THE FILTER

December 2020
Volume 30 Issue 4

OLDIE BUT GOODIE ISSUE

Topaz Cichlid
Amatitlania myrnae

TBAS . . . Since 1992

Photo Mike Jacobs . . . 2016

TAMPA BAY AQUARIUM SOCIETY

"THE FILTER"

Tampa/St. Pete, Florida

TBAS

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Hi Folks . . . TBAS still doesn't know if our meeting place will be open for the DECEMBER meeting!!! We will let you know as soon as we know!!

For right now this is an "OLDIE" issue of "THE FILTER". I do it every now and then for 2 reasons: 1) to honor the folks that have written for us 2) what they say 99.999% of the time is just as good now as it was when they wrote it!!!!!

Ok, guys . . . let's all agree that when ever we have been given the "gp-ahead", you folks will show up like we all will.

Honestly, I miss you all and REALLY look forward to seeing you folks! I sincerly hope you feel the same and are looking forward to the re-opening like I am!!!

See you guys all soon!

Mike

Mike Jacobs, Editor TBAS Filter

Synodontis schoutedeni
Yellow Marbled Synodontis
Photo by Mike Jacobs 2014

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Oodinium pillularis. This is the Latin name given to the parasite that causes the disease more popularly known as Velvet, Gold Dust or Rust disease. This variant is the most often encountered, but be aware that there are also at least a couple of other very similar freshwater forms.

The infestation is caused by a parasitic dinoflagellate that is variable in size, as the variants differ somewhat in their measurements. Other forms that cause very similar signs are Oodinium limneticum and Oodinium vastotor. These can measure more than 100 microns in length although the more typical sizes are 50-70 microns.

Note the chalky, powdery substance covering the scales of this fish.

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One of the greatest problems with this parasite is that most typically the hobbyist will observe the infestation only when he or she sees a fish, sometimes more than one, gasping for air and in the last stages before death. Usually this is when the fish is laying on its side on the bottom of the aquarium, as it tries desperately to get air by attempting to breathe at the surface. At this advanced stage of infection it is rare indeed that the fish will survive, however if prompt action is taken it is possible to save other fish, as without doubt if such remedial measures are not applied then virtually all the fish will be lost and usually within a very short space of time.

The parasite attacks the skin of the fish & inserts "roots" which can easily be seen under microscopic examination. Another favorite site of attack is the gills of the fish, which so typically then cause the most observed sign that of "panting" for breath as mentioned. These parasites eat into the cells of the epithelial layer, or the sensitive tissue of the gills, and destroy them in the process. After the parasite has matured it falls off the fish much in the manner of white spot (Ich) and here it begins several stages of mitotic division, ending up with some dozens or even more of cells which are flagellated.

In both the free swimming flagellated stage as well as the parasitic stage when attached to the fish, the organism contains a form of chlorophyll. This gives the parasite its typical gold or rust color, and also enables it to obtain food as do plants by the process known as photosynthesis. However when in the parasitic form almost all of its nourishment is obtained at the expense of the host, which causes tremendous damage leading to death once the fish is heavily parasitized. On the fish the dinoflagellate form grows in size about 5-6 times, before falling off and replicating itself in the free swimming form.

These flagellated free swimming forms are in fact dinoflagellates which must, within the space of one day, find another fish to infect or they will die. The relatively short life cycle & massive reproductive capacity ensure that if an outbreak occurs and it is not treated, heavy losses will follow. Fortunately it is not too common, but has no equal in the speed in which it can cause havoc in any aquarium unfortunate enough to have an outbreak. Sometimes a few fish will survive an outbreak for reasons that are not entirely clear; it would appear these surviving fish have developed an immunity of some form to the parasite.

Younger fish appear to be much more susceptible to the parasite, perhaps because they have a less well developed immune system. If young fish become exposed the casualties will almost invariably be much higher. However, if untreated, even adult fish will succumb to this infection.

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Typical signs of Oodinium infection.

