

* DELTA TALE *

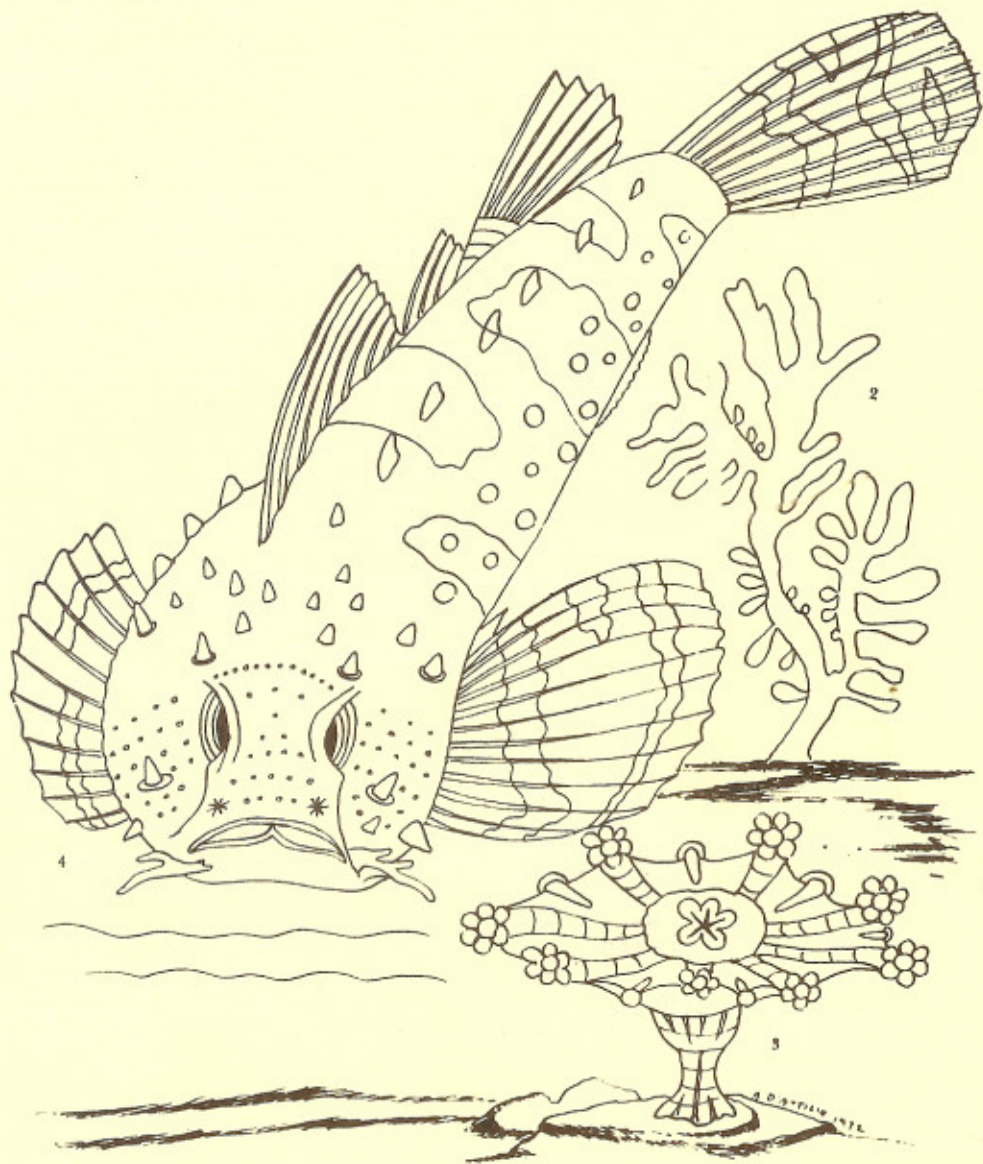
September 1988

Vol. 19 #8

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OFFICIAL PUBLICATION OF

potomac valley aquarium society



The Delta Tale is published for the benefit of the Potomac Valley Aquarium Society, Inc. (PVAS), a non-profit organization, was established in 1960 for the purpose of furthering the aquarium hobby by dissemination of information, encouraging friendly competition, soliciting participation in its shows, and promoting good fellowship. Correspondence should be addressed to PVAS, PO Box 6219 Shirlington Station, Arlington, VA 22206. Original articles and artwork may be reprinted by other non-profit organizations if credit is given to the author, Delta Tale and PVAS. Two copies of the publication should be sent to the Delta Tale c/o PVAS. Please place the author's name on one copy to ensure that it gets to him/her. PVAS and Delta Tale disclaim any responsibility for content or availability of advertised merchandise or services in these pages. Customer satisfaction is a matter to be worked out exclusively between the advertiser and the buyer. All material for inclusion in Delta Tale MUST reach the editor by the 18th of the month prior to publication.

1988 PVAS OFFICERS

President:	Gene Aldridge
Vice President:	Pete Thrift
Treasurer:	Gerry Hoffman
Corresponding Secretary:	John Mangan
Recording Secretary:	Bob Pallansch

1988 BOARD OF GOVERNORS

John Jessup	John Stierenger
Ray Hughes	Kenny Warren

1988 COMMITTEE HEADS

Auctions	
BAP:	John Jessup
HAP:	Alex Cummins
Library:	Pete Thrift
Membership:	Pat Gore
Spring Show:	Pete Thrift
Fall Workshop:	Gerry Hoffman
Bowl Shows:	Barrie Farmer
Programs:	
Ways & Means:	John Stierenger
FAAS:	Gerry Hoffman
Delta Tale:	Tom Hetzel

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The following list was downloaded from Fishnet - the Aquarium and Tropical Fish Forum on CompuServe Information Service. I'm leaving the header in so you can see how messages are stored and on the system. I've deleted those entries that have already passed. [Editor]

#: 28885 S8/News/Shows/Meetings
30-Mar-88 22:47:38
Sb: Meetings (Apr-May)
Fm: Sally Van Camp (FAAS) 73167,2625
To: All

This listing compliments of the Federation of American Aquarium Societies.

Sept 3-5 Calgary A.S. Annual Show
 info: 803 Allandale Rd. SE,
 Calgary, ALB T2H 1W7

Sept 23-25 FAAS Convention
 Regency Best Western, Blasdell, NY;
 info: 716/941-3701

Oct 1 Michigan Cichlid Assn. Fall Auction

Oct 7-10 Saskatoon Bi-Annual Public Show
 Saskatoon Forestry Farm Auditorium

Oct 16 Greater Detroit A.S. Fall Auction

Oct 17 Bettas of the North East Certified Show
 Grenich, CN

Nov 5 Motor City A.S. Fall Auction

Nov 5 & 6 North Jersey Aquarium Society's -
 Tropical Fish Weekend II - lots of great speakers

The following list was downloaded from Fishnet - the
August and Tenthredinid and Tenthredinid
October's meeting will be the third Monday rather than the
second Monday of the month. That makes it the 17th rather than the
date given on the back cover. Chuck Davis will give a program on
catfish.

