THE DELTA TALE

Potomac Valley Aquarium Society Official Publication Volume 35, Number 2

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The Delta Tale is published quarterly 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 purpose of furthering the aquarium hobby through the dissemination of information and advice, and the promotion of good fellowship among the membership by organized activities and competitions.

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If you would like your fish or tank to appear in Delta Tale send your pictures to: plord@verizon.net.

Cover photo: http://www.ploybettas.com/index.html
New fish acquired by member, Rick Dotson

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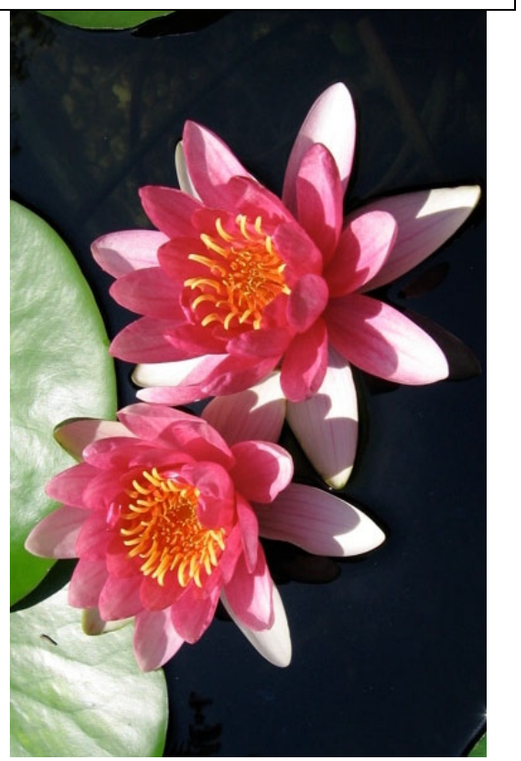
Fish line art from: "Clipart for Language Learning, used per site copyright notice. http://clear.msu.edu/dennie/clipart/



Editor's Tank

In this issue, we have an update on the work and plans for the year by the various committees from PVAS President Sherry Mitchell. We have a calendar of PVAS events in the next 3 months. In Frank Cowherd's "Tips for Your Fishroom" column, we have the second half of his article on raising livebearers. Frank also wrote an article expanding on the mini-talk he gave at the June meeting about how to prepare fish to compete in a bowl show. Remember – the July meeting is our annual bowl show – bring a fish, even if you don't think you will win. It is all for friendly competition and learning. Next we have an amusing and informative article by JT Thomas (Chairman of the Breeder's Award Program) on breeding festivums, a fish he said he found fairly easy to work with if you follow his simple formula, even though it is considered one of the more difficult cichlids to breed. We have a very interesting, but also very technical article on the science of cladistics and how it relates to scientific names. Finally, we have a poem and our comic drawn by a local artist, Steve Dell'aria.

No one sent me a photo of their tank for this issue's "Tank of the month. Starting with the summer issue, (which should be out in September) I will be choosing a "tank of the season". For this month, I selected one of Sherry Mitchell's tanks -- she gave me the photo after I told her no one had responded to my call. Come on! This is your chance to introduce yourself and your fish (not to mention your photography skills) to other members of the club!

Nominate yourselves or your friends! Email me photos of your show tanks or ponds with a brief description, and I will choose one to be featured in The Delta Tale. I will interview you about the tank, how you got into the hobby, and other interesting tanks, livestock, or anything else interesting. (The interview can be in-person in your fish room, on the phone or via email – I'm not picky.) We'll include the photo of your tank, close-ups of some of its residents, and (if you're willing) a photo of you. I can't wait to see those amazing tanks!

Speaking of photography skills, PVAS is going to publish a calendar for 2010 as part of our year-long celebration of our 50th anniversary. We are seeking aquarium-related photos from club members to use in that calendar. There is more information and an entry form on pages 26 & 27.

Until next time, happy fishkeeping!

A trio of Frank Cowherd's Blue Rams. (F. Cowherd)

Committee Update:

By Sherry Mitchell

Okay, I'm not going to be delicate about this…. PVAS needs help with all of our committees! Aquafest is coming up in October and we will need a bunch of help to pull it off. Ditto with the Catfish Convention in 2010 AND the 50th Anniversary Celebration. I get tired just thinking of all the work! If you don't want your club prez to keel over from exhaustion, please volunteer. There's something for everyone to do! Remember we can't do what we do without you!

-- 2009 PVAS Committee Update --

50th Anniversary: Great News! Member Frank Cowherd has been successful in getting us the National Aquarium in D.C. for our party. **KEEP THE DATE – JUNE 5TH, 2010** for the PVAS 50th Anniversary Celebration Party! More details to come. Chairman: Gerry Hoffman.

Auction: The Spring 2009 Auction at Marshall Road Elementary School was our best yet! See Auction results for details at the end of this issue. PVAS had 107 buyers, 46 sellers and sold 844 items. The PVAS share of the proceeds was higher this year than in any of the previous three years. Great Job Auction Committee! If you have not cashed your checks, please do so ASAP! Chairmen: Michael Barber and Mike Kaiser.

Sherry Mitchell and her cool new auction sign. (Jeff Mitchell)

Breeders' Award Program: The BAP is humming along with more fish and points adding up. Report your spawns to chairman, J.T. Thomas (Tophat on the forum).

By-laws: The PVAS by-laws govern our meetings and committees, and define our organizational structure. Ongoing review and evaluation of the by-laws is necessary to be sure that the by-laws are current and in compliance with the club mission. Chairman: Sherry Mitchell.

Delta Tale: This is our second issue of Delta Tale since the re-launch this year. The editor always needs articles, pictures and ideas for material. Contact Paul if you have any material for an upcoming issue of the magazine, or if you want to enter a photo in the Tank of the Season – we had no entries for Summer! Editor: Paul Lord. plord@verizon.net

Hospitality: Food, coffee and soft drinks are provided at every monthly meeting. Recently there has been a thread on the forum about food. If you have a preference for meeting food, please post on the forum. Typically we have a cooler of sodas, coffee, a cake, and appetizers like dips, wings, nachos, fruit platters and vegetables. Help is always needed to transport food and drinks, as well as set up and break down the hospitality table. The hospitality committee also runs the refreshment stand at the twice-yearly auctions. Chairman: Sherry Mitchell.

