DELTA TALE

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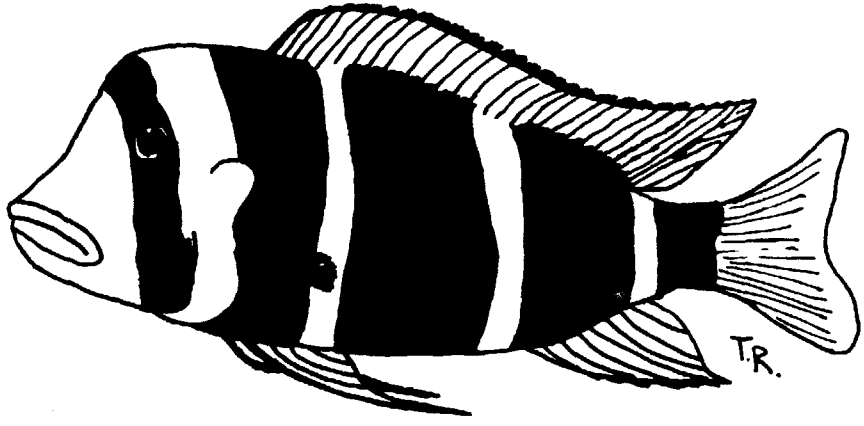
Volume 6

Issue 9



DELTA TALE is published for the benefit of the Potomac Valley Aquarium Society (formerly the Potomac Valley Guppy Club), a non-profit organization, established in 1960 for the purpose of furthering the aquarium hobby by disseminating information, encouraging friendly competition, soliciting participation in its show, and promoting good fellowship. Correspondence should be addressed to Secretary, P.V.A.S., P.O. Box 6219, Shirlington Station, Arlington, Virginia, 22206. Original articles and drawings may be reprinted if credit is given the author and DELTA TALE. Two copies of the publication in which the reprint appears should be sent to DELTA TALE which will forward one copy to the author. All materials for inclusion in the DELTA TALE must reach the editor no later than the Saturday after the monthly Monday meeting.

EDITORIAL STAFF

Editor: Susan Sprague
Staff Writers Ruth Brewer, Jerry Meola

TABLE OF CONTENTS

Volume 6 Issue 9

This month's cover is of a Cyphotilapia frontosa by Tony Rizzuto of York, Pa. Thanks for all your good work, Tony!

MINUTES OF THE BOARD OF GOVERNORS' MEETING

The Board met at the Sergent residence at 9:00 pm on August 5 with eight members present. The following business was transacted:
BAP Committee: Gene Aldridge said that the Committee was still working on possible changes to the rules. Posters: Gene Aldridge moved and Gene Sergent seconded the motion that the poster prepared by Mike Sprague be accepted and posters be printed and distributed. Fall Show: Schedule, first day: Registration from 9:00 am to noon, judging from 12:30 to 5:00 pm, open to public from 5:00 to 7:00 pm. Second day: Registration of auction fish from 9:00 to 11:30 am, awards and raffle to start at noon, with auction immediately following. Auction fish will be limited to 10 bags per person, except for those who have fish entered in the show. These exhibitors will be allowed to auction their entries in addition to the 10 bags per person limit. Show categories are tentatively to remain the same as for the Spring Show, with possible changes in the S.A. cichlid categories and the possibility of two marine classes (vertebrates and invertebrates). Entry blanks are to be changed to show a phone number where exhibitors may be reached. Delta Tale: The President directed the Corresponding Secretary and the Editor of the Delta Tale to coordinate as to the additional number of copies to be printed. Treasurer's Report: Gene Sergent reported that the July mini-auction netted $32.68 to the club and that we had an $18.00 profit on the raffle. All bills except the still unbilled past three months' bill for the Delta Tale have been paid and we have $857.31 in the bank. Future Mini-auctions: The next mini-auction will be February and it is tentatively planned that they will be held at 6-month intervals thereafter. Advertising: It was agreed that for a 1-time shot, no contract would be required if payment was made at the time the advertising was ordered. The Editor of the Delta Tale is authorized signatory powers in connection with advertising matters. Salt Water Club: Warren Garnar said there was no meeting in the past month. The meeting adjourned at 11 pm.

Respectfully submitted,
Ruth Brewer, Recording Secretary

BREEDERS AWARD PROGRAM

By: Gene Aldridge
BAP Chairman

The BAP is becoming more popular now with more PVAS members becoming involved. I have plenty of Breeder's Award Forms, so don't be bashful.

The current point totals are:

Name	Points Firm	In Process
Susan and Mike Sprague	45	-
Ruth Brewer	30	-
Gene Aldridge	50	-
John Jessup	35	30

Good luck to all of you.

ETA

BOWL SHOW RESULTS AND STANDINGS
August 11, 1975

	1st	2nd	3rd
GUPPY			
a. Red	Walsh	Walsh	---
b. 5 match males	Walsh	Walsh	Walsh
c. AOC	S.McInturff	---	---
CICHLID			
a. C & SA dwarf Br.Pr.	Jessup	D.McInturff	D.McInturff
b. Tilapia	Jessup	Jessup	---
c. Open	Aldridge	Jessup	Jessup
EGGLAYER/LIVEBEARER			
a. Livebearers	B.Hardy	B.Hardy	B.Hardy
b. Killifish	D.McInturff	D.McInturff	---
c. Open	B.Hardy	B.Hardy	---

POINT STATUS

Guppy	Aug.	Ann'l
Walsh	16	41
Sergent	-	13
S.McInturff	4	4
Egglayer/Livebearer		
Hardy,B.	16	67
Gaines,J.	-	46
Gaines,H.	-	11
McInturff,D.	7	7
Hudson	1	1

Cichlid	Aug.	Ann'l
Jessup	16	74
Aldridge	6	28
Gaines,R.	-	20
McInturff,D.	6	9
Long,J.	1	3
Warren	1	1

BOWL SHOW SEPTEMBER 8, 1975

Guppy: Blue, Black, AOC
Cichlid: Angelfish, African home spawn & raised, Open
Other: Sharks & Loaches, Catfish-non-cory., Open

DISCOUNTS

Ben's Tropical Fish - 10% except on sale items

Mary's Tropical Fish - 10% unless specified

National Petland - 10-20% except on livestock

MEETING DATES

Board of Governors
Sept. 2 8:00pm
Ted Walsh
4017 34th St.
Mt. Rainier, Md.
277-8249

Cichlid Group
Sept. 17 8:00pm
Pat & Pete Tietjen
1728 S. Monroe St.
Arlington, Va.
920-4442

Coral Reefs Group
Sept. 7 4:00pm
Ricky Nussbaum
649 N. Ripley St.
Alexandria, Va.
370-4225

MEMBERSHIP AND THINGS

By: Chuck Story

We have two new members to welcome to PVAS this month.