PVAS BOARD MEETING
August 1, 1988

President Gene Aldridge convened the meeting at 7:30 pm chez
Bob Pallansch. Also present were Pete Thrift, John Jessup, Ray
Hughes and Gerry Hoffman.

Treasurer Hoffman reported about \$1300. in our checking
account, with no unpaid bills and \$150 to \$200 still due PVAS,
largely from auction sales.

Re: the October Workshop:

Speakers under consideration are Jack Wattle, Jon Burleson,
Chuck Davis, Merrill Cohen, and Paul Loiseffe. Several lecture
subjects were proposed and discussed.

Display room/concession ideas included plants (Mike
Trzonowsky), mini-reefs, live foods, and live illumination.

Gerry Hoffman mentioned a local restaurant which can provide
a banquet for \$150.00 per person. Ray Hughes agreed to check at
the Potomac Sheraton for a comparable offer, the matter to be
decided at the August 8 meeting. Ray also agreed to take charge
of the Workshop brochure; posters will be a blowup of the flyer
cover.

The board agreed to purchase 100 PVAS-imprinted calendars
for publicity use or resale.

The meeting adjourned at 9:30 pm.

Respectfully submitted,

Robert J. Pallansch
Recording Secretary

TRADING POST

To Swap: 20 gal. metal tank for 20 gal. all-glass.
Call: Peter Crawford - (301) 946-2441

NOTICE

Anyone interested in joining a newly forming "mini-reef" group
call Peter Crawford at (301) 946-2441. The group is considering
meeting in Silver Spring once a month.

POTOMAC VALLEY AQUARIUM SOCIETY
announces its Annual Fall

WORKSHOP/BANQUET/AUCTION
October 8 & 9, 1988
to be held at the

SHERATON POTOMAC

I-270 and Shady Grove Road, Rockville, Maryland 20850

SCHEDULE OF EVENTS

SATURDAY, October 8, 9:00 to 4:00 Workshop

SPEAKERS

JACK WATTLEY - Internationally known breeder of discus will share his knowledge of maintaining and breeding these exotic fish.

DR. PAUL LOISELLE - Recently returning from another South American collecting trip will captivate us all with his slides and experiences.

JOHN BURLESON and/or JULIAN SPRUNG - the salt water experts from Sea Kleer Reefs, Inc. will share with us the latest in marine technology and living reef aquariums.

MIKE TRZONKOWSKI - on importing fresh water plants from around the world and growing them in the home aquarium.

FURTHER DISPLAYS AND EXHIBITS

RON THOMPSON - Nikon Representative - through the lens experiences with the proper lenses and equipment for fish photography.

SEA KLEER REEFS - Marine wet/dry filtration units and lighting.

DELAWARE AQUATIC IMPORTS - Large selection of aquatic plants.

P.V.A.S. - Exhibits and advice for the hobbyist.

Saturday, October 8, Evening

6:30 to 7:30 - Cocktail & Social Hour - Cash Bar

7:30 - Dinner - Buffet

Featured Dinner Speaker - Jack Wattlely
on "International Discus Keeping"

Sunday, October 9 - AUCTION

9:00 - 12:00 Registration of items to be sold.
11:30 am - Auction begins. _____

REGISTRATION FORM

WORKSHOP:

_____ will attend the Workshop - Saturday, Oct 8 @ \$10.00 _____
(Pre-registration prior to Oct 1.)

_____ will attend the Workshop - Saturday, Oct 8 @ \$12.50 _____
(Registration after Oct 1.)

BANQUET:

_____ will attend the Banquet - Saturday, Oct 8 @ \$15.00 _____

Name _____

Address _____

Phone _____

Please make checks payable to P.V.A.A.

Mail registration to: Gerry Hoffman
547 Hunton Street
Warrenton, VA 22186
(703) 347-7486 (After 8:00 pm, please)

Buffet dinner at the SHERATON POTOMAC is to include an
All-You-Can-Eat, 2-Entree Buffet with Salad Bar, Fruit Cup,
Vegetable, and Dessert.

Directions to the SHERATON POTOMAC:

I-270 & Shady Grove Road, Rockville, MD 20850 (301) 840-0200

From the Capital Beltway (I-495) In Maryland take Exit 38
(I-270) North. Follow I-270N for 7.5 miles to Route 28 (for
Rockville) and take a right turn off the exit. Continue to the
2nd traffic light, turning right on Research Blvd turn right on
Research Court. The Sheraton is on Research Court and Shady
Grove Rd. You can see it from I-270.

The Capital Beltway (I-495) can be reached directly from
I-95 whether coming from the North or South. From the North
follow, signs to Silver Spring and Frederick. From the South,
follow the signs to Frederick, MD.

PVAS AUCTION - Sunday, 9 October

RULES FOR THE SELLER

1. You do not have to be a PVAS member to buy or sell hobby-related items, including fish, plants, equipment, etc. in the auction.

2. Registration of items for sale will begin at 9 am and will end promptly at 12:30 pm on Sunday, 9 October.

3. All items must be labeled with the identity of their contents, to include number, sex (if possible), and other pertinent data. Use a permanent marking pen and adhesive label. Labeling equipment will be available at the auction, but labeling must be accomplished before the items will be registered.

a. Fish: 'Pair' means one of each sex. 'Mated Pair' means a pair that have spawned WITH EACH OTHER. 'Trio' means one male and two females. 'Reverse Trio' means two males and one female. 'Mixed Sexes' means at least one specimen of each sex. If you are uncertain, label the bag 'Unsexed'.

b. Supplies: All aquarium equipment MUST be labeled as to working condition or missing parts. PVAS reserves the right to reject any equipment judged to be unsuitable for auction.

4. Proper fish bags must be used. Live items must be bagged with ample air and water. Fish packed in 'baggies' or similar bags will not be registered. If a fish is registered in a bucket, tank, or bowl, the container will be considered part of the item and will be auctioned as a unit. There will be a supply of fish bags for sale at the registration desk. After registration, the Auction Committee reserves the right to re-bag any item as is necessary.

5. Registration is limited to fifteen (15) items per person.

6. A limit of five (5) items registered per species or color form/variety is allowed, unless prior approval is obtained from the Auction Chairman.

7. For every five (5) items registered in the auction, one (1) colored sticker will be given to the seller to attach to the item of his choice. These items will be auctioned first.

8. Bags will be offered 'as is' and will be sold as one item. Once registered, the contents of a bag may not be split.

9. Each item carries a \$1.00 minimum, unless the seller assigns a higher minimum. The seller may lower the minimum on an item that does not sell during the auction.

COMPUSERVE ATF DOWNLOAD

[Editor's Note] You may have noticed that I've been including articles downloaded from CompuServe in the last few issues. I'm doing this because I think the quality of the articles is quite good and I'm trying to encourage those of you with computers and modems to join the Forum. The rest of you should buy the equipment and join the Forum. This month's article is not an article but a captured and edited version of a live conference. These happen all the time in the Forum. There is generally a 15 - 20 minute presentation followed by questions from members. This lecture was given by Dr. Loiselle. I'm giving it to you exactly as it is stored in the Forum's Archives. That's another reason I've been reprinting them here . . . no typing.