Membership: The club is currently in need of a new membership chairperson. The membership committee processes membership applications and renewals, tracks member information, puts together new member packets, and makes membership cards each year. Committee members also greet new members and do a count of participants at meetings. Chair: Open.

Newsletter: A monthly informational newsletter and meeting reminder is sent out electronically every month to the members. Members of the committee gather information for the newsletter, write it up and send it out to members prior to the monthly meeting. Chairman: Shawn Carlson.

Outreach: This committee garners support from local businesses. It also keeps the supporting organization list up-to-date on the website with the help of the webmaster, and creates an up-to-date list of local fish stores. Outreach committee members work with local businesses to get the word out on our club, come up with charity programs that PVAS can contribute to or participate in. Outreach also acts as a liaison with the local press, notifying them of events in the club and issuing press releases. The club needs more people on this committee! Please volunteer. Chairman: Larry Wilkie.

Speakers: With the move to Saturdays PVAS can now bring in the brightest and best speakers! Speakers are the main

event at our monthly meetings and a huge part of our club, so let's put our heads together and come up with a spectacular list of speakers for the future! Chairman: Sherry Mitchell (Gardengirl on the forum).

Technology: Our club is constantly changing and computerization plays a big role in that change. The technology committee is in charge of automating important systems such as the auction, breeders' award program, fish shows, membership and other databases within the club. Techies are always welcome! Chairman: Jeff Mitchell.

Ways and Means: The Ways and Means Committee is in charge of the club's raffles and door prizes for meetings. Raffles and door prizes are done at monthly meetings, twice a year large auctions, and at special events. Members of the committee perform a letter writing campaign to manufacturers and other businesses to solicit merchandise for the club to raffle and give away as door prizes. Chairman: Shawn Carlson.

PVAS Calendar

June:
June 8: Monthly Meeting
Speaker: Bob Dozier, Breeding Bettas
"Showing Your Fish" Mini-Presentation by Frank Cowherd
Introduction to the Engineering Challenge
June 8: World Ocean Day

July:
July 13: Monthly Meeting
PVAS BOWL SHOW
Engineering Challenge Results
President's Quarterly Report to the Membership

July 30-8/2:
ACA Convention 2009, Cincinnati, Ohio

August:

*** NOTE MONTHLY MEETINGS MOVE TO FIRST SATURDAY OF THE MONTH AT 1:00 PM BEGINNING IN AUGUST!**

August 1: Monthly Meeting Speaker: TBA

Tips For Your Fish Room

By Frank Cowherd (photos by author)

TIPS FOR YOUR FISH ROOM
SAVE THOSE BABY LIVEBEARERS (PART 2)
RAISING LIVEBEARERS
By Frank Cowherd
January 16, 2009

Saving the livebearer fry from being eaten by their parents is only the start of getting the fry to adult size so they can be put back into the main display tank. The next part is raising them so they grow healthy and quickly. Food type and amount are critical to raising most of the saved babies to adult size even in the baby-saver set up as described in PART 1 and illustrated in Figure 1.

But these food-related factors are not the only critical parameters. When you feed heavily, the water quality goes bad, the tank bottom gets ugly, fungus can start to grow on the plants or the sponge filter, and the filter gets plugged with debris. All of these potential problems need to be addressed by those who wish to keep, raise, and proudly display their beautiful, fascinating, and home-raised tropical fish.

LIVEBEARER VERSUS EGG LAYER FRY

Raising livebearer fry is actually easier than raising most egg-layer fry. The advantage livebearers have over egg-laying fish is that the eggs are incubated in the female's body.

FIGURE 1 RED WAGS ADULTS IN BABY-SAVER SET UP AS DESCRIBED IN PART 1 OF THIS ARTICLE.

The developing livebearer embryos do not get nourishment from the female, thus they have no belly buttons. They are ready to forage for food within an hour or so. In other words they are fully functional fish at birth.

Egglayer fry usually hatch with a large egg sac and are not able to swim freely. They have no need to forage until the egg sac is adsorbed after which, usually at least five days, they become free swimming. From the time the eggs are laid until the fry are free swimming, the eggs/fry are prone to attack by fungus, bacteria, and other fish as well as diseases, particularly because they are not moving. In other words they are not fully functional for a long time.

SIZE OF FOOD

The deciding factor for what food to feed is the size of the fry's mouth. If you offer foods that are larger than their mouth, you will starve the fry. They might live a few days on infusoria already growing in the tank, but that results in only a few fry surviving.

As the fry grow, larger foods can be added, but they will usually still take the smaller foods.

DRIED FOODS ARE CONVIENT

Fortunately livebearers will take dried foods as a first food. Just provide it in a proper size. Simply crushing a really dry flake food between your fingers as you drop it onto the surface of the tank is all that is needed. If it is not easily crushed, the machines that are used to grind coffee beans are also great for grinding dried fish foods, even pellets, to a powder of a size you need.

A great initial dry fry food is CYCLOP-EEZE®, because it is nutritious and already the right size for livebearer fry and it is available from your LFS. It is fed by mixing a small pinch of the material in water. Then pour the mixture into the tank, directed to where the fry are.

OVERFEEDING DRIED FOODS CAN LEAD TO PROBLEMS

Dried foods of the right size are useful but the fry will not eat all that is put into the tank. The excess will fall to the bottom, get in cracks and crevasses and quickly start to decay. The bacteria involved in decay multiply and consume oxygen and produce waste products, which combined with fish waste help to deteriorate the quality of the water.

Bad water quality can and, particularly if allowed for any length of time, will lead to either diseases or deformities in the fry. Velvet and dropsy are two common diseases caused by poor water quality. Missing gill covers and possibly lack of a swim bladder are examples of deformities cause by environmental problems. Such deformities are thought to be the result of poor water quality particularly in the first weeks of their lives.

LIVE FOODS HAVE ADVANTAGES

Live foods are much better than dried foods because the fry will seek out live food even if it stays on the bottom of the tank. The motion of the live food attracts the fry, which are visually oriented animals. Fry will eat live food until they are stuffed and their bellies are extended.