James Allen of Alexandria is a cichlid enthusiast and currently maintains 4 tanks. James also works with youngsters on a 4-H Club program in which he is teaching budding novice aquarist how to maintain and care for fish.

Alene Staley maintains two community tanks with angels, tetras, gouramis, etc.. Alene is an Arlington resident.

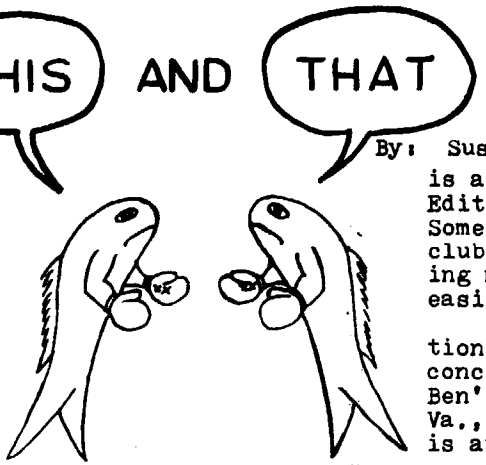
Last month's Delta Tale was mailed out on time thanks to Michael and Susan Sprague. Thanks again for the help. Due to this change in procedure (and not having any membership renewal applications available) I was not able to include applications in the Delta Tale for those persons whose membership expired in August. I've added applications for both August and September in the September mailing.

EXPIRING MEMBERSHIPS

August	September
Ann and Warren Garnar	Joe and Cindy Bennett
Pat and Sherrill Tobin	Robert Moore
Mr. and Mrs. Loren Wilson	Glen Sherbondy
Mr. and Mrs. Larry Wilson	Bill Mosteller
Larry and Sandy Winter	
Bill and Gay Seamans	
Ronald and Carolyn Lorusso	

New membership lists are being prepared in hopes of having them in time for the September meeting.

A-BOUT THIS AND THAT



By: Susan Sprague PVAS

A-BOUT THIS AND THAT is a collection of information which the Editor feels is "noteworthy" news. Some topics may concern shops and clubs, and some may be hints for saving money or doing fish-related jobs easier.

I shall begin by mentioning what I have heard and seen concerning business openings and closings. Ben's Tropical Fish, located in Falls Ch., Va., has replaced South Seas; Fish World is at the site of the old Bobby-Jo's Fishin' Hole in Fairfax, Va.; and Mary's Tropical Fish reopened at a new address in Alexandria, Va. The closings are: Fancy Fish Aquarium in Beltsville, Md.; Fish Bowl II in Falls Church, Va.; and Belleview Tropicals Inc. in Alex, Va.

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It is with great sadness that I announce the demise of Aquacons, the publication of the C.C.I. Aquarium Society in Chillicothe, Ohio. This is an organization of inmates at the correctional institute there. Due to administrative reasons and lack of space, the men have been told they must give up their fish and aquariums. Their society feels that they do not want to continue to spend their money on a publication since they do not have any fish. They are, however, still interested in receiving any aquarium club bulletins to keep in touch with the hobby.

VVV

A salt formula for hatching baby brine shrimp in quantity was given me by Gene Sergent. To one gallon of tap water add

4 heaping tablespoons of any non-iodized salt
1 teaspoon epsom salts
1 teaspoon borax
double the recommended am't of brine shrimp eggs
heavy aeration

Depending on the temperature the solution is kept at, there should be a phenomenal hatch in 24-48 hours.

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A group of local killie enthusiasts have been meeting informally at their houses. Some of the people attending are Walter Bott (on the Board of AKA), Ruth Brewer, Joan Glascock, Gary Haas, Steve Siska, Mark Schneider, Bill Voss and others I don't know. If interested, contact any of them or me.

Did you know that all members of PVAS are welcome at Board meetings? The only stipulation is to let the member giving the meeting know you are coming. If you want to know what we, the Board, are doing, come and have a listen.

ooo

I am planning on sending away for some plants from Robert Gasser in Stuart, Fla. Anyone interested in putting together a large order, let me know. We can get the plants postage paid by ordering $20.00 or more. If you want to know the quality, ask either of the Tietjens at our next meeting. I have seen theirs and they are beautiful.

Our apologies to Dr. Charles Mendenhall on the reprint of his article The Genus Labidochromis in the August 1975 Delta Tale. On page 15 part of the paragraph was inadvertently not printed. It should have read:

As can be seen, these are all Haplochromis type fish, but with small scales, a pharyngeal apparatus containing somewhat fewer and blunter teeth compared to most Mbuna and very elongate curved jaw teeth. Figure 2 compares the pharyngeal apparatus of the Labidochromis and Melanochromis with its close relative, the Pseudotropheus. It is believed the broad blunt crowns on the back teeth are specialized for crushing and grinding their invertebrate food. The jaw teeth (Figure 3) represents their most specialized adaptation designed to grasping their prey from rocks and algae. It should be pointed out that this degree of specialization is not unique to Lake Malawi and the genus, Labidochromis. Lake Victoria has the genus Paralabidochromis, and Lake Tanganyika has Spathodus and Tanganicodus which have similarly adapted teeth for insects and invertebrate

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BLACK MOLLIENESIAS

By: Bertha Hardy PVAS

A pair of black sailfin mollies were put in a 29 gal. tank. The temperature was 78° and the pH was 7.6. A regular bubble filter was used. There was a good amount of salt to keep them lively. After the spawning of the two was over, a few days later the female was put into a 10 gal. tank.

The female was fed brine shrimp and tubifex worms. There was an incandescent light over the tank with a few floating plants. Instead of a filter, an airstone was used. After the fry were born, the female was taken out. When the fry were about 1½ inches long, they were moved to a 30 gal. long where they can grow faster.

The fry in the 30 long were fed newly hatched brine shrimp and Tetramin baby food.

