# AQUATICA

THE ON-LINE JOURNAL OF THE BROOKLYN AQUARIUM SOCIETY
VOL. 32 NOVEMBER - DECEMBER 2018 No. 2


Emperor Angelfish - *Pomacanitus imperator*

107 Years of Educating Aquarists

# AQUATICA

VOL. 32 NOVEMBER - DECEMBER 2018 NO. 2

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## Brooklyn Aquarium Society Board of Directors



The **Brooklyn Aquarium Society Inc.** is a non-profit organization 501(c) (3) for people interested in the aquarium hobby and the study of aquatic life. The Society meets the 2nd Friday of each month except July and August at the Education Hall of the New York Aquarium at Coney Island, Surf Avenue at West 8th St., at 7:30 PM. Meetings are open to visitors. Refreshments are served. Membership is $25 per year family / $20 individual / $15 for students under 14. Send inquiries or membership checks payable to:

**Brooklyn Aquarium Society, C/O Membership Chairperson, P.O. Box 290610, Brooklyn, NY 11229-0011.**

# Brooklyn Aquarium Society

## Calendar of Events ~ 2018 ~19


**NOV 9 Greg Sage - Selective breeding** - Followed by an auction of freshwater and marine fish, aqua-cultured corals, plants & dry goods..

**DEC 14 Holiday Party ~ Members, their families & friends** • Fish Bingo & Prizes • BAS awards presentations.

## 2019

**JAN 11 Dr. Timothy Hovanec, Tim's Aquatics - Modern Day Approach to Aquarium Chemistry** ~ Followed by an auction of marine fish, aqua-cultured corals, freshwater fish, plants & dry goods.

**FEB 8 Joseph Graffagnino -A Pond Grew in Brooklyn** ~ Followed by an auction of marine fish, aqua-cultured corals, freshwater fish, plants & dry goods.

**MAR 8 Richard Ross - Coral Spawning and Secore** ~ Followed by an auction of marine fish, aqua-cultured corals, freshwater fish, plants & dry goods.

**APR 12 Ralph Chi of Pacific Aquarium & Pets, Inc. Topic TBA** ~ Followed by an auction of freshwater and marine fish, aqua-cultured corals, plants & dry goods.

**MAY 10 Giant Spring Auction** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods.

**JUN 14 Speaker from House of Fins - Topic TBA** ~ Followed by an auction of freshwater and marine fish, aqua-cultured corals, plants & dry goods.

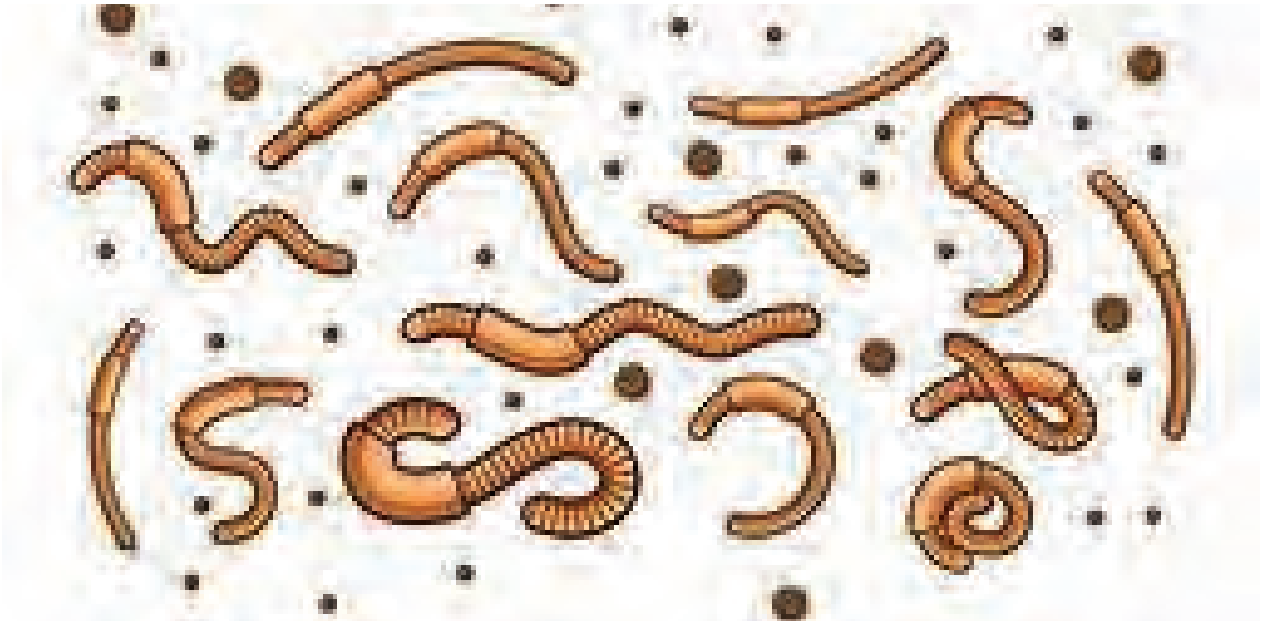
### NO MEETINGS JULY & AUGUST

**SEPT 13 TBA** Followed by an auction of freshwater and marine fish, aqua-cultured corals, plants & dry goods.

**OCT 11 Giant Fall Auction** ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods..

**NOV 8 TBA** ~ Followed by an auction of freshwater and marine fish, aqua-cultured corals, plants & dry goods.

**DEC 13 Holiday Party ~ Members, their families & friends** • Fish Bingo & Prizes • BAS awards presentations.



# LIVE FOOD FOR TINY FISH

I have been raising and breeding tropical fish for over 40 years. Many times I am asked about what type of foods are ideal for really tiny fish. I hear that some use crushed flakes, others cut up live or frozen worms and others add brine shrimp, either adult or baby brine live or frozen. Many assume that even if the baby fish can't ingest the food, they will eat around it and obtain nutrition that way. This may work if the fry are older and larger and can take bites from food too large for them to take in their mouths.

There are exceptions to this such as catfish that will ram their body over an egg to get it in their mouth and wait a day or so for the egg to break down and enter their stomach. For the most part, if the baby fish can't get the food in its mouth, it will ignore it to the point where it will starve to death.

The best food for tropical fish is live food. This is especially true for tiny fry fish such as wild bettas, gouramis, certain catfish, tetras, barbs and others in the minuscule size. These fish fry look like ½ of a human eyelash. Tiny fish are very susceptible to water depth, temperature, pH, hardness, light, and too many other variables to mention. Any of these factors could cause the fry's demise. They need a healthy and safe environment to survive. As a hobbyist, you want the fry to grow as quickly as possible. The larger it becomes, the better the chance it can handle stress and survive to an adult size where it can complete the cycle and reproduce more fry.

I have created a list of live foods from the tiniest to the largest to provide a choice for you to feed to your baby fish that will provide them the correct food to allow them to grow and prosper. Some of these may overlap in size but there are differences in the shape of the animal that would make it easier for fish to swallow. I will provide what I think is the smallest to the largest live foods.

