

THE FILTER

February 2021
Volume 30 Issue 6



TAMPA BAY
AQUARIUM
SOCIETY



ST. PETE/TAMPA
FLORIDA

Nannostomus trifasciatus
Threestripe pencilfish,
South America

TBAS . . . Since 1992

Photo by Mike Jacobs . . . 2013



TAMPA BAY AQUARIUM SOCIETY

“THE FILTER”

Tampa/St. Pete, Florida

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Hello Tampa Bay Aquarium Society friends! I trust you are all well and are still in good spirits. We are still waiting for the county to allow us to meet at our location. We understand that this is quite disappointing. Hopefully as soon as our most vulnerable become vaccinated we can safely meet in person again. Also the Florida State Fair has been rescheduled to April 22 – May 2. The bright side is we still have until February 28th to register to submit any entries.

Fortunately Zoom sessions have never been greater! If you missed it, we had a session with Joe Gargas of Aqua Research Center. It was a very informative presentation of new aquarium innovations and some explanation of water chemistry in the aquarium. It is currently available to view on our Tampa Bay Aquarium Society Facebook page. We hope to have one of these every month with other presenters, so be on the lookout for that Zoom link. If you know of anyone that would like to do a presentation via Zoom, please let us know.



See you all soon,


Dharmesh

Dharmesh Patel, President TBAS

Carassius auratus

Assorted Goldfish

Photo by Mike Jacobs 2016



Part 2 Fish Nutrition
by Joe Gargas www.aquaresearchcenter.com

This month, the individual vitamins, their functions and occurrences, and their respective values to fish will be discussed.

FAT-SOLUBLE VITAMINS

Vitamin A occurs in most foodstuffs as the so-called provitamin A (carotin), and first turns in to actual Vitamin A in the body of the animal. It occurs in green plants, especially in algae. Vitamin A1 is found in the stomach of small crustacea, insects and their larvae; A2 in the eyes of freshwater fish (to enable vision). The primary effect of Vitamin A deficiency is damage to the epithelial cells. Therefore, Vitamin A is also designated as the epithelialprotecting vitamin. As an anti-infectious agent, Vitamin A inhibits skin infections and is responsible for the formation and maintenance of function of the skin's slime layer. Vitamin A is often prescribed for blindness and diseases of the eye. Live bearers can bring young to the world blind, circumstances permitting, and hatching capability can be severely impeded.

Vitamin A is partly stored in the liver and yolk of fish eggs. Vitamin D: It is important to distinguish between three various vitamins: D1, D2, and D3, among which known differences in the mode of their action arises. One frequently finds Vitamin D in association with Vitamin A. Deficiency of this so-called anti-rickets vitamin causes bone diseases; however, this disease is closely linked to the Ca-P (calcium/ phosphorous) balance.

Furthermore, a deficiency of Vitamin D can cause disturbances to metabolism, which leads to problems with starvation and the musculo-skeletal system. Vitamin D is closely linked to steroids, which through irradiation with UV light can be transformed into compounds with Vitamin D characteristics. The real Vitamin D is Vitamin D₃, an animal product that is formed in the body through photochemical transformation from a precursor, a derivative of cholesterol. The fish is capable of producing this compound itself, and the transformation results from UV irradiation. From this process results the relationship between maintenance of the fish and the requirement of Vitamin D.

It is therefore advisable to give free Vitamin D on the food for surface fish such as half-snouted pikes, hatchetbelly fish and others, along with lighting that has a high UV component. The provitamin of Vitamin D occurs in zooplankton and in algae. During rich feeding with small crustacea, insects and their larvae, Vitamin D balance can be fully achieved.

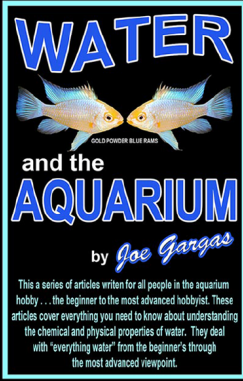
Vitamin E has a close relationship to the sex hormones, and for this reason it is also designated as an anti-sterility vitamin. Vitamin E has specific effects on the musculature, endocrine glands and nerves. Among the symptoms of deficiency is fin paralysis. In female animals, the disturbance is of a lesser nature and is entirely curable.