I particularly like to feed live foods for the first week or two and then introduce dried foods later. If the fry are really small, I start out with infusoria. For example, least killifish are livebearers that are very small when born and do best with infusoria as a first food. After a few days microworms or baby brine shrimp can be added. Powdered dried food can be added later, particularly as you run out of enough live food to feed.

Even with live food you do not want to overfeed. Although live foods will stay alive in the tank for a considerable length of time, most live foods will die and pollute the tank if overfed. The length of time live food will remain alive depends mostly on the oxygen content of the tank, particularly at the bottom of the tank where the excess live food will accumulate. So poor water quality can impact the time the live food remains alive. Microworms will stay alive for around a day in the bottom of a tank provided there is a good flow of oxygenated water. In stagnant water the microworms will be dead in hours.

Brine shrimp are salt-water creatures so their life in a freshwater aquarium depends mainly on the salt content. Adding a small bit of salt (up to a teaspoon per gallon) to the water can prolong the time that the brine shrimp will remain alive. But brine shrimp cannot be expected to last more than 6 or 8 hours in fresh water. And when they die, they decay rapidly. The bacterial bloom that accompanies this decay can be fatal to the fry.

HOW MUCH FOOD

To find out how much food is the right amount to feed, start by feeding a small amount of any food of the right size and observe the fry. If they eat all that was added quickly, you can add more. A good guideline is to feed no more than

the fry can eat in four or five minutes.

To get good growth, you need to feed heavily with both dry and live foods. I find that one morning feeding and one late afternoon feeding of a good dry food mixture followed by a late evening feeding of live food will produce rapid growth. (See Figures 2 and 3.) Watch the fish for at least 5 minutes after feeding dry foods. You should not see any excess food anywhere in the tank after the 5 minutes. If you do, you should feed less.

For the live food feeding, all should be consumed in 5 minutes unless you are feeding infusoria, daphnia or microworms. If you are feeding microworms, a small excess is fine.

aquafest2009

Save The Date!
October 16-18
Holiday Inn Laurel

Festivums for the Rest of 'Ums

Being an account of a successful spawning of *Mesonauta insignis* by J.T. Thomas.

Introduction

If you had to pick the most underrated commonly available new world cichlid, if festivum didn't head the list it would certainly be up there near the top. These are beautiful fish, sort of arrowhead shaped, greenish brown shading to cream, with long pelvic fins and subtly speckled tail, dorsal, and anal fins. There's also a heavy dark brown stripe that starts just behind the eye and runs to the back point of the dorsal, and an eyespot at the base of the tail. And just to make things more interesting, they have a pattern of vertical stripes that vary according to mood from not visible through green to almost black. (A festivum in fight/flight mode could almost be mistaken for a convict, so bold the stripes get.) The particular batch I have managed to lay hands on also has a lovely golden throat.

As with many fish in the hobby, Festivums you are likely to see are not the fish they are named after. *Mesonauta festivus* is rarely imported. You are much more likely to find *M. insignis* (from whence the other common name: Flag cichlid), or *M. acora*. There are

another half dozen species, described and undescribed, that are occasionally available. They are difficult to distinguish. The easiest way to do so is to find out the source of the wild fish. There are a number of sites that document the various species, their source localities, and their differences. One of them can be found at Mostly Cichlids - Is that a Festivum?.

Now, if you go out on line to find festivum breeding tips, you'll be largely disappointed. They're isomorphic, so you can't tell male from female at a glance. They're monogamous pair bonders, and they're nearly as picky about their mates as people. Badman notes that they are substrate spawners, that they are difficult to sex, and that they are hard to pair, but pair for life.

Mongabay rates them an 8 of 10 in breeding difficulty, "…due to troubles with inducing the pair to spawn". Animal world does have a better description of breeding (Flag Cichlid, *Mesonauta festivus*, also called the Festivum Cichlid), but notes they are, "…somewhat more difficult than other cichlids to breed in captivity".

Getting Started

So, I obtained a 55 gallon tank, which sat in my garage until my LFS could lay hands on some good festivums for me. Finally, they arrived. Since this is an isomorphic species (the sexes look the same), and hard to pair, I got a half dozen. I purchased six juveniles, selecting for good finnage, golden color on the throat, and to the frustration of the person catching them, speed and ability to evade the net (and boy did that come back to bite me.) I initially housed them in a 55 gallon South American community with tetras, cories, and plecos. Later I moved them and some cories I was planning on breeding to a 20 long, and then parceled out the cories to breeding tanks, and moved the festivums to a 33 tall. I mention this to point out that, while moving fish around is generally not a good idea, these guys were shuffled about quite a bit before finally going into the breeding tank.

Setting Up the Breeding Tank

Finally, I set up the 55 for them to grow out, pair, and breed. The tank has a 1" sand substrate with Malaysian trumpet snails stirring it. There's a large hunk of java moss covered driftwood in the middle of the tank. Filtration is with a pair of hydrosponge 1 filters, matured for months in other active community tanks, stacked three sponges high, and placed one in the back corner of each end. This causes very little water movement – just a slow cycling. The tank is kept at 80ºF with a 150 watt submersible heater in the center of the tank. For breeding substrate and possible hiding spots, I placed five 6" clay flowerpots on the sand on either side of the driftwood (I eventually reduced this to three to one side only). I planted with a number of species: *Hygrophilia corymbosa* "angustifolia", *H. difformis*, *Ludewegia repens*, and *Hydrocotyl brasiliensis* (Pennywort). I also let a good amount of pennywort float on the surface. This is all lit with a 2 bulb shop light from a big box store, putting out 80 watts of 6500K light 12 hours a day. Into this I introduced my six young festivums.

I gave them a varied daily feeding. Three different types of flake, 2 different pellets, and possibly freeze dried bloodworms 3 or 4 times weekly (Usually 2 of the above at a particular feeding). Frozen bloodworms or mysis shrimp or spirulina enriched brine once or twice weekly, and live brine and blackworms at least once weekly (and on Sunday they fasted).

A Short Lived Success

Initially, all six tended to school together, but over time two claimed the territory over the three flowerpots. I thought I might be seeing a pair form, and found that I was right about three days later, when I found the female hovering over a 2" round patch of quite small, whitish eggs (I guess about 200, but there were more than I cared to count.) The four remaining fish had been relegated to the far side of the driftwood, and any that came out of the Hygro thicket on that side the male rapidly chased back into hiding. "Away we go!" I thought.

