July 2020
Volume 29 Issue 11

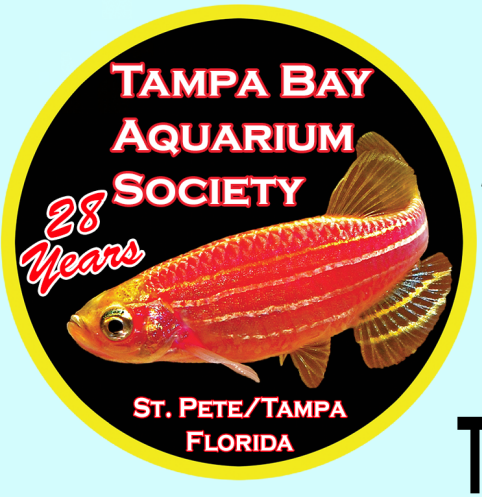
Tampa Bay Aquarium Society
28 Years
St. Pete/Tampa Florida

THE FILTER

Mdoka "White Lip"
Placidochromis phenochilus

Photo Mike Jacobs . . . 2020

TBAS . . . Since 1992



TAMPA BAY AQUARIUM SOCIETY

"THE FILTER"

Tampa/St. Pete, Florida

TBAS

TABLE of CONTENTS

TBAS

Click on Title to go Directly to Item

Well, folks . . . I'm not too sure if this COVID-19 thing is getting better or worse or people are now starting to be truthful with the info now or WHAT????

REMEMBER, however that our meeting place has been closed by the county until the end of July . . . so no meetings until at least August!!! I have missed seeing all of you guys and am looking forward to seeing and talking to you folks again!!!

Ok, we have 3 "things" in this bulletin:

1) A Joe Gargas Juvenile Discus article . . . very, very nifty!!!!
2) A "Patty Talks" monthly issue
3) A whole buch of photos from me for you guys to look at!!

Hope you enjoy this July issue . . . there is really some pretty good stuff going on in here!!!

As always . . . take care of yourself and your family and I will see you as absolutely soon as I can!!!

Mike

Mike Jacobs, Editor TBAS Filter

Symphysodon discus
Marboro Discus
Photo by Mike Jacobs 2001

To Table of Contents

JUVENILE DISCUS

www.aquaresearchcenter.com

by Joe Gargas

Behavior, Feeding, Diseases, Parasites, and the Effects of Hormones

Introduction

Good care of juveniles is essential if vigorous adult fish are to be produced that will turn out to be active breeders. Much is learned in the process of raising of juveniles that will be valuable later when the time comes to raise future spawns. Beyond this, if mistakes are going to be made in the learning process, then it is better to make them on the cheaper juvenile fish rather than the very expensive larger discus.

Behavior

As is the case with almost any animal, the juvenile stage of life is when activity is at its peak. Few people new to discus appreciate the fact that a healthy juvenile fish must be active or something is amiss. Discus exhibit very different types of behavior depending on whether they are feeling well, or whether they are sick, or whether they are being intimidated by more dominant fish. Dominance hierarchy formation does not really occur until the adolescent stage is reached and territorialism starts to set in as the breeding age approaches. A very experienced discus keeper can look at these fish and know immediately when things are all right and when they are not.

Normal Behavior

Juveniles are highly gregarious and territorialism only becomes apparent as the fish approach sexual maturity. Juveniles instinctively school together; once they achieve a size of 5cm, however, the schooling behavior begins to decrease somewhat. Juveniles raised in isolation will often hide in a corner of the tank and fail to come out regularly for food. Healthy juveniles will be extremely active, rushing to the surface at the front plate of the tank to await feeding if anyone approaches closely enough. When food is dropped into

To Table of Contents

the water they will literally tear it to pieces in a wild feeding frenzy.

Abnormal Behavior

If the fish suddenly begin to depart from this behavior pattern then there has probably been a drop in water quality, or an onset of bacterial disease or a parasitic infestation. Under these circumstances, the fish will go off the feed, they will turn dark, and they may even huddle in the corner or face the rear wall of the tank. If they hover below the surface with a head-up body attitude and gasp for air, there is a serious problem with the water or, much less likely, their gills are heavily infested with parasites. This situation is critical and an immediate water change must be made.

It is necessary to run the tests for pH, ammonia, and nitrite since, if the limits have been grossly exceeded, it may take a few days for the fish to completely recover. During this time many will probably die off. If the water parameter limits have only been moderately exceeded then the fish should return to normal within a few hours after changing the water.

If they do not show improvement within a few hours there could be a bacterial disease and the employment of antibiotics may be necessary. The parasites increase relatively slowly compared to the bacteria; it takes several days for a parasitic infestation to manifest itself in a change in fish behavior.