Water	Without any doubt, less than ideal water quality is one sure way to help in the outbreak of any parasitic infection, and in this respect Oodinium is no exception. However the primary reason for its introduction is usually to be found elsewhere in this instance.
Behavior	Gasping for air, with very rapid respiration, most typically on the floor of the Aquarium, but sometimes at the surface, is nearly always observed. In the early stages of an infection, “flashing” or rubbing & scratching are often indications, as the fish tries without success to rub off the irritating organisms.
Fins	Fins can become clamped and folded.
Body	The most observed feature of this infestation is a salt & pepper effect of hundreds of small dots, usually with a cast of gold/yellow or rust color, which give the appearance that the fish has been covered with what appears to resemble talcum powder. It is sometimes difficult to see this unless the light is coming from the back, and shines off the fish, when it can easily be seen. In this advanced phase of infestation is almost always fatal, and the hobbyist should try to become aware of the earlier signs if one wishes to be able to take meaningful action.
Gills	Excessive mucous will be a sign that the parasite is attacking the gills, and a smear should easily confirm this.
Skin	The skin becomes “dusted” with hundreds of small raised parasites, giving a color which ranges from a yellow gold color to an almost red shade.
Prognosis	If the problem is only discovered when the parasite has made large inroads into many fish, then severe casualties are to be anticipated. Older fish of certain species often will resist the infection, though they will also succumb in many instances if no action is taken. Young fish typically will die in large numbers if they are not helped with appropriate action by the Aquarist. However, if a suitable remedial regimen is introduced, excellent results can be expected.
Treatment	There are several treatment options that can be employed including raising the temperature or the addition of Copper Sulphate.

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Raising the temperature by some 8 - 10 degrees Fahrenheit, to about 86°F can be effective BUT is also dangerous. The higher the temperature is raised, the lower the dissolved oxygen content is in the water; this is not an ideal situation for an already stressed fish.

Copper Sulphate treatment is widely referred to in the literature, but must to be used with extreme care, as many fish are highly susceptible to copper, and varies species by species in the toleration of the amount employed in the treatment. Furthermore, the hardness of the water plays a critical role in the effect of the copper. If water is not hard enough then no benefit will ensue. In addition, copper levels tend to drop and must be monitored frequently if positive results are to be expected. This treatment is often just not practical for the average hobbyist who is not available to tend the aquarium all day long.

In the United States the treatment of choice is often an Acriflavine drug sometimes used in combination with other chemicals. This combination gives excellent results (Revive and Aqua Pro-cure, are two such combination treatment drugs). Do not use any carbon during treatment & subdued lighting is recommended. Acriflavine or some of its close relatives have been marketed for many years. While no drug is perfect, these drugs provide an excellent result with minimal effect on the fish. After treatment, carbon should be used in the filter to remove any residual “green/yellow” cast to the water.

The European hobbyists openly refer to another drug for the cure of Oodinium called JBL Spirohexol. It comes in pill form, as well as liquid I believe, and you add it to the aquarium; in 7 days you do a 75% water change and that is the extent of the treatment. It is particularly recommended and useful in treating the Licorice Gouramis that I maintain; these gouramis are particularly susceptible to this disease. However, I have seen indications of the drug also being utilized to treat other species particularly Discus. I have been unable to locate or obtain this drug here in the U.S. I understand it is used in this country to treat pigs for certain diseases but it is by prescription only. It is my understanding, talking with the staff at the Tropical Aquaculture Laboratory in Ruskin that the FDA declared this product it to be a carcinogenic substance and therefore limits its distribution here in the U.S.

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50 Years of Angelfish Care

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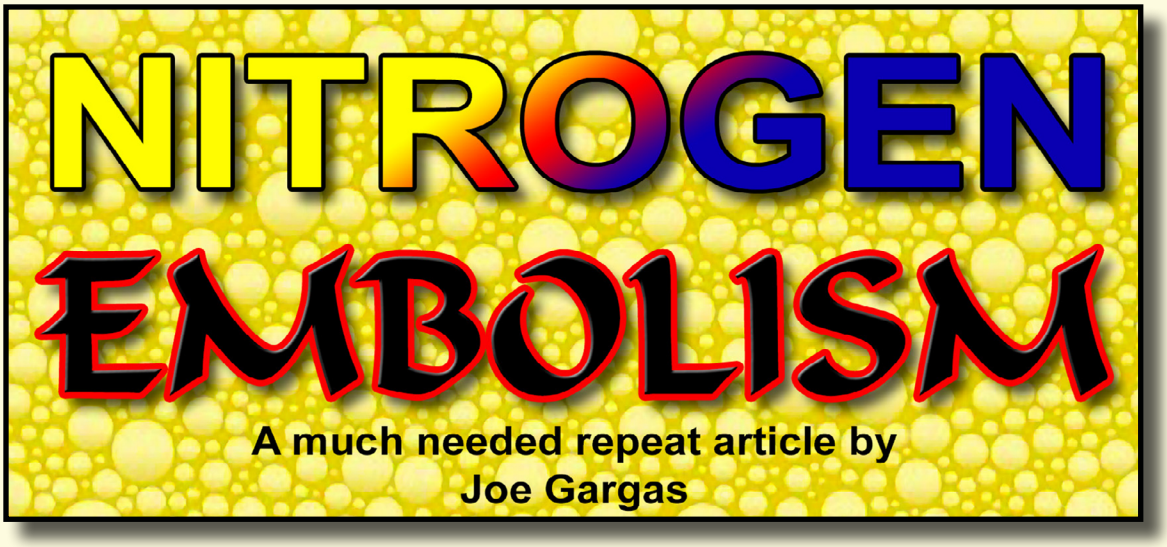

Within the past few weeks I have had a few calls and inquiries - that aquarists are still loosing fish after a water change even though they use conditioners like Prime, Stress Coat, and other products that remove chlorine and chloramines.

