marmoratus* alone in small, covered dishes holding as little as 7 tablespoons of water, in which they spawned as well as fish maintained in larger aquaria. A hint that they might not have been as happy as they might have been in these small quarters was the observation that often they spent considerable time hanging from the coverglasses. Fish kept together largely ignore one another when of nearly the same size, but individuals should not be kept together when of very different sizes. I fed my fish wingless fruit flies, white worms, and adult brine shrimp.

*R. marmoratus* begin spawning as young as 6 months at a size of 1 inch, and may continue spawning for as long as 3 years, at which time they have reached 2 inches in length. When eggs are shed, a typical *Rivulus*-like posture is taken, except that only one fish participates. The eggs are shed at varying times after being fertilized, from an hour or two to several days. Peak spawning occurred at about noon each day. The most eggs I collected in one day from a single fish was 16, but Harrington reported up to 30 in a day from large individuals. While I kept gravel and plants in community tanks, for spawning the fish were kept in bare tanks with a mesh one inch above the bottom. This was necessary since the fish are avid egg-eaters. Even so, many eggs are lost - the fish spawn near the surface, and often eat the extruded egg before it reaches the bottom. Shallow spawning tanks are helpful! I collected the eggs from the tank bottoms daily, and placed them into petri dishes containing fresh water. At 80 °F, eggs hatched in about 14 - 16 days. This varies somewhat since eggs are released at variable times after fertilization. The fry were fed newly hatched *Artemia* nauplii from the time of hatching. Harrington reported that he suffered large losses of fry if he fed *Artemia* immediately, so he fed microworms for the first few days, then changed to *Artemia*. I found no ill effects from feeding with *Artemia*. The fry grew rapidly, reaching 1 inch in about 4 months. Like many killifishes, older fry ate their younger brethren if sizes were too different.

*R. marmoratus* hermaphrodites are "female-like" in appearance. They are a greyish color with a few darker areas on their bodies, and a typical *Rivulus* ocellus on the caudal peduncle. One of my adult fish changed from a hermaphrodite into a "secondary male" after I had had it for about 1 year. This was observed as a marked, rapid reduction in egg shedding, accompanied by the appearance of a few orange spots on the body. Within a few months after stopping egg-laying, the fish had many orange spots on the body, a few on the fins, and the ocellus was nearly absent. This fish lived for about 8 months after the color change. Harrington reported that a considerable number of hermaphrodites change to secondary males later in life, and some of his secondary males lived more than 2 additional years. He reported that these males were fertile.

My secondary male fish was fairly attractive. Since Harrington reported that primary males are more colorful than secondary males, in the winter of 1976 (I lived in Charleston,



South Carolina, where it is very hot during the remainder of the year) I attempted to rear some primary males. Eggs, when collected, were placed in a storage room attached to the rear of the house, where they could be kept at 68 °F. (Since I kept the breeding adults at 80 °F, and collected eggs once per day, the eggs spent several hours at 80 °F. Development was noticeably slower. A few fry hatched spontaneously after about 3 weeks. However, many eggs contained well-developed fry but did not hatch. Ultimately, many of these eggs fungussed and died. Thereafter, when eggs reached 3 weeks of age and contained well-developed fry, they were cut open with the tip of a pointed scalpel blade. Surviving fry were kept at 68 °F for as long as the weather permitted (up to 3 months). These fry grew more slowly than fry raised at higher temperatures, but I was rewarded in obtaining a total of 35 fry, 8 of which developed as primary males. These fish, unlike their hermaphrodite siblings, never developed an ocellus, and from the time they reached about a half inch in length, they began to develop orange spots, first on the body, later on the fins. By the time these fishes reached an inch in length, their body color was light orange, with darker orange spots.

*R. marmoratus* is an extremely interesting native killifish. Like many native killies, it is not usually colorful, but, if one is willing to expend effort, one can obtain colorful, male specimens. The fish is sometimes available through the trading lists published by the American Killifish Association.