Vitamin E increases the egg hatch rate, brood growth and the fertility of the adult fish. The chief function of Vitamin E among animals is viewed today as being an antioxidant; and also has the effect of protecting Vitamin A from oxidation. In addition to this, it plays an important role in electron transport in the respiratory chain. Vitamin E can be taken in from plant matter.

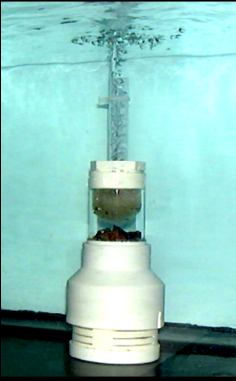
Vitamin K prevents anti-hemorrhagic vitamin deficiency, which causes disturbances in growth, skin and inflammation of the slime layer, low fertility and inadequate blood formation. Vitamin K is found in green plants of all species.

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Joe's WATER Book



Joe's ROCKET FILTER



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SO, WHAT'S A VIRUS ANYWAY?

by Joe Nadolny



Since we have all been and maybe still are in self quarantine at home, and all of our aquariums are spotless, and all of our breeders are set up, and there is not a spec of dirt in any of the filters, it may be a good time to talk about viruses.

Viruses are interesting creatures. Virus is a Latin term meaning “poison, sap of plant, slimy liquid.” The earliest use in English was in 1728. Viruses have been called “organisms at the edge of life.” Some say that viruses are not alive. One definition I found was, “A virus is a submicroscopic infectious agent that replicates only inside living cells of an organism such as an animal, plant, or bacteria.” Inside the virus is a packet is called a viron that contains DNA or RNA enclosed in a protein coat called a capsid. The viron has no digestive system, nervous system, or nucleus as a typical animal or plant cell would have. A virus cannot reproduce on its own. This is why some say that viruses are not “alive” in the strictest sense of the word. Viruses reproduce by injecting their DNA or RNA into a host’s cell and programming the cell’s machinery to produce more viruses. The cell eventually explodes releasing new viruses to infect more cells.

Viruses are very, very small, about 1/100 the size of a bacteria. They have a diameter of 20-300 nanometers. A nanometer is one billionth of a meter. Escherichia coli that lives in our intestines is 1100 nanometers wide and 6000 nanometers long. You cannot see a virus with a regular light microscope; you need an electron microscope.

There are about 5,000 different viruses (so far). A virus can be very specific to the host it infects and what type of cell it infects. In humans, measles, polio, influenza, smallpox, and covid-19 are all caused by viruses. They have been found in almost every type of ecosystem. Viruses are the most abundant biological entity in the aquatic environment. There are about 10 million viruses in a teaspoon of sea water (I may never go to the beach again!). There are over 125 different viruses that affect fish.

There are many viruses that affect food fish and cold-water fish such as goldfish and koi. As fish keepers you may have seen some of these:

Spring Virena of Carp (SVC)

Koi Herpes Virus (KHV)
Goldfish Herpes Virus (HVHN)
Carp Edema Virus Disease (CEVD)
Carp Pox

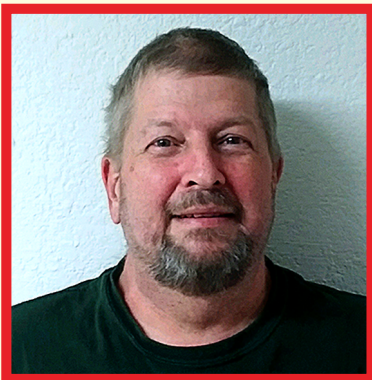
Most of the above are more of a problem in colder areas. You may never see some of these due to Florida being sub-tropical. All of these (except Carp Pox) can cause up to 100% mortality. You might have seen Carp Pox. It looks like small spots of wax on the fins. I have very carefully wiped the spots off the fin in between my fingertips to remove them. Carp Pox rarely kills the fish; it just looks bad.

As far as viruses that affect tropical fish, megalocytivirus can affect sword-tails, sailfin mollies, some gouramis, and some cichlids including angelfish. This is the "angelfish virus." It can cause 100% mortality. It can occur in a temperature range of 68 to 90 F.

