THE FILTER

Sphaerichthys vaillanti
Vaillant's Chocolate Gourami

Photo Mike Jacobs . . . 2019

August 2019
Volume 29 Issue 1

TBAS . . . Since 1992

TAMPA BAY AQUARIUM SOCIETY

"THE FILTER"

Tampa/St. Pete, Florida

TBAS

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TBAS

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I have to tell you something . . . this "old material" that I have been putting here is really really nifty and fun. Let's take another small but different peek. **By the way, it STILL all is good stuff for today!!**

I thought I would take this month and dedicate it to 3 members. the first would be **Bill Shields**, a founding member of TBAS and the second would be **Joe Gargas** and the third would be **Patty Moncrief**.

Bill Shields was one of the very first people I ever met at TBAS (1994) because he walked right up and shook my hand and we talked fish and talked fish and he was **RIGHT** on everything . . . I knew then I had found the right place.

Joe Gargas . . . I formally met Joe in about 2009. As with Bill, it took maybe 15-20 minutes talking with him and I knew I was talking to the **BEST** "**Water-Man**" I had **EVER-EVER** met!!!

Patty Moncrief . . . Patty is just the best. Note the top of her "Patty Talks" column this month - 1997 - that's right folks, she has been doing things like this for TBAS since way in the middle 1990's!!!

This club is **REALLY GREAT** and has some wonderful memories for some of us **OLD** guys!!!

Mike

Mike Jacobs, Editor TBAS Filter

Betta splendens
Betta
Photo by Mike Jacobs 2019

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AQUARIUM "SKOOL"

. . . or 'Back to Class'

From December 2010 *by Joe Gargas*

Filtration!!! Joe knows water quality, and we all know that, but it's quite another story to be able to produce the quality of water wanted from a given batch of water. That's what separates Joe from the rest; he knows filters and how they work. Sit back and learn something very valuable . . . FILTRATION and the AQUARIST.

This month we are going to look at Mechanical Filtration, but before I start, I would really suggest for those who are very interested in "Filtration" and water treatment get this book: Fish and Invertebrate Culture Second Edition by Stephen Spotte. Published by Wiley –Interscience. It is a GREAT book and very easy to read.

The Purpose of Mechanical filtration is to lower turbidity in water by the entrapment of particulate matter in excess of 30 Microns in size. For a point of reference the width of a human hair is between 50-75 Microns. Turbidity is the cloudiness or haziness in water caused by individual particles. Mechanical filtration is usually placed before the chemical filtration such as a carbon pad and the biological filtration to prevent clogging. All Mechanical filtration media should be cleaned completly every 10-14 days to prevent the particulate from breaking down in smaller particles and pushing through the media.

Some examples of Mechanical filtration and media:

Filter Pads, Polyester filter fiber, Sandfilters, Diatom Filters, Cartridges of all types and kinds. Any type with the word "Pre-Filter Attached.

Next month we will look at biological filtration.

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AQUARIUM "SKOOL"

. . . or 'Back to Class'

From May 2011 *by Joe Gargas*

Last issue we spoke briefly about mechanical filtration; now we will go on to Biological Filtration, which I will break down into four steps in the preceding months.

STEP ONE:

The first step to biological filtration is the process called mineralization. Mineralization, simply defined, is the process of breaking down nitrogen based organic waste into simpler mineral compounds such as ammonia.

Heterotrophic bacteria are the major actors in this phenomenon. These decomposers are represented by Saprolegina, Bacillus, and Micrococcus.

They derive there energy from the nitrogenous organic waste excreted by aquatic animals. In the process the waste is decomposed into simple compounds such as ammonia.