Such disappointment when the next day the eggs were nowhere to be found. However, it is not uncommon for new cichlid pairs to eat their first (or first several) spawns. I had a pair, and I was past what the limited information out there indicates is the hard part.

At this point, I removed 3 of the 4 unpaired fish (2 to the 33 high, 1 to the 55 gallon community where they were initially housed). The fourth and smallest, the one that prompted the fish store employee as near to vile language as I have ever seen her, remained persistently elusive. With the amount of sand that had gotten kicked up, I gave it up for a bad job, lest I accidentally fish out one of my breeding pair. I also pulled out two of the five flowerpots at this point.

And Away We Go

It didn't take the pair long to get back to business again. They picked the pot nearest the driftwood for their spawn this time and drove the third wheel into hiding in the thickets. On the second day, the color of the eggs darkened. As small as they are, I wasn't 100% sure, but I think I was seeing eyes.

During this time, I continued to feed the adults lightly once a day (on the same schedule). The female tended to hover over the eggs, fanning them with her pectoral fins.

I was unable to locate anywhere how long it would be until hatching, so I was a bit surprised on the third day to find the eggs gone from the flowerpot. A bit frustrated too, since I thought I was seeing another false start. Then I noticed that a patch of driftwood was grey and pulsing, and there they were, looking for all the world like eggs with tails, in very nearly the same configuration as they had been on the flowerpot. Over the next six days, the parents moved the fry several times between that spot and one near the top of the wood, where they cleared a patch of moss about 3" around. Every day the yolk sacs shrank incrementally, and at about 4 days the fry started to look less like eggs with

tails, and more like baby fish with goiters. Finally, after 6 days, the fry ran through their egg sacs and went for their first swim.

How Fast is Too Fast?

On the day after the hatch, I noticed that the third wheel, the speedy, wily, elusive one, was nowhere to be found. So I went in there with a net and chased it out from behind a filter. The pair had been at it, and it was missing some scales. Apparently the parents get really short tempered with interlopers in their territory when they have fry. They quickly chased it into the opposite corner of the tank. Fortunately or not, the third had been beaten up enough that I was able to net it out and put it in my 55 gallon South American community, when it recovered (if remained a bit timid).

Feeding the Swimmers

On the second day after the hatch I was able to lay hands on a culture of micro worms and get it running (my infusoria experiment was less successful). The

Image © JT Thomas 2008

feeding schedule will be as follows or the next several days: Microworms in the morning. Frozen rotifers in the mid afternoon. Cyclop-eze powder (and food for the parents every day) at night. After about a week I started mixing 2 cubes of frozen baby brine with one cube of rotifers and feeding about half of that to the festivum fry. (The other half was parceled out among cory, rainbowfish, Neolamprologus, and Rineloricaria fry.)

After about 3 weeks on this regimen, I added frozen daphnia to the mix. About half the fry had stopped looking like fry, per se – eyes with tails – and had become identifiable as some sort of generalized cichlid. They had grown to the size of week old swordtail fry – perhaps 5 or 8 mm. At this point, I started adding small sided flake food to the mix for one or both feedings.

At about 30 days out, when the first of the fry became recognizable as

festivums, I noticed that the larger fry were partaking of the feed I put in for the adults. There really is nothing more amusing in the aquarium hobby than watching a ¾" fish tussling with a 2 ½" blackworm. The larger ones also seem to go for the frozen spirulina brine. At 60 days out, I am no longer separately feeding the fry and adults.

Image © JT Thomas 2009

Parental Care

It seems to be a pretty universal thing among cichlidophiles to rhapsodize on the family life of their fish. I can see where they are coming from.

The fry spend periods of lights out down near the substrate. While the lights are on, they swim in a globe around the parents. One thing that freaked me out was during the midday lighting hiatus, when the tank isn't really light, but isn't actually dark either, some of the fry headed for the bottom, and some stayed in their swarm. The parents swam to the bottom and picked the fry up in their mouths and spat them back into the school. On the one hand, I was initially worried that they were eating the fry, and I would have to move the parents (I have been advised not to do that, since apparently the pair bond is strengthened by consistent surroundings). On the other, when they spat the fry back into the school, the sand that they had picked up with the fry dribbled down on the driftwood, which solved a question that had puzzled me since I noticed white specks seemingly growing there. I was wondering if maybe there was something in there of which I was unaware that was laying eggs. Nope. Just sand.

As the fry grew, they started to form distinct schools about the male and female, and as the male grew less tolerant of the female and the fry began to school less tightly around him, he took over territorial duties exclusively.

Growing Them Out

Over the course of the next 6 weeks, these tailed eggs, glass slivers, and cartoon cichlids have grown unevenly. 60 days out from the initial hatch, about three quarters of the fry are immediately identifiable as festivums. The largest are nearly 1 inch long.

I will be culling the runts and moving the largest and healthiest fry to a 40 long within the next few days.

A Word about Water

Throughout this entire process, I only paid a smidgen more attention to water quality than I do in the rest of my tanks. Water changes were done weekly with aged water, heated to 80 degrees, and treated with NovAqua+ and AmQuel+ at pond concentrations, a full dose of each. I am informed that AmQuel+ has the effect of crashing the pH of Fairfax County's relatively hard water, but I have not paid a great deal of attention to that, since I use the same treatments on all my tanks, and the pH, on the infrequent occasions I test it, tends to be right around 6.8.

Conclusion

For an underserved, difficult to breed species, this has turned out to be a remarkably easy experience. Insofar as I can determine, the keys to breeding were:

- Allowing a group of juveniles to grow out together.
- Putting them through a large number of changes of scenery so as to assure that they were the only constant in their experience.
- Setting them up in a species tank to pair off.
- Lots of plants, little water movement, and some driftwood.

I believe I made a number of mistakes along the way, but they have turned out to be the right mistakes, and I can learn to live with that kind of error.

My Favorite Fish

Sherry Mitchell's Tri-Color Goldfish, "Adolf" in her pond.

Show Your Fish At Their Best!