1 **Infusoria** is a single-celled organism consisting mainly of ciliate protozoans. There are an estimated 2,000 – 3,000 types of infusorians protozoa. Infusoria are created from decaying vegetable matter. Be careful with the use of infusoria because, if left in a small glass container for longer than a day or so, it will start to decay and emit a foul smell. Replace it with a fresh supply immediately before feeding to your fry. The size of infusoria is 25 um [micrometer] – 300 um. By definition, a um = 1/1,000 of a mm [millimeter].

2 **Paramecium** – is a form of infusoria, an easy to raise live animal created by using a banana skin, plain tap water, and a starter culture to activate this solution. Always use a glass container, not plastic. A 2 or 3-liter container will last 3-4 months. Remove the live paramecium from the container via a turkey baster into a smaller glass container (a 12-ounce Corona beer bottle is perfect for this because it is clear and has a long neck). Add the paramecium solution to the bottle until it is halfway up the neck of the bottle. Place a piece of filter floss halfway down the neck of the bottle to the top of the paramecium solution. Add aquarium water to fill the rest of the neck of the bottle. The paramecium will travel up the solution, travel through filter floss to ascend into the aquarium water. Hold the bottle up to the light and you should see the paramecium swimming in the water. The paramecium will be clear and look like a tiny cloud of wavy lines. Take a pipette or small siphon tube to squirt it into the tiny fry tank. The paramecium will survive for several days in the aquarium. The size of a paramecium is 50 um – 300 um (0.0020 – 0.0130 inch).

3 **Rotifers** are another type of freshwater zooplankton. There are 2,200 species of rotifers. Rotifers eat algae. The size of a rotifer is 50 um – 0.1 – 0.5 mm long.

4 **Banana worms** measures 50 microns in diameter and 2 millimeters in length. These worms can live for 24 hours. They are ½ the size of a micro worm

.

5 **Walter worms** are very similar to banana worms and are minimally larger than banana worms. These worms can live for 24 hours.

6 **Vinegar eels** are made the same way as paramecium, except instead of a banana, use an apple cut into 6 pieces. The size of a vinegar eel is 2 millimeter

(1/16 of an inch). Vinegar eels are the size of a banana or Walter worm. The difference is vinegar eels are free swimming. Vinegar eels stay alive for days.

7 **Micro Worms** the same size as vinegar eels. They fall to the bottom and can live for 24 hours. The nutritional value of banana, Walter, Vinegar eels and Micro Worms is 48% protein, 21 % fat, 7% glycogen, 1% organic acid.

8 **Brine Shrimp** is a saltwater species. When first hatched, their size is 400 – 500 um long. Brine shrimp reach adult size in 8 days and after 15 molts is 8 – 20 mm in length. Adult brine shrimp become 20 times longer and 500 times larger in biomass than a newly hatched nauplii. In salt water, they can live between 50 days and 3 months. In freshwater, they live for 5 hours.

**Now you have an idea for a variety of live foods that are easy to maintain and will be the correct size for your baby fish. Do not overfeed since too much food becomes a pollutant if it's not eaten. The good thing about any of these live foods is that even the pickiest of fish can't resist live food. Enjoy your fry keeping!**

JOE

**Anthony P. Kroeger** – BAS


# Black Banded Sunfish

## *Enneacanthus chaetodon*

**The beautiful black banded sunfish is sometimes available in better pet stores. It is ironic that the fish you see in shops is raised in Hong Kong and Indonesia. This American native is not commercially raised here, but is very popular in other countries and there is good reason for its popularity.**

This beautiful sunfish is native from the New Jersey pine barrens to Florida in what is essentially North American blackwater environments. If you go to collect them, be sure you have the permits to do so. Expect to find a few at a time, as they are only rarely abundant in nature.

This fish's color and behavior reminds me of an angelfish. A bright silver body is crossed vertically by 4 - 6 black bands. The dorsal has black leading spine. The ventrals have neon orange leading spines followed by a trailing broad black stripe. The other fins are clear; males have a metallic neon green speckling overlaying the body.

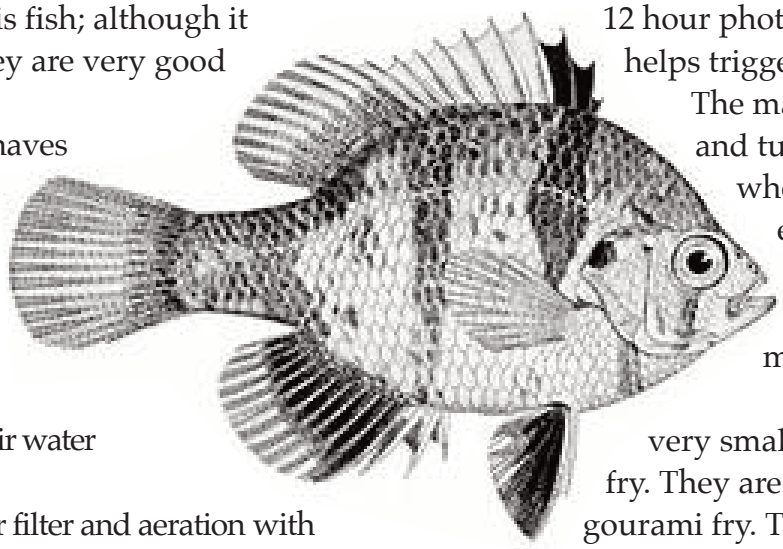
This fish usually grows to between 2 and 3 inches. Although I have heard of 4 inch specimens, I have personally never seen them at this size. Black bands usually live to about 3 years old.

Black bands do have some specific requirements to keep them in the home aquarium. Treat them like *Apistogrammas* and they should be fine.

This fish must have soft acidic water. I keep mine at 6.6 to 6.8 pH and at 72˚F temperature. I use peat moss or dried oak leaves to add tannins to the water. You can also use commercially formulated blackwater extracts for same thing. A good tea colored water is best for them.

I recommend a 20-gallon long tank for 3 or 4 of them. Use sand with this fish. They do not seem to do well over gravel. Give them plenty of hiding places and live plants just as you would with Apistos.

Always cover this fish; although it does not look like it, they are very good jumpers.



This fish behaves like an angelfish. They glide around their aquarium in a sedate manner, but can move quickly if disturbed. They are peaceful with fish that are tolerant of their water conditions.

Use a small power filter and aeration with this fish; it does not need, want or appreciate high rates of currents, nor does it tolerate large volume water changes.

I change 10% of its water twice a week. That's it; if you change too much of its water at once, it will clamp its fins and twitch to show you its great displeasure.

Black bands will initially be picky feeders. Expect this! Usually you must start them with live foods such as live blackworms, live brine shrimp and live daphnia or bloodworms. They quickly learn to eat frozen food. Black bands rarely eat flake food and forget about pellets, which they will refuse to eat.

In the proper conditions, this is a fairly hardy fish. But if those conditions are not maintained, it easily will fall ill. This fish is very sensitive to any medication containing Malachite Green. I recommend you do not use Malachite Green on this fish except as a last resort and, even then, only at 1/3rd the manufacturer's recommended dose.

Black bands have an interesting breeding behavior and will spawn in your aquarium. Eggs are laid in a pit and guarded by the male.