Mineralization occurs mainly with solid waste, such as fish fecal matter, uneaten food or dead plants and algae. The mineralization of these organics is the first stage in biological filtration. Now one can see why Foam Fractionation/ Protein Skimming are as important as it removes substances that would be converted to ammonia during the mineralization process. **To sum it up when ammonia is detected biological filtration has begun.**

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AQUARIUM "SKOOL"

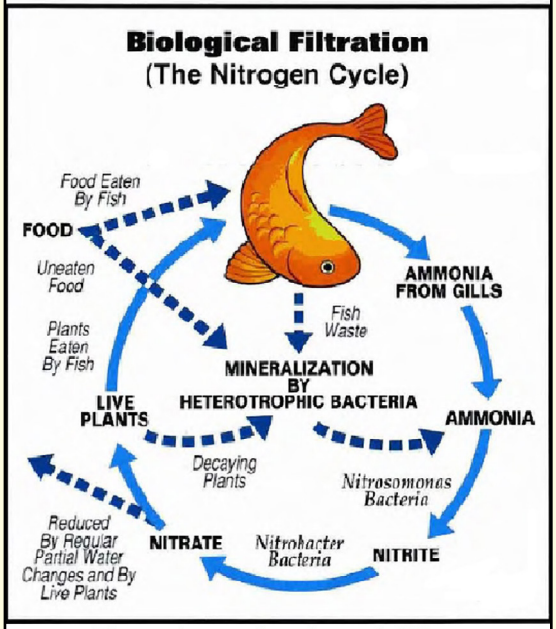
. . . or 'Back to Class'

NITRIFICATION:

Once the organics have converted to an inorganic state by the heterotrophic bacteria (Saprolegina, Bacillus, and Micrococcus) Biological filtration shifts to the second stage which is nitrification. This process is defined as the oxidation (biological oxidation) of Ammonia NH_3 to Nitrate NO_3^-. This process is carried out by autotrophic bacteria. The big difference in the autotrophic bacteria, unlike the heterotrophic bacteria, is that autotrophs can utilize inorganic carbon (mainly CO_2) as a source of cellular carbon. A few of these species are Nitrosomonas and Nitrobacter. Recently there have been new species discovered.

What Happens In Your Aquarium

The introduction of fish, plants and food into your aquarium begins a series of processes, collectively know as biological filtration. In biological filtration, naturally present bacteria safely convert wastes into less toxic compounds.



The reaction goes from Ammonia NH_3 to Nitrite NO_2^- to Nitrate NO_3^-

The reaction of the oxidation and the time it takes depends on temperature, pH and the amount of dissolved oxygen. Studies have shown the ideal range for pH for biological oxidation is 7.1 to 7.8

The stronger biological filtration you have in your aquarium the quicker your pH will fall as Hydrogen is released during the oxidation of ammonia. The end of the biological oxidation process is Nitrate NO_3^- and is used by plants.

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Meet the Member!!

Bill Shields

Bill Shields, a lifelong aquarium fish hobbyist who started keeping fish at the ripe old age of six, grew up in South Florida in the 1950's. During his youth, Bill's entrepreneurial streak had him collecting guppies and mollies from the town park's pond and trading them with the local fish store for other fish and supplies. After college and various jobs, Bill finally started working "officially" in the pet trade as a salesman, store manager and then, finally, general manager of three Docktor Pet Centers in the Harrisburg, PA area. During this time, an invitation to attend and join the Susquehanna Aquarium Society in 1974 became his formal introduction into the organized portion of the hobby. Not long after joining, he became Vice-President, President, and then member of the Board of the Directors; later he was named Hobbyist of the Year in 1978. After joining the American Killifish Association (AKA) in 1974, he realized he had jumped to the next level of the hobby.

After a hiatus from the pet trade - during which he was an elephant handler and midwife for 27 Asian elephant births - Bill's avocation became his vocation. His aquarium fish expertise earned him a position as a professional fish breeder at 5-D Tropical Inc, an ornamental fish production and import/export facility, in Plant City, Florida where he worked from 1995 until retirement in 2010. He worked with Yorktown Technologies and with them did the R&D and introduction of Glofish into the American fish hobby. Finding no organized fish club in Tampa, FL, Bill's life came full circle as he and eight other fish keepers founded the Tampa Bay Aquarium Society . . . TBAS in 1992 in 1992. Bill still remains 100% active with the TBAS, Suncoast Killifish Association and NANFA. He has served on the committees for two national AKA

Checking spawns in some of the 2,500 tanks on a Wednesday morning.

