

# \*DELTA TALE\*

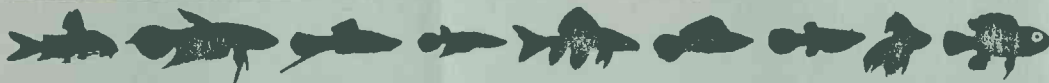
Nov. 1987  
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potomac valley aquarium society



# POTOMAC VALLEY AQUARIUM SOCIETY, inc.



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## 1987 PVAS OFFICERS

President: Gene Aldridge  
Vice President: Pete Thrift  
Treasurer: Gerry Hoffman  
Corresponding Sec.: Bob Pallansch  
Recording Sec.: Lea Spickler

## 1987 BOARD OF GOVERNORS

John Jessup, Ray Hughes, John Stieringer, Kenny Warren  
Ex-officio: Bob Roser

## 1987 COMMITTEE HEADS

Auctions: Alex Cummins  
BAP: John Jessup  
HAP: Alex Cummins  
Library: Pete Thrift  
Membership: Pat Gore  
Spring Show: Pete Thrift

Fall Workshop: Gerry Hoffman  
Bowl Shows: Jason Kookan  
Programs:  
Ways & Means: John Stieringer  
FAAS: Gerry Hoffman  
Delta Tale: John Mangan

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FROM THE EDITORZ DESK

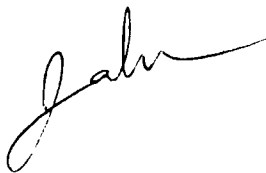
The Fall Workshop/Banquet is almost upon us. If you have'nt registered yet do it soon. You MUST preregister in order to attend the Banquet. There is a registration form in the center of this issue, or contact Gerry Hoffman at (703) 347- 7486. You can register for the work shop at the door, but will save a little money if you register early. We have an excellent lineup of speakers. If it is at all possible for you to attend you should do so. You'll learn a lot plus have a real good time.

Elections are also coming up this month. The following slate has been proposed by the nominating committee:

President- Gene Aldridge  
Vice President- Pete Thrift  
Treasurer- Gerry Hoffman  
Corresponding Sec.- John Mangan  
Recording Sec.- Lea Spickler  
Board of Governors- John Jessup, Ray Hughes

Nominations will be accepted from the floor prior to the election for any position.

One final topic for this month- something I've repeated over and over and over that doesn't get paid attention to. I'll give it one last try though anyway. Please be a little selective about what you bring to the auction. Don't bring bag after bag of junk. Use proper type fish bags - ziploc bags are not acceptable and will not be allowed. Also- use the proper SIZE bags for the fish you are putting in them. If you don't have proper bags go to your local fish store and buy some. They are very inexpensive. Use a little common sense when bagging your fish. (Question of the month- why is it called "common sense" when it is so rare?).



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What's Happening in Nov.

Program- George White on African Cichlids in Germany plus Gene Aldridge on Central & South American Cichlids in Germany.  
Election of 1988 officers  
Mini auction- none this month, bring your stuff to the big one on the 8th.  
Raffles & Door prize  
Bowl Show- Angels& Discus, New World Cichlids, Mbuna, Haplochromis, Riftlake non-mouthbrooder, open cichlid, Livebearers, Characins, Catfish, Sharks& Loaches, Anabantoids, Open.  
Super Bowl Show- all the judges choice fish from this year competing for fish of the year.  
Fall Workshop/Banquet/Auction- Nov. 7 & 8. see elsewhere in this issue for details.

The PVAS Board of Directors convened at 7:45 p.m., chez John Mangan; also present were President Gene Aldridge, Gerry Hoffman, Ray Hughes, John Jessup, Bob Pallansch, Pete Thrift and Kenny Warren.

Topics discussed;

- Siting of the 1988 Spring Show (the Mannassas Holiday Inn will not be available). Negotiating with The Falls Church Inn was considered, and Ray Hughes agreed to seek a Maryland location and report back at the next general meeting.
- John Mangan gave the nominating committee report; it was agreed that the Board needs new blood.
- We were reminded that The Delta Tale needs a new editor as of Jan. 1, in view of John Mangan's "retirement" from a job well done.
- The problem of encouraging more member participation in PVAS meetings was discussed; suggestions:
  - Start meetings on time; speed up the pace
  - Avoid intimidating less experienced members with too much technical jargon; keep it clear.
  - Change the order of meeting activities.
- Broaden the base of PVAS to attract more salt enthusiasts (designate certain months as salt months).
- Set up program suggestions for 1988 at the Nov. Board meeting, to be fleshed out and published in The Delta Tale.

The Board voted to survey our membership for more suggestions and comments; Ray Hughes will make up a seed list of questions to stimulate members' opinions about club activities.

The meeting adjourned at 9:15 p.m.

Respectfully submitted,

Robert Pallansch  
Corresponding Secretary

PERUVIAN AMAZONIA      by Eugene T. Aldridge, Jr.