WAVES FROM THE CORAL REEFS

THE INVERTEBRATE COMMUNITY TANK

By: Ann Garnar, PVAS

Our invertebrate community aquarium began strictly by accident, but once started, has turned into a joy -- interesting, educational and beautiful.

We use a ten gallon tank with an undergravel filter, Instant Ocean salt, and an assortment of invertebrate life. Two serpent stars, a brittle star, a red star and a Mexican star (who sports 25 legs), three condylactus anemones, one curly cue anemone, a black long-spine urchin, a pencil urchin, a banded coral shrimp (who is King of the Tank), a beautiful pink peppermint shrimp (who has forgotten to stop growing and is now almost three inches in length), two grass shrimp (part of our catch on the collecting trip), a small green crab, two feather dusters, and several hermit crabs are the residents of L-4, as the tank is known.

There have been a few misfortunes and mysterious disappearances. A small trunk fish ate a good dinner, but wasn't there for breakfast. However, one of the anemones sure looked content for several days!

One red star wasn't able to outrun or out-maneuver the pencil urchin and provided daily meals for several days.

Our Mexican star broke all speed records going around the tank to pounce upon our beautiful new Flamingo Tongue -- much to my dismay. Before I realized what he was doing, the Flamingo Tongue had fallen prey to the predator and was beyond saving.

We maintain a 1.024 specific gravity reading and the temperature is kept at 72°. The tank sits on a bookcase in front of a south window and while it receives little direct sun, there is a good algae growth throughout the tank. We only remove the algae from the front of the aquarium. We feed the animals once a day, alternating between frozen brine, squid flakes and Tetramin. When available, we will add a little live brine to the tank for their further enjoyment.

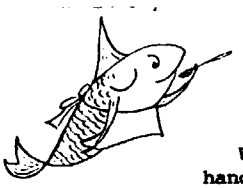
This was a seasoned tank and a complete water change was effected prior to introducing any new life. It was originally intended that it would be a holding or isolation tank, but as can be seen, it is now the home of our invertebrates -- permanently.

There is one medium size lace coral which gives the star fish something under which they can hide while also giving a climbing place for the hermit crabs and a "throne" for the banded coral shrimp to survey his (!) kingdom. Several pieces of finger coral make up the rest of the decoration. With an invertebrate tank, decoration should be kept to a minimum so as not to detract from the beauty of the animals. Use only what is needed for their comfort and wellbeing. We also keep several extra shells so that the hermit crabs can occasionally change their homes.

Each inhabitant can keep an observer occupied for quite a while. There is not enough room available to go into the antics of all.

Through trial and error, and reading too, we have learned who is compatible with whom. As in the case of the Flamingo Tongue, too late. Unfortunately, there is not too much written on invertebrates at this time. There are several books out but the information is still lacking in many areas of keeping our invertebrate pets.

Many marine hobbyists overlook the invertebrates and admire only the fish. We are so glad we found them and hope they will be a part of our home for many years to come. The entertainment given by these performers is unbelievable and extremely enjoyable. They are also easy to keep, making few demands upon their keepers. We urge anyone interested to give us a call. They, as well as we, love company.



TASTER'S CHOICE

By Ruth Brewer, PVAS

While we were visiting the National Aquarium, Nancy Kaufman handed out some copies of a paper "A Meal-Gelatin Diet for Aquarium Fishes" by Edward J. Peterson and Rayburn C. Robinson of the National Aquarium and Harvey Willoughby of the Bureau of Sport Fisheries and Wildlife. (If you missed getting one, Nancy still has some. Just drop a line to Nancy Kaufman, National Aquarium, Commerce Building, Washington, D.C. 20230. There's no charge.) After extolling the virtues of gelatin as a binder for fish food, a recipe calling for water, trout meal, liver, shrimp or clams, gelatin and vitamin A and D feeding oil follows. The authors say that, after two years' experience with the diet, they found that some fishes which generally require live food can be trained to accept and appear to thrive on the gelatin mix. Cutthroat trout, Salmo clarki, fed only this diet for over a year, spawned successfully at the Aquarium.

The problem I had when I considered the use of the Aquarium's gelatin mix was that I couldn't see myself hauling home a 25-lb. sack of trout meal and that appears to be the minimum size. Besides, I'm sort of a free-wheeling cook and I don't like to be tied down to somebody else's recipes all the time. I want to make it perfectly clear that what follows is not a scaled down version of the Aquarium's mix, although it does contains some of the same ingredients in different proportions, but it's easy to make, doesn't fall apart in the tank, stores well and most of my fishes eat it greedily.

I read through the list of contents of trout meal and started looking around the supermarket for a substitute. High protein baby cereal, dry cat food and dry dog food all came close. Baby cereal has 35% protein and costs 67¢/lb., cat food has 30% protein and costs 48¢/lb. and dog food has 26% protein and costs 30¢/lb. I chose cat food because of the additional flavor it would contribute to "my" recipe. I put it in the blender, ground it to a consistency about like coarse corn meal and then used it in the following recipe:

1 cup water (healthy smelling "green" water, if you have it)
1 8-oz. can Doxsee chopped or minced clams
2 envelopes Knox plain gelatin
Handful of lettuce
6 10-1/2 grain tablets dessicated liver (you can get these at the health food stores -- about 100 for $1.50)
1 cup cat food meal (see above)

Put about 1/2 cup water in the blender and sprinkle the gelatin over it to soften. Drain the clams, put the juice and lettuce in a small pan and heat to boiling. Put the cat food meal in a mixing bowl, add the liver tablets broken into bits. You can add the clams to this mixture if you plan to feed larger fishes, or add the clams to the liquid in the blender if you want to pulverize them. Pour the boiling clam juice and lettuce into the blender and blend until smooth. Stir this into the dry mixture until it's thoroughly mixed. Pour into a small baking tin lined with Saran wrap, cover with another piece of Saran and stick into the refrigerator for a couple of hours. This will fill an 8 x 11-1/2 inch pan to a depth of about 3/8 inch. The mixture is ready to feed as soon as it jells, but if you plan to freeze it, roll back the covering sheet, cut the mixture into convenient sized cubes, cover it again and freeze. When frozen, remove the Saran wrap, break the food into feeding size cubes and store in the freezer for use as needed.