Heavy feeding of live food and a minimum 12 hour photo period (lights on) helps trigger spawning.

The male loses all his color and turns a muddy gray when he defends the eggs. Males usually do not guard fry well, if at all. I remove the male once the eggs hatch.

The eggs are clear and very small, so are the resulting fry. They are smaller than honey gourami fry. The fry are also light sensitive. Keep their lighting dim.

Such tiny fry need green water and rotifers as a first food. Only later, feed brine shrimp nauplii (usually 1 to 2 weeks after hatching).

The fry shoal but grow at varying rates. Be sure to feed green water and rotifers until all the fry can accept baby brine shrimp.

As usual, check with your local DNR to be sure you can legally keep this fish. Black band sunfish are demanding and challenging, but the effort is well worth it. Try some!

Happy fishkeeping.

Tony

By **Staff Writers** - www.liveaquaria.
Reprinted from the May 2018 Raleigh Aquarium Society Newsletter Vol. 37 Issue 5


# How Does Stress Affect Fish?

Stress is present in the lives of all living things and is the force that brings about physical change and adjustment. Small amounts of stress can be harmless, or even beneficial, but high levels of stress or prolonged periods of low stress can create severe health problems. Many people are aware of stress in their own lives and can name many of the causes as well as possible treatments. However, the stress that affects fish is different and much more widespread. The nature of keeping aquatic species in confined environments generates many stresses that are unique to aquarium fish. To be successful in keeping healthy aquarium fish, you need to know what causes stress in fish as well as how to prevent it. Elevated stress levels are at the root of most health problems in fish.

## What is stress?

Stress is any condition that causes physical or mental discomfort that results in the release of stress-related hormones or results in specific physiological responses. Stressful events will cause an increase in heart rate, blood pressure, blood sugar, and the release of cortisol. Stress can be physical, psychological, or environmental. Stress can either be short and sudden, or long and chronic. Mild short-term stress has few effects, but severe long-term stress leads to illness or death.

## The effect stress has on a fish's health

Short-term stress will cause an increase in heart rate, blood pressure, and respiration. The fish is reacting much as we do with the fight or flight mode. Fish can only maintain these altered states for a short period of time and then they will adapt or the stress will become chronic. Stress is accompanied by the release of the hormone cortisol, which is responsible for many of the negative health effects associated with stress. In addition to having a negative effect on growth,

reproduction, and digestion, chronic stress will also lower the ability of the immune system to respond effectively and fully. This lowered immune response is what allows parasites, bacteria, and fungi to infect a stressed fish. Depending on the duration of the stress and its type of treatment, it can lead to illness or death.

## The causes of stress

**There are dozens of potential stresses to fish, but common causes are:**

- Elevated ammonia
- Elevated nitrate
- Improper pH level
- Fluctuations in temperature
- Improper salinity
- Low oxygen levels
- Harassment from other fish
- Lack of hiding places
- Inadequate tank size
- Overstocking of tank
- Medications and water treatments
- Improper nutrition

Elevated levels of ammonia, nitrite, and nitrate all create deterioration in fish health due to stress. High levels can cause severe stress, whereas slightly elevated levels can contribute to chronic stress. pH levels that change abruptly cause acute stress and continually elevated or lowered pH levels can cause chronic stress. Many fish adapt to long-term changes, but there are limits. pH changes of more than 1.5 points below or above recommended levels are going to have a negative effect over time and should never be considered acceptable.

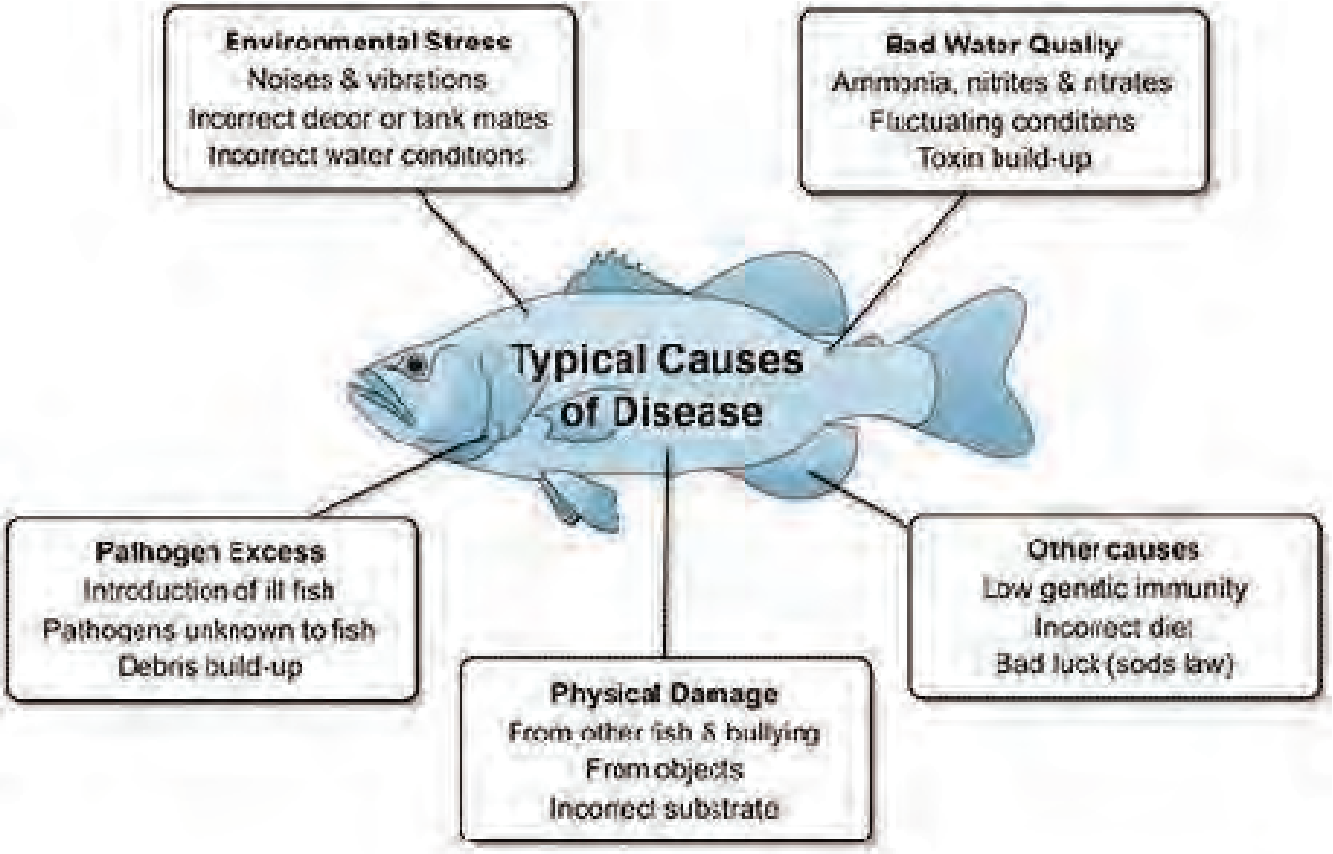
Temperature fluctuations are a much underappreciated stressor of fish. Most tropical freshwater and marine fish do not tolerate temperature changes very well. Many tanks that are not set up properly will have over the recommended maximum of one degree of temperature fluctuation in a 24-hour period due to room temperature, lights, and equipment. The daily fluctuations will create chronic stress as will having a too low or too high temperature in the tank for the species of fish present. Wild fish live within very specific salinity levels (levels of salt in the water). Their bodies work hard to maintain the osmotic gradient between themselves and their environment. If their environmental salinity is not specific to their needs and is not held at a steady level, they have to work harder to maintain their osmotic gradient, which generates chronic stress. Oxygen levels that are below recommended levels can cause fish to 'breathe' faster than optimum and this can result in chronic stress. Obviously, very low oxygen levels can lead to severe short-term stress and death.