Continued from last month

MONDAY

In the morning the air was HEAVY and wet without raining. It burned off as the sun came up. Very early we left Oran by going up to the stream we had seen the night before to fill out shower and toilet water tanks on the roof of the upper deck. Then we went down to the Apayacu River and tied up about up about 9:00 AM. We broke up into groups and went into various small local streams to collect fish. I went with John S., Jay S. and Paul. We were in a 14 or 16 aluminium boat with a 25 horsepower outboard motor. We ended up in a stream about 45 minutes away from the main boat. The water was a little high so some tree roots were under water providing plenty of places to hide. There were broken trees at the mouth of the stream we went into nearly hiding it. The water had a pH of 6.1 with 28 microseans (a factor relating to water hardness), after going in about 300 yards the pH was 5.8 and the microseans between 8 and 9. We netted and kept pencil fish, several species of hatchet fish, and several Apistogramma species from each spot collected. We saw and our guide caught a beautiful Morpho butterfly as big as the palm of my hand. The top of the wings were a dark sky blue with black edging and the bottom paisley. We ended up back at the M/V Margarita in time for lunch. After lunch they went back out to different streams, but as I did not feel very well so I stayed on the boat not wanting to get sick. Enough eating size fish were caught by various group members during the morning and afternoon trips to provide fish in some form for several days, included in the catches were pacu, red bellied piranha, cichla ocellaris, and a big rainbow like bass - with one weighing well over five pounds.

A night trip was planned to go and look for cayman. Those going were divided up into three boats and they left with flashlights. The three boats went off in different directions so as to have a better chance at seeing cayman. I do not know if they are endangered or not, but special permits are required to get them out of Peru and into this country. In two hours they started to come in, all had see cayman some only briefly. Chuck Davis came back with a' baby one about 10 inches long. After everyone looked at it a took pictures and played with it he released it. While most of the group was away on the trip I took a shower and put on some loaned fresh clothes. It felt good to get rid of all the sweat and bug repellent. About 10:30 PM I went to bed and slept very well.

TUESDAY

We woke up to a steady rain called by a "female rain" by the natives as it was long and steady one. Conversely, a "male rain" is short and quick of maybe ten minutes duration. The plan called for

us to go to the Madre Selva Forest Reserve and Lake Atun Cocha with our lunch and getting back for a late dinner. The trip in the small boat would have taken more than 5 hours. The way it was raining none of really us wanted to go. It would have been nice but the rain made it out of the question for me, I did not get that wet. It rained all morning and very hard at times. During this period Lee Finley caught about 15 red bellied piranha. About noon it cleared up so we made plans to go some new local places.

After lunch I went with Paul, John S., Gian (John) P. and Alfredo to a new lake type area off of the Apayacu River. Paul and John S. went ashore to observe and collect specimens for an hour. The rest of us went out into the middle of the lake and fished with a rod and reel. Alfredo was the only one to catch anything - six Cichla ocellaris (10" to 12"), two chocolate cichlids (1-3" & 1-6"), and two red bellied piranha (6"). At the agreed to time we picked them up. Another group stayed close to the M/V Margarita using one of the small boats under paddle power and went down a small black water river where we were tied up flowing into the Apayacu River. They caught a dozen 12 to 14 inch plecos. After everyone saw and photographed them they were given to the local kids that were always around the boat. Some of the kids were no more than two or three years old with kids as young as six and seven years old fishing for their food. At this point I took a shower. John O had been told by Alfredo that Maria would wash some clothes for us if we wanted. We both did so I got some things ready for her.

In the late afternoon, after everyone had returned from the various trips, a great deal of trading went on. A dirty T-shirt with any sort of design on it was worth a used paddle. New paddles took a little more. Since I had no T-shirts at this point, Chuck gave me one with a logo of a local North Jersey Beer Joint's St. Patrick's Day Party so I could have a paddle. Mime was well used and is a super reminder of my trip. In the end we all had paddles and some even had some of the local wood carving art. After dinner more trading went on. Also another group went out looking for cayman. They were successful but none were brought back. My paddle is now dried out and has been painted with poly wood sealer so it will not crack. They are made out of a type of rose wood and are okay when they are new or wet, but do not let the wet ones get dry as they will crack and break up. The water around the boat is full of Prochilodus insignis (red striped) and P. taeniurus (silver sides - no real color). The waters were also full of hatchets. After a spending a good part of the day in the sun, I went to bed about 11:00 and got a good night's sleep.

#### WEDNESDAY

In the morning, we left the Apayacu River to return to the Amazon River and after a while went up the Orazza River and stopped.

We were to go in the small boats across the river to see birds and water lillies. There was a great deal of walking to be done so I stayed on the boat. They left about 9:00 to go and see the birds and lillies. The bank we were tied up to was about 12 to 15 feet high and it was clearly evident that the water had been 12 feet or more. The bank also had many catfish holes - many of them six inches in diameter. It would have been fun to go on the trip, but I had to be careful not to get my shoes wet. Clothes wise I was getting things from half the group so I could at least but fresh things on daily. The half not helping were not because their clothes were to small for me to ware. Lee Finley was good enough to loan me 5 rolls of film, so I could at least take some pictures. I spent most of my time while the others were away getting my notes up to date. In the three days we were on the Apayacu and Amazon Rivers, they have gone down 18 inches and it showed on all the banks. Alfredo brought back with him a big blooming lilly, and showed me how it gets pollinated. Eggs are laid in the flower, shortly the eggs hatch and the beetles flop around in the closed flower. On opening again, the beetles leave all covered pollen and go to another lilly. We kept the lilly on the table for a couple of days and saw the beetles come out of the opened lilly. Everyone returned about 10:30 so we continued on up the river toward Oran, the village where we spent the first night. It took us 3 hours to get there.