This mixture can be varied either by changing the flavor of cat food, or by substituting fish or beef heart cut in small chunks, shellfish or whatever you like. Just stick to the basic proportions of a cup to a cup and a half of liquid, one cup of cat meal and two envelopes of plain gelatin. From there on, use your imagination. I made an alternate mixture using a 10-oz. package of frozen chopped spinach and a 3-1/2 oz. jar of baby strained beef liver in place of the clams, lettuce and liver tablets. I like this one for the fishes which are supposed to get lots of vegetable matter in their diets, however, I give both mixtures to all the fishes which will eat it.

My angels gobble this up, but then they'll eat anything. The corys and the loaches love it and it will even tempt the plecostomus out of hiding into the light. I've been dropping some into the tanks at "lights out" time for the benefit of these night feeders. Among the killies, the A. gardneri, C. alexandri and the E. dageti (even though supposed to be top feeders only) enjoy it. The mixture comes out rather rubbery in texture, so some of these fishes can't really bite into it, but they will nibble on it as long as there's any left. The paradise fish have an interesting eating technique. They ram their snouts in almost up to the eyes and then, with a quick sideways twist, pull back leaving a neat hole in the piece. Within seconds after a it hits the bottom of their tank, a cube of this mixture looks like a piece of Swiss cheese. But the fish I feel sorry for is the pink chalceus. He won't go below the top half of the tank so he misses out except when he can bite off a chunk as it drops to the bottom. Since his reflexes are no better than my aim, that's not very often. I was considering trying to train him to hand feed, but then I saw "Jaws". The next time I fed the mixture in his tank was one of the rare occasions when he got his bite and, as the remaining two thirds (now with a neat concave edge instead of a straight one) sunk to the bottom, it slowly turned into an arm. I have temporarily abandoned the project.

In using this gelatin mixture, as with all other foods, be careful not to leave uneaten pieces around too long. Keep an eye on the tanks when you feed it to see which of your fishes will eat it and get out the uneaten pieces fairly soon. I am not touting this as an all-purpose food, but it will add another high-protein food to the variety of other good foods we now have available.

SETTING UP AN AFRICAN RIFTLAKE COMMUNITY TANK

By: Jerry Meola, PVAS

I thought it was about time the Delta Tale got away from its articles on the more exotic aspects of raising Africans and concentrated on the basics. Since I have written many of the other articles, I felt I owed this article to the new club members who may just be getting started in Africans. I think this article is particularly appropriate in that it will be my last before leaving to join African Fish Imports in New Jersey.

Let's assume you are considering setting up your first African community tank. You may have raised most anything before or even a few Africans, but now you want to do it right. You are either going to buy tanks and equipment or use existing equipment, either of which represents a substantial investment. African fish are hardy and live a long time, but they certainly are not free. It is worth the expense to have that beautiful tank of Africans, but you have heard so much about different ways to set up that tank, how can you be sure the tank will stay beautiful and healthy? I cannot give you any guarantees but here are several starting points from which to avoid the more common problems.

Africans like space. They are territorial. Remember, however, their territory is on the bottom and extends to the top of the tank. A tank is only "bigger" when it has more surface area. Any fish that stays near the top of the tank is in trouble. It means the fish is sick or cannot defend itself in the tank. It must be moved to another tank. Getting a weaker fish to be accepted in a tank after it has been beaten like this is an art beyond the scope of this article, sell or trade the fish for another.

A twenty gallon long and a twenty-nine gallon tank are the same size when setting up an African community. Also long, narrow tanks are not as useful as they may seem. A fifty-five gallon long looks like a lot of bottom area but it is narrow and if one large, dominant fish chooses the center of the tank for his territory, he can prevent other fish from crossing. The other fish will have to fight for very limited amounts of space on each end. Breeding will not be easy if the male and female are at opposite ends. Smaller fish will do better in this tank even though it looks like it will take large six inch beauties.

The larger the tank the easier it will be to set up the community. (Bear in mind that I say this while prejudiced to very large, 200 gallon or larger, tanks.) A twenty gallon long is the smallest community I would try. If you are going with a small tank (50 gallon or less), limit the size and quantity of the fish; less than three inches maximum size for thirty gallons or smaller; four to five inch maximum for fifty or fifty-fives. Limit them to six fish for a twenty long; twelve in a thirty long and fifteen to twenty for the fifty or fifty-fives. Synodontis catfish can be added to these limits without further consideration.

Do not make the mistake of getting fish that are too large or too rough for the smaller tanks because someone wants to sell you his fry or his rejects. Pay a little more and get fish that are compatible. There are many beautiful dwarf Africans that are not as readily available. It is worth the effort to search them out. Think before you buy fish. Talk to everyone you can and shop around. Even after you know what fish you like and how they will act - stop again - ask yourself how they will balance visually with each other. Cobalts, powder blues

and socolofi are all beautiful fish but you do not want all blue fish in the tank. Choose fish you may not have liked as much since the variety will make a much more balanced community. Do not put the first fish in the tank until you know how the last will balance with it - think it through.

Riftlakes like hard, alkaline water. Lake Malawi is usually 80-82 degrees and Lake Tanganyika 76-78. The fish will adapt from 65-90 degrees but you are much safer keeping the temperature between 75-82. Most water supplies are naturally alkaline. Using dolomite for gravel will maintain the alkalinity. Hardness is a little more troublesome. My fish do all right in the tap water which is less than thirty ppm (3 DIN) but 100-200 ppm (6-12 DIN) is more desirable. Dolomite helps some with hardness and salt can be added. Salt is doubly desirable. Salt acts as a preventative medicine against ick and other minor infections. I always use it when setting up a new tank, although I often let it dilute out with water changes. Sea salts are much more desirable than Kosher or rock salt (never use iodized salt). Regular salt acts as a softener. Sea salts have minerals and trace elements that maintain the hardness. Mesco has two ready prepared salts that duplicate the water of Malawi and Tanganyika exactly. They have just recently lowered their prices to where it costs less than one cent a gallon.

I use dolomite as the gravel in all my tanks. It is difficult to keep a tank without gravel because the bacteria that develops in the gravel is necessary to clear the water. Bare tanks foul quickly. Dolomite is more useful for this purpose and has the added benefits of maintaining hardness and alkalinity. Regular gravels can be used but watch your alkalinity more closely. Dolomite requires more careful cleaning than regular gravel which I will talk about later.