I have looked into this 'thinking" back to some of my past experiences and speaking to a few Water Quality Engineers that also do hydraulics modeling for potable water systems. What I have discovered especially in our State of Florida we should all take to heart!

As we are all aware, atmospheric air is made up of about 78.08% nitrogen, 20.95% oxygen, and 0.93% argon, and small amounts of other gases. The amount of carbon dioxide is important to the earth's climate even though it makes up less than 4/100 of 1% percent of the total atmosphere. When we utilize an airflow system in our aquariums, the air pumped to the air stone (diffuser) and or filter contains little oxygen and a lot of nitrogen, atmospheric air has much more nitrogen than oxygen.

Nitrogen embolism is a condition that can occurs and affects aquarium fish during a water change especially when one is replacing the old aquarium water with slightly warm fresh water that is under high pressure from the tap. This condition is characterized by fish gasping at the waters surface or laying on the bottom then a jerking (erratic) swimming behavior and the possibility of the presence of small bubbles of nitrogen beneath the skin in the fins, tail or mouth behind the eyes, and in the blood vessels (even though it's hard to see with pressure induced nitrogen embolism).

Nitrogen embolism is caused by over-saturation of the water with air. This atmospheric nitrogen can be lethal to fish when the water is over-saturated

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with this gas. (Over-Saturation and Super-Saturation means that any gas that is in the water system is now been forced into solution due to the water pressure and temperature).

During summer it is tempting to try and force as much air as possible into the water to aerate it but it is important to realize that at any given temperature there is a maximum amount of oxygen/nitrogen (a gas) the water can naturally hold. If this level is exceeded for example by forcing air into the water under pressure the water can become supersaturated with /gas, since warmer water holds less dissolved gasses it has a lower saturation point thus it can be easily supersaturated thus pressure induced nitrogen embolism is harder to detect than temperature induced nitrogen embolism. The following 2 paragraphs below explain the difference between the two.

Temperature induced nitrogen embolism

Example: I had my large discus operation in the South Suburbs of Chicago. During the winter months (this only happens in the winter) when you will fill a glass of cold water from the tap set it on the counter come back 20 minutes later you would not be able to see through the glass due to the amount of bubbles on the sides of the glass. This is the nitrogen that came out of solution as the water warmed up and is a natural occurring process which occurs up North only during the winter.

Pressure induced nitrogen embolism

What we experience down here in Florida is nitrogen embolism condition due to pumping under pressure which is much more suddle than natural occurring temperature induced nitrogen embolism. My water pressure up north was always around 42 –45 lbs (pounds per square inch) and the yearly temperature ranged from 50 to 68 degrees. Since we live in a subtropical climate down in Florida with much warmer water temperatures, especially in the summer months, tap water is always warm and the Hillsborough County water distribution systems pressure is high – I have measured pressures as high as 80-90 lbs. (pounds per square inch) this is to insure adequate flow to customers. Any atmospheric air inadvertently introduced into the distribution system (e.g., a leaky manifold changing of pumping stations/pumps adding chemicals etc.,) especially when the water is warm will be dissolved at these higher partial pressures, and will often be supersaturated when it emerges

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from the tap.

This is the main reason why some aquarists are “spinning their wheels” – they see the above signs and symptoms thinking its ammonia and or chlorine/chloramines without even testing the water and feel the fix is adding more chemicals to the aquarium such as Prime, Stress Coast, and Thiosulfate and or other water conditioners only to see losses at the end. All of these conditioners are “reducing agents” meaning they will remove or cancel out any oxidant including oxygen which is counter productive during this condition at this time, as the fish need as much oxygen as they can get.

There is no quick fix for this – the aquarist protocol must change by adding water to a separate vat and aerating it allowing all the saturated nitrogen to gas off for a period of 6 to 8 hours and bringing the temperature to equilibrium with room temperature then adding it to the aquarium. It is also not a good idea anyway to add chemicals directly to the aquarium in the form of reducing agents (which all conditioners have in them) while adding water as this is stressful to the fish.

The only way to prevent Nitrogen Embolism is by aerating the water to be introduced for a period of 6 to 8 hours in a separate container or vat in order to clear the excess nitrogen and bring the temperature at equilibrium with room temperature.