Growth Rate

It is important that a rapid growth rate be quickly achieved and that this rate be maintained if the fish are to develop into vigorous adults. Very often inexperienced culturists will fail to achieve and hold the minimum growth rate. There are a number of reasons for this which are listed below, yet few people realize the importance of monitoring growth rate as an indicator of fish health. When growth rates are lagging, the culturist should be attempting to find out what is wrong then parasites are suspect and correct it before too much time has elapsed. Properly fed and maintained juvenile discus will grow very rapidly and, as a general rule, a properly fed and maintained juvenile should have a fin span of 5cm by 10 weeks of age. Fish that are less than 4cm by this point in time are probably not going to develop as well as the larger ones.

Growth Retardation

Retardation in growth is most frequently caused by poor water quality, poor feeding, parasitic attack, and gill embolism from nitrogen supersatured water. Whatever the case may be, fish which are significantly retarded in growth have very little chance of turning out to be vigorous breeders. An estimation of the age of a juvenile is only possible for a very experienced breeder, but if one

sees 5cm fish in an aquarium shop, they should be examined closely to see if they have peaked mouths and relatively large eyes. If this is the case, then the fish are most probably four or five months old and will never grow into a vigorous spawner.

Divergent growth rates

Based on everything that I have seen, growth rates of juvenile fish always tend to diverge even when they are well fed and maintained, although the divergence is not as rapid under better rearing conditions. Growth rate divergence also occurs in game fish hatcheries. Some fish grow faster because they are more aggressive and they seize the food first, or because they are males and hormonal factors promote this. Even if juveniles are segregated by size, the fish within each size group will once again begin to diverge in their growth rates after being segregated.

Feeding

The more frequently juveniles are fed, the faster they will grow. Juveniles will eat constantly but they will never overeat. They should be allowed to eat until their bellies are visibly swollen. Ideally, juvenile discus should always be on the feed. If they go off the feed something is seriously wrong. Check pH, ammonia and nitrite and make a large water change. If feeding declines slowly and the water quality is good, then parasites are suspect.

The frequent feeding, and the resultant loading of the water with fine particulate food matter, plus the heavy loading with metabolic waste products from the fish, will necessitate frequent water changes if growth rates are not to suffer. Although beef heart can form the bulk of their diet, they should be fed other things such as: frozen aquatic insect larvae, frozen mussel larvae, and krill. Growth rates should not be allowed to decline, this means constant feeding and frequent water changes.

Live Food

During the warmer months I culture Daphnia outside in plastic garbage cans. These provide an excellent source of food, particularly for very small fish. Although most fish prefer live food, obtaining Daphnia from ponds containing fish runs the risk of introducing parasites. This can be avoided by the feeding of cultured live foods such as brine shrimp or cultured insect larvae or cultured worms. Good growth rates will be achieved on tubifex or black worms if a clean source of these worms can be found.

Frozen Food

I freeze a prepared mixture of beef heart, crustacea (krill), fish, liver and

To Table of Contents

vegetable matter. I also feed straight beef heart. Frozen foods such as frozen insect larvae or frozen mussel larvae are highly recommended since this varies the diet away from being exclusively beef heart.

Vitamins

The addition of vitamins to the food of juveniles will promote growth rates but, after a period of time, the gap in growth rates will be closed by the fish whose food was not vitamin enriched unless there was a critical deficiency in vitamins. A lack of vitamins, particularly ascorbic acid can cause bent vertebrae, shortened gill flaps, and slow healing of sores. According to one author a lack of vitamin B encourages hole-in-the-head (Teufel, 1989) and, according to another, vitamin E promoted growth (Lindner, 1965).

Diseases

The more polluted the water, the more likely one is to encounter bacterial or fungal growth due to the high nutrient loading. Conversely, at higher water qualities one is more likely to encounter ectoparasitic protozoans which are introduced with live food and possibly even trematode parasites.

Bacteria

Common Gram negative bacteria which are a normal part of the natural bacterial flora of aquatic systems are: Aeromonas hydrophilia, Pseudomonas fluorescens, Flavobacterium, Edwardsiella tarda and Columnaris. All of these are capable of mounting a pathogenic attack upon the fish should dissolved organics from decomposing food or fish waste build up high enough in the water to permit their rapid proliferation. Columnaris is particularly dangerous since it has an acute form which is usually lethal in about 3 days (Roberts, p 292).