I would not mix Malawi and Tanganyikan cichlids in this tank. They can be mixed but too many species like different conditions to risk it in your first tank. Many Tanganyikans are not aggressive enough to compete for food with the Malawi fish. This results in slow starvation. Wait until you have enough experience to recognize a frightened fish before adding more problems.

I have at least one Synodontis catfish in every tank. They do an excellent job of moving gravel and cleaning uneaten food. Rare, fancy Synodontis can range to two hundred dollars but you should be able to find the more common species for less than five dollars. South American catfish are usually not suited for an African tank.

Heaters are usually desirable. Unless you can be certain your heat will not drop on an unusually cold night during the summer when the heat is off, a heater is a cheap safety valve. Spend some money and buy the best you can get. Cheap heaters have a bad habit of sticking open and frying the fish. A large space heater heating the whole room year round is much better if you have a separate room and can leave it hot.

Filtration is important. The larger the filter the less often it will need to be changed and the less danger you will have of the tank going bad. Add some activated carbon (not useless charcoal) to each filter. It will make the water appear cleaner.

Whatever gravel you use it will need to be stirred often to flush out the waste products. Stirring it once or twice a week just before water changes will remove the impurities. It should be done at least every other week. You cannot avoid this by using an undergravel filter, because Africans eat too much for an undergravel to remove the waste by-products.

Water changes cannot be avoided unless you use prohibitively expensive amounts of carbon to remove the waste. There is no completion of the natural cycle in the most perfect of aquariums. It will never remove the impurities naturally. I make a fifty to seventy five percent change every week. I would not change this much on a new tank until the fish have established themselves and are eating well. It would always be better to change the same amount of water by more frequent changes of lesser amounts. Africans can tolerate increases in temperature during these changes much more easily than lower temperatures. I always add hotter water during the changes to give me a safety margin should the temperature drop and it also can stimulate a spawning.

If you can purchase all your fish around the same time, it is much better to introduce them all to the tank at the same time. If you cannot, strip the tank bare except for gravel before adding each new fish. This gives the newcomer a better chance to compete for territory. Watch the fish and see if he can hold his own. It may be necessary to strip the tank again and move the decorations to allow the fish to reestablish territories more than once before they will co-exist peacefully. If this does not work, either the weaker fish or the bully will have to go. Sell it or trade within the club rather than let the fish die. It is the aquarist that kills the fish, not the other fish; the deaths can be prevented. A fish that is not eating may only be frightened and not sick. Would you eat if you thought a bully might hit you over the head when you were not looking?

For those who want a small community tank I am going to put my neck on the line to make definite recommendations. All the small Labidochromis are good especially clowns, freibergi, fryeri, or joanjohnsoni. Trematocranus jacob-freibergi are excellant but more expensive then you may want for your first tank. Socolofi, johanni, and Likoma Island elongatus are the only Pseudo-tropheus I can recommend without hesitation. The only zebras you should try are the dwarf, dwarf red tops, white, red or orange. Avoid cobalts in the small tanks. Avoid Labeotropheus, they are not aggressive enough eaters and need a diet much richer in vegetation than you may be able to feed.* Add one or more Synodontis catfish. The notatus, alberti or sorex can be purchased for about five dollars. This is not an all inclusive list of Malawi cichlids you can use but there are enough here to make a beautiful tank. If you want a Lake Tanganyikan tank it is more difficult to get a selection that will blend into a community. Most people raise them separately. However, Julidochromis will co-exist with each other if placed in a community while young with plenty of rocks (more rock than water). Chalinochromis brichardi can be added to the Julido-chromis community. Avoid Lamprologus brichardi unless you can keep them with larger fish, they can be very rough on small fish. I would not put catfish in a substrate tank like this one if you want to try to breed them. Julidochromis do not do well with large water changes and the tank should be disturbed as little as possible. Here you are better ignoring my advice of stirring the gravel and instead syphon the waste out. Do not feed Tanganyikans as much as Malawis, they are not generally agressive eaters.

An African community tank - try it you'll like it - its worth the expense and effort.

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* Editor's note: I have never experienced any trouble with L. fuelleborni in a community situation however, I do tend to feed a paste diet which is high in vegetable matter. S.S.

GETTING A START ON FISH IDENTIFICATION

By Jim Pitts
(Reprinted from American Currents, May-June, 1975)

To the aquarist who cares little about the distribution and taxonomy of fishes, identifying his fishes may seem an unnecessary bother. Such pure and uncompensated dedication to the aesthetic quality of fishes is admirable, yet most of us are curious creatures, and are unsettled by not knowing that irridescent shiner or colorful darter by name. With a certain amount of practice and a tremendous amount of patience, there is no reason why you can't identify 90% of the freshwater fishes in North America. The only reason 100% is hard to achieve is that there are difficulties with immatures, hybrids, abberant individuals, and as yet undescribed fishes.

There are a few tools necessary to identify fishes. Probably the most important is a good key. Keys are books or sections of field guides that systematicly tell you what fish you have. The most comprehensive and inexpensive key available for North American freshwater fishes is the famous How to Know the Freshwater Fishes by Samuel Eddy. The book is part of the Picture Key Nature Series and is generally available at bookstores, especially bookstores associated with large universities. If you aren't in reach of a bookstore write to William C. Brown Company Publishers in Dubuque, Iowa. The price is around $5.00.

Another key that deals with most of the described freshwater species in North America is Vertebrates of the United States by W.F. Clair et al. The section devoted to fishes is by George A. Moore and is intended for those who are serious students of fishes. Unlike Eddy, Moore's keys attempt to separate fishes on a more or less phylogenetic basis. Moore uses pharyngeal tooth counts to key Cyprinidae, while Eddy does what is possible to avoid this. It seems that Moore's key depends less on the subjective opinion of the identifier than Eddy's. It is not as well illustrated as Eddy's key. The two books complement each other well. Vertebrates of the United States is published by McGraw-Hill Book Co., Inc. in New York. The price is over twenty dollars.

Regional or state keys that cover your area may be just as useful to you, so check the library and write your state department of fishes to find out what is available. A list of several good books is presented at the end of this article.

The other tools you need are all pretty much optional or may be substituted for.