There were two activities planned for the rest of the afternoon. One a four to five mile walk through the jungle with some fish collecting or a small boat trip up the little black water stream we had seen on Sunday. Chuck, John O., Paul and I went in two boats with Teddy and Hernando as crew and Sandigo as a guide. We went several miles upstream and pushed and pulled ourselves through patches of river junk, cane and morning glory. We went by a lot of rain forest jungle. So I got a chance to see and be close to jungle without actually walking in it. Along the shores, we caught and kept whiptail cats, cats, banjo cats, breeding color apisto's and threw away hatchets, pikes, piranhas, shrimps and fresh water crabs. No cory's were found. The consensus of the crew and guide was that we are about two weeks to early. While we were in a clear area beyond the junk we saw a large bird that we found out later, after looking it up in the bird book, was a *Opisthocomos hoatzin* a large scavenger. It was quite majestic in its black feathers and long neck. The noise it made was hard to beleive like the honk of a car horn. On returning to the M/V Margarita we had to push and pull the two boats through the same junk. On the return trip to the big boat, it started to rain. We all got soaked. My shoes got waterlogged but good. I should mention at this point before I forget it, my cane came in very handy in loading and unloading the small boats when we were close to the big boat. It made for a nice extra long arm (about 3 feet longer) with a hook to grab with. It was much appreciated by all. I was also given ALL kinds of help getting into and out of the little boats. About 5:30 I took a shower and with my shoes as wet as they were it took me 30 minutes to get them back on.

After dinner a small group, Wayne, John S. and John O. went out to same place to try and find some angels. Wayne was trying to get as many angels as he could from different areas. At this point he had some from several different places and he was trying to figure what way to cut or nip the fins so they could be separated when all in one tank. The rest of us stayed on board and settled the affairs of the world. Then we spent sometime talking with Alfredo talking on ways to improve the service the M/V Margarita offers. Such as providing tanks or vats for fish like we needed and did not have or other types of specialized items depending on what type of group was using the boat. It was all a friendly give and take. We had been told by Holbrook that there would be tanks to hold fish and there were none. This in no way was the fault of Alfredo. Had we known there were no tanks we would have arranged our luggage in such a way to include small plastic tubs in what we brought. With what I saw being brought in Miami, I could have gotten a 50 gallon tub down without any trouble. I went to bed about 11:00 and kept a pair of socks went me in bed to keep them warm and dry.

#### THURSDAY

We left early in the morning toward Marupa Island and the village of Marupa on the Amazon River in the vicinity of the mouth of the Napo River. It took nearly an hour to get my shoes on in the morning, they were really wet. Shortly we left the big boat in the small boats to go up a the Napo River. The M/V Margarita continued on toward Marupo. We asked the local natives if we could collect some fish and after a lot of talking they said NO they did not want outsiders taking their fish. So we went up a side stream up into a lake appearing body of water. I do not know if it was a lake or just a wide place in a river. We found several good place where fish should have been but there were none. We also saw some of the side effects of the recent earthquake in Ecuador. Somthing had come down and took the whole side of the mountain with it breaking and pushing everything flat to ground. Mud, rocks and trees had been pushed down into the water. The edges of the lake were a mess with all the junk. This was why the water in all the rivers and streams were full of so much junk and debris. We went to another stream. Here we used the seine and caught several fish we had never seen before. The seine was setup in a little stream (about half as big as Four Mile Run) then the others went up about 200 feet to flush fish down to the seine. It was not easy but as there was a lot of cover over the stream making it difficult to even move. After picking the seine clean we packed up and returned to the M/V Margarita now anchored at Marupa Village. To save my few clean clothes, I had started the day out with the wet clothes from yesterday. By the time we got back to the boat everything was dry but my shoes. The top layer of them got dry but not the insides. We could not have asked for nicer weather with the sun out all the time and hot.

The Marupa village is not on the main part of the Amazon River as it is only about 150 feet wide at this point. On getting on board



the M/V Margarota I found my luggage and one of the Amazon Camp owner partners, Al. I thanked him very very much for bringing my clothes. We all spent a lot of time talking and he told us what was to happen the next day. My things were carried up to my cabin so I went up and started to unpack. Customs had gone through all of my things and missing was my micro recorder, blank tapes, a flashlight and a knit shirt. There was really nothing I could do but bitch which I did. There is no way that something like that could be proved, luckily my other camera and film were there. The only item very expensive besides the camera was the recorder costing \$100.00. I took the two styro's and the cardboard box down to the lower deck and left them for use holding fish. With no tanks or tubs, they were urgently needed to hold fish. I took an early shower including washing my hair for the first time and put on my own clothes.