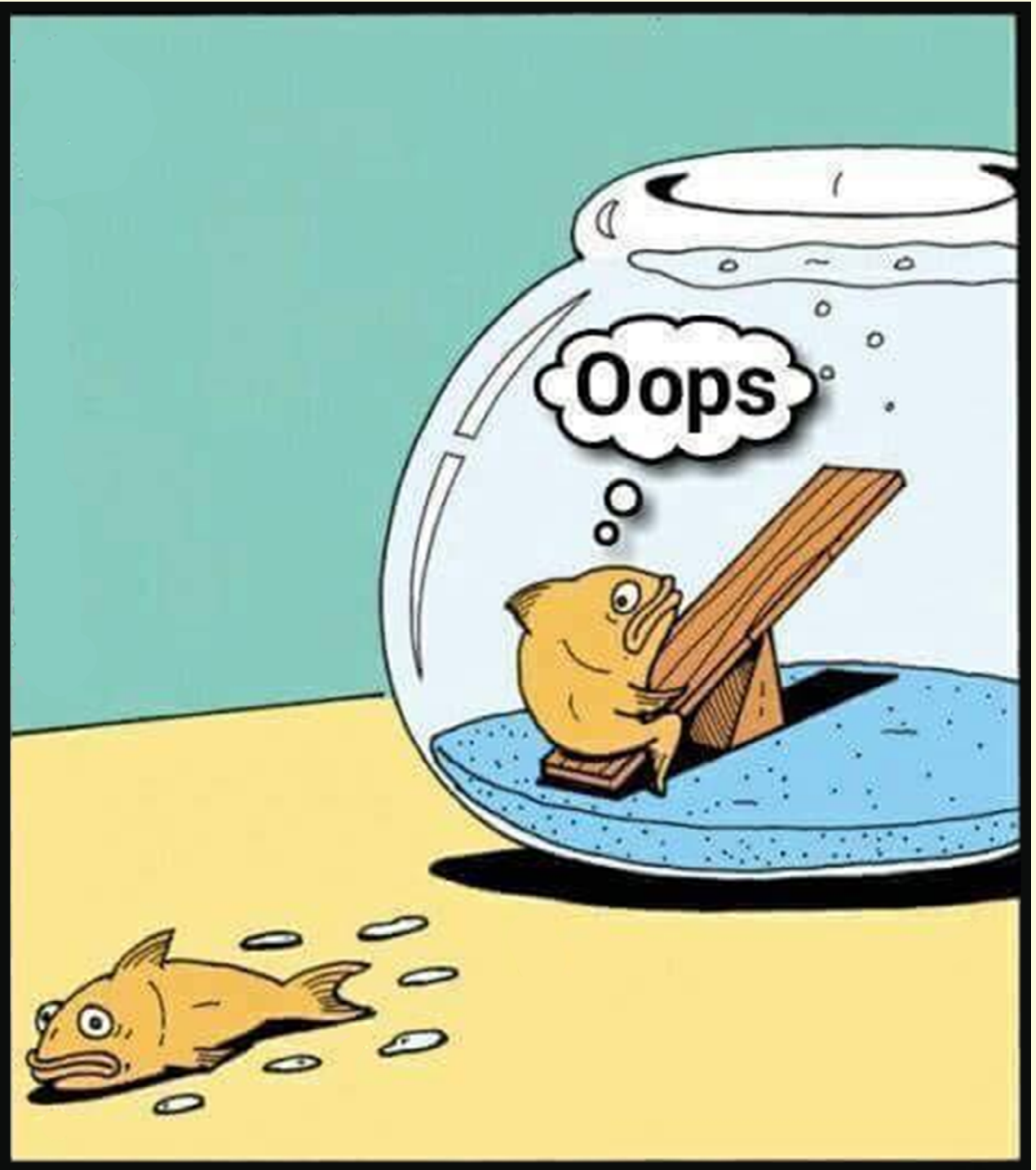
Lymphocystis Disease (LCDV) is a virus you may see. It looks like small, wart-like nodules on the fins. It does not cause significant mortalities. The only fish I have seen it on are Ruby and Green Scats and Glass Fish, both painted and unpainted. I could, very carefully, pull it off by pinching the fin between my fingertips and gently pulling it off. The fish do not seem to be bothered by it. There are no treatments for viruses. Antibiotics will not work on viruses. So, what can you do? Try to keep your fish healthy and stress free by:

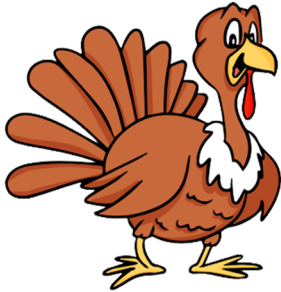
- 1) Maintain excellent water quality
- 2) Feed high quality food
- 3) Maintain clean facilities
- 4) Keep sick or potentially infected fish separate from all other fish

It is a particularly good idea to quarantine any new fish you get that are from an unknown or suspicious source.