Harassment from other fish and lack of hiding spaces go hand in hand. There should be two suitable hiding spaces for every fish in the tank, otherwise there are going to be fish that are stressed and bullied. Remember that, unlike their environment in the wild, these fish are confined and cannot get away from aggressors. Aggression is a very real problem in many tanks that leads to many injuries, infections, and death. Overstocking of the tank is a common problem that contributes to almost all of the stresses in the above list, from water pollution to oxygen depletion to harassment.

Do not overstock your tanks. If you want to stress your fish, put too many in the tank and it will happen every time.

If you add something to the water to treat a disease or water condition, be aware that it can be stressful to your fish. Try to avoid treating the water if at all possible and always use a quarantine or treatment tank. Copper is an excellent treatment for ich or velvet, but it can be toxic and stressful

to fish. Of course, using it is much better than letting a fish die from velvet, but it should never be used in a tank with healthy fish.




Improper nutrition is also a commonly overlooked stressor of fish. Many fish can live on minimal nutrition with old or stale flake foods, but this poor nutrition is a chronic stress. A variety of well-preserved dry foods as well as freeze-dried, fresh, and frozen foods specifically designed for individual species are necessary to prevent chronic nutritional stress.

Disturbing the tank through banging on the glass, constantly netting fish, or rearranging décor stresses fish and should be kept to the necessary minimum. There is probably nothing that stresses fish more than bringing them from the wild or an aquaculture pond through the wholesaler to your home. In just a few days, the fish will be captured, held, packaged, shipped, sorted, handled, packaged again, and so on through the collector, exporter, importer, wholesaler, and retailer to your tank. Throughout this process they may be exposed to drastic changes in temperature, ammonia, pH, salinity, diet, medications etc. They often do not eat and arrive at your tank completely stressed. If they are not handled very carefully and are not placed in an optimum environment, their stress is going to continue and they will get sick and die. The reason that this stress is listed last is not because it is the least important, but because it is the most significant.

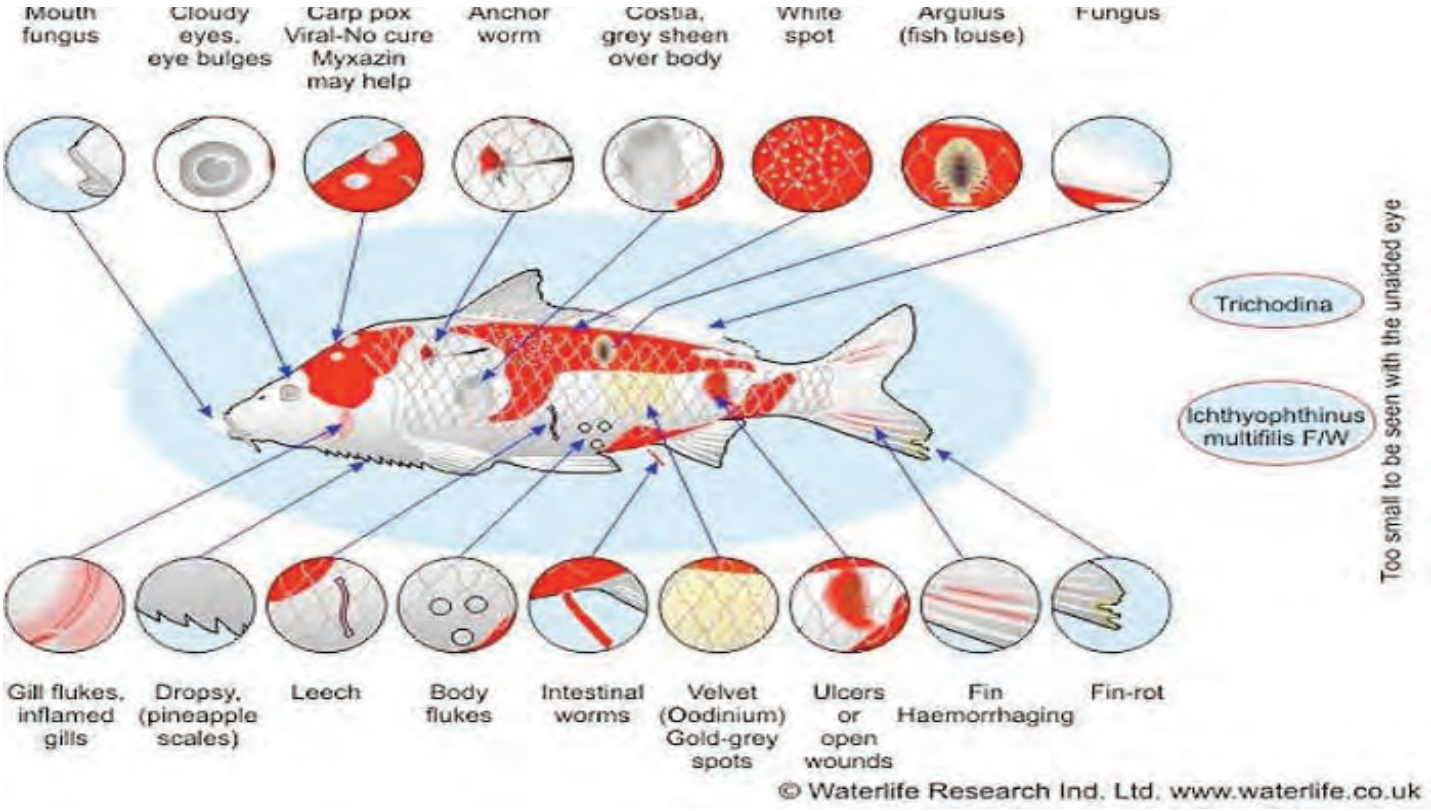
You need to understand all the stress factors and how to eliminate them because these fish that arrive at your tank have been exposed to all of the listed stresses. The unfortunate truth is that the majority of fish mortalities occur at or near the time of entering a new tank and only through an appreciation of stress and its effect on fish can this problem be prevented.

## How to eliminate stress

While it is impossible to eliminate all stress, we have the ability to limit or prevent many of the causes. Acute stress is more obvious and needs to be addressed very quickly. Chronic stress is often not visible. It can take weeks and months to develop. Your fish may appear to be doing fine, until one day one gets sick and dies, and then a few weeks later another one does and so on. If you have fish that are getting sick and dying, there is probably a source of stress on them that needs to be identified and remedied.