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conventions, in 2000 & 2006, as well as the 2009 North American Native Fish Association (NANFA) and the 15th World Guppy Contest 2015 and the Annual Friends of the Florida Fancy Guppy Association BBQ/Auction all held in the Tampa area. In addition, Bill manages the annual Aquarium Beautiful Competition for the Florida State Fair. He also gives talks to aquarium societies all over the country as well as doing pod cast Aquariumania with our own Dr Roy Yanoung and three Blue Zoo Youtube episodes with Frank Reece. As a bucket list trip, Bill travelled to Iquitos Peru in 2009 with seven of his long time fish friends and returned in 2017 with his long time fish friend Brian Skidmore to Puerto Maldanado,Peru collecting and bringing back fish to breed.

My only bottle baby Angel with her mother Sally - 1987

Bill's Photos

Susquehanna Aquarium Society
Bill Shields
1978

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A BLAST from the PAST . . . AGAIN!!!!

Vinny Kutty was already in TBAS when I arrived. We became quick friends when we found that we both took photos of fish. Then I gained more and more respect for Vinny when I found that he also knew his fish WELL! The he moved to California and it was a bad day for TBAS, but a good day for Vinny . . . ☺ ☺ ☺!!!

Hydrogen Peroxide In Your Aquarium (A Cure-all?)

by Vinny Kutty . . . written in approx 1997

Vinny Kutty . . . a TBAS member in the middle 1990's until he moved to California. A great member of TBAS and a great tropical fish person . . . still working hard in the hobby.

About a month ago, while discussing ways of increasing the efficiency of power filters with Al Knowles, we came up with some very good solutions. I use Aquaclear 300s on all my 55-gallons tanks. I like them for their ease of operation, reliability and moderate cost. I use the carbon that comes with the filter for about 2 weeks and throw it away . . . after that, I get another sponge block in its place. This doubles the biological filtration capacity of the filter. After all, carbon gets "exhausted" in a couple of weeks and isn't worth much after that. These filters do, however, have a problem: they need at least bi-monthly maintenance in the form of sponge rinsing. If this isn't performed, the flow is restricted, mechanical and biological filtration collapses and the desirable bacteria needed for nitrogen cycle becomes outnumbered by heterotrophic bacteria (these are the bacteria that are neither helpful nor harmful, they are present in all organically rich milieu, a.k.a. muck-filled filters) resulting in poor nitrogen cycle management.

Some TBAS members have pre-filters attached to their Aquaclears and this prevents the filter sponge from getting clogged. This solves one problem: reduced heterotrophic bacteria on the sponge and so more good "bacteria" such as Nitrosomonas and Nitrobacter can perform their duty

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of oxygenating dissolved ammonia and nitrates to less harmful nitrates without being hindered by muck or competing for space with heterotrophic bacteria that convert the muck and fish waste into ammonia. Basically, the point is that your bio-filter must be free of particular waste. A pre-filter does a good job but it too gets clogged frequently and must be rinsed. Once the pre-filter is clogged, water movement through the filter is drastically reduced and this cuts down on oxygen flow into the bio-filter.. Our good bacteria are oxygen hogs and need large quantities of oxygen. My filters were performing very poorly because of reduced oxygen input into the bio-filter media. Additionally, I don't have airstones in most of my tanks (I usually aerate tanks that have a heater in them and when the temperature is over 80 degrees F).

To increase the oxygen in the tanks, we decided that I'd have to lower the water level an inch or two so that the filter would create a miniature waterfall, thereby increasing the amount of oxygen and desirable surface turbulence. The other obvious option was to add airstones to the tank. I did both these and immediately saw an improvement in the water quality and fish behavior.