By Frank Cowherd

One really good reason to go to a fish show is to see fully grown fish in good health with great color and glorious finnage. This is where you can learn what a good quality fish should look like for almost any given species. Fish sold in most pet stores are young and often do not have the great colors and finnage of their adult forms. If you have been in the hobby for very long, you too probably have some great looking fish. Have you thought of taking your fish to a fish show?

You have probably been to a fish show and realized you have fish at home that are as good or better. You've thought, "I should have entered one of mine." There are lots of reasons to bring your fish to the show: you have good fish; you want to show off a favorite fish; your fish is bigger, more colorful, or just different in some way. Yet, you hesitate to bring your fish to the show because you might loose the fish in transit or at the show. I've taken fish to many shows and have taken as many as twenty fish to a single show. I still have a perfect record of survival, to and from shows. So read on. I'll tell you how to do it.

Goldfish Show, 2007, (S. Mitchell)

First, the most likely reason you would loose fish at the show is that your water quality is different than the fresh clean water you are going to put the fish in at the show. One way to see how bad your tanks are is to fill a drinking glass with water from your tank, and fill another with fresh water from the tap. Compared to tap water, the more yellow

the tank water, the worse it is. The yellow color in your tank water is indicative of the amount of accumulated waste products (pollution) as well as the mineral or salt content.

If you are not changing water routinely at home, you are likely to have trouble after transferring your fish to the very clean water at a fish show. This is because the fish are accustomed to their dirty, environmentally challenged water, and the change to really fresh water will stress them, or kill them if the change is drastic. If you have been neglecting water changes for a considerable amount of time, start about 3 months prior to the show and do 10 percent water changes each week for a month, then increase to 20 or 30 percent water changes per week and continue until show time. It is actually a bit better to go to 40 or 50 percent water changes for the last couple of weeks. Just be sure to do the changes with water within 5 degrees of the tank temperature and treated to remove any chlorine or chloramines. The goal is to make the change from their tank water to the water at the show with little or no difference to the fish. In special cases where you know the fish requires special conditions, you must bring enough water or additives with you to fill the show tank.

Mid-Atlantic Koi Club Show, (S. Mitchell)

MOBB Betta Show, Richmond, (S. Mitchell)

Some people refuse to take their fish to the show saying, “I can’t catch them,” or “I’d destroy the tank trying to catch them.” Well, I’ll admit I have been there with my planted tanks. I used to refuse to catch my clown loaches, but loaches are easy to catch with the right equipment, and this equipment can work for other fish that also like to hide. In the wild clown loaches are caught in bamboo sticks that have a hole drilled

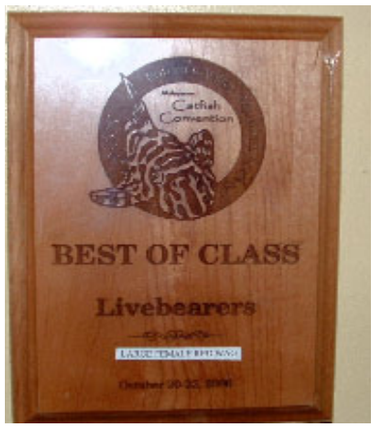
into the side and are then stuck in the bottom of a river or creek. A day or two later you simple pull out the bamboo stick and shake the fish out into the holding tanks in the boat. In the aquarium you just lay the trap on the surface of the gravel and a side hole is not needed. I use white PVC pipe with an end cap. The black PVC pipe floats. Choose a pipe that is a bit larger than the fish. I use a 1.5 inch diameter pipe that is about 10 inches long.

Put it in the tank a week or so prior to when you want to catch the fish, so he will get used to it. Most likely he will go hide in it whenever he is not searching for food. Place the pipe so you can see the entrance. Then when you want to catch him, put your hand or a net over the entrance, remove the pipe from the tank and empty the fish into a net or a bucket. This works well for plecos too.

Ancistrus in Cave, (F. Cowherd)

Another way to catch hard-to-catch fish is to use an extra large net, like a 12 by 12 inch net. But do not chase the fish; make them come to you. If you place the net in the tank slowly to start with you will have more success. Put the net about 3 inches under the water surface and close to where you would normally feed the fish. Hold the net as still as possible and instead of feeding as much as normal just feed a small amount. Some will swim into the net to feed. They will encourage others to swim in. Add more food when it’s all gone. Only raise the net when the one fish you want swims in. Then use a smaller net to get the one you want out of the large net. Again, go slow with the net. This is a perfect project for more than one person.

If you have a rock filled aquarium, like a rift lake cichlid tank, there is nothing to do except to take out the rocks. But if you want to try it, there is a clear plastic box trap with a clear plastic door that revolves around its middle. The clear plastic becomes almost invisible underwater. When a fish swims into it, you turn the door by pulling a clear monofilament line to close and then grab the handle to take the trap out.



One of the author's many awards.
(F. Cowherd)

This is a rather big trap (9 x 9 x 4 inches) and sold as the "Fish Corral". The door is on one of the 4 inch ends, so the opening is 2 inches wide when open.


Kordon Fish Coral (http://www.novalek.com/kordon/fish_corral/index.htm)

Food can be placed in the trap to encourage fish to enter. An airline tube inserted into the trap can be used to transfer brine shrimp or other live food in water to the back of the trap once it is in place.

There is one other strategy that works with hard to catch fish. In the dark, fish become lethargic. Well, maybe they are just asleep with their eyes open! So after an hour or so of dark, get out a small flashlight, or use a more diffused light. Use the light to identify the fish you want to catch and in slow motion move the net around it and take it out. In a goldfish or koi pond this strategy works well in the middle of a moonless night, though it is not much fun if you fall in! In a densely planted aquarium a little gentle probing in the plants with a hand

or a stick will force the fish you want up to the front of the aquarium. Again, go slow; don't wake the fish.

One other note, if you also use a net that is black or red or dark green to catch fish at night, the fish are even less likely to see it. If you use a standard white net and the flashlight shines on it, the fish are more likely to be spooked.

So now that you have caught your fish, transportation to the show seems like the next step, but it does not have to be. If you want to get serious about showing your fish, you can condition your fish for showing. Actually I do not personally know anyone who does this, except for one cichlid nut. If you think about show conditions: a bare tank on black plastic, you can see that this could be stressful to your fish. So, why not set up a tank like this at home and put the fish in it for a few days prior to the show? This gives them a chance to get used to these conditions. Even if you don't want to do this all the time you might want to do the set-up to figure out which fish need this kind of acclimatization versus any fish that loves to strut its stuff. Remember to add an air stone, and do not feed too heavily, or feed only live foods, and if any cloudiness appears, do a water change. The main reason to do this is that one of the judging parameters is deportment. A conditioned fish is less likely to hide in the corner. Judges love a fish that appears to own the tank.