The other big source of stress is bringing new fish into your aquarium. Buy only from the most reputable sources that move the fish in the most careful and humane manner. Acclimate your new fish properly, use a quarantine tank, and make sure your new fish are fed appropriately. Spend extra time on the new fish and be as careful as you can. Taking a little time here can make all the difference in breaking the chronic stress cycle and keeping these fish healthy and disease free. Stress is one of the most critical factors in fish health. Only by understanding the effects that stress has on fish, as well as being able to identify and prevent common stresses, can we eliminate this problem.

**As aquarists, we need to be responsible for the health and welfare of all of our fish. Provide the highest quality water, nutrition, and suitable tank environment. Introduce new fish carefully and always use a quarantine or treatment tank when necessary. If we work hard to reduce the stress in our fish, we can virtually eliminate disease and health problems in our aquarium.**



**Anthony P. Kroeger** – BAS

## *Marine Angelfish - Part 1*

# BIG! BOLD! BEAUTIFUL!

## THE EMPEROR ANGELFISH

***Pomacanthus imperator***

**Wow!** That's the first reaction most people say when they see an emperor angelfish. This is a real showstopper in your aquarium.

Given proper care, emperor angels make good aquarium inhabitants. But expect to pay high prices for this angelfish.

Native to a wide area of the Indo-Pacific, emperors occur from East Africa to the Red Sea to Sri Lanka and over to the Philippines.

Emperors grow to about 14" inches as adults. Both adults and juveniles are stunning, but have completely different color patterns. Juveniles are deep blue with white and light blue shooting target shaped concentric bands covering the flanks of the fish.

Adults have a turquoise blue or purple main body color on the flanks and neon yellow lines that extend upwards from the shoulder

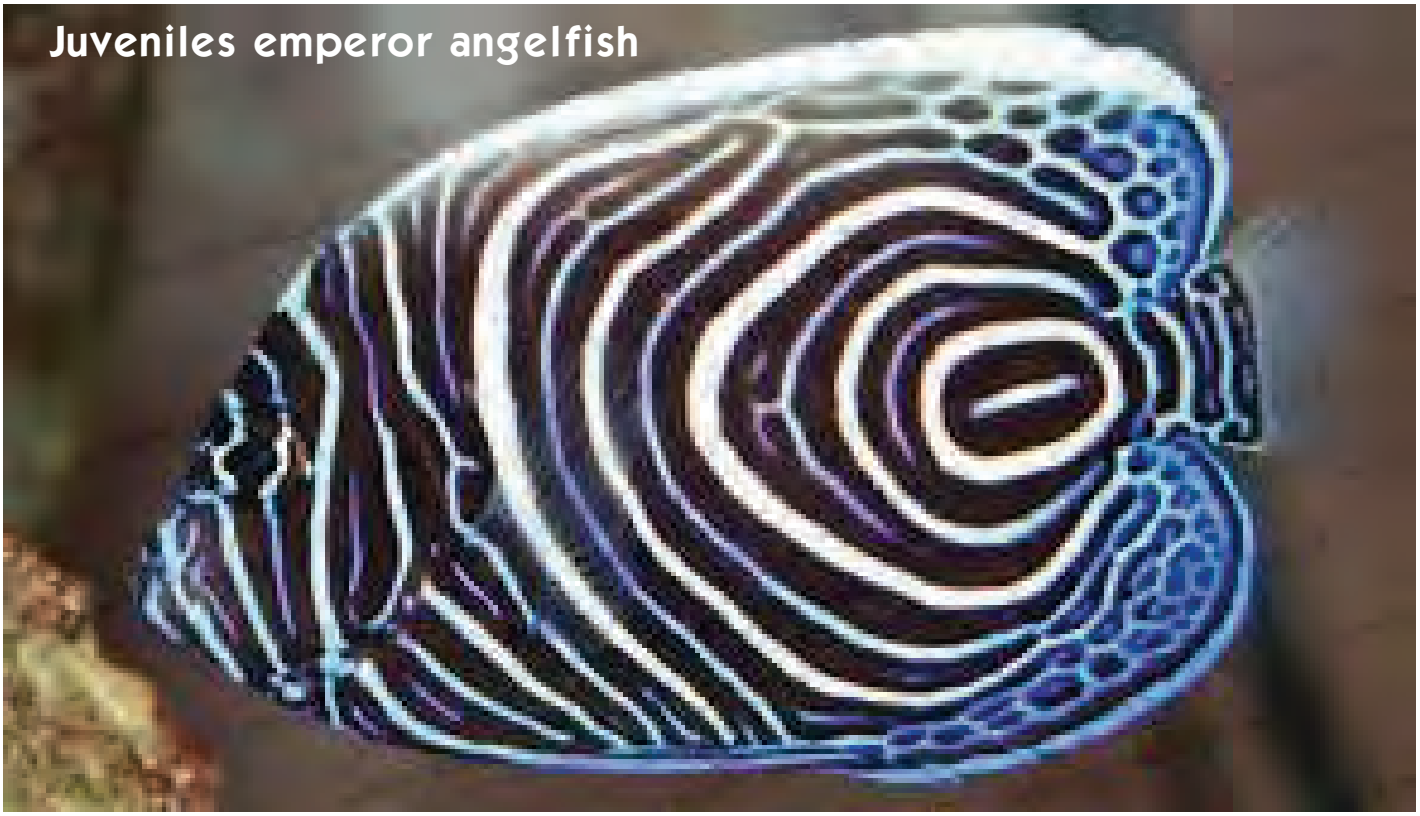
through the dorsal and anal fins and to the caudal peduncle. The tail is solid canary yellow. The snout is cream color. The nape is a honey gold/green color. A larger vertical black patch extends from the gill cover edge forward and down to the belly and anal fin, both of which are also black. A wide black mask extends over the fish's eyes (which are also black) and down in a thin stripe to connect with the black on the throat and belly. The mask and gill cover parts are lined in a wide turquoise blue stripe. The gill cover ends in a long blue spike.

The pectoral fin rays are black. Anal fin is black with a blue longitudinal stripe and edged in blue. The dorsal is yellow posteriorly, blue; at the base with canary yellow striping and topped with a snow white edge. Emperor angels are stunning!

So how do you keep this beautiful fish?

Emperors are large fish and need room. A 55-gallon tank would be minimum for a juvenile, a 180-gallon tank for an adult.

A large capacity power or canister filter is mandatory. Emperors require superb water quality. No nitrites or ammonia is tolerated. Keep nitrates very low too. Salinity 1.020 to 1.024. Temperature from 74˚ to 82˚F is fine. I change 25% of their water weekly. Cover their tank.




Emperors are peaceful fish. I have never had emperors cause problems for other fish. But do not put two emperors of the same size together unless you watch them extremely closely for signs of aggression. In nature, this fish lives in pairs. But in the aquarium it is hard to find a compatible pair. You can keep a juvenile and an adult together...usually. Normally I just keep adults alone. Emperors are not reef tank safe.