Joe Naldony:
A long time fish keeper
and a long time
TBAS'er!!!!





Fat Free Turkey Breast Recipe 1/2 pound at a time by Joe Gargas

Weigh out 1/2 pound of fat free ground Turkey Breast at a time put it in the blender with 1/2 to cup of Distilled water.

NOTE: You Must Use Distilled Water!!!!

You may need to add more water to prevent blender from burning up. It all depends on how powerful your blender is.

Add 10 mls of menhaden oil (fish attractant – bait shop) - a full tablespoon. Then 3 jars of Gerber strained garden vegetables or peas. (This will give you all the vitamins you need in the fish food much more than the prepared over the counter dry fish foods.)

Blend

Then add 1/4 tsp of Carophyll Pink .10% Astaxanthin (Brine Shrimp Direct ask for Victoria 1-801-782-4700) - Blend for 45 seconds to a minute.

Last thing add 1/2 Tablespoon of my binder in to a 1/2 cup of distilled water mix until dissolved – then add to blender, make sure blender is covered or else the food will float. Blend no more than 45 seconds I blend on liquefied to get a consistency of pourable mayonnaise. (Because you are not using heat to bind the mixture you will keep all the natural occurring vitamins in the food 100%. Heat destroys vitamins)!

Pour the mixture in zip lock freezer bags or ice cube trays let set out room temp for 2 -3 hours before freezing it as this will give the binder time to work.

You're done.

Because the binder is cold setting you will not destroy any of the nutrients in the food. I sell the binder, its \$35 and is enough to make about 7-10 lbs of GOOD GREAT FISH FOOD!!!!!!

**I ADDED
30 ANGELFISH
TO THE TANK!!!!**

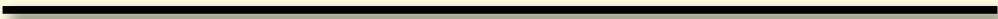
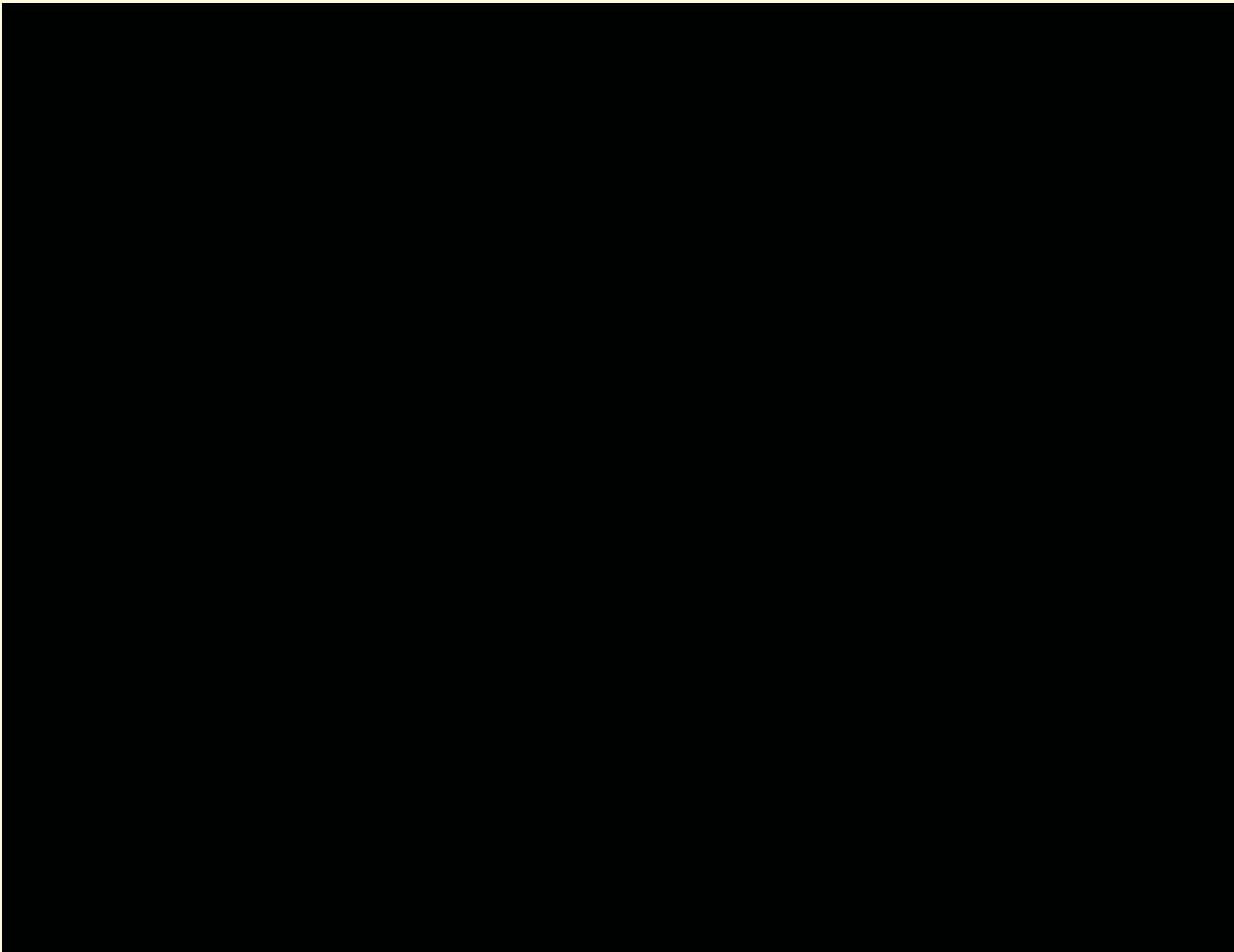
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[Click on the](#)