Fish Show, Aquafest 2007, (Kris Weinhold)

One other consideration pertains to your fish's health during the show. Some fish like goldfish and koi produce a lot of waste. With these types of fish, it is best not to feed for at least three days prior to the show. That way there is a lot less waste produced in the show tank and with no filter, only an air stone, the water quality is better for a longer time. High levels of pollution in the show tank quickly show up as red veins in the fish's fins. It is best to move these types of fish to a clean bare tank for the three days prior to a show since in a pond or tank they will continue to eat algae and plants if not fed their normal foods.

So now we get to talk about transporting the fish to the show. Bags are an option, but I avoid bags. Bags have corners that can trap or injure the fish. And bags can

leak. When the bag is upright it has a low surface area to depth, which lowers the oxygen level in the water. I prefer and recommend five-gallon buckets, but any ice-cooler is just as good. Just do not use much water. The shallower the water the more oxygen the fish will get and the more water circulation is caused by the fish moving. All you need is enough water for the fish to swim upright, plus a little margin, maybe an inch more. Your bucket will be less than one quarter full and it will be easy to handle. In a five-gallon bucket, this amounts to about a gallon of water. The fish will survive in this set up for at least a couple of days as long as they are not subjected to too high or too low a temperature. I put them on the floor in the back seat of the car and make sure the buckets cannot tip over.

Five gallon buckets are available for a few dollars from most hardware stores. Clean as you would for a new tank and rinse well with tap water. Then fill it with water from the aquarium to a depth as described above. Then add your fish. I put as many as 8 show fish in one bucket. I make sure that the ones in the same bucket are compatible, and if I want to help keep them calm, I add a few pieces of hornwort or other bunch plant. Actually, I almost always add a few plants so the fish can hide in them, feel more comfortable and stay away from each other.

When you get to the show, all the show tanks will be filled with the same water and will be already treated to remove chlorine and chloramine. All the fish you brought in the bucket can be acclimated together at the same time. Bring a siphon or a quart container and transfer enough water from one of the tanks you are assigned to double the amount of water in the bucket. Wait fifteen minutes. Add enough water to the bucket to again double the volume of water in the bucket. Wait another 10 minutes. The fish will now be acclimated to the water in the show tanks. Net each one out of the bucket, and place them in their respective show tanks. If you have fish with delicate fins, you should not use a net. Instead, use a kitchen pint or quart plastic measuring container with a handle. Scoop out the fish and transfer to the show tank without ever taking the fish out of the water.

Thus, with a couple of buckets, one in each hand for balance, you can easily bring a bunch of fish to the show. You might have one large aggressive cichlid in one bucket, and mollies, guppies, platys, gouramis, rasboras, and corydoras in the other, or a couple of large angelfish or other large fish in one and a large goldfish in the other. Okay, you get the idea. There are endless potential possibilities that expand with the number of buckets or coolers.

You can usually store your buckets, nets, and siphon plus any equipment for the trip under the tables or shelving used for the show. Just be sure to use a magic marker and put your name on the bucket so it can be readily identified. Storing them there assures they are ready when it is time to take the fish home.

German Blue Ram, (F. Cowherd)

Enjoy the show. I love to see all the different types of fish that are being shown, particularly since those shown are in their prime. If you bring some of your fish, even the most common fish, then you are helping to promote the hobby. And if your fish wins an award, all the better.

Once you have seen all of the different fishes on display, be glad you are not one of the judges. That is a tough job, but judging has its rewards too.

Judging is hard work. Which is the better angelfish? (F. Cowherd)

After the show is over siphon a few inches of water into the bucket or cooler, net or scoop the fish and place them in the bucket. Remember that with only a few inches of water the fish will have the most oxygen, but because of the small amount of water, the temperature of the water can quickly change. So take care to prevent the bucket from standing in a

very cold or very hot place for very long. You might even take the precaution of getting the car's heater or air conditioning in operation prior to placing the fish in the car.

When you get home, do not forget to acclimate the fish in the bucket to their individual tanks. Use the same method as described above.

Now you can plan for the next show, and it does not have to be the one held by your local club. There are shows within driving distance all year long. Most club or society web sites make mention of those that are close by, be it a club in the next city over or a national organization holding a national or regional meeting near by. Using the bucket method with plants you can safely transport fish for trips even days away without worry about the fish running out of air. Just be sure to keep them warm, not cold or hot. If you are comfortable in the car or hotel without a sweater or without changing to a bathing suit, the fish will be fine. So, check out your monthly fish magazines or go on-line to find a "local" show and register for it. I hope to see you at the next show with a bucket of fish!

JULY BOWL SHOW!

PVAS is bringing back the Bowl Shows. Join us at the July 13th meeting at 7:30 PM to show your fish in a fun competition among club members! Details can be found on the forum at www.pvas.com.

Tank of the Season

Sherry Mitchell's Eclipse 37 gallon goldfish tank.

Who Knew???

According to an article by Steve Smith in the Greater Cincinnati Aquarium Society Newsletter (Fincinnati May/June 2009 issue) Cherry Red Shrimp show effective egg cleaning ability and help keep Corydoras eggs viable.

Make Your Fish A Part of History!!!

PVAS announces Calendar Contest for 2010

ENTER YOUR PHOTOS

PVAS has approved the production of a photo calendar for the year 2010, our 50th Anniversary, and now is the time to begin finding appropriate pictures to be included. We will need 12 pictures, one for each month, and possibly a cover image also. Have your fish commemorated in this piece of club history!