Emperors must have a wide variety of foods to survive. Feed varied high quality flakes, pellets and frozen foods. Marine angel sponge diets are beneficial. This angel also needs fresh greens daily. Lettuce alone is neither good or sufficient for them. I feed mine a wide variety of greens including kale, romaine lettice, green beans, spinach, mashed peas, swiss chard and beet greens, spirulina flakes and tablets, the freeze dried marine algae products; caleurpa. I change this fish's food every day and never feed them the same food (whether flake, pellet or veggie) more than one time per week.

I also feed this fish both onion and garlic greens, which most emperors seem to like and bell peppers sprinkled with cinnamon. This improves their color. Not all will eat the latter, but many will eat it with gusto. Failure to vary this angel's diet will result in head and lateral line erosion. Skin deterioration from pitting over the eyes and forehead and down the lateral line will occur. This pitting can spread very quickly.

Altering the fish's diet to include a drastically greater variety of food and massive partial water changes will usually heal the pitting, although this process is very slow.

Fed well and given clean water and room emperor angels are fairly hardy fish.

For a real show piece, an emperor angel is hard to beat!

Happy marine fish keeping.

Tony

**Lee Van Hyfte** – EIAS

Reprinted from *Fin Flap*, August 2017 the publication of the Eastern Iowa Aquarium Society

# Breeding the Brunei Beauty: My path to Betta enlightenment

## *Betta macrostoma*

**Growing up in the aquarium hobby, I had seen many photos of *Betta macrostoma* in books. That was as close as it was to come. Many thought them extinct and yet others just knew the fact that they were a protected species, protected and restricted by the Sultan of Brunei, forbidding collection with risk of imprisonment.**

Over the past 10-12 years, there have been imported wild fish coming in from Borneo, which finally fulfilled my dream of even owning this species, let alone breeding it. I watched prices for many years and just could not stomach the $500/pr price tags that were involved. Over the years, the prices began to come down as captive breeding and a continuous flow of imports began to fulfill the demand.

In 2015, I set my mind to finally obtaining one of my dream fish, the Brunei Beauty. I began seeking sources for quality fish; I kept on missing the mark and found it rather difficult to find them from a reliable source. I was finally able to make the plunge and invested $210 to obtain a young adult trio from a breeder on Aquabid. I gauged the quality of the breeder by his other fish he was offering as captive bred.

So, on a cold day in November when the trio arrived, I was quite worried as they were sluggish and cold. I let them rest before evening, seeking to attempt my drip acclimation

procedure. I had already prepped the aquarium weeks before arrival in order to give them a comfortable home.

The 15-gallon tank contained Java Fern, Java Moss, 2 chunks of Malaysian driftwood and 3 small flowerpots. I ran 2 small sponge filters, a heater in the aquarium and had a very tight fitting lid, as Betta species are very gifted jumpers. Water was very soft 95% RO water with 5% tap of 550ppm. I had also added tetra black water extract and some almond and red oak leaves to obtain the black water that they needed to produce.

I began to very slowly drip acclimate the fish over a period of 2 days. I also did conductivity matching, as my parameters were too far off from the shipping water to do a simple drip. I used RO right powder to obtain the equal reading, as I did not want the high pH of my tap to grossly influence the fish.

Once acclimated, I added them to the aquarium and began my struggle. The first hurdle I had to jump was getting them to eat. There was a lot of cover in the aquarium and did not want lost food contaminating the water. The fish remained shy and quite resistant to my normal fodder of Hikari brine shrimp and bloodworms. I battled this until I finally gave in and offered a high quality flake food as I was simply running out of options and they seemed to be starving. It was to my great confusion that they took flake with strong intensity. I knew I could not breed them on flake foods but at least I could begin moving forward.

I had finally managed to get them strong and switched over to a more favorable diet for breeding. I was still unable to trigger the spawn I was so desperate for. After a conversation with my good friend Ward Wester, I was educated on the proper breeding procedure. Essentially, I had found out that everything on the Internet was disinformation. There are boundless amounts of useless information, unless you are trying to prevent the competition from ever succeeding.

The breeding parameters and procedure are as follows and many I have found are key elements of production as the fathers are notoriously bad about eating the spawns. The absolute key to success is temperature, 74˚F to be precise. Odd, considering their range and as it turns out, it is a matter of altitude and deep shade of the Borneo rain forests. I feel this lower temperature is critical due to the period of starvation that the male must incur while mouth brooding for 28-31 days. I feel the loss of spawn is due to metabolism and weight loss of the males. Another key ingredient is 10% daily water changes. You might ask why, but it is simple - as they come from small rainforest streams. Local rains are abundant and flush the entire ecosystem almost daily. The water must be very soft and quite acid; using straight RO water daily dropped the total dissolved solids to 25ppm. The water was the color of tea, assuming the pH was very low, but I did not have an accurate reading to assess the pH.

As these efforts progressed, I found increasing aggression particularly in the females, though the male would join in on occasion. One female became dominant and began to show interest in the male. Observations of spawning behavior began with a courtship dance and vibrant colors in the male and the female took on 2 horizontal stripes.

I have observed a few things worth remarks: the female would often breed and collect up any eggs that she could then offer them to the male. If he hesitated, she would suck them back into her mouth, a commonly found behavior in mouth breeding bettas I have worked with. In addition, at the end of the spawning activity, the female as well as the male would have a

mouth full of eggs. I am assuming at this point that the male exceeded capacity of the full spawn, he would take to cover at this time and she would carry the eggs for about 24-48 hours before eating them.

Well, I had struck gold success at last, short lived as the male hid for about 6 days before eating the spawn. Argh, I was so close, but to no avail. About 2 weeks had passed and it was up to round two. This second spawn was successful though I did not know it. The male had disappeared into deep cover for about 3 weeks. I admittedly was panicking. He came forward finally, horribly pale in color and with a mouth full. He carried them for an additional 10 days until he released the spawn. I did not see any fry, however, and thought I was at strike two. I had been providing glass worms as the season allowed and seeking to pump up the male for round 3. I was just making some observations one evening with a flashlight in the dark tank. I thought to myself those glass worms looked rather odd; much to my delight and surprise, I had fry! They were hiding near bottom at the edges of the Java moss.

I began feeding baby brine shrimp in the adult tank because I was fearful to remove the fry as the father was already holding a 3rd spawn. Time passed and, after 2 weeks, the fry had developed orange color and black stripes. I continued with this natural method for 3 consecutive spawns. I found 30-40 fry of varying ages, though the spawns seemed to be having lower survival rates.

As I was still learning, I figured out not only were the older fry cannibalizing on their much smaller siblings, so was the subordinate female. My guess is that even the dominant female did this as well. I removed all the juvenile fry and the subordinate female to a grow-out tank, and she sadly did pick off a couple of the smaller juveniles.

I moved the adult pair into their own 33-gallon long aquarium to give the male more peace and quiet and to make it easier to provide a barrier to the dominant female after breeding. I found that she would be ready to breed after 2 weeks and the male after 31 days. I did not wish for him to starve and rebreed as he had done before. The female would also harass the male about 2 weeks into the brooding in order to breed yet again. On a few occasions, he swallowed the brood and rebred the female to start all over again.