(Moderator) =====Lecture Commencing=====

The ATF FORUM together with the American Cichlid...
Association is very honored to have Dr. Paul Loiselle...
as a guest speaker today. To introduce Paul, I would...
like to ask Steve Szabo the ATF FORUM Conference...
Coordinator to share a few brief words of introduction...
for today's event. Steve, proceed. JB

(Steve Szabo) Good Afternoon all...

I see from the roster that few of you ...
really need an introduction for Paul ...
so I will dispense with the list of publications ...
and works that he has done lately. ...
Paul is currently involved with a project ...
to save the native species of Lake Victoria ...
from predation of the introduced species of Nile
Perch. ...
Today he will be giving us tips on how to maintain ...
these Lake Victoria species so that they will ...
not disappear from the face of the earth. ...
Paul, will you now begin? scs

(Paul V. Loiselle) REFLECTIONS ON THE HUSBANDRY
OF THE HAPLOCHROMINE CICHLIDS
OF LAKE VICTORIA

Dr. Paul V. Loiselle

130 Suburbia Terrace
Jersey City, NJ 07305

I will begin this essay with a brief description of
Lake Victoria and its cichlid fauna, progress to a
discussion of the approaches to the maintenance and
breeding of the haplochromine cichlids of Lake
Victoria I have found useful, and conclude with a
few remarks on the availability of these cichlids
in North America and the role that aquarists can
play in implementing captive breeding programs
aimed at preserving as many representatives of the

10. No payment will be made to the seller on the day of the auction. Payment will be forwarded by mail within ten days after the auction date. It is the seller's responsibility to give PVAS a proper name and address to receive payment. Envelopes for this purpose will be filled out during registration.

11. The seller receives two-thirds of the selling price. PVAS retains one-third.

12. All items not sold must be claimed at the close of the auction, or they will be disposed of at the discretion of the Auction Chairman.

13. The auctioneer retains the right to set aside any improperly bagged or marked item, or any sick or otherwise unsalable item.

14. Fish species that are restricted by either federal or state statutes will not be accepted. These include, but are not limited to: Piranhas, Texas Cichlids, and Walking Catfish.

RULES FOR THE BIDDER

1. All persons wishing to participate in bidding are required to register with their full name and address. Bidding numbers will be assigned to all buyers.

2. Items may be inspected only before the auction and during the intermissions.

3. All bidding raises will be in one dollar (\$1.00) increments. The auctioneer has the right to alter this procedure at his discretion.

4. Successful bidders will have their items brought to them, at which time payment is expected. An authorized bidder may run a tab, or pay by check. Please see the Treasurer before the auction. Proper identification will be required in these instances.

5. In all cases, the decision of the auctioneer is final.

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few remarks on the availability of these cichlids
in North America and the role that aquarists can
play in implementing captive breeding programs
aimed at preserving as many representatives of the

lake's amazing assemblage of cichlids as possible.

Lake Victoria, with a surface area of 26,000 sq. mi. (68,800 sq. km.) and a shoreline 2,150 mi (3,440 km) long, is the third largest body of fresh water in the world, exceeded in size only by Lake Superior and the Caspian Sea. Aquarists tend to think of it as one of the Rift Lakes of East Africa. This is something of a misnomer. Unlike the basins of Lakes Tanganyika and Malawi, which are two vast cracks in the surface of the earth formed by the movement of two tectonic plates away from one another, that of Lake Victoria arose when an episode of mountain-building associated with the opening of the African Rift system blocked the flow of a series of westward-draining streams in what is now northwestern Uganda. This caused them to flow backwards and over time fill a vast, shallow, more or less saucer-shaped basin.

Lake Victoria's mode of origin explains why it differs in so many respects from the two southern Great Lakes. Whereas Lakes Tanganyika and Malawi are very deep - 4,700 ft (1,435 m) and 2,470 ft (758 m) respectively, Lake Victoria is quite shallow, with a maximum recorded depth of 279 ft (84 m) and an average depth of 132 ft (40 m). It is thus the only lake of the three whose life-supporting zone extends all the way to its bottom. The waters of Lakes Tanganyika and Malawi are devoid of oxygen at depths in excess of 300 ft (c. 100m) and thus cannot support aerobic organisms such as fishes.

Lake Victoria also differs from Lakes Tanganyika and Malawi in that it has always enjoyed an outlet to the sea. Its water chemistry is thus quite different from that of the two more southerly lakes, whose basins have been closed over most of their geological history. This state of affairs permitted the concentration of dissolved minerals within their basins over time and resulted in hard, alkaline water conditions aquarists must duplicate in order to successfully maintain their endemic fishes in captivity. The waters of Lake Victoria are fairly soft, with a conductivity of 91 - 98 micro mhos at 20' C. and a hardness of 97.0 ppm total dissolved solids (c. 5.0 DH). Carbonate hardness values are particularly low, falling consistently below 1.0 DH. Measured pH values range from 7.0 - 8.0, depending upon whether samples are taken within an enclosed bay or in the

open lake, as well as upon the time of day. Surface temperatures can range from 74' F. (23' C.) to 85' F. (29' C.), but at depths in excess of 1 ft (30 cm), the temperature is a constant 76' F. (24' C.) year round.

As might be suspected given its different mode of origin, the distribution of shoreline habitats is quite different in Lake Victoria from that seen in either Lake Tanganyika or Lake Malawi. Rocky habitats are relatively uncommon in Lake Victoria, and are more likely to be found on offshore islands than along the shoreline of the lake proper. While extensive sandy beaches are not uncommon, the preponderant inshore substrata in Lake Victoria are clay or clay overlain to a greater or lesser extent with flocculent organic detritus. In sharp contrast to the situation in the two more southerly lakes, inshore habitats in Lake Victoria tend to be heavily vegetated. Papyrus and sedges predominate along the lake margin, while progressively deeper waters are dominated by Trappa - a relative of the water chestnut - and two species of water lilies. Each of these vegetational zones has a distinctive assemblage of cichlids, comparable to the distinctive communities found in association with sandy and rocky bottoms inshore. Because its deep waters are fully oxygenated, Lake Victoria also (hopefully still) supports a distinctive complex of benthic cichlids as well.

The fish fauna of Lake Victoria, like that of Lakes Tanganyika and Malawi, is dominated by cichlids. Of the 200 described fish species recorded from Lake Victoria, only 50 are representatives of other families. Our knowledge of the Victorian cichlids is derived chiefly from the work of Dr. P. H. Greenwood, based in turn upon extensive collections made along the Ugandan and Tanzanian shores of the lake. While the northern half of the lake has been fairly thoroughly surveyed, the same cannot be said for its southern region. Hence it is not too surprising that the Haplochromis Ecology Study Team (HEST), a Dutch group from the University of Leiden based at Mwanza, Tanzania, has significantly added to the roster of endemic haplochromines. Most of their discoveries remain undescribed, but when their work is completed, it seems safe to predict that the percentage of cichlids in the Victorian ichthyofauna will increase from its present 75% to around 90%!