[to See Video](#)

20-40 second
"load" the **FIRST**
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SOMETHING TO SEE!!! Part 2



Haludaria fasciata,
Panda Red Barb



Xiphophorus maculatus,
Pinapple Hi-Fin Platy



*Hyphessobrycon
Margitae,*
Peruvian
Blue
Tetra

*Betta
splendens,*
Koi
Betta



*Fundulopanchax
gardneri,*
Common
Gardneri



***Melanotaenia
praecox,***
Dwarf Neon
Rainbow



***Balantiocheilos
melanopterus,***
Bala
Shark



***Carassius
auratus,***
Calico
Goldfish



The afternoon high is a very pleasant 65 degrees with low humidity. We opened our windows to air out the house from the long summer of 24 hours-a-day air conditioning. By late evening, the temperature dropped into the mid-50s . . . great sleeping weather . . . and the windows were

closed for the night. What a beautiful day it had been! A couple of days later, we noticed that our fish were covered in little white spots. They have the DREADED ICK! Testing shows that the water quality was good and no new fish were added. How could this have happened? How do we save our fish?

Fish get sick for a reason, so what happened? The temperature in the tank dropped several degrees in less than 24 hours and no doubt severely stressed the fish. The temperature in larger bodies of water is much more stable and usually doesn't drop more than a degree or two a day . . . it that. But in much smaller bodies of water, like our fish tanks, the temperature is not as stable. Unless there is a heater in the tank, the temperature can drop very rapidly. When this happens the fishes' immune systems are depressed and the nasty little ick parasites take hold. If something is not done very quickly, many of the fish will die.

Freshwater ick is characterized by small, white, rounded spots (the size of the period at the end of a sentence) on the body and fins of the fish. The spots visible on the fish are actually a combination of cyst (caused by an immune reaction by the fish (and the parasite). The parasite penetrates the skin and gills of the host. This form of the parasite can not be killed by medication. Later in their life cycle, the ick parasite drops off their host (the fish) and matures further in the substrate or on the surface of plants or other structures in the tank. They then reproduce, each ick, parasite releasing up to 1,000 free swimming forms, known as tomites, into the water. These tomites must find a fish host with 48-72 hours at 75-79 degrees F or they will die. This free swimming tomitite stage is the for that can be killed by medication.

The first thing to do is put a heater in the tank to maintain a stable water temperature. Any infected fish should be removed to a hospital tank whenever possible. The best course of action is to treat the fish with a formalin-malachite green combination. However, this treatment is also the harshest medication for

the fish to tolerate. Formalin alone is the next best treatment and less stressful. These two medications must be used cautiously for fine-scaled or scale-less fish. In every case, be sure to read the directions for dosage. If for some reason, medicating is inappropriate, increasing the salinity of the treatment tank (for fish species that can tolerate the higher levels) often works because the salinity disrupts the ick life cycle.