The juveniles grow fast for the first 3-4 months, then greatly taper off growth. I found them easy to feed and though there were a few skirmishes of hierarchy, they did quite well together. I feel this was an effect of population density distributing the aggression amongst a greater number. They are quite slow to sex out and it took 6 months of age to sex them with any consistency. The key indicator is the dorsal spot that is only present on a male. An interesting observation that was remarked upon by **Mike Hellweg** was the time of first spawns. Wild caught fish often take 2 years to breed, F1s 18 months, F2s 12 months, and I am finding the F3 to breed as young as 8 months. I will make the assumption here that the ones that would try to breed then further passed the genes down the line with each generation adapting to the aquarium.

This has been a great adventure for me, going from a dream fish to a reality. They are phenomenal parents and I find them much less work than their bubble-nesting cousins, as Macs, as we call them, are prone to natural methods of production. All in all, take a stab at your dream fishes and have fun with them. If you give them love they will show you a great reward.

God Bless and
KEEP IT FISHY,

*Lee*

**Joe Graffagnino** – BAS

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**ARTICLES FROM THE FILES WORTH READING AGAIN**

# THE COLUMBIAN TETRA CHALLENGE

## Breeding *Hyphessobrycon columbianus*

**My friend, and fellow fish nut, Bob DeBonis, acquired a group of eight Columbian tetras. This is a very beautiful large tetra that has a blue and silver body with red dorsal and tail fins. This species of tetra is somewhat rare in the hobby and, from what Bob has told me, not that easy to breed. He asked if I would want to try to get them to spawn. I could not resist a challenge so I said "sure, why not?"I have been fortunate in breeding fish species, but this has been with cichlids and catfish.**

I have little experience with tetras or Characins of any kind. I thought this may not be an easy task, but I was determined to try. I set them up in a 10-gallon high [H x L x W] tank with driftwood, almond leaves and jammed the tank with java moss. I figured that this would be a good holding tank while I set up a breeding tank. I had planned on using a 10-gallon long [H x L x W] aquarium that would have small clay flower pots on the bare bottom to support a plastic mesh screen that would be approximately 3 inches off the bottom. Above the screen would be some Java moss and artificial yarn mops that I use for killie fish spawns. I figure that the tetras would scatter their eggs over the moss and yarn and that some eggs, if not most, would fall thru the screen onto the bare glass bottom. Once through the screen, the spawning group would not be able to eat the eggs.

A little history on this species: they come from Columbia, South America (hence their name). They grow to a length of 2 – 3 inches, and their water conditions are hardness of 6 – 15 dH, a pH of 6 – 7 and a temperature range of 75° – 81°F (24° – 27° degrees Celsius). They are a schooling fish that enjoys its own company. They will eat just about anything – flakes, frozen food, freeze dried or live food (especially black worms). They scatter their eggs over the bottom and in the plants.

They are a schooling fish that enjoys its own company. They will eat just about anything — flakes, frozen food, freeze dried or live food (especially black worms).

These beautiful fish were full grown at 2 3/4 - 3 inches long and tall by tetra standards. The breeding environment was 6.2 pH, with a water temperature of 80°F. I started performing my weekly water changes and noticed something darting across the bottom of the tank. The breeding group stays at the top and middle of the tank. Looking closer at the bottom of the tank I noticed several tetra fry of different sizes. This means that the tetras have been laying eggs for some time in this tank. I think that the most interesting point on breeding fish is what makes them comfortable enough to breed in an artificial environment. Good, high quality foods, regular and consistent water changes, along with an established aquarium environment that suits the particular needs of the species of fish you're working with, will bring a successful spawning of the fish species (most times).

I removed the breeding group and placed them into a 35-gallon aquarium with the same type of water and environment conditions, except for the Java moss and mops. I want to raise the brood that exists and not have multiple broods occurring in several tanks. I left the fry in the original tank and feed them frozen baby brine shrimp and frozen rotifers. I also feed them crushed plant flakes and live vinegar eels. The fry grow fast. I believe that the parents will eat the eggs recently laid but not eat the hatched fry. This may not be true with the larger siblings, as they may try to munch on their younger brothers and sisters. I will remove the larger fry and place them into a small tank. This allows the small ones to rapidly gain size while keeping the larger ones in a holding tank. When the fry are similar sizes, I place them with the original group.

Columbian tetras are a very beautiful and interesting fish to raise and breed. They will eat just about anything and get along with other fish their size. They may bully and fin nip smaller fish. These fish would be a welcome addition to any community aquarium. To enhance their colors, keep them in well-planted aquariums and feed foods that are high in beta-carotene, a natural color enhancer.

Get some Colombian tetras and enjoy them!

Joe

**Anthony P. Kroeger** – BAS

### Bumblebees in Your Aquarium


# The Bumblebee Goby

## *Brachygobius xanthozona*

One word describes the bumblebee goby: Cute!

I remember the first time I saw one stuck on the glass of an aquarium at F.W Woolworth (*Yeah I've been in the hobby a long time*). I just had to have it! I was 9 years old at the time and had no idea how to care for it. So I went to the library and read up on it. Today you can find bumblebee information online.

Bumblebees are awesome little fish! Native to the brackish waters of most of Southeast Asia, they are usually exported to the aquarium trade from Bangkok. Bumblebees are small fish, never exceeding about 1¾" inches.

Although bred in the aquarium, almost all specimens offered for sale are wild caught imports. Every aquarium store carries bumblebees at relatively cheap prices.

Color is simple; black and yellow bumblebee stripes, very pretty in its simplicity. Some male specimens are orange and black striped rather than yellow. Anal, dorsal and interior caudal fin is black. Bumblebees have a typical pelvic sucker disc.

Bumblebees are fun to keep! A 10-gallon tank is fine for 6 to 8 of them. A bottom fish, they hop around but will stick on the glass and plants too, sometimes even head down! Bumblebees' antics are fun to watch! Give them a sponge or small power filter, sand, roots, plants and mystery snail shells to live in.

Give them hard alkaline water. pH 7.4+. Keep the temperature at 78 to 84˚F and add 1 tsp of Kosher salt per 2 to 3-gallons of water. Change 30% of their water weekly. They are best kept alone or with other peaceful brackish fish, such as glassfish,

mollies and celebes rainbow fish. Cover their tank; bumblebees can jump if they want to.

Bumblebees' worst fault is that they're picky eaters, at least at first. Feed them tubifex, live blackworms, mosquito larvae, brine shrimp. Eventually most will learn to eat micro-pellets. Forget flakes! Most bumblebees will starve to death first!

Bumblebees spawn in mystery snail shells (empty, of course!) or under small stones. The male is more colorful and guards and fans the eggs. Fry are very tiny and need rotifers followed by baby brine shrimp.

Bumblebees are kind of grouchy amongst themselves. They chase each other out of their small territories, but no damage is really ever done.

Be sure to keep your bumblebees warm. Never chill them. Bumblebees are very susceptible to ick, a disease which usually kills them. Bumblebees are sensitive to all ick dye medications, except methylene blue. If your bumblebees catch ick, raise their water temperature to 90˚F and add a half dose of methylene blue. Never use copper on bumblebees it will kill them.

Bumblebees are awesome, fun fish; plain and simple.

Try some today!

Happy fishkeeping.