With the exception of two endemic tilapias, *Oreochromis esculentus* and *O. variabilis*, all the cichlids found in the Lake Victoria basin are HAPLOCHROMINES, that is to say, all representatives of the genus *Haplochromis* or of closely related genera. Three of these haplochromines occur widely outside of the Lake Victoria basin in its broadest sense, which includes Lake Kioga and the Victoria Nile, that stretch of the river above the Murchison Falls: *Haplochromis nubilus*, *Astatoreochromis allaudi* and *Pseudocrenilabrus* sp., an undescribed congnate of the Egyptian Mouthbrooder, *Ps. multicolor*. The remainder are endemic to the Victoria-Kioga system, and of these, the great majority are found only within Lake Victoria proper.

In comparison with the endemic cichlids of Lakes Tanganyika and Malawi, the haplochromines of Lake Victoria are on the small side. A few relatively robust predators measure 10" (20.0 cm) SL, but the modal size value falls between 3" (7.5 cm) and 4" (10.0 cm) SL. This fact notwithstanding, the morphological diversity encompassed within this assemblage of cichlids is fully comparable to that seen within the haplochromines of Lake Malawi and compares favorably with the cichlid fauna of Lake Tanganyika, which is drawn from at least five distinct evolutionary lineages.

This diversity reflects the fact that the haplochromines of Lake Victoria have exploited just about every means of making a living open to a freshwater fish. Among these cichlids can be found generalized invertebrate feeders, detritus feeders, zooplankton specialists, species that exploit the diatoms that grow on sandy bottoms and coat the stems of aquatic plants, the leaves of the plants themselves, and the filamentous algae found growing on rocky substrata. Three different modes of feeding on snails have been documented among Victorian haplochromines, each represented by a significant number of species. Piscivores are remarkably abundant. At least one species of Victorian haplochromine feeds upon the scales of other fishes, while two make their living at least in part as "cleaner fishes".

However, without a doubt the most bizarre trophic specialization practiced by these cichlids is PAEDOPHAGY, or feeding upon the developing embryos of other haplochromine cichlids. In its simplest

form, paedophagy entails interrupting the spawning sequence to snatch up newly-laid eggs before the female of a consorting pair can remove them to the safety of her buccal cavity. Haplochromis barbarae, a small, colorful, morphologically generalized species, is a primitive paedophage that derives much of its food in this manner. However, the majority of paedophagous species somehow manage to force parental females to jettison their mouthful of developing zygotes. There is some dispute over the mechanism paedophagous species employ to secure their food. Efforts to elucidate the normal feeding mechanism of paedophagous haplochromines by observation of captive animals are complicated by the reluctance of these cichlids to feed "normally" after discovering the delights of flake and fresh frozen foods! However, the available evidence suggests that a combination of ramming the cheeks and throat of a laden female and interfering with normal respiration by seizing her snout will eventually produce the desired result.

As the forgoing observation suggests, these cichlids are easily maintained under aquarium conditions. They prosper in neutral to moderately alkaline water, over a hardness range of 1.0 - 10.0 DH. Their preferred temperature range is 76' - 82' F. (24' - 28' C.), but they can survive brief exposure to temperatures as low as 50' F. (10' C.) and as high as 95' F. (35' C.). Their tolerance of dissolved metabolites falls somewhere between the extreme sensitivity of Malawian haplochromines and the hardiness of riverine and peripheral lacustrine species such as H. callipterus and H. burtoni. Regular changes of 30% - 50% of their tank water every 7 - 10 days in conjunction with efficient biological filtration will assure their ongoing good health and be rewarded by frequent successful spawnings.

Lake Victoria haplochromines are not picky eaters. Even trophic specialists such as snail eaters and piscivores find flakes and pelletized foods quite to their liking in captivity. Any of the usually available fresh frozen foods are also relished by these cichlids. Frozen bloodworms and glassworms are particularly appreciated by the smaller species, while the more robust predators are partial to frozen Mysis or Euphësia pacifica. Occasional feedings of live food seem to have a positive effect upon both spawning frequency and brood size. The smaller species are partial to

Daphnia and brine shrimp, the larger to guppies or like-sized feeder fishes. Interestingly, snail-eating species will not usually tackle their normal prey in captivity unless kept hungry by accident or design. The brilliant red, orange and yellow coloration of many Lake Victoria cichlids will fade in captivity unless the fish are offered the appropriate pigment precursor substances in their diet. The easiest way to satisfy this dietary requirement is to offer these fish commercial color-enhancing foods such as Tetra Ruby or Tetra's new Discus Food, which contain the necessary beta-carotene and canthaxanthin in a highly palatable form. LAKE VICTORIA CICHLIDS ARE VORACIOUS EATERS. SAVE IN THE CASE OF PARENTAL FE MALES, REFUSAL TO FEED IS ALWAYS A SIGN OF SERIOUS STRESS OR ILLNESS!

Like the generality of cichlids, most Victorian haplochromines are opportunistic piscivores, whose predatory activities pose minimal risk to tankmates larger than a male guppy. Specialized piscivores are quite another story. The only constraint on the size of their prey is the capacity of their mouths. The prudent aquarist will therefore select THEIR tankmates accordingly! As a rule, these cichlids will ignore fast-moving, schooling fish too large to pose a serious gustatory temptation. I have found the larger alestid species such as the Congo and African longfin tetra, Danio and mid-sized Barbus species and the several Australasian rainbowfishes make good companions for small to mid-sized Lake Victoria haplochromines.

As is the case in other polygamous, maternal mouth-brooding cichlids, only male Victorian haplochromines are territorial. In nature, such behavior is episodic, largely because territorial defense is energetically costly and interferes with normal foraging activity. A male must thus accumulate the necessary metabolic reserves to sustain him for a protracted period before he can undertake the occupation and defense of a breeding territory. In captivity, regular feedings eliminate this energetic constraint. The result is a state of more or less continual sexual activity and concomitant territoriality.

The most intense manifestations of territorial intolerance are always directed against other males of the same species. This is quite understandable, as they represent a given male's rivals for the

attention of ripe females. However, territorial males will attack heterospecific males with a similar color scheme almost as ferociously as they will conspecific rivals. Differently colored males apparently do not act as such potent releasers of aggression. Disputes between them may arise, but seldom lead to really damaging conflict. Hence it is not advisable to try keeping species with similar male breeding dress, such as H. nubilus and H. nigricans (black body, red tail and anal fin) or H. brownae and H. ishmaeli (metallic orange-yellow body, red-streaked soft dorsal and caudal, reddish grey anal fin) in the same aquarium.