Guidelines:

1. Only PVAS members will be eligible to submit their photos.
2. Photos should be of items relating to the word AQUARIUM, after all, we are an aquarium society, not a club for underwater diving, charter boat fishing, etc.
3. Photos may be of Freshwater or Saltwater, although the majority of club activities are mainly geared to freshwater fish keeping, thus final selections may be more inclined to be of freshwater intent.
4. Photos can be of fish, invertebrates, plants, or planted tanks, possibly whole fish rooms, and breeding situations. Again the focus is to be on aquarium or aquarium inhabitant.
5. Members may submit as many photos as they wish, but the ideal intent is to try and find 12 different people to be represented in the calendar.
6. Ideally, photos should be submitted in digital format, and if not, we will make the best effort to convert the image to the format we require. Use as large a file size as possible, since images will be blown up to approximately 8 ½ x 11, page size, 300dpi suggested.
7. Credit will be given to the person who took the photo, but PVAS will require permission to use the photo, copy, crop, or publish the photo as we desire.
8. Images may be submitted on disk, flash drive, via email, or if a slide or print(ideally we wish it to be digital) and sent to:

Gerry Hoffman gahajaja@starpower.net
Or 6211 Old Glory Lane
Rixeyville, VA 22737-1958

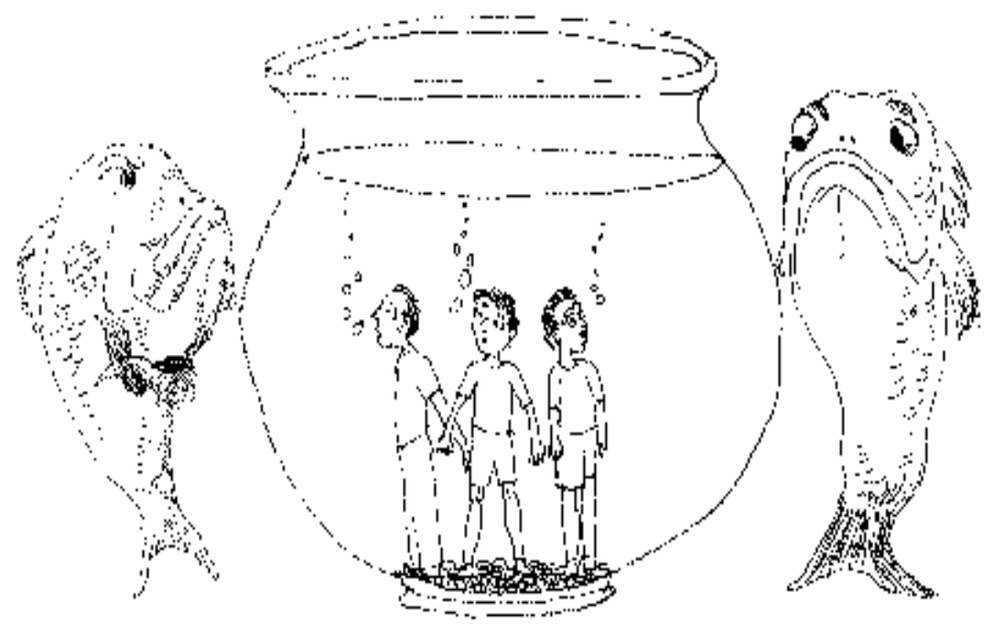
All photographic images must be received by July 31,2009, so start taking new pictures or dig out your finest from the past. (continued next page)

All submissions should be accompanied by the following statement:

The photographic image(s) that are hereby submitted to PVAS for acceptance in the calendar for 2010 have been taken by _____.
I give permission to PVAS to use the photo, enlarge, crop, or enhance the photo, and publish the photo as they desire.

Name:_____

Date:_____



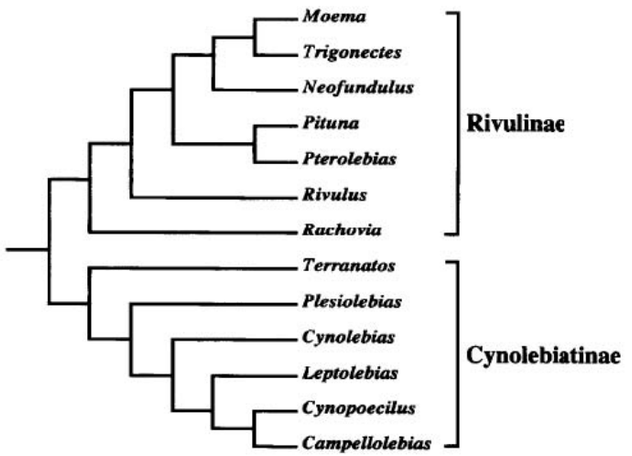
Comic by Steve Dell'aria

How Cladists Work

by Albert J. Klee, Ph.D.

THE IDEA BEHIND CLADISTICS

It is generally understood that classifications ought to reflect the phylogeny of organisms, where each taxon (a genus, for example, is a taxon) should originate from a single ancestral form. The emergence of "cladism" or "cladistic taxonomy" in the 1960's, therefore, is expected to supplant Linnaean classification in the future since, in classifying species, cladists place a priority in achieving coherence with the Darwinian principle of common descent. In grouping species, cladists look for "derived similarities," meaning those aspects that species can be expected to share by virtue of a common evolutionary ancestry. This approach differs from that of phenetics, which associates species based on overall similarity and does not address ancestry. This was the way aquarium species were classified in the old days. It also differs also from classification based on ad hoc "key characters," a device known to aquarists looking up identification in a book based on such keys. Cladists, on the other hand, avail themselves of all the types of evidence available, including DNA sequences and hybridization studies, biochemistry, and traditional morphology. They often make use of computerized algorithms to identify the most likely phylogeny or "family tree" that relates the species they are considering. A cladistic analysis therefore is applied to a certain set of information. To organize this information a distinction is made between characters, and character states. Consider the color of fish scales; this may be blue in one species but red in another. Thus, "red fish scales" and "blue fish scales" are two character states of the character "scale-color." The researcher decides which character states were present before the last common ancestor of the species group and which



were present in the last common ancestor by considering one or more outgroups. An outgroup is an organism that is considered not to be part of the group in question, but is closely related

to the group. This makes the choice of an outgroup an important task, since this choice can profoundly change the topology of a tree. Note that only character states present in the last common ancestor are of use in characterizing clades.