## References

- Harrington, R.W., Jr. (1961) Oviparous hermaphroditic fish with internal self-fertilization. *Science* 134: 1749-1750.
- Harrington, R.W., Jr. (1963). Twenty-four hour rhythms of internal self-fertilization and of oviposition by hermaphrodites of *Rivulus marmoratus*. *Physiol. Zool.* 36: 325-342.
- Harrington, R.W., Jr. (1967) Environmentally controlled induction of primary male gonochorists from eggs of the self-fertilizing fish, *Rivulus marmoratus* Poey. *Biol. Bull.* 132: 174-199.
- Harrington, R.W., Jr., and Rivas, L.R. (1958) The discovery in Florida of the cyprinodont fish *Rivulus marmoratus*, with a redescription and ecological notes. *Copeia* 1958: 125-130.
- Huehner, M.K., Schramm, M.E., and Hens, M.D. (1985) Notes on the behavior and ecology of the killifish *Rivulus marmoratus* (Cyprinodontidae). *Fla. Sci.* 48: 1-7.
- Seegers, L. (1982) Contribution to a revision of the *Rivulus* species of southern Brazil with the description of *Rivulus luelingi*, new species, and *Rivulus caudomarginatus*, new species (Pisces: Cyprinodontidae: Rivulinae). *Zool. Beitr.* 28: 271-320.
- Turner, B.J., Elder, J.F., Jr., Laughlin, T.F., and Davis, W.P. (1990) Genetic variation in clonal vertebrates detected by simple-sequence DNA fingerprinting. *Proc. Natl. Acad. Sci. USA* 87: 5653-5657.

A POEM by Anonymouse

Some Swordtails are Red  
Some Platies are Blue.  
Annoy a Piranha  
and he'll surely bite You.



Poetry editors note- on behalf of the entire Delta Tale staff I'd like to apologize for the above. But it was the only thing I had in my files.

Winston Snyder-Smythe III  
Delta Tale Poetry Editor



# LETTER TO THE EDITOR



Dear John,

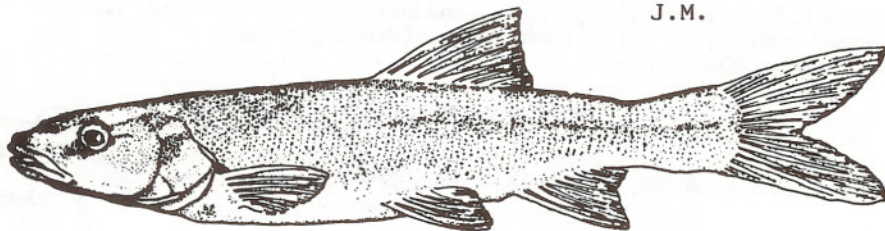
I was saddened to hear that our little personal pseudo-feud has spawned a species-versus-species split in the club. I am personally fond of Cichlids, catfish and Killifish (some of my PVAS breeders points are from Killifish fry), but I find all other families of fish interesting. For example, I remember an interesting discussion you and I had once about one of your Goodied species that is endangered since its natural habitat is rapidly being razed. While I would not want to lump Goodieds together with spectacular species such as Bettas and Gouramis, Goodieds must have some use in nature. My Goodied bashing was tongue in cheek. (By the way, you were kidding when you said you would arrange a job for me as food taster for author Salmon Rushdie, weren't you?)

*George*

## Editors Reply-

To set the record straight - All of the comments that pass back and forth between George and myself are all in fun, at least mostly. I have nothing at all against cichlids and, as I've said before, I even have a tank of them in my fishroom. If I had enough tank space and time I'd probably have a little bit of everything. The reason I keep our "feud" going, aside from the fact that it's fun, is to, hopefully, show people that seriously argue about their specialty fish being the only one worth keeping how foolish they look. Although some of these people are so dense that subtlety and satire probably don't get through to them anyway. Yes, I was kidding when I said I had gotten George a job as Salmon Rushdie's food taster- it was really a car starter that Salmon was looking for, and George didn't get the job. I guess I shouldn't have put Jimmy Hoffa down as a reference on the fake resume I sent.

J.M.





# Fun with Fins

BY: Meloney A. Hoyt KAS

Presented from  
Kitsap Aquarian  
Kitsap Aquarium Society

SAMMY SNAIL  
THANKS YOU!!!

GOOD LUCK!

Sammy snail needs your help!! He must reach the safety of the gravel below- or become dinner for a hungry lyretail sword. Begining at start, trace his path to the gravel, but do not cross any solid lines.