I wanted to have Maria wash the borrowed clothes but she they NO. So I just returned as it was dirty. Most went into the village. What I could see it was quite nice. A few clapboard buildings and few houses still with thatch. With the river bank being about 20 feet up the houses were not very far off the ground. Al left in the late afternoon to return to Iquitos in a speed boat with a 150 horsepower motor. Once started it could really move out doing 40 knots without trouble. After dinner a local school teacher came brought on board by Alfredo. Her name was Julie and was quite nice looking. She understood a LITTLE english, about as much as several of us understood Spanish. John P. and Alfredo provided the necessary interpretations. She left in about 45 minutes. She was interesting to talk to. We found out on Friday from Al that Peru requires all teachers to spend two years in Amazonia and pays their salaries. All the villages have schools up to a 6th grade equivalent. The village must provide a free house equal to local housing and provide them with food. There are regional schools above the village schools. If the teacher feels a child has the ability to go on he or she must leave home to go at no cost to the family. As the culture is so family oriented not many leave for further education. We also learned a little about local government here. There equal to a mayor is called a Lt. Governor, then the town elders and the teacher. The teacher is the main recorder after the Lt. Governor. Being able to read and write makes a teacher a very important asset to the local villages. After the teacher left some of the boys went back into town. The clothes came back from Maria. About 10:30 PM I went to bed and slept very well and happy.

Continued next month

The Cichlid Aquarium by Dr. Paul Loiselle

a book review by George White, PVAS

The Cichlid Aquarium is by far the best written and most accurate book available on cichlids--a must have for beginners as well as serious cichlid fanciers interested in breeding and showing superb fish. Dr. Loiselle has packed an incredible amount of information into 287 pages. Many of the topics Dr. Loiselle delves into are essential for success with cichlids, but are not included or are inadequately covered in other cichlid books. (Much of the information in this book can only be found by searching a wide assortment of specialized publications such as the American Cichlid Association's monthly bulletin.)

The photographs in this book are spectacular--there is not one picture of a dead cichlid with faded colors. Not only are a wide range of cichlids portrayed in vibrant color, but also several of their natural habitats. The pictures of would-be pairs sparring and of parent fish tending their fry are my favorites.

The Cichlid Aquarium provides an excellent survey of the different types of cichlids and how to manage their behavior within the confines of an aquarium. Most other books offer simplistic (and often inadequate) advice such as: offer cichlids a large enough aquarium and lots of hiding places. Dr. Loiselle, in contrast, examines the whatfor and whyfor of cichlid intraspecific aggression and outlines specific strategies for managing the behavior of the different types of cichlids. For example, the merits of various dither fish, target fish and scavengers are discussed.

The chapter on "Breeding cichlids under aquarium conditions" not only describes cichlids' physical environmental requirements, but also ways to improve the fishes' psychological inclination towards love not war. Again in this area, Dr. Loiselle goes into detail, avoiding the vague generalities many books mislead their readers with. For example, this book includes techniques to encourage breeding by cichlid pairs as well as by harem and other polygamous cichlids.

The chapter on "Maintaining the cichlid aquarium," alone justifies reading this book. It provides concise and highly useful information on managing the nitrogen cycle as well as warnings about dangers such as gas embolism many aquarists are unaware of. The discussion of water chemistry also mentions the trace elements as well as ranges of Ph and hardness desired by the various types of cichlids. Tanganyikan cichlid fanciers, for example, are advised to beware of inadequate iodine in the water that could lead to some of these fish dying from goiter.

Incidentally, the iodine levels in the Washington D.C. area are lower than the levels of Lake Tanganyika. The only fish I have lost to goiter are Lamprologus Compressiceps; my other fish do not seem to have this problem. I now add one drop of de-colored iodine (which I found at People's Drug) per twenty gallons of water in the tanks containing my Tanganyikans, but not my Malawi aquaria.

# **The Potomac Valley Aquarium Society**

**ANNOUNCES ITS FALL 1987**

## **WORKSHOP • BANQUET • AUCTION**

**SATURDAY, NOV. 7 & SUNDAY, NOV. 8**

**HOLIDAY INN, MANASSAS, 10800 VANDOR LANE, MANASSAS, VA. 22110**

### **FEATURED SPEAKERS**

- **Peter Lewis: "Fishy Trivia"**  
"Fish Keeping for the Advanced Aquarist"
- **Charlie Grimes: "Live Foods"**  
"Killifish"
- **Sallie Boggs: "Success with Oddball Fishes"**
- **Steve Somermeyer: "Tanganyika Cichlids"**
- **John Burleson: "Salt Water Invertebrates & Corals"**

### **SCHEDULE OF EVENTS**

**Saturday, November 7 -8:30 am Workshop Registration**

**9:15 am - 4:30 pm Speakers**

**(Lunch break at about 12:15)**

**6:30 pm Social Hour (Cash Bar)**

**7:30 pm Banquet & Dinner Speaker**

**Sunday, November 8 -PVAS Annual Fall Auction**

**9:00 am Registration of Auction Items**

**11:30 am Auction Begins**

### **TWO GIANT RAFFLES**

**MISCELLANEOUS ITEMS DURING THE AUCTION: Tickets 3 for \$1**  
**GRAND FINALE: 55 GALLON TANK, STAND, SET UP: Tickets \$1 each**