1. Ruler--clear plastic is best
2. Magnifying lens (or dissecting scope)
3. Scalpel or surgical scissors
4. White-enamel pan
5. Forceps or tweezers
6. Isopropyl alcohol and jars for specimens
7. Dividers.
8. Dissecting needle

If you do not want to kill the fish to identify it, you may let it live a full life in the tank. When the fish dies of natural causes; deterioration, fungus and the nibbling of other fishes may soon make the fish unidentifiable. However, I try to keep a close eye on the fish and place it in alcohol as soon as possible after it expires. If the fish has any distinguishing colors, make note of them. The colors may fade in the alcohol and in your memory. Coloration is often helpful in keying. If you collect large numbers of a species and don't mind using a

few for immediate identification, you may want to kill them. There are a couple of ways to do this. One is to simply drop them directly into alcohol. The second way is for softies like me. Wrap the fish in plastic bags with a small amount of water and place them in the freezer. Close the door. Run into the living room and try to forget what you've done. Thaw and allow the fish to sit overnight in alcohol. Be careful not to damage fins when handling the fish.

Keys work on a very simple principle of giving you two opposite characters to select from and sending you on to another set of opposites, according to your choice. By choosing the proper options as characters of the unidentified specimen, you should eventually arrive at its proper identity. Let's go over the procedure with a hypothetical example.

1a. Dorsal fin with spines. Go to 2
1b. Dorsal fin without spines. Go to 10

You should read both options. After looking at the fish you decide that the dorsal fin possesses spines, so you go the pair of opposites 2a and 2b.

2a. Lateral line present. Go to 5
2b. Lateral line absent. Go to 3

Your fish has a lateral line so you skip over 3a, 3b, 4a, and 4b to proceed to the pair of opposites 5a and 5b.

Eventually you will arrive at a fish in the key that should agree with your specimen. Check the illustration and distribution given (if they are). If all seems to agree, you in all probability have correctly keyed out your fish. If there is a disagreement between the illustration, distribution, or general remarks and your fish, start again at the beginning of the key and recheck.

Keys are often filled with vague spots, and characters that are not so easily checked for. Sometimes it is best to consult several keys before deciding the identity of your fish. Most keys will work better for you if you use adult, sexually mature fishes. Males are often more distinctive to a species than females.

The mechanics of examining fishes for taxonomic characters are often the big holdback for the beginner. A discussion of some of these mechanics follows.

Measuring Proportions--It is often necessary to decide how many times the body depth goes into the length. If you use dividers instead of a ruler you will find you have a more exact approximation. A dime store compass with a nail used to replace the pencil will work in place of dividers. Use this instrument to find all proportional measurements, being careful not to puncture the fish.

Fins--You will need to know in most cases whether or not the fins possess spines or rays. Hold the fin up to a light and spread the fins with your forceps. Clasp the anterior portion of the fin near its base (see fig. 1). Holding the fin near the top will usually cause it to tear. If the supporting structures appear segmented, they are rays. Non-segmented structures are spines. Rays may be modified into hard structures as in the carp's first dorsal ray. Counting spines needs no explanation, however, rays are often branching structures and should be counted near their bases.

Scales--Scales are commonly one of three types as illustrated in fig. 2. The only North American fishes with ganoid scales are the Paddlefish, Gars, and Sturgeons. You don't have to remove scales in order to see whether or not they are cycloid or ctenoid. Simply rub the fish with your hand from the tail towards the head. If the scales are ctenoid the body will feel scratchy and rough. Cycloid scales will feel smooth.

Counting scales should be done in accordance with the key's counting instructions, since counts may be made in different ways by different authors. On small fishes with indistinct scales try wiping or blowing the moisture off the fish and looking at the fish from different angles to see the scales better. Imbedded scales may be scraped out with a needle.

Pigmentation--If you are using body pigmentation as a character for identification, use your hand lens or magnifying glass. Pigments may fade and discolor in alcohol. In some minnows you may have to check the pigmentation of the peritoneum or lining of the body cavity. In order to do this, make an incision with a scalpel, razor blade, or scissors from the anus to below the pectoral fins. Another incision should be made from the anus dorsally about half the height of the body. You may now lift the flap of muscle to see the peritoneum clinging to it on the inner surface. (see fig. 3)

Intestine and stomach structure--These often give hints to the identification of a fish. For example, the intestine of the stoneroller, Campostoma anomalum, is a very long coiled structure wrapped around the other organs. Dissect the fish as before but make an additional incision from the anterior portion cut vertically about midway up the body. Most of the internal organs will now be exposed by pulling back at the flap. Pyloric caeca (fig. 4) are finger-like structures attached at the juncture of the stomach and intestines. Counts of these structures are sometimes warranted.

Pharyngeal teeth--Probably the most difficult count you will ever have to make to identify a fish is that of the pharyngeal teeth. This count is made to help identify suckers and minnows. The pharyngeal teeth are situated on two curved bones that lie behind the gill arches. The procedure goes as follows:

1. Take your thumb and bend the opercle forward to a position where the entire gill chamber is exposed.
2. The pharyngeal arch may be exposed by placing a needle or probe behind the last filament covered arch and placing it forward.
3. With a scalpel, forceps, or pointed surgical scissors, remove the fleshy arch from its attachment to the top and bottom of the cavity.
4. Carefully remove the arch with forceps and clean the flesh from it with a needle.
5. Repeat the procedure on the other side.

After examining the teeth, place them back in the chamber and close the opercles. You will have to practice and develop your own technique to achieve proficiency.

Dr. J.S. Ramsay of Auburn University suggests that anyone who plans to work with pharyngeal teeth should culture his thumbnail so that it is long enough to be of use as a tool. In working with the teeth the thumbnail makes possible manipulating the arch without tying up your hands with forceps.

Very often a tooth formula is given in the description that appears something like this: 2,4-4,1. Such a formula indicates that the left arch contains two rows of teeth, one row has two teeth, the other row on the same arch contains four. The right arch has a row with four teeth and one row with only one tooth. Teeth are easily broken away from the arch, leaving a bare socket. Be sure to count these sockets when making tooth counts. Typical pharyngeal arches are illustrated in fig. 5.

Samuel Eddy provides excellent instructions on general measurements in his key. Again, be sure to check any key you use for the methods that author uses in determining characters.