Under aquarium conditions, sexually active males defend territories from 8" (c. 20.0 cm) to 2' (c. 60.0 cm) square. The actual area defended depends upon the species in question and the size of the individual male. The number of adult males that can be safely housed in a tank is thus directly proportional to its bottom area. The management of territoriality is considerably simpler in a multi-species community, where the different males typically arrange themselves in a dominance hierarchy and hold territories sequentially. As territorial defense is basically a function of reproductive activity, such behavior tapers off dramatically once a given male has bred with all the available ripe females. Typically, the male of the most aggressive species sets up a territory and breeds first, followed by that of the next most aggressive, and so on down the line. By the time every male has bred, one or more females of the community's most aggressive resident will have ripened another batch of eggs, which triggers the cycle anew.

As a rule, a territorial male will excavate a pit prior to spawning. Its maximum width is approximately twice the male's standard length, while its depth is a function of both the texture of the tank's substratum and the behavioral idiosyncracies of the species in question. Either very fine sand or very coarse gravel tends to dampen the enthusiasm of even the most ardent male haplochromine for excavation. There is always a small risk that such activity will dislodge a few plants. However, apart from this, Lake Victoria haplochromines pose no threat to rooted plants. Indeed, they seem most comfortable and look their best in well-planted aquaria.

These cichlids are easily bred. Indeed, short of physically separating the sexes, I know of no way to prevent them from breeding. FAILURES ALMOST ALWAYS ARISE FROM EFFORTS TO SPAWN SINGLE PAIRS OF THESE CICHLIDS IN ISOLATION. Like other openly polygamous cichlids, association between male and female Lake Victoria haplochromines is restricted to the spawning act itself. These fish lack the sort of behavioral mechanisms that allow both partners of a monogamous pair of cichlids to share the same territory on a long-term basis. The only conspecifics a male haplochromine tolerates within his breeding territory is a sexually receptive female. A female that fails to respond appropriately to a male's courtship is attacked. If she cannot flee beyond the limits of the males territory, her death is inevitable.

There are two basic approaches to spawning openly polygamous cichlids in captivity. Both assume a tank large enough to allow its other inhabitants to move beyond the limits of a male's territory and rely upon the presence of other fishes to distract him from the single-minded harassment of his potential consort. Each accomplishes these objectives in a different manner, however.

The so-called HAREM APPROACH is the simplest to arrange. It entails nothing more than housing a single male with three or more females - the more the merrier - up to the carrying capacity of the tank. Under these circumstances, no one female is likely to remain the object of the male's attentions long enough to run the risk of serious injury. There appears to be no practical upper limit to the number of females a single male can service. However, it is desirable to rotate the male in a harem set-up in order to maximize genetic diversity among the resulting fry. The harem approach is obviously the method of choice for commercial or semi-commercial breeders interested in producing the largest the number of fry in the least possible space.

Most aquarists prefer the MIXED SPECIES COMMUNITY APPROACH, as it maximizes the number of species that can be bred in a given space. Under this arrangement, pairs or trios of several different species are housed together. As noted above, males tend to hold territories on a revolving basis in such a set-up. A proprietor's need to defend his

territory from usurpation by heterospecific males engages sufficient of his energies to preclude the likelihood that he will damage his eventual consort. The reluctance of Victorian haplochromines to emulate the proclivity of their distant Malawian cousins for promiscuous hybridization in captivity is yet another argument in favor of this approach.

Courtship centers on the male's efforts to lead or lure a ripe female into the spawning pit. Females initially ignore such solicitation, but as their eggs ripen, their readiness to follow where the male beckons increases. Once the two fish settle down to reciprocal circling and vent nudging, spawning is imminent. The female expels one or more eggs, which she immediately picks up in her mouth. She then nips at the conspicuously displayed pseudo-ocelli on male's anal fin. This triggers ejaculation. During the course of her persistent efforts to pick up these "egg-dummies" the female winds up with a mouthful of sperm, thus assuring the intrabuccal fertilization of her eggs.

This behavior is repeated until the female is spent. In nature, the male may be obliged to interrupt the spawning sequence several times to chase away rival males. It is also likely that a female will visit several males during the course of a single reproductive episode. In captivity, an undisturbed couple rarely requires more than half an hour to conjugate the amatory verbs. Once spent, the female either leaves the male's territory of her own volition or else is chased from it by her erstwhile consort.

In nature, ovigerous females seek out sheltered "nursery grounds" to complete the incubation sequence. In captivity, they must have access to shelter of some sort. Males will often harass laden females, who may also come in for unwelcome attention from others of their own sex. In a well-planted tank, the question of shelter is largely academic. Unplanted tanks should be liberally furnished with clay flowerpots, sections of CPVC pipe or rockwork where a female can shelter.

Inexperienced females often abort their first few incubation sequences. Unless exposed to severe temperature stress or environmental pollution, older individuals never do so. Females rarely encounter any difficulty in carrying broods to term in a community aquarium. However, postrelease

survival of their progeny under such conditions is improbable. Hence the necessity of eventually isolating ovigerous females if one wishes to save their fry. A 5 gallon (20.0 l) aquarium filled with water from the breeding tank constitutes a suitable nursery for most species of Victorian haplochromines. A thermostatic heater, a sponge filter, a thin layer of gravel and a few clay flower pots are essential furnishings. A layer of floating plants, while not essential is appreciated. Females are generally indifferent to food during the incubation period, which lasts from 10 - 14 days, depending upon water temperature.

Postrelease care of the mobile fry, culminating in the fry's return to their mother's buccal cavity in the face of danger characterizes all the species bred to date in captivity. Such maternal solicitude doubtless contributes significantly to fry survival in nature. In captivity, however, it is an absolute nuisance. Females are usually so easily provoked into sounding the recall signal that their protectiveness actually interferes with the normal foraging behavior of their fry. Thus there is little point in prolonging the association of mother and young past the point of initial release.

Some breeders advocate a period of reconditioning before reintroducing the female to her former surroundings. While this certainly can do no harm, it is not, in my experience, absolutely necessary.

A major water change, accompanied by a modest rearrangement of the breeding tank's furnishings, usually shakes up the existing social hierarchy sufficiently to allow a formerly parental female to slip smoothly back into the company of her erstwhile tankmates. If alternative males are available, replacement of the resident territorial proprietor with a new stud concurrently with the reintroduction of an exiled female is a further guarantee of her smooth reintegration into the social order.

The fry of these cichlids measure from 9.0 mm - 13.0 mm TL at release. They are robust miniatures of their mother quite capable of taking newly hatched brine shrimp and powdered prepared foods for their initial meal. With frequent feedings and regular partial water changes, they can be expected

to grow rapidly. A week postrelease, fry of most species can take sifted Daphnia, a month post-release, chopped frozen bloodworms. If care is taken not to foul their environment, Victorian haplochromine fry are gratifyingly hardy. They also appear less given to sibling cannibalism than the young of many other cichlids. Fortunately, brood sizes seldom exceed 100, so rearing an entire spawn to sexual maturity does not require a great deal of tank space.

Like all haplochromines, those endemic to Lake Victoria are characterized by precocious male growth superiority. At any given age, males are larger than their female sibs. This should always be taken into account before deciding to cull slow-growing individuals. As a rule, the first traces of anal fin pseudo-ocelli are evident in males between four and six weeks postrelease. The onset of sexual maturity comes between the fourth and sixth month postrelease in the species bred to date. It would not come as a tremendous surprise to learn that the larger predatory species mature somewhat more slowly.