# The American Cichlid Association

announces



## International Cichlid Conference II

August 29 - September 1, 1991  
Orlando Hyatt • Orlando, Florida

### Speakers

- Dr. George Blasiola** (New York)  
Disease Prevention  
**Heiko Bleher** (Germany)  
Collecting Cichlids Around the World  
**Theirry Brichard** (Burundi)  
Collecting Tanganyikan Cichlids  
**Willem Heijns** (Holland)  
Central American Cichlids  
**Dr. Tijs Goldschmidt** (Holland)  
Lake Victoria Cichlid Status  
**Stuart Grant** (Malawi)  
Collecting Malawi Cichlids  
**Dr. Irv Kornfield** (Maine)  
Cichlid Evolution  
**Rene Kruter** (Holland)  
Tanganyika Cichlids  
**Dr. Paul Loiselle** (New Jersey)  
Cichlid Diversity  
**Dr. Richard Lovell** (Alabama)  
Fish Nutrition  
**Marshall Meyers** (Washington, D.C.)  
Aquarium Hobby Regulatory Concerns  
**Dr. Don Taphorn** (Venezuela)  
Cichlids of Venezuela

For More Information write:  
**International  
Cichlid Conference**  
6815 Carolyn Rd.  
Louisville, KY 40214

### Featured Events

#### Speakers Cichlid Show/Exhibit Cichlid Auction plus

##### ACA Cichlid Mart

The Cichlid Mart allow attendees to buy, sell, and swap cichlids. For a nominal fee, you can rent table space to offer your cichlids for sale.

##### Florida Fish Farm Tours

Florida tropical fish farms are known around the world for the quality and variety of aquarium fish, especially cichlids, they produce. There will be several tours, divided into smaller groups, to allow a variety of farms to be included. You can sign up for one tour on Thursday and one tour on Friday.

##### Sea World Tour

Sea World isn't just a performing tourist spot. They have over 20 ichthyologists conducting research on marine animals. Lectures and tours will be offered to give you a very special look at Sea World.

##### EPCOT Land Tour

A special tour of The Land at Epcot Center will demonstrate how tilapia and other plants and animals are being cultured in high-density conditions for future world food production.

##### Aquarium Trade Show

The trade show of manufacturers and distributors will allow you to talk with companies that produce and distribute the products you use.

### Hotel & Travel

**Maupin Travel**, our Official Travel Agency, has special rates with **Delta Airlines** and **Budget Car Rental** and offers full travel service for North America foreign locations. Call them for lowest rates.

#### Maupin Travel

P. O. Box 429, Raleigh, NC 27602

**Domestic: 1-800-359-4738**

Ask for Trish Moss or Cindy Mixer.

**International:**

**919-821-2146 (call collect)**

Ask for Lisa Hart.

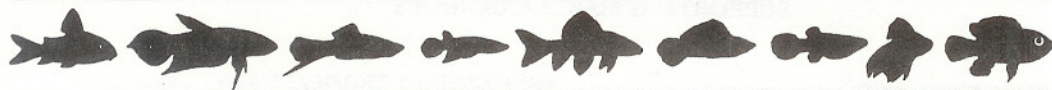
Delta Airlines is offering 5% off the lowest available fare or 40% off coach fare within the U.S. and Canada. Contact Maupin Travel for international. Budget Car Rental is offering \$89/week for an economy car and \$99/week for a compact car, with unlimited mileage. Other sizes are available.

#### Orlando Hyatt

**Reservations: (407) 396-5000**

A special rate of \$71.00/night (1-4 people/room) is available at the Orlando Hyatt, very close to Disney World, Sea World and many other attractions. During the first ICC this hotel sold out prior to the conference! It is very important to make reservations as early as possible to guarantee your room. Contact the Orlando Hyatt directly for room reservations.

# POTOMAC VALLEY AQUARIUM SOCIETY



POST OFFICE BOX 6219 SHIRLINGTON STATION ARLINGTON VIRGINIA 22206

## APPLICATION FOR MEMBERSHIP

Date: \_\_\_\_\_ 19 \_\_\_\_\_

Name: \_\_\_\_\_

Street: \_\_\_\_\_ Apartment: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_

Telephone H: \_\_\_\_\_ W: \_\_\_\_\_

Occupation: \_\_\_\_\_

Where did you hear about PVAS/get this application? \_\_\_\_\_

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.