Now we come to the subject of identifying fishes that are still alive. You may learn to identify many fishes on sight. Every time you find that your mind is idle, pick up an illustrated text of native fishes and browse through the pictures. Color plates will more effectively place the fish in your memory. Slide programs, museums, and exchanging live identified specimens will all help in the effort. Don't just look at the fish you see in your tank in the way you would a painting. Study their habits, the way they swim, eat, school, and spawn. Soon you will find yourself identifying fishes in the wild at only a glance.

Learning "field characters" of fishes will make the job of identifying live and preserved fishes much easier. "Field characters" are characters or short combinations of characters that tell the identifier the identify of a fish without resorting to keys. These characters in fact are not very often found in keys. In the Georgia swamps, for example, two pickerels occur commonly, the chain pickerel (Esox niger) and the grass pickerel (Esox americanus). Eddy's key uses a lateral line scale count and the color pattern of adults to separate the two species. In juveniles, the patterns are quite variable and a scale count is a great bother. They may be easily separated by a single field character that is consistent in juveniles and adults. The snout of E. niger is very exaggerated in length when compared to E. americanus. The difference is so dramatic that once you see the two side by side you will probably never again have trouble separating them.

When you are keying fishes it is very beneficial to make note of these field characters as you come to develop them. A card file of each fish's field characters is very handy. You might also note them in your key's page margin by the fish. Notes may be made on drawings to call the characters to your attention. Make notes of colors, complicated patterns, pore arrangements, distinctive body shapes and proportions, areas with crowded or sparse scales, sizes and distribution of breeding tubercles, etc. Especially useful are drawings that you can make of characters of juveniles, since sub-adults are so often neglected in keys.

You will undoubtedly make mistakes in identifying some fishes. Professional ichthyologists are not exempt from an occasional misidentification, if that is any consolation. If you are unsure of your identification of a fish, get another opinion from another NANFA [North American Native Fishes Association--Ed.] member. Ichthyologists at a nearby university are almost always willing to take out a few minutes to help you. In any case, don't let the ordeal of "beginning" your study of fish taxonomy discourage you. Develop a systematic way of approaching fish identification that best suits your desires and needs, and enjoy what you are doing.

Some Books of North American Fishes

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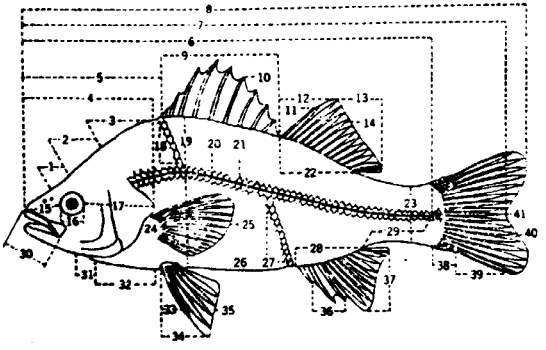


A spiny-rayed fish illustrating parts and methods of counting and measuring: 1—interorbital; 2—occipital; 3—nape; 4—head length; 5 predorsal length; 6—standard length; 7—fork length; 8—total length; 9—length of base of the spinous or first dorsal fin; 10—one of the spines of the first dorsal fin; 11—spine of the second dorsal fin; 12—height of second dorsal fin; 13—length of the distal, outer or free edge of second dorsal fin; 14—one of the soft-rays of the second dorsal fin; 15—snout length; 16—eye length; 17—post-orbital head length; 18—scales above the lateral line or lateral series which are counted; 19—body depth; 20—one of the lateral line pores in a complete lateral line; 21—one of the lateral scales which with the remainder form the lateral series; 22—length of base of the second or soft dorsal fin; 23—least depth of the caudal peduncle; 24—the pectoral fin; 25—one of the soft-rays of the pectoral fin; 26—abdominal region (belly); 27—scales below the lateral line or lateral series which are counted; 28—length of the base of the anal fin; 29—length of the caudal peduncle; 30—length of the upper jaw; 31—isthmus; 32—breast; 33—height of pelvic spine; 34—height of pelvic fin; 35—one of the soft-rays of the pelvic fin; 36—spines of the anal fin; 37—soft-rays of the anal fin; 38—rudimentary rays of the tail (caudal) fin; 39—one of the principal, unbranched soft-rays of the caudal fin; 40—branched soft-ray of caudal fin; 41—the caudal fin with numeral at fork of fin. (Source: Trautman, 1957).

Fig. 1. Typical dorsal fin of a cyprinid. "P" indicates position of forceps in spreading fin for examination; "R" is the rudimentary ray; "a-g" are rays counted by their bases; "h" is usually counted as a single ray since the branches join below the skin. Drawing by author.

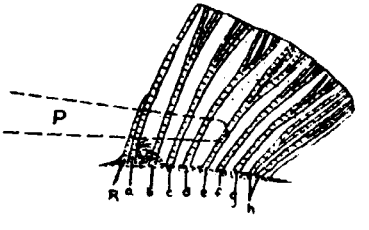


Fig. 2. Typical scale types:a. cycloid (carp) b. ctenoid (perch) c. ganoid (gar). Drawings from Lagler, Bardach, Miller 1962

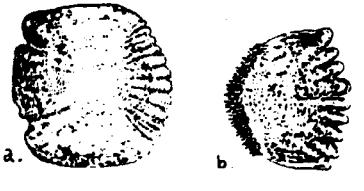


Fig. 3. Minnow disected to show the peritoneum. Drawing by author.

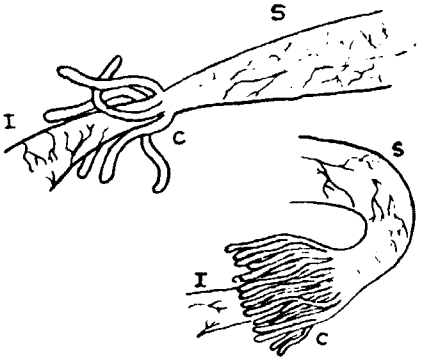
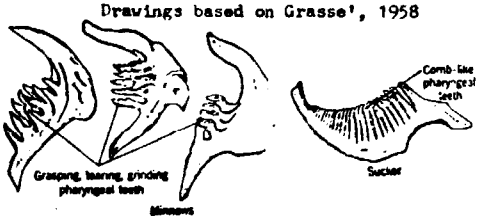


Fig. 4. Pyloric caeca (c) in position relative to stomach (s) and intestine (I). Above unbranched form, below branched form. Drawings by author.