### **EVERYONE WELCOME**

**AQUARISTS OR THOSE INTERESTED IN BECOMING AQUARISTS!**

Over Please for Registration Information

## WORKSHOP/BANQUET REGISTRATION FORM

**Registration:**

# of People		Total \$
_____	Pre-Registration (Before Nov. 1, 1987) - \$10/person	_____
_____	Late Registration (Nov. 1 - Nov. 7, 1987) - \$12.50/person	_____
_____	Banquet Registration (Buffet Dinner) - \$15/person	_____

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

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: (\_\_\_\_) \_\_\_\_\_

Please Send to: Gerry Hoffman, 547 Hunton St., Warrenton, VA 22186

For Further Information Call 703 - 347 - 7486

**Holiday Inn/Manassas:**

Motel Rooms are available at the site of the workshop. Rates are: Single \$44.00/night  
Double \$49.00/night

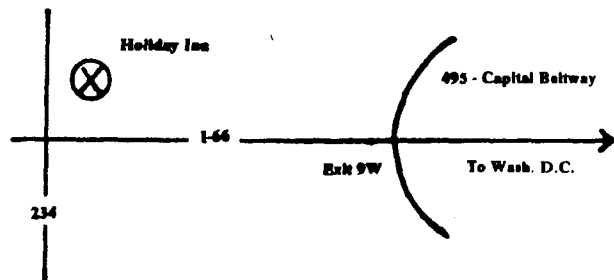
**Call or write the Motel (Not PVAS)**

**Holiday Inn, Manassas, 10800 Vandro Lane, Manassas, VA 22110.**

**Phone: (703) 361-0131**

**Directions:**

**Take Exit 9 West off the Capital Beltway**  
**Continue on I-66 West until the Manassas**  
**Exit. Take Rt. 234 North, then the first**  
**immediate right.**  
**The Holiday Inn is visible from I-66.**



PVAS FALL AUCTION - SUNDAY, NOVEMBER 8TH

RULES FOR THE SELLER:

1. You do not have to be a PVAS member to buy or sell hobby-related items, including fish, plants, equipment, etc. in the auction.
2. Registration of items for sale will begin at 9 AM and will end promptly at 12:30 PM on Sunday, November 8th.
3. The auction will begin promptly at 11:30 AM, and will continue, with periodic breaks, until all items are sold.
4. All items must be labeled with the identity of their contents, to include number, sex (if possible), and other pertinent data. Use a permanent marking pen and adhesive label. Labeling equipment will be available at the auction, but labeling must be accomplished before the items will be registered.
  - a. Fish: 'Pair' means one of each sex. 'Mated Pair' means a pair that have spawned WITH EACH OTHER. 'Trio' means one male and two females. 'Reverse Trio' means two males and one female. 'Mixed Sexes' means at least one specimen of each sex. If you are uncertain, label the bag 'Unsexed'.
  - b. Supplies: All aquarium equipment MUST be labeled as to working condition or missing parts.
5. Proper fish bags must be used. Live items must be bagged with ample air and water. Fish packed in "baggies" or similar bags will not be registered. If a fish is registered in a bucket, tank, or bowl, the container will be considered part of the item and will be auctioned as a unit. There will be a supply of fish bags for sale at the registration desk. After registration, PVAS reserves the right to re-bag any item as is necessary.
6. Registration is limited to fifteen (15) items per person.
7. A limit of five (5) bags per species or color form/variety is allowed, unless prior approval is obtained from the Auction Chairman.
8. For every five (5) items registered in the auction, one (1) colored sticker will be given to the seller to attach to the item of his choice. These items will be auctioned first.
9. Bags will be offered 'as is' and will be sold as one item. Once registered, the contents of a bag may not be split.
10. Each item carries a \$1.00 minimum, unless the seller assigns a higher minimum. The seller may lower the minimum on an item that does not sell during the auction.
11. No payment will be made to the seller on the day of the auction. Payment will be forwarded by mail within ten days after the auction date. It is the seller's responsibility to give PVAS a proper name and address to receive payment. Envelopes for this purpose will be filled out during registration.

12. The seller receives two-thirds of the selling price. PVAS retains one-third.
13. All items not sold must be claimed at the close of the auction, or they will be disposed of at the discretion of PVAS.
14. The auctioneer retains the right to set aside any improperly bagged or marked item, or any sick or otherwise unsaleable item.
15. Fish species that are restricted by either federal or state statutes will not be accepted. These include, but are not limited to: piranhas, Texas cichlids, and walking catfish.

#### RULES FOR THE BIDDER

1. All persons wishing to participate in bidding are required to register with their full name and address. Bidding numbers will be assigned to all buyers.
2. Items may be inspected only before the auction and during the intermissions.
3. All bidding raises will be in dollar (\$1.00) increments. The auctioneer has the right to alter this procedure at his discretion.
4. Successful bidders will have their items brought to them, at which time payment is expected. An authorized bidder may run a tab, or pay by check. Please see the Treasurer before the auction. Proper identification will be required in these instances.
5. In all cases, the decision of the auctioneer is final.