Now that I've taken both of these steps, it was time to go one step further. I'd heard of hydrogen peroxide (we'll call it HO from now on) treatment of water to increase oxygen content as a last resort in situations where water changes cannot be done. I read about it in the new book Enjoying Cichlids (Ed. Ad Konings) and I must have read it in the TFH or FAMA magazines back in the 70s or early 80s. There is also a product out on the market called the Oxidator (or something like that) that leaks little bits of HO gradually into the tank.

The science behind this treatment is remarkable yet simple, and being a chemist, I admit to feeling pretty stupid for not having done this sooner. HO is two oxygens and two hydrogens bonded together and it is called a strong "oxidizing agent" which for practical purposes means that it can "chew up" or "eat" organic material like fish waste when they are directly exposed to each other. That is, if you drop some filter sludge into a glass contained 30% HO, the filter sludge will soon get oxidized into something that is not filter sludge. When you add small quantities into your tank this will happen on a micro scale. What happens in a tank is: ammonia gets rapidly converted to nitrites and quickly to nitrates. A molecules/ion of ammonia has no oxygen, where as nitrite has two and nitrate has three. The HO provides the oxygen molecules for this to happen. This is the direct effect of adding HO to your tanks.

Obviously if you add too much HO into your tank, your fish will be

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oxidized along with your filter sludge! It'll be the cleanest and whitest dead fish you'll ever see.

Where do I buy my HO? Publix. I believe a quart sells for just 26 cents. It is a 3% solution of HO and this is used for mouth washing and other hygienic purposes where it does to germs what it does to filter sludge. You will not kill any of your good filter bacteria in this process because the dosage is very low.

What is the dosage? I use eyedroppers to administer it to my tanks. I have millimeter markings on my eyedropper and I add about 3 Ml in the morning and 3 in the evening to all 55-gallon tanks. I have added up to 10 Ml twice a day without ANY undesirable side effects. Of course, for smaller tanks, eyeball your own dosage to match mine. You can a little more without serious ill effects.

As a result of HO addition, I noticed a lot less gill movement (i.e., the fish do not have to try heavy-breathing to get enough oxygen). The high amount of oxygen produced from the dissociation of HO is plenty for the fish and bacteria for a long time. A high oxygen content is helpful to get fast fry growth in many species of fish. Do remember to get the Publix brand because the others have a small amount of phosphoric acid in them and this could mess with your tank pH levels. I wish I had oxygen test kits to monitor the increase of oxygen after HO treatment. I would really like to know how long the HO is effective in maintaining a high-oxygen environment. If you could maintain an oxygen content of 8-10 ppm, you are doing very well and this will make all your underwater filters perform as well as a wet-dry. If HO treatment is done correctly, you could greatly increase the efficiency of your filters.

I noticed that my filters don't get clogged as much and large pieces of fish waste are broken down quickly. In some tanks, the filters don't get clogged at all. Unfortunately, the muck is broken down to a very small size and is released back into the tank. Basically, sponges don't act as a good mechanical filter anymore. I've had to use micron filters to polish the water. A lot of times, if you do a water change, the nitrate will temporarily go down but come back up in two days. This is because you did not rinse the sponge in the tank and clean the gravel. If you use HO there is no muck, and nitrate really will go down if you change water, and it stays down. So, give it a shot and let me know what happens. Share your experience with TBAS.