Fungi

I have not experienced any problems with fungi in the raising of juveniles, but it is well known that fungi produce toxins. Feeding trout with moldy food

caused liver cancer from the fungal toxins present in the mold. Larval fish are more susceptible to fungal toxins than are eggs or adults (Wyllie & Morehouse, pp. 490-496). Should fungus develop on the fish, Malachite green is probably what will be recommended to the aquarist but I would hesitate to use it too freely since it has been shown to cause the same stress to fish at 0.1 ppm as formalin at 100 ppm (Oiah, et al, 1982) Moreover, Malachite green is retained in the tissues of fish exposed to only 0.1 ppm of the dye (Poe & Wilson, 1983).

Protozoans

To Table of Contents

The two main classes of protozoans parasitic to fish are the ciliates (ectoparasitic) and the flagellates which are mostly endoparasitic. A group of ciliates called the Trichodinids are frequent parasites of discus. They attach to the skin and gills by means of a ring of teeth but their mouth is at the opposite end of the cell and they feed off bacteria in the water. A flagellate that is another frequent ectoparasite of young discus is Ichthyobodo necatrix (Costia). Both of these protozoans can be treated with salt dips, formaldehyde dips, or with copper but the chelated form is better as a prophylactic than as a treatment. Unless the fish is properly treated and then transferred to a noninfested tank, these protozoans will keep returning and continued treatments will always be necessary.

Monogenic Trematodes

These are ectoparasitic on the skin gills and fins to which they are attracted by means of a ring of microscopic hooks. Monogeneans are usually host specific (Roberts, p 263) and are most often introduced into the aquarium with an infected fish. Infected parent fish traqsfer them to all including the smallest of their fry (Untergasser, p 100).

Gyrodactylids are viviparous (live bearing) small worms about 0.3 to 1mm in length. They are able to reproduce very rapidly if conditions permit them to. Dactylogyrids are oviparous (egg laying) up to 2 mm in length and attach to the gills of fish. Some dactylogyrids parasitizing discus are 0.2 to 0.3 mm in length with 4 central hooks but this species can also parasitize other fish species (Untergasser, p 101).

Hormone Treating

Juveniles are sometimes treated with testosterone to bring out their coloration at a very early age. Administration of testosterone or estradiol derivatives will not

bring out any color patterns aside from those that will be present when the fish reaches sexual maturity and its gonads begin to produce one or the other of these two steroid hormones depending on the sex of the fish. This has the advantage that the prospective buyer knows beforehand what the fish will look like when it reaches adulthood a year later. Admittedly, it is the best way to avoid the purchase of juvenile “solid” fish which turn out to be only striated ones 12 months later, or buying juvenile “greens” which turn out to be browns after you have invested a year in them.

On the other hand abuses of these compounds, particularly the excessive

To Table of Contents

feeding with testosterone derivatives can produce fish which fail to reproduce, or fish which have been sex reversed from female to male and, therefore, will produce predominantly female offspring if they fertilize eggs.

Non-Hormonal Coloring Agents

Although I have not heard of any recent cases of this with discus in North America, it has been reported to have occurred recently in Europe. Among the coloring agents used were: E 123 Amarant (which increases susceptibility to viral infections, E 127 Erythrosin (can cause disturbances to nerve functioning), or E 160 Canthaxathan (can lead to damage to the eyes) (Kohler, June 88). The color caused by these dyes will fade a short time after the food containing these substances is discontinued. Kohler's article quoted above states that is even possible to buy mussel larvae pre-treated with these dyes.

While it can be argued that use of testosterone or estradiol derivatives on juveniles just long enough to bring out color protects the buyer from buying a fish that is not the designated color variety, the use of dyes or food coloring agents is pure fraud which serves no purpose other than to swindle the buyer.

Hormones and Sex Reversal

Experiments with young largemouth bass (Micropterns salmoides), 2 to 3 cm in size at an age of approximately 5 weeks, in which the fish were fed with 17-alpha-methyltestosterone at 50 micrograms/kg, have shown that females could be masculinized, but conversely, feeding them with estradiol did not significantly skew the sex ratio towards more females. Feeding them containing either testosterone or estradiol was the only method that was 100% certain of changing the sex ratio in either direction (Garrett, 1989.)

In another study on grass carp, Ctenopharyngodon idella, 55 day old gynogenetic females were administered methyltestosterone for a 460 to 650 day period through a capsule implanted intraperitoneally. Out of the 27 fish treated, 5 had testes, 9 and 5 had bisexual gonads, 8 had gonads with no germ cells and 5 had underdeveloped ovaries. No male germ cells were detected in the gonads of untreated gynogenetic females. Spermatozoa taken from sex reversed females remained active from 30 to 90 seconds when placed in water. This is comparable to that of normal brood fish (Jensen et al, 1983).