## RAINBOW GOODEID

- by Ginny Eckstein

Spring of 1983 found us with Dr. Paul Loiselle as our house guest for several days. While Paul's knowledge of cichlids is legendary, I was amazed as he went through my fish room, correctly identifying the many species of Goodeids I keep. At the conclusion of the tour, he asked if I ever tried my luck with *Characodon lateralis*, as he hadn't noticed any. "No, why?" was my quick reply. Well, luckily for me, Paul was preparing to move, and offered to send me his *C. lateralis*. I eagerly accepted his offer.

He gave me a brief sketch of some of the difficulties hobbyists have encountered attempting to maintain this species. They are extremely intolerant of dissolved metabolics and demand frequent water changes. A slight neglect can result in almost instant death. Aside from that, he found them to be extremely predacious toward fry.

In a note he included, when he shipped the fish, he advised, "... a satisfactory survivorship follows moving the gravid female into a 5 gallon tank filled only 2" deep with water and packed with Java Moss." *Characodon lateralis* seemed to be an ideal goodeid for masochists. I knew of three hobbyists (Dan Fromm, Marcia Palmetter, Lois Scanlan) that had "briefly" maintained this species. Naturally, I was eager to try!

My fish arrived in Madison's liquid rock. The super hard alkaline water these fish had been living in, matched not-at-all my soft acid water. I started dripping them. I had decided to match halfway the water between Wisconsin and Long Island. I usually don't buffer any of my tanks. The *C. lateralis* would nbe an exception. I dripped the fish all day (and half the night).

Once they were settled in a tank, I knew that they were worth it. The common name of Rainbow Goodeid is almost inadequate; they were beautiful! Their body is rather chunky shaped. The base color is gold. Superimposed upon this, are iridescent shades of pastel blue and bright red. The dorsal, which appears set back on the last quarter of the fish, is red and gold, smartly trimmed in black. The caudal fin is graduating shades of red, from very light to very dark, edging in vermillion and black margins. The female, while lacking the intensity of the male's coloration, is still very unique. Her primary coloration is gold and blue with a couple of black spots mid-laterally; this seems to vary from female to female depending on their mood. At times they will disappear entirely and be replaced by a stripe. I realize that "mood" is a human concept but many of the behavioral aspects of these fish can best be described in this manner. The intensity and density of their coloration is directly related, in my opinion, to their happiness. Immediately after a water change they literally glow.

There is a definite "pecking order" among the males with much displaying. The dominate male has the deepest coloration. This title is constantly defended with varying degrees of aggression. Provide many hiding places, particularly in a lightly populated tank, as the males can be quite hard driving on the females. Weeks later, I was

shocked to discover several fry swimming along the surface of the tank. Immediately, I removed them, feeling I had saved their lives. I carefully observed the females: I removed what appeared to be the most gravid. She was sequestered in a five gallon tank aerated by a Jungle sponge filter. I had cut the filter airlift tube down so that it could function in 3" of water. The tank was packed with Java moss and floating plastic spawning grass. During this time, I fed only live foods and did daily water changes. I waited. After eight days, I couldn't believe she still hadn't dropped. Finally, I saw some fry, removed all the plants and placed the fry in a previously set up nursery tank. I carefully monitored the female's tank, every few hours removing any fry I discovered. I'm sure now that I was scaring the devil out of the poor female because she dropped her young over a period of three days. My reward was 17 live fry (I found 2 dead). I was extremely proud. The fry are born with a large trophotaenia. I isolated another very gravid female. Unfortunately, before she started to drop, my weekend house guests arrived. The following evening, I noticed 2 fry, but didn't have time for the necessary move. After 3 days my quilt was so intense, I stealthily departed from my house full of "fishy friends". I could still see a couple of fry through the dense plant covering. After removing all the plants, I couldn't believe what I discovered. There were 20 hungry *C. lateralis* fry swimming around with their mother. In Dr. Joanne Norton's FAMA series on Goodeids, she recommends isolating females of this species for the same reasons as Loiselle. I began to do some serious thinking about these unique livebearers. My conclusions are based strictly upon my own observations. I'm certainly not knowledgeable or foolish enough to disagree with Drs. Norton and Loiselle. However, in my experience .....

(1) The chemistry of the water is not as important as the "quality" of the water. Although these are indigenous to hard alkaline water, they appear to do very well in my soft acid water (I do add commercial marine salts to the tanks of all my livebearers). I change at least 50% of it every other day on adults, daily water changes on the fry.

(2) With daily water changes the fry grow incredibly fast. They eagerly eat brine shrimp, powdered krill and chopped-up blood worms. For their first feeding of the day, like their parents, I feed them vegetable matter. I'm sure it's the greens that help to intensify their coloration.

(3) Concerning their predatoriness: At 4 weeks of age I placed the first spawn (17 fry) in with the adults. The result was a very happy group. The tendency toward shyness was gone. They were now very social. More importantly, I recently noticed another spawn in the tank. The adults ignore them. Their slightly older siblings will chase them only when competing for live food. I can't explain why these fish have a reputation for being difficult. They haven't been that way for me. The joy these "Rainbows" will impart to the hobbyist is better than any "Pot of Gold" !