If you are using a hospital tank, raise the temperature to about 80-84 degrees F. This will cause the parasites to drop off faster and reproduce. Remember, the medication only kills the free swimming tomites. Be sure to do a water change after the first 48 hours to improve water quality and vacuum the gravel to reduce the number of maturing parasites. When the spots are all gone, don't celebrate yet . . . often three to five treatments, every other day are necessary to control and eliminate the disease. When you're pretty sure the disease is gone, bring the temperature down one to two degrees a day until it matches the main tank. Then return the fish to the main tank. Don't forget to keep a heater in the tank to maintain temperature stability.

If a hospital tank can't be used and you must treat the main tank, raise the water temperature to 80-82 degrees F. Be sure to remove all carbon. Add the medication to the tank (follow the dosage instructions!). Unfortunately, your plants and invertebrates may suffer. So, if possible, move them to another tank for at least three to four days. This will also break the life cycle of the parasites living on the plants. Don't forget to do a water change after treatments to prevent water quality problems.

Everyone's tank gets ick sometime, but if we do everything we can to prevent problems like sudden temperature drops and the introduction of un-quarantined fish, then an "ick-disaster" will happen far less often and fewer fish will be lost. Until next month, keep those fish happy and keep those questions coming.

Note: The preceding advice was for freshwater fish only. The rules are different with marine tropical and reef tanks.

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by Joe Gargas

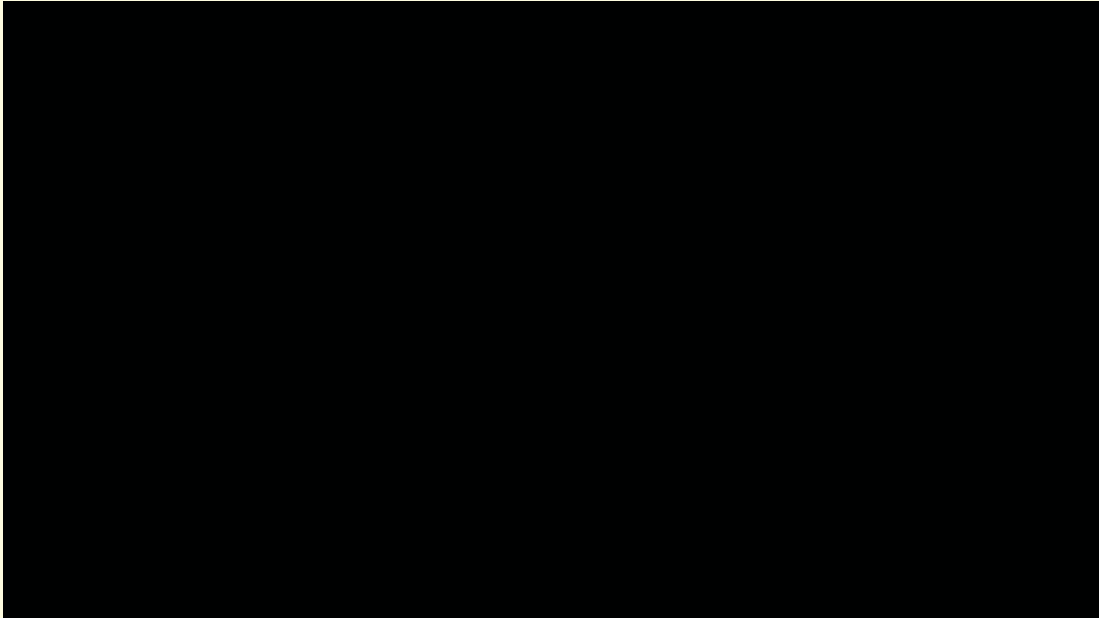
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Danio rerio - Purple Galaxy Danio (from 5D Hatchery)