A study conducted with salmonids in which 17-beta-estradiol was fed to the fry at 20 mg/kg for a period of 0 to 60 days following "swim-up" resulted in an all female population whose gonads were indistinguishable from the ovaries of untreated fish. Feeding this hormone at the same concentration, but for the period of 0 to 40 days produced a population which was 64% females, 21% males and 12% bisexual fish (Johnstone et al, 1979)

Short term dips to bring out the cole which are given after sexual

differentiation has already occurred naturally, do not necessarily have this effect and fish that are kept in water containing testosterone will gradually lose their color over a period of 30 to 60 days after the hormone is removed. Hormones and Sex Ratios of Progeny Sex ratios among the offspring of male tilapia which were sex reversed by testosterone feeding as fry, were significantly different from the usual 1!1 sex ratio in any normal tilapia spawn. Sex reversed males produced sex ratios of (2/1) to (3/1), {females/males) in their offspring (Garrett, 1989).

Discussion

Successful rearing of juvenile discus requires the skills of an advanced aquarist and commercial breeding of this species is a miniature aquaculture project which will require a very high level of technical competence.

The importance of behavior and growth rate as indicators of water quality and fish health have probably not been emphasized enough in earlier literature. Learning to gauge fish growth rates only comes with experience but it is too important to neglect.

There are probably more misconceptions surrounding the use of hormones than anything else in fish culture. They are usually thought of only as something which can sterilize fish but they can have varying effects depending on the how much was applied, for how long and at what stage of life. The fact that females sex reversed to males produce all female offspring has important potential uses in commercial food and game fish culture. The culturist can know beforehand that his entire stock will be female and this enables better control of sex ratios for future breeding. Similar uses may be found in aquarium fish culture.

In the area of water treatment, reverse osmosis is the newest thing to the aquarium hobby. The large quantities of low ionic strength water required for spawning made it all but impossible for anyone but commercial hatcheries to breed this species in the past. New developments in membrane technology however, have made it possible to produce reliable reverse osmosis units capable of providing the volumes of low ionic strength water required at prices the aquarist can afford.

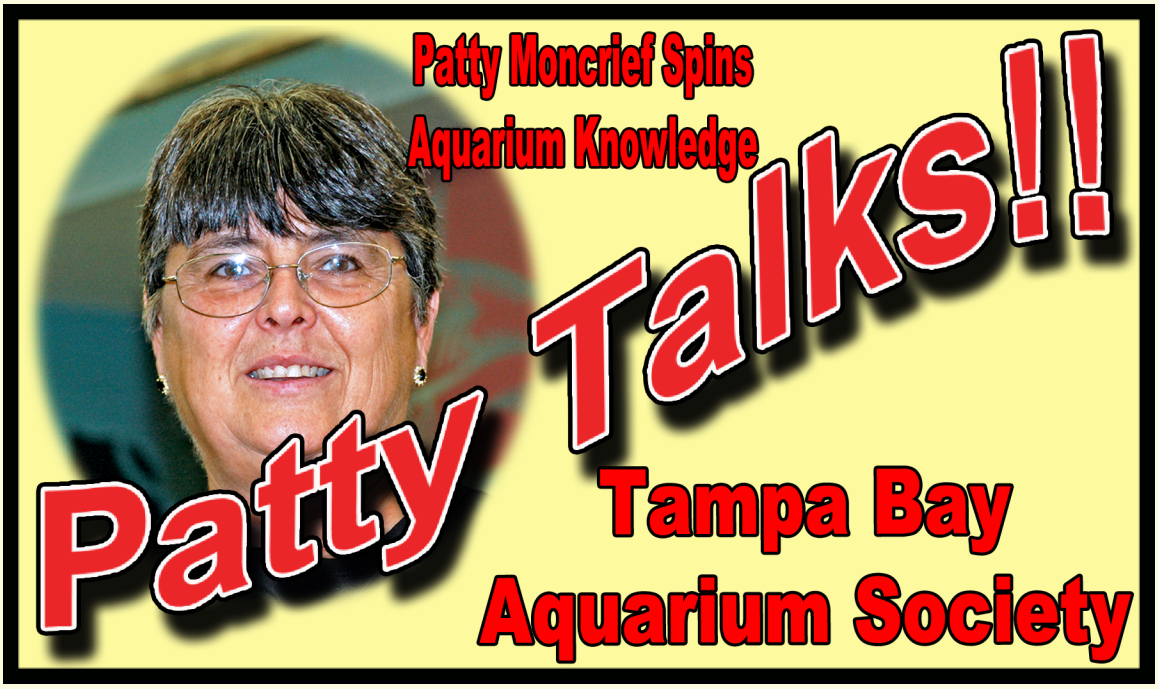
Literature Cited

1. Garrett, G., Hormonal Sex Control of Large Mouth Bass, Progressive Fish Culturist, 51, 1989, pp 146-148
2 Guerrero, R, Use of Androgens for the Production of All-Male Tilapia aurea (Steindachner), Transactions of the American Fisheries Society, 2, 1975, pp 342-348.
3. Lindner, Heinz, Elf Jahre Zuchterfahrung mit Dislrusfischen, Aquarien Terrarien, June