\*\*\*\*\*  
 Reprinted from Paradise Press, October 1983, the Long Island Aquarium Society  
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## A BETTA RECIPE

by Robert Riggio

Breeding bettas is as easy as baking a cake. Yet the first attempts of beginning betta breeders and novice cake-bakers are often dismal failures. While such failures are generally thought of as an essential part of the learning process, they really need not occur. One need only follow a recipe to avoid them.

Over the years I've developed my own recipe for breeding bettas. This recipe is the result of trying many of the different techniques described in the aquarium literature. Utilizing a trial and error approach, I have hopefully incorporated the best elements of each technique into my recipe.

Note taking played an essential role in developing this recipe. I emphasize note taking here because hardly any aquarists do so. This is a real shame when you consider the amount of time and effort most of us put into trying to breed fish. A few simple notes scratched on a sheet of paper take only a few seconds. Yet these same notes can save yours when they help us to avoid repeating the same mistakes over and over again.

For the serious aquarist, notes are also useful in determining which technique produce the best results. In developing my recipe, I was primarily concerned with three things: practicality, growth rate and survival rate. Thus my notes pay careful attention to feeding regimens; when, how much and what was fed, deaths; when and how many, and growth; determined by measuring individuals. I have also paid close attention to certain behavioral activities such as how old the fry were when they took their first breath of air or when they first started to chase each other. My experience has been that the onset of such activities is closely related to the effectiveness of the rearing techniques.

Betta breeding can best be described as a series of stages. These stages are: preparation of the adults, spawning and care of the eggs, initial feedings of the fry, fry grow-out, and jarring. Each of these stages will be discussed below.

### Preparation of the Adults

Male bettas generally require little preparation prior to spawning. Feeding them twice a day on brine shrimp is usually enough to get them in shape. This conditioning can take place at the same time that the female is being readied.

I have found that the key player in a betta spawning is the female. She is the one who will initiate the spawning sequence and if she is not ready, no spawning will take place. In this respect I am at odds with the aquarium literature which has lavished undue attention upon the male and the preparation of his nest. In fact, I have had males who blew their nest while they were spawning.

To prepare the female, I remove her from the holding tank where I keep my females and place her in a jar. This jar is then placed next to her future mate. Both fish are fed either live or frozen brine shrimp for three or four days. At the end of this period the female should be visibly swollen with eggs and a white ball should be

protruding from her genital pappila. These signs indicate the female's readiness to spawn.

#### Spawning and Care of the Eggs

Once the pair is ready to spawn, I move them to the spawning tank.

I have utilized a number of different types of tanks but have found my best results to be with smaller tanks. I am presently using clear plastic sweater boxes which hold about two to three gallons of water.

Should the spawning aquarium be empty, it is filled with aged water from another tank. If it is already full, it is left as is. No effort should be expended in cleaning the tank as a certain amount of dirt is essential in breeding bettas. However, if the tank contains gravel remove it. A bare tank is essential as the fry will swim into the gravel and be unable to find their way out.

The final and probably most important item to be placed in the tank is a mat of water sprite. This is a fast growing plant which can be purchased from any pet shop. I usually add enough of these plants to form a mat about one to one and a half inches deep across the entire surface of the aquarium. This mat of plants will act as a refuge for the female when she is released.

You may have noticed that I have neglected to add filters, airstones, or those funny little styrofoam things that every betta book describes in great detail. None of these things are needed. In fact, the agitation produced by airstones or filters will destroy the male's bubble nest.

The entire tank is then covered with either its plastic lid or Saran Wrap. The tank should be placed where it will receive a fair amount of light or the plants will rapidly deteriorate.

The male is added directly. The female remains in her jar which is placed so that it either rests on the bottom or floats around.

The male should almost immediately begin building a bubble nest and should also spend a fair amount of time displaying to the female in the jar.

After two or three days in the tank, the pair should be ready to spawn. It is then that I release the female. I generally release the female at night just before the lights are turned out. This allows her a little time to get accustomed to being free before the male's courtship activities begin in earnest in the morning. Releasing the female at this time also allows me to observe the pair briefly in the morning before I leave for the day. In one case where the female was much more aggressive than her mate, it gave me the opportunity to remove him before she killed him.

If the pair are ready, they should spawn sometime in the late morning or early afternoon. If they don't spawn that day then it becomes a waiting game. As long as the male remains interested and the female is not too badly mauled, there is a possibility that they will spawn. Should the female get too badly beaten up then she should be removed and either the attempt postponed or another female introduced in her stead.

Once the pair finish spawning, the female is removed. The male remains to tend the eggs which take between 36 and 48 hours to hatch. Generally, fry can be observed hanging vertically from the nest early in the second morning following the spawning. I usually remove the male that night or the next day.

## Initial Feeding of the Fry

In my opinion, the initial feedings of the fry determine the outcome of the spawning attempt. Not surprisingly, there is a great deal of disagreement over what foods are best for the initial feedings.

My best results have been obtained with live microscopic foods supplemented with a slurry of Tetramin E. For a long time I relied upon infusoria cultures as a source of living microscopic food. Recently, however, I switched to rotifers and have obtained better results.

Neither infusoria or rotifers are difficult to grow. It is essential, however, when feeding such creatures to know just what you are feeding. For this, one needs a microscope and some basic knowledge of microbial life forms.