I point out in closing that there is no reason not to exploit the reproductive precocity of these cichlids to the full. Most of these haplochromines tend to grow substantially larger in captivity than they would in nature. Inexperienced cichlid keepers are inclined to regard these "lunkers" as superior breeding stock. Regrettably, both the area defended by such oversized males and their overall level of aggressiveness seem to increase in an exponential rather than a linear fashion. This extreme aggressiveness bodes ill indeed for females and makes such "lunkers" useless as breeders. Hence it is always preferable to work with young adults whenever they are available.

I have frequently referred to the haplochromines of Lake Victoria and their riverine cousins as the best kept secret in the cichlid hobby. These cichlids are hardy, tolerate live plants and can be successfully kept and bred in tanks of modest dimensions. The color patterns of sexually active males span the entire spectrum of possible color combinations, in contrast to the preponderance of metallic blue and yellow characteristic of their more popular Malawian cousins. If this were not enough to engage the interest of the serious cichlid fancier, the threat to the survival of

these cichlids posed by the introduction of the Nile perch into Lake Victoria should provide a further incentive for them to involve themselves in their captive breeding.

Regrettably, historical circumstances have seriously limited efforts to make these fishes available to aquarists in Europe and North America. For logistic reasons, the Ugandan coast represents the ideal location for an ornamental fish export business. Initial efforts by Bob Heath, a pilot for British Airways, to develop such a business during the 1970's were foiled by the uncertain political climate of the Amin dictatorship. Some fish were exported, but incompetent handling and the problem of securing individuals of both sexes severely limited breeding success. In any event, the steadily increasing number of spectacularly colored Malawian haplochromines effectively overshadowed the few Victorian species that were successfully bred in captivity.

Thanks to the efforts of enterprising aquarists like Steve Somermeyer, Charley Grimes and Myrneath Anderson, a few species from the southern portion of the lake were made available to aquarists during the late 1970's. However, the most successful effort to introduce Victorian haplochromines to the hobby carried out to date is that of Bo Selbrick, a Swedish aquarist who is presently the editor of the aquarium magazine AKVARIET. Bo and his companions brought back and successfully bred 23 haplochromine species from the Mwanza Gulf in Tanzania. I was recently involved in a partially successful effort to import tank-reared progeny of these fish into North America. Regrettably, fry of only a third of the species listed proved to be available this time around. I intend to organize another shipment next spring and would be interested in hearing from anyone who might wish to participate. You can either leave a message for me in the appropriate place in the system or else drop me a line my address.

Stocks of a number of Victorian species are also being maintained under laboratory conditions in Europe. I am presently working with Dr. Gordon Reid of the Fish Rescue and Breeding Centre of the Horniman Museum to arrange for the distribution of fry of these species to A.C.A. members wishing to participate in a captive breeding program. The need to organize a system of distribution that will

satisfy the conditions of the permit under which the fish were collected poses something of an obstacle to such a scheme, but if things go well, fry of a further dozen species could be available on this side of the Atlantic by next spring.

Finally, several A.C.A. members have suggested the possibility of mounting a collecting trip to Lake Victoria in order to bring back as many endemic cichlids as possible to provide the nucleus for an intensive captive breeding program. The interest expressed by the New England and New York Aquariums, the Indianapolis Zoo and the National Aquarium in Baltimore in establishing a captive maintenance program for Victorian haplochromines suggests the possibility of administrative support for such an effort. Such an effort would be neither easily arranged or inexpensive to carry out, but is at least worth discussing further. Anyone interested in this idea can either leave a message for me in the system or drop me a line. I hope the forgoing has piqued your interest in the haplochromines of Lake Victoria. I'll be glad to entertain any questions you might have about these fish or about any other aspect of cichlid keeping you might be interested in.

(Moderator) Thanks Paul. Before we begin the question and answer session, let's all limber up those typing... fingers by entering your city and state for the record... Please enter now. JB

(Steve Szabo (CO-co)) Southbridge, MA
(B.Rogers(ACA+OCA)) Canton, Ohio BR
(Moderator) Muscle Shoals, Alabama
(Pam Chin (ACA)) Sacramento, CA
(Andy Nikolajski/ACA) Columbus, Ohio
(Jim Webb (ACA&TCA)) Dallas, Texas JW
(Stuart Covill (ACA)) San Diego, CA
(Glenn Eaves (ACA)) Raleigh, NC
(Paulo A. Buckup) Ann Arbor. MI

(Moderator) Paulo, as an interested ichthyologist I'm sure.. this was especially interesting to you also. Okay.. let's get to the part some of you have been waiting.. for. If you want to ask Dr. Loiselle a question please.. enter a "?" now. JB

(Steve Szabo (CO-co)) ?
(Pam Chin (ACA)) no pam
(Jim Webb (ACA&TCA)) ? jw

(Moderator) Steve your question for Dr. Loiselle. JB

(Steve Szabo (CO-co)) Paul, ...
I would be interested to know ...
what the least number of females ...
recommended for polygamous breeding. scs

(Paul V. Loiselle) Two or three, depending ...
on the species in question ...
and the size of the breeding tank.pvl

(Moderator) Pam Chin, your question. JB

(Pam Chin (ACA)) ok
I am very interested...
in knowing more about the captive breeding program...
gary and I are very interested in helping out tell
us more pam

(Stuart Covill (ACA)) ?
(Andy Nikolajski/ACA) ?

(Paul V. Loiselle) The program is still in the organizing stage...
The essential element in such a program...
is a system for keeping track of breeding...
stock and fish pedigrees. I am presently...
talking to people at the NAIB who are developing...
software that carries out these functions...
I am also beating the drum to stir up...
institutional support for such a program...
We need to have a long-term...
commitment from public aquaria to keep...
case of trouble...
populations of these species going...
in order to make such a program work...
If you wish, I'll be glad to add your name...
and Andy's to the mailing list and...
keep you posted on future developments.pvl

(Pam Chin (ACA)) ?

(Moderator) Before I take Jim Bob's question, I would like..
to ask a general type question. I've been in touch..
with Dr. William Cooper, Mich. St. Univ. who is planning..
on doing some deepwater study in Malawi and related..
areas during Jan. My question is this - #1) Do you (or..
Paulo) know if this includes anything with Lake Victoria...
and 2) if restricted to Malawi, what are the expectations..
as far as new species? JB

(Paul V. Loiselle) The work you describe has nothing...
to do with L. Victoria to the best of...

my knowledge. If you want the latest on...
Malawi developments, try to get either...
Dr. Ken McKaye or Dr. Jay Stauffer on line...
Based on the results of previous trawl surveys...
in L. Malawi, I would predict the likelihood...
of discovering undescribed species is high.pvl

(Moderator) Thanks. Jim Bob your question. JB

(Paulo A. Buckup) ?