photo: Mike Jacobs 2018

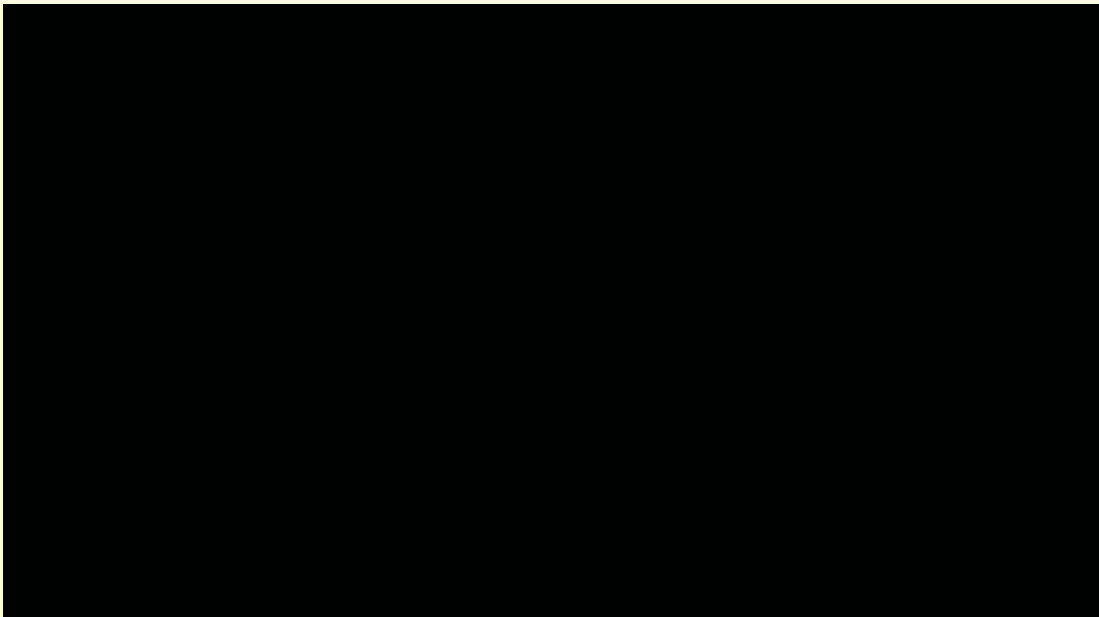
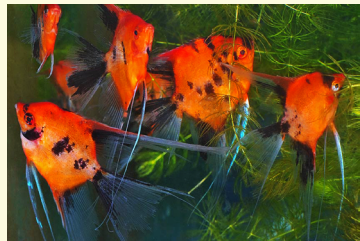
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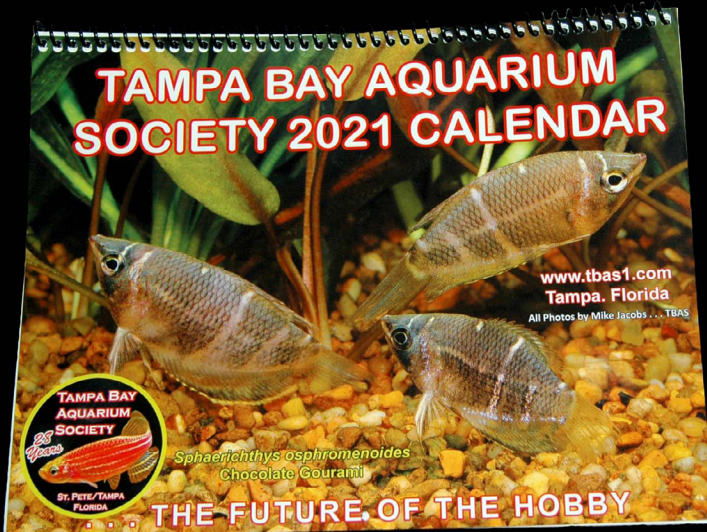
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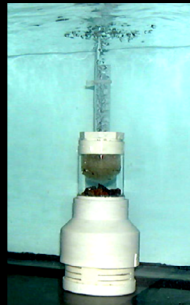
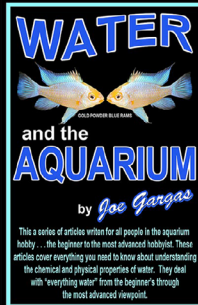
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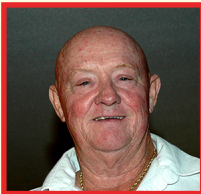
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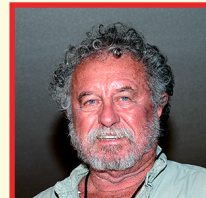
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