CLADOGRAMS

Cladistics provides systematists with one very handy feature. Due to its bipolar character states (a species has a given character or it doesn't — there's no in-between), cladistics lends itself very readily to computer analysis. Computers can analyze hundreds or thousands of characters in a fraction of the time that a human systematist could. Computers then use the results to generate branching diagrams — called "cladograms" — which graphically represent how the included species are interrelated. The following is an example of a cladogram:

Clades ideally have many “agreeing” character states present in the last common ancestor. Ideally there are a sufficient number of them to overwhelm characters caused by convergent evolution (i.e. characters that resemble each other because of environmental conditions or function, not because of common ancestry). A well-known example due to convergent evolution would be a character “presence of wings”. Though the wings of birds and insects serve the same function, each evolved independently, as can be seen by their anatomy. If a bird and a winged insect were scored for the character “presence of wings”, this would confound the analysis, possibly resulting in a false picture of evolution.

HOW CLADOGRAMS ARE OBTAINED

Many cladograms are possible for any given set of taxa, but one is chosen based on the principle of parsimony, i.e., the most compact arrangement, that is, with the fewest character state changes. Though at one time this analysis was done by hand, computers are now used to evaluate much larger data sets. Sophisticated software packages allow the statistical evaluation of the confidence we can put in the veracity of the nodes of a cladogram. Using a parsimony criterion is only one of several methods to infer a phylogeny from molecular data: maximum likelihood and Bayesian inference, which incorporate explicit models of sequence evolution, are also ways to evaluate sequence data. As you might expect, these methods are difficult to explain to those not versed in statistics or mathematics but I’ll give it a try.

The maximum likelihood method is based on a model and on a distribution. The model is the probability of an event dependent on a model parameter, p. The

p	Computation	L
0	0*1*0	0
0.1	0.1*0.9*0.1	0.009
0.2	0.2*0.8*0.2	0.032
0.3	0.3*0.7*0.3	0.063
0.4	0.4*0.6*0.4	0.096
0.5	0.5*0.5*0.5	0.125
0.6	0.6*0.4*0.6	0.144
0.7	0.7*0.3*0.7	0.147
0.8	0.8*0.2*0.8	0.128
0.9	0.9*0.1*0.9	0.081
1.0	1*0*1	0

likelihood of the parameter given the data is the probability of observing X given p. The maximum likelihood method consists in optimizing the likelihood function. The goal is to estimate the parameters p which make it most likely to observe the data X. In this example I’ll use the binomial distribution, often used to calculate the probability of the outcome of coin tossing. Suppose we throw a coin three times where the probability of observing a head (1) is p=1/4 and the probability of observing a tail (0) is p=3/4. We can compute the probability of each possible data set (X) of three tosses as follows: (Top left next page)

For example, in a toss of coins three times, the probability of obtaining a head

X	Computation	
0 0 0	(3/4)*(3/4)*(3/4)	.4218
0 0 1	(3/4)*(3/4)*(1/4)	.1406
0 1 0	(3/4)*(1/4)*(3/4)	.1406
0 1 1	(3/4)*(1/4)*(1/4)	.0468
1 0 0	(1/4)*(3/4)*(3/4)	.1406
1 0 1	(1/4)*(3/4)*(1/4)	.0468
1 1 0	(1/4)*(1/4)*(3/4)	.0468
1 1 1	(1/4)*(1/4)*(1/4)	.0156

followed by two tails (the fifth entry in the table) clearly is: 1/4*3/4*3/4 = 0.1406. Inversely, if we observe the outcome of three throws as “1 0 1” we can compute the likelihood, L, of the probability that produced this outcome: (table on right)

For example, in a toss of coins three times, if the probability of obtaining a head is 0.8, the probability of obtaining a head, then a tail, and then a head is (the eighth entry in the table) is: 0.8*0.2*0.8 = 0.128.

“1 0 1” is most likely for p = 0.7. Substitute a set of observations on a group of fishes rather than a set of observations on a group of coin tosses, and substitute a postulated clade for the

probability in the last table, and you have the basic idea of one way cladists form their cladograms using the maximum likelihood principle.

CONCLUSION

Given differences in the specialties and biases of individual cladists, it is hardly surprising that different characters, weighted differently, would result in different cladograms. But new techniques in comparative morphology, molecular genetics, and refinements in cladistic methods are beginning to produce a fair measure of agreement among the cladograms proposed by various workers. When several independent cladistic studies — using different character suites — are largely in agreement, we can be reasonably confident that the cladograms accurately reflect real evolutionary pathways.

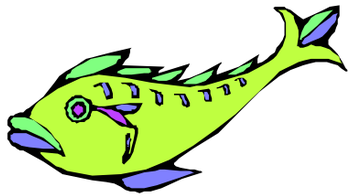
A Fish-Keeper's POEM:

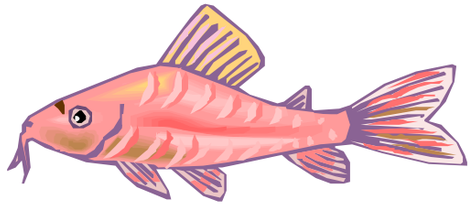
C'est La Vie
By Lou Sandberg

With bellies up and finnage furled,
My prized new fish have left this world.

I know they all go by and by,
To that great fish pond up in the sky.

But . . . would it ask too much before they're gone,
Leaving earth bound me with just one good spawn.





PLEASE REMEMBER!

PVAS Meetings will move to the FIRST SATURDAY OF THE MONTH, beginning on August 1st! We will still meet at Green Acres School in the cafeteria. Join us for a whole new chapter in the club's history!

Spring Auction Pics!

By Sherry Mitchell

Paul Lord won a complete ten gallon set up in the raffle. Go Paul!

Looking for that next great deal!

Check Out Table: Shawn, Emily, Cristy, Robert and David.

Everyone works hard, but has fun at the front of the room.

Potomac Valley Aquarium Society

P.O. Box 664, Merrifield, VA 22116

Application for Membership and Membership Renewal

Name:		Date:			
Street:					
City:		State:		Zip:	
Phone:		Email:			

PVAS Annual Membership Dues (Circle one):

Individual	$20
Family	$30
Corresponding	$15
Junior (under 18)	$ 5

Please send this application and a check or money order to the above address, or register for membership at the next monthly meeting. Membership cards are mailed once applications are processed. Processing takes 4-6 weeks. Any questions about membership should be directed to: membership@pvas.com.

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