(Jim Webb (ACA&TCA)) ok
Do Victorian cichlids have as much trouble with
bloat? jw

(Paul V. Loiselle) Not if they are properly maintained...
But then again, Malawi cichlids don't...
suffer that much from systemic bacterial...
infections if they are properly taken care of.pvl

(Moderator) Andy, your question. (Paulo you'll be next). JB

(Andy Nikolajski/ACA) Okay...
what plants are indigenous to Victorian biotope? AN

(Paulo A. Buckup) What does "NAIB stand for? PAB

(Paul V. Loiselle) You really want to talk to a botanist...
for a detailed answer to this...
I saw papyrus, several different kinds of sedges...
-Trappa- a kind of water chestnut, two different...
kinds of water lily, one with white, the...
other with blue flowers, bladderwort, water...
lettuce and some sort of -ceratophyllum-...
I'm sure there are more species present than that.pvl

(Steve Szabo (CO-co) ? scs

(Moderator) Paul, can you handle Paulo's question next? JB

(Paul V. Loiselle) I can try.pvl
NAIB stands for National Aquarium in Baltimore.pvl

(Paulo A. Buckup) You mentioned "NAIB"...

(Paulo A. Buckup) What does it stand for? PAB

(Paul V. Loiselle) National Aquarium in Baltimore.pvl

(Moderator) Steve Szabo, you are up. JB

(Stuart Covill (ACA)) ? SC

(Steve Szabo (CO-co)) The software ...
you mentioned NAIB was developing
would it be a stand alone program ...
or one to be used in conjunction with ...
say, dBASE? Also ..
I would presume ...
perhaps falseiy, that it would run on PC's. scs

(Paul V. Loisel) Steve, I am waiting for a reply to a letter...
I mailed last week. I assume it is a modified...
relational data base intended for use on PC's...
I'll let you know when I find out.pvl

(Steve Szabo (CO-co)) !

(Moderator) Steve your follow up. JB

(Steve Szabo (CO-co)) Could you find out ...
if it is possible to have it uploaded here? scs

(Paul V. Loisel) I'll ask.pvl

(Moderator) Stuart your turn. JB

(Stuart Covill (ACA)) I have a comment..
A new store that opened up in Orange county...
is co-owned by a Swedish gentleman...
They are supposed to be getting in ...
16 different species of L. Victoria...
cichlids...
Actually, they are supposed to be in, and...
I am planning on checking it out...
I will try to get him on fishnet too. SC

(B.Rogers(ACA+UCA)) ?

(Moderator) Paul, comment? JB

(Paul V. Loisel) The gentleman in question is Hans Jacobsson...
He organized the shipment to which...
I alluded in my presentation. I am not ...
certain exactly how many species came in...
with his portion of the shipment...
We were shorted three of the 12 we ordered...
I certainly recommend you check out...
what he has in stock.pvl

(Jim Webb (ACA&TCA)) ?jw

(Moderator) Paul, let's take a typical tank. Assume a 100 gallon....
tank set up (display). What Victorian species would you..
recommend for populating tank? How many? How much would...

they cost? Lastly, where would I find them? JB

(Steve Szabo (CO-co)) ? scs

(Paul V. Loiselle) You could house 5 or 6 breeding groups of 1 male and 4-5 females in such a tank comfortably...
The only rule to follow in selecting species...
is not to try keeping males with similar breeding...
dress together. As for availability, keep an...
eye out on the ACA Trading Post. Alternatively,...
I can send anyone interested a list of who...
presently is maintaining these fish.pvl

(Moderator) Bill, your question. JB

(B.Rogers(ACA+OCA)) Do you have a list of "currently" available Victorian...
species? BR

(Paul V. Loiselle) I can generate a list of the species that we brought in...
I am also trying to determine if any of the fish...
that Steve Somermeyer sold to Florida breeders...
are in commercial production. Would either set of data..
be of use to you?pvl

(B.Rogers(ACA+OCA)) !

(Moderator) Go ahead Bill. JB

(B.Rogers(ACA+OCA)) As you know the problem is the scare associated....
with the possibility of purchasing "hybrids"...
How can one guard against this possibility? BR

(Paul V. Loiselle) Unlike Malawian haps, these fish do not...
hybridize promiscuously in a community setting...
Indeed, it is not easy to produce hybrids...
in a "no choice" situation in many cases...
I think that there is a greater risk...
of riverine species such as -H. callipterus-...
or -H. darlingi- being marketed as Victorian...
cichlids. I have seen instances of this in...
the Northeast recently.pvl

(Moderator) Jim Bob, a question from Texas. (Not too big) <grin> JB

(Jim Webb (ACA&TCA)) ok

Paul, would you mind if a local cichlid club...
reprinted your lecture today on Victorian cichlids...
in their publication, as long as you and Fishnet...
were given credit? Jim Bob

(Paul V. Loiselle) Anything that spreads the word on these...
fish is fine with me. However, you should...

know that I covered a lot of this material...
in a 2-part article published in BB a couple of...
years ago. It isn't exactly what you would call...
a scoop!pvl

(Moderator) That hand in the front row, Steve Szabo I believe. JB

(Jim Webb (ACA&TCA)) !

(Steve Szabo (CO-co)) OK ...

Paul, is there a good reference or three ...
that one could use to identify these species ...
I notice that you mentioned some riverine ...
species were being passed off as Victorian. scs

(Paul V. Loiselle) The most comprehensive coverage of riverine haps I...
am familiar with is a well-illustrated piece I did for...
FAMA some years back. There are references for...
the L. Victoria haps. They leave quite a bit...
to be desired, because often life colors were...
not known when the fish were described...
and for whatever reason, Humphrey Greenwood...
did not see fit to try and generate...
keys to the fish he was working on...
What will ultimately emerge from the...
labors of the Dutch HEST group...
remains to be seen. They at least...
have plenty of hands-on experience...
with the living fish!pvl

(Moderator) Jim Bob, you had a follow up on your last question. JB
Jim Bob, you there? JB

(Jim Webb (ACA&TCA)) Just to thank Paul, I am more interested in spreading...
the word on these fish, than a scoop. JW

(Moderator) Anyone else have a question for Dr. Loiselle? JB
Closing remarks Steve Szabo? JB

(Steve Szabo (CO-co)) I would like ...
to thank Paul for taking the time ...
to be with us here on this fine sunny day. ...
I think that he has done a wonderful job ...
presenting us with information on the Lake Victorian ...
haps. I hope he will consider gracing us with
his presence at ...
a future date. ...
Thank you Paul ...
and all those who attended. scs

(Moderator) Paul, I also wish to thank you for taking the time...
to present such a timely lecture. Paul, do you have...
time to stick around and have some general chit chat..

with anyone wishing to stay? JB

(Glenn Eaves (ACA)) Thanks, Paul. Very interesting. GE

(Paul V. Loiselle) I'll be glad to chat for another half hour or so.pvl

(Andy Nikolajski/ACA) Thank you very much, Paul. AN

(Moderator) With that I'll formally draw this lecture..
to a close. Anyone wishing to stick around can...
use this area for any open discussion. JB

(Pam Chin (ACA)) clap clap! Bravo Standing Ovation here in California...
Thanks Paul, Pam

!!!! PVAS MEMBER ARTICLE !!!!