To Table of Contents

1965, pp 100-104.
Methyltestosterone, Transactions of the
American Fisheries Society, 112, 1983, pp 79-85.
5. Johnstone, Simpson, Walker, Sex Reversal In
Salmonid Culture, Part III. The Production
and Performance of All-Female
Populations of Brook Trout, Aquaculture,
18, (1979), pp 241-252
6. Kohler, Horst, Das Einfarben von Dislrusfischen,
'Dislrus Brief, June 88, pp 4748.
7. Olah, et al, Studies on Stress Effect Caused by
Malachite Green and Formalin Treatments
of Common Carp (Cyprinus capio L .),
Aquacultura Hungarica, 3, 1982, pp 57-61.
8. Poe & Wilson, Absorption of Malachite Green
by Channel Catfish, Progressive Fish
Culturist, 45, 1983, pp 228-229.
9. Roberts, RJ., editor, Fish Pathology, Bailliere
Tindall, London, 1989.
10. Teufel, Roland, Die Dislrusloschkrankheit-
Hexamita, Diskos Brief, Dec. 1989 pp
88-90.
11. Untergasser, Dieter, Handbook of Fish
Diseases, T.F.H. Publications, 1989.
12 Wyllie & Morehouse, Mycotoxic Fungi,
Mycotoxins, Mycotoxicoses, An
Encyclopedic Handbook, Vol 2 Marcel
Dekker, Inc, New York and Basel

To Table of Contents



As I sit at my computer trying to think of something to write about I think back on the last several weeks at work. Everything seems to go wrong at the same time. Two tanks sprang leaks. One was a cracked input pipe, the other was a bad seal. Another tank dumped 40 gallons of saltwater on the floor in the middle of the night because the floating thermometer got stuck in the overflow pipe and caused backup. Still another tank refused to clear and had animals dying in it. This was a case of over cleaning. The bacterial bed was never allowed to grow. However, the worst tank was the one that sat for 5 months unplugged with water in it. I was called out because the canister was stripped and had to be replaced so they could restart the tank. They drained the tank before I got there, but neglected to drain the canister. What an odor! I suggested they run bleach through the system for 24 hours before restarting the tank. In case you haven't guessed I do on-call work for commercial tanks, everything from training personnel to complete re-plumbing. Troubleshooting a tank is usually 50% equipment and 50% personnel.

Sometimes even the best of us will have a problem that we can't seem to solve, so never give up. Talk to others who have experience with tanks. Sometimes it is something you didn't think of. For example, when dealing with tanks in offices there are problems that don't usually happen at home like excess heat due to turning off the air-conditioning on the

To Table of Contents

weekends, especially with computer controlled units in large office buildings. In one case the cleaning crew that came in on Saturday was throwing handful of food into the tank thinking the poor fish were not eating the whole weekend. Every Monday the tank was cloudy and sometimes there were dead fish. This can be expensive in a saltwater tank. Of course the number one problem is that people who know nothing about tanks are usually given charge of feeding them. Just when I get them trained they go on vacation or leave and I have to start all over again.

When trouble happens in a home there can be other problems. There was the case of a 20 gallon tank that was not overstocked and wasn't overfed and had dual filter systems on the tank, yet we could not seem to solve an ammonia problem. I finally went to the lady's house and looked in the tank. Everything seemed in order. I asked her about spraying air freshener or bug spray and found that she sprayed air freshener into the intake of her central air-conditioner. There was an output vent directly above the tank. As soon as she stopped spraying in the intake, the problem was solved. In another case a ten gallon hex tank had an ammonia problem that wouldn't go away even after four months. I asked about the filter system and it seemed to be adequate. I finally stopped by to take a look at it and discovered that there were 4 inches of gravel in the under gravel filter and there was a large carbon cartridge attached to the top of the lift tube which was blocking the flow of air coming out. The water was not circulating. We solved the problem by putting on a bigger pump and adding an air stone to the tank.

The next time you have problems unrelated to fish disease, you should consider other things that might affect your tank indirectly. I am sure glad that this month is almost over. Until next month keep your fish happy and healthy.

GARGAS ANSWERS!!!

We all have a WOUNDEFUL opportunity!!! Joe Gargas has volunteered to take and answer all of your "WATER" and "DISCUS" questions!