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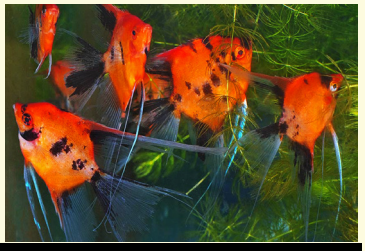
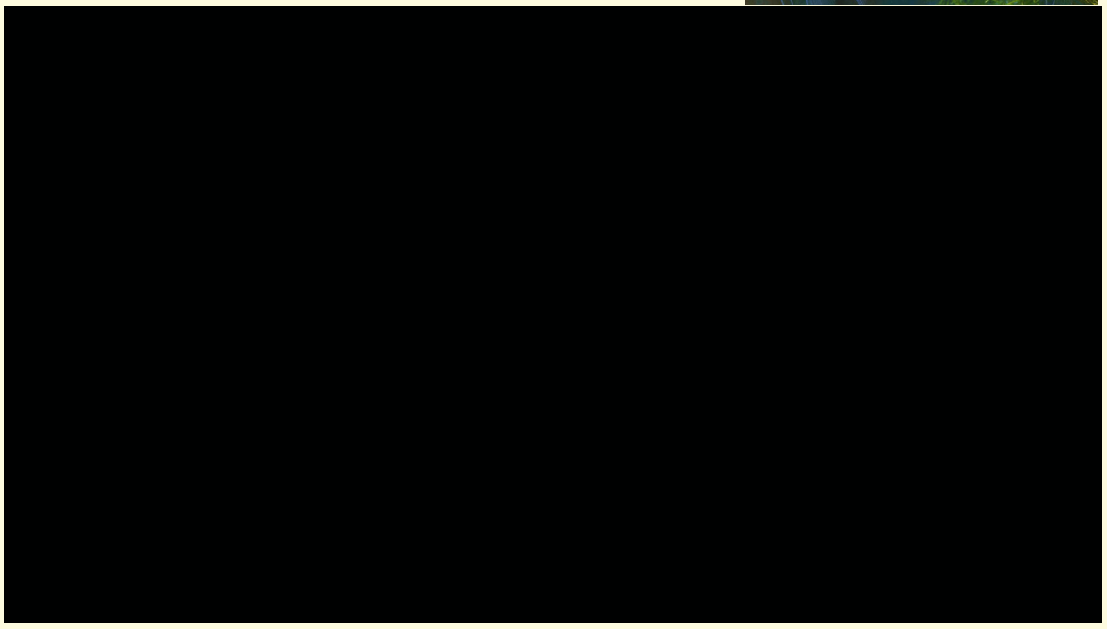
Click on the

to See Video





THE BEST KOI ANGELFISH IN THE UNIVERSE

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1997

Have you ever been zapped by an electric stingray? I WAS! I tried to force feed one when it knocked me across the room. I had mistakenly assumed that it's generated current was more like the electric Black Ghost's. I was VERY wrong.

The stingray went back to the dealer the next day. My arm "bothered" me for several months after that incident.

What do you do when a fish "get" you? If it is a venomous type sting some vinegar and HOT water and Benadryl will help. The sting will give you a burning sensation and ice or cold water will make it worse. If it is an electric zap you might consider having yourself checked by a doctor. I would not recommend one of these fish to anyone with a pacemaker.

Do your homework on new fish. I have compiled a list of potentially painful groups commonly available in the hobby and their weapons. Most are marine and some are not legal in Florida.

Black and white striped catfish, marine. The pectoral fins. Many pet shops don't know that this fish is venomous. The reaction is like that of a lionfish. Get treatment right away for a sting from this fish.

Catfish in general, freshwater and marine. If you have ever stepped on a catfish while fishing then you know how painful it can be. Some catfish have venom in their dorsal and pectoral fins. Vinegar will usually help to neutralize the poison. Always use caution when handling catfish.

Electric eel, only freshwater. This fish is not usually offered for sales and never in Florida. It can give a fatal jolt of electricity and it definitely is not for novices.

Electric stingray, marine. The name means just what is says and it can give a nasty jolt. Remember that saltwater conducts electricity better than freshwater.

Marine lionfish, all types. Venomous, usually the back fins and sometimes the side fins too. Does not hurt other fish in the tank, normally. However, the Turkey lionfish is a jumper.