THE NAME GAME

By Chris Brewer

"I'll take the pretty red one." That's how I bought my first tropical fish fifteen years ago. The pet store was a dingy corner of the local garden supply dealer.

I've visited hundreds of fish stores since that time. I check the local dealers in every town I travel to. I've gotten some beautiful specimens, wonderful bargains, and a lot of great advice. But, I've also started a new hobby.

Somewhere along the way, in addition to fish, I also collect the names of Pet Stores. My collection comes from the Yellow Pages, stores I visit, and hobby magazines. Some are totally without imagination. Some give no hint that fish are sold there. But many are funny and great attention getter. The following are my favorites and I hope you enjoy them.

The list is in common names for the benefit of the novice aquarist. The Latin terms will be included in a later, more advanced column.

Tanks-A-Lot	Ocean Condor
Fishey Business	Planet of the Fish
Animal Pleasure	The Spawn Shop
Aqua Marine	Animal House
Age of Aquarium	Exotic Aquatics
Animal Kingdom	The Finny Farm
Fanta-Sea Reefs	Sea Serpents
Wet Pets	Scarlet Angler
Tropical Illusion	Fish Freaks
Claws Paws & Jaws	Some Things Fishy
Tropi - Quarium	Tropical Lovers
Fin City	Gills & Gravel
Animal Tracks	The Ark
Aquatic Dreams	

If you think these were all the creative names, I've thought of several more.

This Is The Spot

- to honor the store that always has ich in its tanks.

"Mutated Genes" Fish Emporium

- the hole in the wall fish store that has the worst looking, most deformed supply of every type of fish.

Float and Bloat

- The cream of the crop store that always fetures dead fish in the tanks.

BOWL SHOW REPORT FOR

August
1988

CICHLIDS

DISCOUNT PET CENTER
New World Dwarf Apistogramma
1st R&B Farmer

NATIONAL PET & AQUARIUM
Rift Lake non Mbuna
No Entries

OAKTON PET SHOP
Open
No Entries

* Judge's Choice

PET MART TYSON
Totals through August 1988

Month Quarter Annual

K. Muller	1	1	1
R&B Farmer	8	24	25
G. White	10	33	33
R. Hammond	8	8	8
J. Hoffman	8	8	8

EGGLAYERS/LIVEBEARERS

PETS-N-THINGS
Killifish
1st J. Stieringer
2nd J. Stieringer - A. walkeri*
3rd T. Fitz - A. gabunense

YAY TROPICAL
Catfish - non-Cory
1st B. Pallansch - C. Geisemannii
2nd R&B Farmer - Ancistrus sp.
3rd R&B Farmer - Madtom

ANNAPOLIS PET SHOP
Open
1st Jason Hoffman - Albino Cory
2nd Jason Hoffman - Aurilinus Barb

AQUARIA INTERNATIONAL
1180 Peninsula Street
Alexandria, VA 22314
983-4811

Month Quarter Annual

T. Fitz	6	49	85
R. Hughes	8	24	9
K. Muller	8	33	5
R&B Farmer	8	32	45
T. Williams	-	-	1
J. Stieringer	13	29	34
T. Hetzel	6	6	11
J. Mangano	3	3	16
R. Hammond	-	-	2
B. Pallansch	6	17	17
J. Hoffman	10	23	23

September Classes: Egg/Live: Livebearers (non-guppy), Sharks & Loaches, Open
Cichlids: Angelfish and Discus, Non-Riftlake African, Open

October: Egg/Live: Goldfish & Koi, Characins, Open
Cichlid: New World Mouthbrooder, Pseudotropheus, Open

VIRGINIA

PETS-N-THINGS
Pan Am Center
3081 Nutley
Fairfax, VA 22031
(703) 573-4400

TYAU TROPI-CARE
6905 Duke Drive
Alexandria, VA 22307
765-6713

ANNANDALE PET SHOP
7406 Little River Turnpike
Annandale, VA 22003

AQUARIA INTERNATIONAL
1180 Pendleton Street
Alexandria, VA 22314
683-4811

BAILEYS PET CENTER
Leesburg Pike Plaza
3527 S. Jefferson Street
Baileys Crossroads
Falls Church, VA 22041
931-1400

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

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

NATIONAL PET & AQUARIUM
Willston Shopping Center
6168 Arlington Blvd.
Falls Church, VA 22046
533-7828

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

PET MART TYSONS
8417 Old Courthouse Road
Vienna, VA 22180
893-8181

WILSON'S PARROTS & MARINE LIFE
Shirley Edsall Ins Park
Build America 5
5605-G Gen Washington Drive
Alexandria, VA 22312
922-7358

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

PETS, ETC.

Herndon
Stuart Centre
462 Eiden St.
Herndon
VA 22171
437-0381

Sterling
Hechinger Jamesway Plaza
243C Harry F Byrd Hwy
Sterling
VA 22170
430-9667

Alexandria
Mt. Vernon Plaza
7688B Richmond Hwy
Alexandria
VA 22306
768-2200

MARYLAND

Animal Exchange
765-A Rockville Pike
Rockville, MD 20852
424-PETS

Aquarium Center
Randallstown Plaza Center
Liberty Rd. at Offutt Rd.
(301) 521-4529

Fish Factory Aquarium
582 N. Frederick Ave.
Gaithersburg, MD 20877
(301) 977-7500

Gaithersburg Pet Center
642 Quince Orchard Rd.
Gaithersburg, MD 20878
(301) 948-1133

Glenmont Tropicals
Glenmont Shopping Center
12345 Georgia Ave.
Wheaton, MD
949-0344

Pet And
White Flint Plaza
5268 Nicholson Lane
Kensington, MD 20895
(301) 231-5216

Rick's Fish & Pet Supply
36 South Market St.
Frederick, MD
(301) 694-9664 831-6868

Pet Mart Rockville
2230 Veira Mill Rd.
Rockville, MD 20851
762-3505

Showcase Aquarium
11248 11250 Triangle Lane
Wheaton, MD 20902
942-6464

Tropical Lagoon
9439 Georgia Ave.
Silver Spring, MD 20910
585-6562

Congressional Aquarium
Congressional Plaza
152 Congressional Lane
Rockville, MD 20852
881-6182

Montgomery Tropicals
7845-G Airpark Rd.
Gaithersburg, MD 20879
(301) 670-0886

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POTOMAC VALLEY AQUARIUM SOCIETY



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The Potomac Valley Aquarium Society will meet on the following dates in 1988:

11 Jan	11 Apr	11 Jul	17 Oct
8 Feb	9 May	8 Aug	14 Nov
14 Mar	13 Jun	12 Sep	12 Dec

Meetings are held at the John C. Wood Facility, Rt. 237 (Old Lee Highway), Fairfax City, VA. Doors open at 7:30, meetings start at 8:00.

Everyone is welcome!!!