You folks all know my opinion of Joe's "WATER" & "DISCUS" knowledge . . . so take advantage of this oportunity and have at it!!

Here's Joe's email address:

joegar@tampabay.rr.com - Ask him anything you want and let him answer. We will then publish the questions in the monthly TBAS bulletin, "THE FILTER" . . . DON'T BE SHY!!

To Table of Contents

Let's Look at Some Photos!!!!!

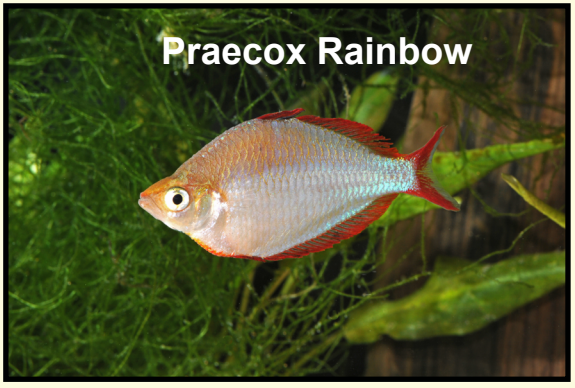
by Mike Jacobs

Msobo Magunga

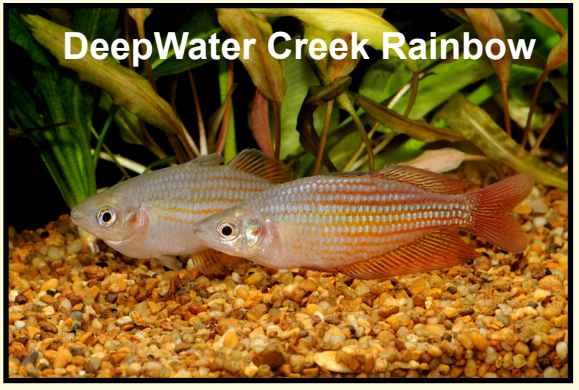
Neuse River Waterdog

Least Killifish

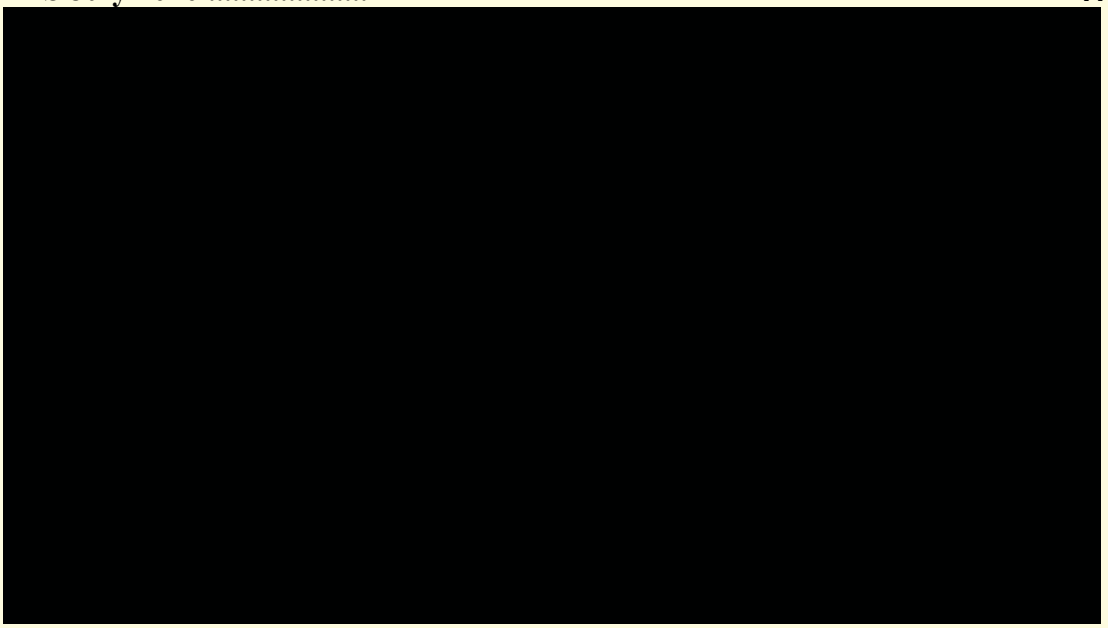