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***Pseudocrenilabrus nicholsi* - Nichols' Mouthbrooder**

photo: Mike Jacobs 2019

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(Editor: I was looking through some old articles and I found this one I did for TBAS in 2002. I went to my old slides and scanned them and here they are . . . **MEMORIES!!**)

Spawning Neon Gobies: 1973

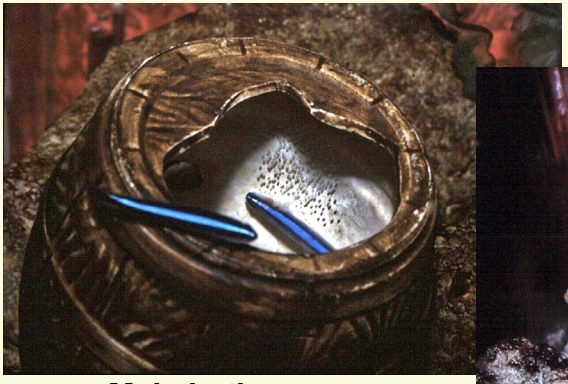
by Mike Jacobs

I was talking to a TBAS'er the other day and he reminded me of something from the way, way back past. It was 1973 I think and I was in the middle of Indiana keeping saltwater. The discussion had began as a joke but saltwater was not a joke to me at that point. I worked in a fish store while I was studying at Purdue University and it had become the standard joke that if someone was going to spawn some particular fish then it would be Mike. Well, this particular day a fellow came in the shop and we were joking about spawning some fish and he said " . . . OK Mike, you're so good why don't you spawn a salt water fish?" Well, hum . . . I thought. Why not? The secret I used to spawn any fish was really simple. Know what the fish wants and learn how it lives in the wild and feed it good and change water. You say that's not much of a secret . . . I've never thought so either. I've been telling people the same thing for 45+ years. **FISH WANT** to spawn. They are born to spawn. If given the right conditions you can't stop them from spawning. So off to Chicago I went and I started keeping saltwater fish . . .1969 . . . we didn't even know much about the Nitrogen cycle then, but we persisted.

At that time I was the only one in the state of Indiana, except a few people close to Chicago, who had saltwater. People came from 50-60-70 miles to just sit and look at the tanks I had in my house. My boss talked me into selling saltwater fish at his shop

because he said it “should go big time” . . . it did!!! I then graduated from Purdue and had to get a real job, so I was then selling saltwater set-ups and fish out of my garage in 1970-73, before I moved to St. Pete, Florida. Time went on and I read every book I could get my hands on and things were going just super and I got up one Saturday morning and looked in a tank and there was a pair Neon Gobies sitting on a clump of eggs. Don’t even ask! I haven’t got a clue how I did it . . . **THEY DID IT**!!! . . . and then they spawned a second time and a third. Every time I really thought they would save the fry but you know they were pipe dreams, **but they did hatch**!! I even went to Chicago and got some “live coral” and crushed it for the fry . . . no luck. However, I did get a couple of pictures to show you.

Enjoy . . . the pictures are really from 1973 in the middle of Indiana!



Male in the cave . . .
Female outside the cave.

Male in the cave . . .
Female outside the cave.

Male outside the cave.

Male in the cave . . .
Female outside the cave.

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I talk to fish. I can't help it. I just have to talk to them. The other day a friend of mine laughed at me and said, "Where are there ears?" "Fish don't have ears," I told her. But it got my curiosity up and I looked in my books. Well, I was wrong, fish do have ears . . . inner ears to be exact. The inner ear is usually located right behind the brain and picks up high frequency sound, up to 8000 hertz (cycles per second). Some fish, like Characins, have a keen sense of hearing because the inner ear is highly developed. The swim bladder acts as a receiver and amplifier for sounds that are passed to the inner ear by means or a series of connecting bones called the Weberian ossicles. This allows them to sense danger quickly and to form schools.

The inner ear in fish also works much like the human inner ear in helping with balance. The fluid within the three semicircular canals triggers receptors that register turning, tilting and acceleration. This enables the fish to orientate themselves in the three dimensions within the aquatic environment.

Fish actually rely heavily on their sense of sound, which in water become pressure waves. They use the inner ear for high frequency sounds and they use their lateral line system for low frequency sounds, as low as 1/10 to 200 hertz. The lateral line consists of rows of mucous-filled sensory buds along a certain line which is located in a narrow channel beneath the skin and the scales. Some fish have more than one lateral line or an irregular lateral line. The lateral line also informs the fish on the strength and direction of currents, helps schooling fish after dark or in muddy waters and aids in migrating.

Until next month, keeping talking to your fish, they might hear you (understanding you is a different matter).

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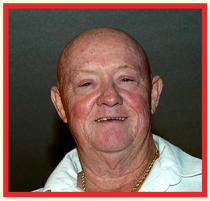

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