Puffer fish, both freshwater and marine. These fish are poisonous if eaten. Don't eat them unless a licensed puffer chef prepares them for you. Don't put

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them with other fish that might eat them. Although this is not always fatal, it can be.

Scorpion, marine. Good name for this venomous fish. Usually top and side fins carry venom.

Marine surgeon fish and angels. Most surgeon fish, marine angels and loaches are armed with razors or spines. These razors fold down against the body or into a groove but can be pooped out in defense. These can cut a net and your hand. Surgeon fish will attack other surgeons with their spines.

Freshwater loaches and botias, such as the clown loach, have spines near their eyes, so be careful when handling them.

There are other fish which you should use some caution around. As a general rule of thumb, if in doubt, ask someone you trust. Always handle fish carefully, anyway, if not for your safety, then for theirs. Until next month, good fish keeping.

NO FLINCHING!!

Predator fish

Click on the  to See Video

15-30 second "load" the **FIRST** time!!!

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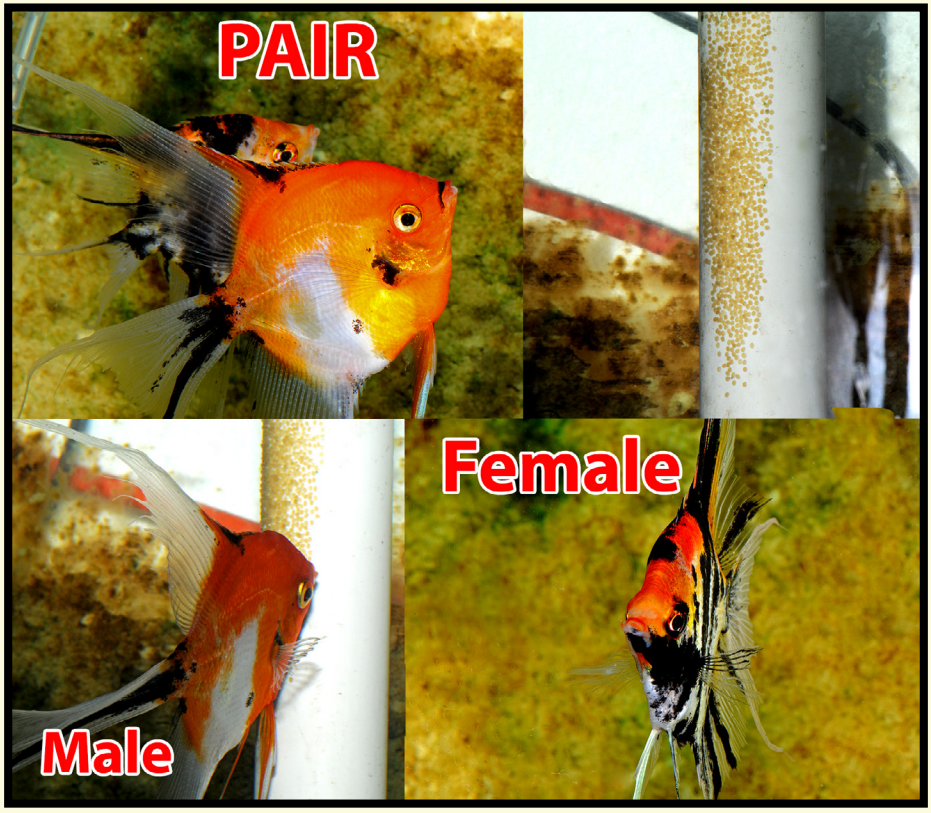
Angelfish & Eggs



Angelfish & Eggs Video Click on the to See Video

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***Prionobrama filigera* . . . Glass Bloodfin Tetra**

photo: Mike Jacobs 2019

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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) Carter's Fish Hatchery
4) FishEye Aquatics
5) Golden Pond
6) Imperial Tropicals
7) Lile's Tropical Fish
8) V-W Tropicals

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