## SUPPORTING MARYLAND SHOPS

**ANIMAL EXCHANGE**  
765-A Rockville Pike  
Rockville, MD 20852  
424-PETS

**AQUARIUM CENTER**  
Randlestown Plaza Center  
Liberty Road at Offutt Road  
Randlestown, MD  
301-521-4529

**BROTHERS PETS INC.**  
13810 Georgia Avenue  
Aspen Hill, MD 20906  
460-4600

**CONGRESSIONAL AQUARIUM**  
Congressional Plaza  
162 Congressional Lane  
Rockville, MD 20852  
881-6182

**FISH FACTORY AQUARIUM**  
582 North Frederick Avenue  
Gaithersburg, MD 20877  
881-6182

**GLENMONT TROPICALS**  
Glenmont Shopping Center  
12345 Georgia Avenue  
Wheaton, MD 20902  
949-0344

**HOUSE OF TROPICALS**  
7389F Baltimore-Annapolis Blvd  
Glen Burnie, MD 21061  
301 761-1113

**MARINE CARE SPECIALISTS**  
15820 Redland Road  
Rockville, MD 20855  
330-0720

**MONTGOMERY TROPICALS**  
7845-G Airpark Road  
Gaithersburg, MD 20879  
670-0886

**PETLAND**  
Briggs-Chaney Plaza  
13833 Outlet Drive  
Silver Spring, MD 20904  
762-3505

**PETLAND**  
White Flint Plaza  
5268 Nicholson Lane  
Kensington, MD 20895  
231-5216

**PET MART ROCKVILLE**  
2230 Veirs Mill Road  
Rockville, MD 20851  
762-3505

**RICK'S FISH & PET SUPPLY**  
1003J West Patrick Street  
Frederick City Square  
Frederick, MD 21702  
301-694-9664 301-831-6866

**SHOWCASE AQUARIUM**  
11248-11250 Triangle Lane  
Wheaton, MD 20902  
942-6464

**TROPICAL FISH WORLD, INC.**  
Walnut Hill Shopping Center  
16529 South Frederick Center  
Gaithersburg, MD 20877  
921-0000

**TROPICAL LAGOON**  
9439 Georgia Avenue  
Silver Spring, MD 20910  
585-6562

## SUPPORTING VIRGINIA SHOPS

ANNANDALE PET SHOP  
7406 Little River Turnpike  
Annandale, VA 22031  
256-2400

AQUATIC ENHANCEMENTS, INC.  
Aquarium Sales/Leasing/Service  
Box 22677  
Alexandria, VA 22304  
(703) 765-4620

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

BAILEY'S PET CENTER  
Leesburg Pike Plaza  
35217 South Jefferson Street  
Falls Church, VA 22041  
931-1400

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

NATIONAL PET AND AQUARIUM  
Williston Shopping Center  
6168 Arlington Blvd  
Falls Church, VA 22046  
533-7828

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

PET MART - TYSONS  
8417 Old Courthouse Road  
Vienna, VA 22180  
281-8181

PETS, ETC - ALEXANDRIA  
7688-B Richmond Highway  
Alexandria, VA 22306  
768-2200

PETS, ETC - CHANTILLY  
Sully Plaza  
13932 Lee-Jackson Highway  
Chantilly, VA 22021  
378-2777

PETS, ETC - HERNDON  
Stuart Center  
462 Eiden Street  
Herdon, VA 22171  
437-0381

PETS, ETC - STERLING  
Hechinger Jamesway Plaza  
243-C Harry Flood Byrd Hwy  
Sterling, VA 22170  
430-9667

PETS-N-THINGS  
Pan American Center  
3081 Nutley Street  
Fairfax, VA 22031  
573-4400

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

TANKS-A-LOT  
Lee Center  
6635 Backlick Road  
Springfield, VA 22150  
703-866-1057

WILSON'S PARROTS & MARINE  
Shirley-Edsall Industrial Park  
5605-G General Washington Dr  
Alexandria, VA 22312  
922-7358



POTOMAC VALLEY AQUARIUM SOCIETY  
P.O. Box 6219, Shirlington Station  
Arlington, Virginia 22206-0219

BULK RATE  
U.S. POSTAGE  
PAID  
PERMIT NO. 418  
ARLINGTON, VA

THE SOCIETY WILL MEET ON THESE MONDAYS IN 1991:

14 JAN	8 APR	8 JUL	21 OCT
11 FEB	13 MAY	12 AUG	11 NOV
11 MAR	10 JUN	9 SEP	9 DEC

Meetings are held at the John J. Wood Facility, Room 7, 3730 Old Lee Highway (Rt 237), Fairfax City, VA. Doors open at 7:30, and the meeting starts at 8PM. ALL ARE WELCOME!