Fig. 5. Typical pharyngeal arches and teeth of minnows and a sucker. Drawings based on Grasse', 1958



AT THE ROOT OF THE MATTER
(He built a what where?)

By: Keith Meggison GPAS
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This was supposed to be a completely separate article from the Root Of The Matter, but it got down to the wire and I only had this one article ready. So here it goes.

Early this summer I decided to build a new fish room in my basement. I had in mind the thought of building a pool about four feet by eight feet in one of the corners of the room. In this pool I was going to place half my spawns of Rift Lake Cichlids in the hopes of raising them to a good size in a short amount of time. After planning the materials I would need, I decided to purchase what I thought would be the hardest to find first and the easiest last. I found the plastic sheeting I would need at the lumber yard was sold in sheets twenty feet wide by fifty feet long. Since the price was only about six dollars for the lot, I bought a package of plastic and a bag of insulation (the granular type used for attics and the like) and headed for the masonry yard to purchase the cinder blocks. When I got there, I was told that they had available seconds, which are blocks that have slight irregularities or ones that had been over produced. The price on these was 15¢ per block. After looking over the selection and finding what I liked, I got foolish and bought forty-three and for another dollar I was given the remaining ones of that type. After loading fifty-four of these giant blocks into my VW bus, I decided to leave the rest after looking at my tires. The ride home was pretty hairy. Did you ever try to stop a VW bus that weighed somewhere around two tons? The blocks I bought were 10 inches wide by 14 inches long and 8 inches deep; you can imagine how much they weighed! With ropes and ramps I finally got them all down cellar. I then decided I would lay them out just to get an idea of how it would look. After I had laid a total of forty-six blocks, I noticed my four by eight pool had turned into a gigantic kidney shaped lake. The pool was two blocks high, which I found was the most comfortable sitting position. Not wanting to move all the blocks again, and since I was pleased with the lay-out, I started preparing the inside of the pool for the plastic. First, I was not going to make the set-up permanent so I used the above ground swimming pool principle, which is the pressure of the water all pushing toward the center because of a slanted base. To do this I used sand that was outdoors, making sure that there were no sharp objects that could puncture the plastic sheet. I made a slanted imbankment about four inches high, sloping from the wall of the pool toward the center. This should be packed down and any depressions should be filled. Once this is done you can pour the insulation in the middle. I used a layer about three inches deep; this should provide an ample amount of protection against chill. This is when I came to a problem. At the joints where I had slanted the blocks in order to achieve the kidney shape, I had left gaps between some of the blocks. If these were not filled in some how the water would push the plastic into them, causing a tear. If there's one thing I did not want it was a few hundred gallons of water gushing onto my cellar floor. To overcome this problem, I placed a piece of cardboard over the gap and taped the edges to the blocks. I then filled the area behind the cardboard

with sand for reinforcement. With this done I spread the plastic sheet out over the whole pool area, and trimmed off the excess. You should leave about two feet of the plastic overlapping for adjustments. Then I ran a small amount of water into the pool, and smoothed out any folds.(The folds could be points of weakness and also collect waste.)

OH!! By the way the grade plastic should be of a mill not less than four mil thick. I used six and found this to be sufficient. After smoothing the plastic out and checking for tears, I secured the edges with a heavy tape temporarily. The pool was then filled. After all the work of just setting it up, I was very proud of the unfinished product. Now the real work began. First off, I had to rig up some kind of filter for the lake. I went down to the garden center and again went foolish and bought a fountain kit consisting of a submersible pump and an adjustable ring. After finding an old filter box from an outside filter, I cut a hole in it so that it would fit over the intake spigot of the pump. In this I placed a sponge, and I had a ready made filter.(By the way I bought one more pump which I plan to use to make a waterfall.) The heaters, although I haven't bought them yet, will be the kind that can be submerged also. With these I can place the heat in a wide area, where with the tube type I would have to hang them on some type of pole, which would take some of the simple beauty out of the pool's appearance. For lighting I plan to use flourescent lights above, colored flood light on the fountain, and optic fiber bushes below the surface of the water. With this set up I can create different moods for different occasions. Now on top of the blocks I plan to place seat cushions, so that people can sit and watch my fish in comfort. In between some of the cushions I will have plants growing to add demension to the shore line. Naturally, I used natural gravel on the bottom. Along one wall I created a rocky coast line filled with caves and valleys. In the center I placed a few wide leafed plants, leaving an open plateau between the shores. The remaining shores that I created were either rocky coast, or thickly planted sandy shores. In short I tried to duplicate one of the rift lakes. The outside of the pool will be covered with stick on carpet tiles to match the floor carpeting.

Excluding the pumps and lighting, the total cost was a mere twenty dollars and a lot of muscle. The enjoyment of building is such a thrill that it's unreal! Build a pool, have fun.

LIST OF MATERIALS NEEDED

? number of cinder blocks(depending on the size of the pool)
? number of feet of plastic vinyl sheeting(no less than 4 mil)
insulation granular type (enough to form a three inch thick layer)

" PHYTOGRAPHY POWER "

PS. Remember when buying materials "don't be foolish" .....

T A R E T A E H E A S S A V A W E R T

B I L S B S R S V E N O T S R I A O S

M T G K R I B O T A O L E V A R G P T

A A O H A A N U B M L H N R G E A M L

X E L C B S T E O S O V I P F I K L A

E O D A R N A L G E A E E R P L J S B

L M F O W A L J A X K R H A D R C U E

R T I L E I C K L S I T L C E A G T O

O E S Z E L I S L H N I R O O M E A T

D T H K P L E C O S T O M U S L O R R

N R N O L A I A N U E S E T L U P U O

O A A I A B N L L I B B L I D M H A P

T M E M T E N A C E G I A O I O A E H

N I F A Y O E R B A M T N R A O G L E

E N I R H B S E D A D M H W T N U O U

G J N U P I S W L R N S A P O A S D S

O U K O O C V U O K E T R O M B W E C

P L P G R O Y W J N E U I T I V B A E

A I O P T L S H I R W V S D Z I M J F

A E F R Y O I R L D I L H C I C E T A

M I E T A R B E Z Y X A R O W A N A Z

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