I culture infusoria by adding three dried lima beans and six rabbit pellets to a quart jar containing aged aquarium water. This concoction is allowed to sit. Over the course of several days it goes from a bacteria rich soup to one packed with "ciliates" to finally a dense culture of Paramecium. It is only when this Paramecium stage is reached that the culture can be harvested for feeding to the fry. Both the bacteria and the "ciliates" which precede the Paramecium are much too small even for the tiny betta fry. A quick look at a sample from the culture under a microscope will reveal when this stage is reached.

Normally, the culture will enter the Paramecium stage about five days after it is set up. Thus, one must begin setting up cultures three or four days before the day on which spawning takes place. Once I set up my initial culture, I set up a new every day thereafter for the next three or four days.

Rotifers are about three times larger than Paramecium. They are a better food as the fry grow much faster on them. I have found that the mulm at the bottom of betta jars, especially that containing decaying flake food often is incredibly rich in rotifers. Concentrations of 100 to 150 rotifers per milliliter are not uncommon. Seed cultures from these jars have been transferred to quart containers where it is possible to achieve concentrations in excess of 300 per ml. The food for rotifers in these cultures consists of Gerber's baby food and dried green peas.

Having described how the food is cultured, I will now describe how it is fed.

On the day that the fry hatch, they are fed nothing as they are still absorbing their yolk sac. This day is recorded in my notes as the first Day After Hatching (hereinafter DAH).

During the evening of the second DAH, the first feeding occurs. If I am using infusoria, then at that time, four to five ounces of a Paramecium rich culture is added with a turkey baster. If I am using rotifers, then enough rotifers are added to achieve a food density of about 1,500 rotifers per liter. This is accomplished by determining the density of the rotifers in the culture to be harvested then calculating how much of that culture must be added to the fry tank to achieve the desired density. The figure of 1,500 per liter is based upon the fact that the optimal food concentration for marine fish eating similar sized organisms is between 1,000 and 5,000 per liter. However, since the rotifers appear to die off quickly in a fry tank, I maintain lower concentrations to avoid polluting the tank.

These feeding then continue twice a day for eight to nine days for infusoria and six to seven days for rotifers. During this

time supplemental feedings of a Tetramin E slurry are made once or twice a day. (Note: Tetramin E does go bad. It should be a light brown powder. Because of the low demand for this item much of it found in pet shops will be bad. Check it before you purchase it.)

#### Fry Grow-Out

Once the fry are past the initial feeding stage it is all downhill.

The next food which they are offered is brine shrimp nauplii. I generally feed the baby brine shrimp about three times a day. When the fry are about 15 DAH, I begin to supplement with finely ground Tetramin Growth food which is sprinkled on the water surface.

At approximately 23 to 24 DAH, I begin to filter the water in the fry tank. Up until that time I place no filters or airstones in the fry tank. It has been my experience that these items are unnecessary and, in fact, the air bubbles may injure the delicate fry. During that time I keep the filth in the tank somewhat under control with small water changes of about one half quart beginning on approximately 9 DAH.

During this period the fry will grow very quickly. By 20 DAH their colors should begin to appear and within three to four days all of their fins should be fully formed. Also between 20 and 25 DAH the first chases and air breathing will be seen.

Finally, between 25 and 35 DAH the fry will be able to eat adult flake foods as well as adult brine shrimp. At this point growth will be rapid.

#### Jarring

If you are raising fish for show then at some point between 30 and 40 DAH it will be necessary to move the largest and most aggressive males to their own individual jar. Chasing which begins sometime between 20 and 25 DAH becomes increasingly violent at this time. If the fish are not separated they will cause irreparable damage to each others' fins.

#### A Final Note

Using the recipe described above, I have been able to raise bettas with a 90 to 95 per cent survival rate and a growth rate which produces young adults in about 40 days. From a practical standpoint, very little attention is demanded except for those crucial seven eight days when the fry begin to feed. Even then feedings are only necessary twice a day and can be dispensed with quite quickly once you get the hang of dealing with microbial cultures.

For me, this method has been a betta recipe, I hope it is for you too.

\*\*\*\*\*  
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Aquarium Society, July 1985  
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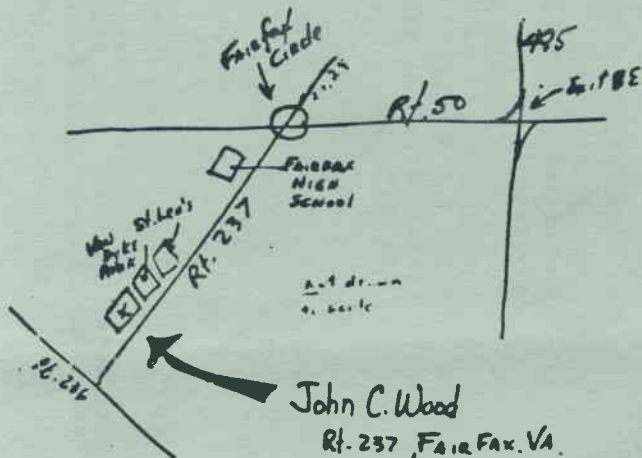
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