To Table of Contents



To Table of Contents



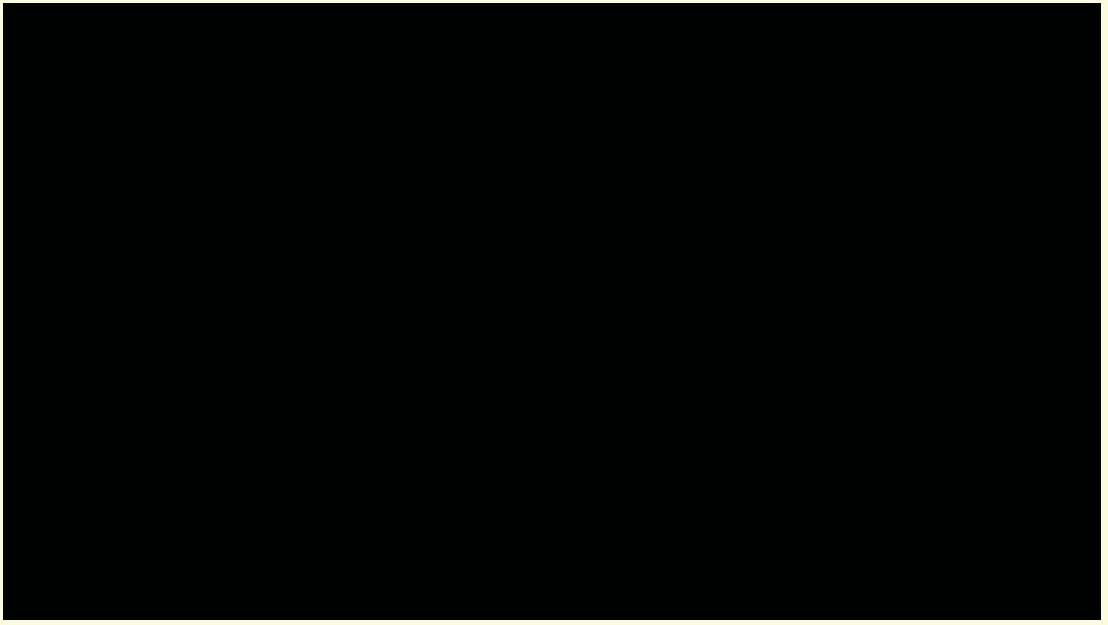
To Table of Contents



Angels Plus
www.angelsplus.com

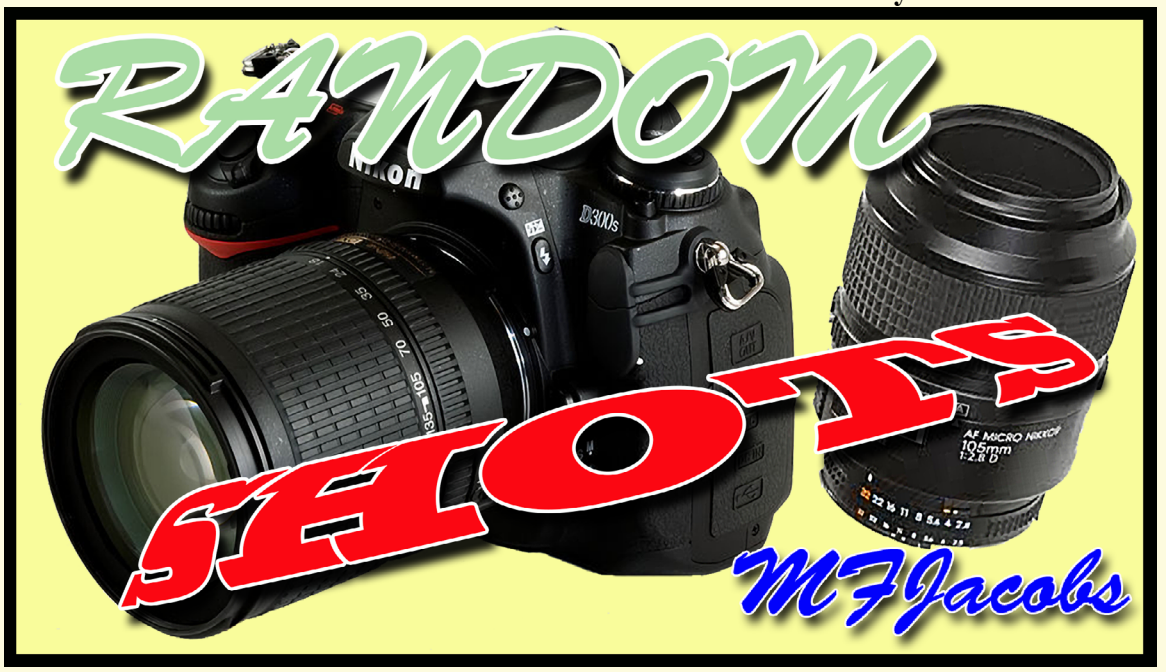
Click on the

to See Video



THE BEST KOI ANGELFISH IN THE UNIVERSE

To Table of Contents



Hybrids of Parrot Cichlids and Convict Cichlids . . . Blue Parrot Cichlid

photo: Mike Jacobs 2020

To Table of Contents

Supporters of TBAS

Tampa Bay Wholesalers: Tropical Fish

alphabetical order

1) 5D Tropical Fish
2) Segrest Farms

Tampa Bay Tropical Fish Farmers:

alphabetical order

1) Amazon Exotics
2) BioAquatix
3) FishEye Aquatics
4) Golden Pond
5) Imperial Tropicals
6) Lile's Tropical Fish
7) V-W Tropicals

To Table of Contents

To Table of Contents

To Table of Contents

To Table of Contents

TAMPA BAY AQUARIUM SOCIETY OFFICERS

PRESIDENT
Dre Alvarado

V. PRESIDENT
Kryssi Damico

SECRETARY
Ludo Van Den Bogaert

TREASURER
Patty Moncrief

BOARD OF DIRECTORS

Gary Foster

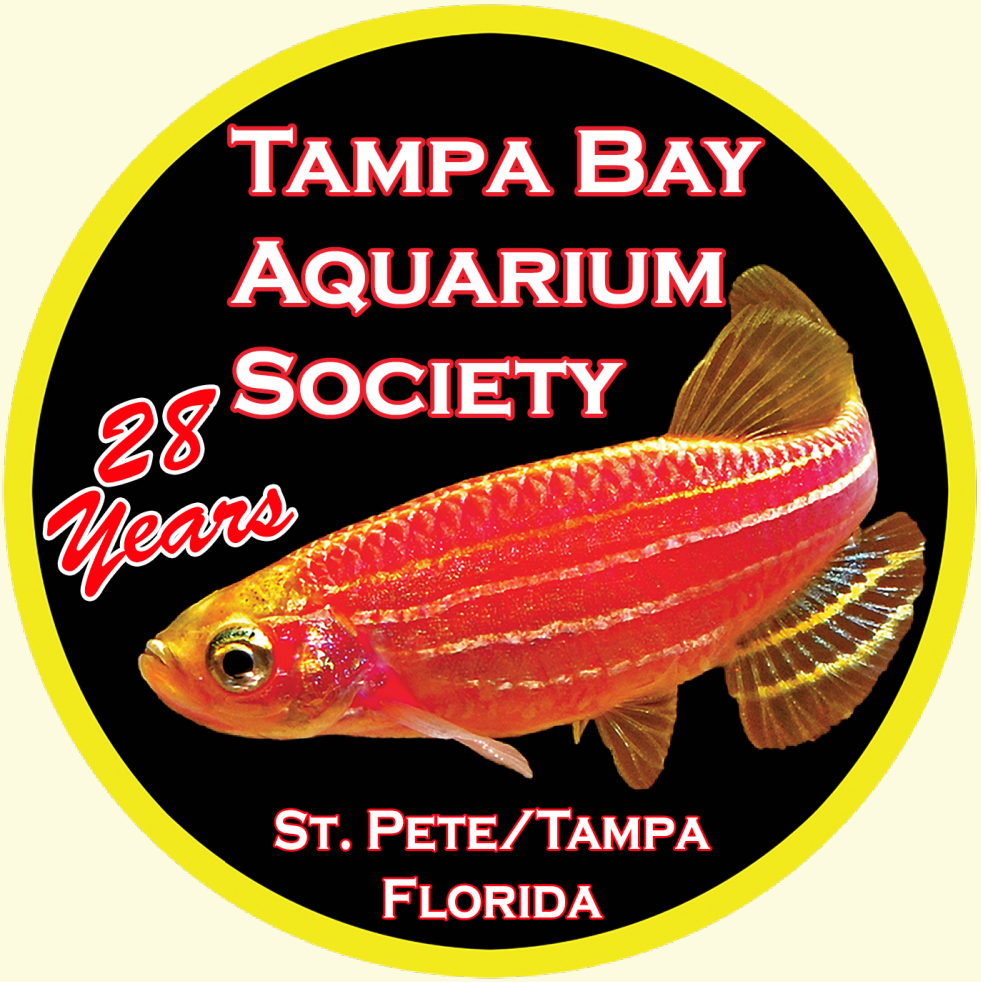
Mollie Howell

Mike Jacobs

Dharmesh Patel

Bill Shields

To Table of Contents



TBAS

Tampa Bay Aquarium Society
St. Pete/Tampa, Florida

Website: www.tbas1.com

FORUM: www.tbas1.com/forum

To Table of Contents