Tony

**John Todaro** – BAS

# SPECIES PROFILE

**Scientific Name:** *Brachygobius xanthozona.*
**Common Name:** Bumblebee Goby.
**Distribution:** Thailand and Vietnam in shallow brackish estuaries, rivers and streams.
**pH Range:** 6.5 - 7.
**Temperature Range:** 79˚ - 82˚F.
**Water Hardness:** 18 - 215 ppm.
**Size:** 1¾ inches.
**Temperament:** Very peaceful. Not the best fish for a community tank; they are easily outcompeted for food.
**Sexing:** Males are more slender than females and brighter coloration.
**Diet:** Carnivores. Live foods like brine shrimp, blackworms or grindal worms.

**Breeding:** Eggs are laid in small nooks and crannies add ceramic tubes or coconut shells or empty snail shells.When ready to breed, females will become noticeably swollen with eggs and males will start to show more intense coloration. Adding fresh water can help start the breeding. Males guard the eggs, or you can move the male to a separate container
**Notes:** Fry are extremely small; make sure you have an infusoria culture ready to go for them to consume at first.

**Reference:**
Aquariadice.com

**Rick Renfro** – MAS

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# SNAILS IN THE AQUARIUM

Every one seems to have an opinion about snails in ponds and aquariums:

"They take over your tank, once they are in your tank you will never get them out!"

"They add too much biomass and too unhealthy, etc…"

I have two of the "hated" three types of snails, the Malaysian trumpet snail, the ram's horn snail, and the pond or bladder snail. I raise and sell red ram's horn snails, but never knew much about them.

The main reason people don't want snails in their tank seems to be because it is nearly impossible to completely control them, and most likely

everyone who has had one of these species in their tanks has had the experience of turning on the lights, sitting down to look at your fish and seeing hundreds of snails all over the aquarium. In my tanks I probably have around a thousand ram's horn snails, and maybe the same number of Malaysian Trumpet snails, though they hide in the substrate so it is hard to tell.

I do feed what some may feel is too much, which supports a large population of snails. I colony breed guppies, keep nine species of *corydoras*, and have two types of *Ancistrus*. The guppies are always dropping fry, so I am feeding a lot of different sized livebearers along with the catfish, and a large population

of snails. Snails can and do eat a lot if food is available.

What are these creatures and what is their role, good or bad, in nature as well as the aquarium? What are the benefits of having these animals in your aquarium or pond? Is there any way to control them? Are they useful as part of a clean-up crew?

Ramshorn snails are in the family of *Planorbidae* (ramshorn snails) in the class *Gastropoda* (snails & slugs) an grouped with the *"pulmonate"* snails, because they breathe air by means of an organ that is like a lung, so they do not breathe water with gills.

There are various species of ramshorn, but the snails that are most popular in the aquarium hobby are the American ramshorn snail, also called the red ram's horn snail, that is said to originate in Florida. A ramshorn found in local streams is black and could come into aquariums as little bitty eggs on new aquarium plants.

These species of snails are mostly herbivorous, eating decaying plant matter though they are opportunistic feeders should they come upon a dead creature. I have never seen one eat a live healthy plant, though they do eat live algae. Mostly they are either sifting through the substrate, or scraping the glass for algae.

As a critical part of the clean-up crew, snails are a major aide to the cleanliness and stability of my tanks. My large tank is heavily planted, though I rarely find a decaying leaf or stem in this tank. I never see a dead fish, though this is a heavily loaded guppy tank and sometimes fish go missing. The snails are efficient and make short work of decaying organic matter in the tank. In the wild, these animals serve the same role by consuming the waste that settles to the bottom of the stream or lake, and also serve as a nutritious food source for larger invertebrates and fish.

> **"Never doubt the courage of the French. They were the one who discovered that snails are edible."**
>
> Doug Larson

Snails absorb calcium carbonate in the water while living, and release it when their shells decay. Water hardness is an expansive subject, but it is basically the amount of calcium and magnesium dissolved in the aquarium water. As more of these chemicals are dissolved in the water, the higher the alkalinity of the water, making it hard. Conversely, the lack of dissolved minerals causes water to become more acidic, more soft. When attempting to raise or lower the pH of the water in a tank, some people use chemicals that temporarily change the levels. This method is quick and causes wide variation in the pH of the water, which is not healthy for fish or invertebrates. The use of additives like crushed coral, crushed oyster shell, cuttle bone, and Argonite tend to maintain a more consistent alkaline pH, and this consistent buffering benefits snails that are growing their shells. Softening is much more difficult and the methods to do this are volatile and require intense monitoring, but that is another article.

There are actually three oxygen transport systems typical in snails. The first two oxygen transport systems are a red hemoglobin bound to blood cells and a clear myoglobin also in the hemolymph, a liquid in the invertebrate that contacts all the cells of the animal. Most snails rely primarily on the third transport system, hemocyanins, as a transporter for oxygen. Hemocyanin is not bound to blood cells but suspended in the

hemolymph, These hemocyanins bind one molecule of oxygen between two copper molecules to facilitate its movement. The blue/black color in most ramshorn is from these oxygenated hemocyanins, that otherwise are colorless when lacking oxygen when they have reverted to a state of only two copper molecules.

The red ramshorn is red because their blood contains primarily the hemoglobin similar to human hemoglobin that is rich in iron instead of copper. They also have the hemocyanins but it is less predominant in the red types.

Here are a couple of tested methods to control the snail population in an aquarium. One effective control in a planted tank is the use of fertilizers that contain copper, which is poison to the invertebrates that rely on hemocyanin to transport oxygen. The reason copper is so toxic to invertebrates is that their systems are designed to easily uptake copper. Copper is scarce in the wild and their systems have developed to be extremely efficient at taking in copper, but have no system to guard against taking in too much. They also lack the ability to expel an overabundance of the metal. The presence of high levels of copper in any animal is toxic and to these snails, high levels quickly damage cells and cause widespread malfunction of the animals' systems.

I added Osmocote capsules containing a small amount of copper to fertilize my plants in my large planted tank and almost wiped out the Malaysian trumpet snails, most of the common ram's horn (black) snails, and all of my mystery snails. The red ram's horns essentially were unaffected. Aside from completely cleaning out your tank, using all new substrate, new filters, and only tissue cultured plants, you probably won't completely rid your tank of all snails for good, though I don't know why you would want to. To harvest my red ramshorns, I bait them with algae wafers. They mob the wafers and I easily pick them up with a net or with my hand. The snails are neutrally buoyant and easily float out of your hand so I mostly use a small net. Sometimes I put a cut water bottle containing a wafer and a rock in the tank and let that sit overnight.

Before I finished this article, I found on MASI's Buy/Sell facebook site a discussion about ridding a tank of snails. A **"No-Planaria"** product was recommended that is a nut palm extract and is supposedly safe for fish and snails but will kill snails and planaria in 72 hours. Such chemicals are another option, there are many products that advertise that they will kill snails but are safe for fish.

Some people throw excess snails into the trash, some feed them to snail eating fish, I sell mine on **AquaBid** and the MASI auctions. So far I have shipped snails to Missouri, Wisconsin, Washington, Michigan, West Virginia, Maryland, Minnesota, and Tennessee, and along with the MASI auctions, snails have paid for my premium fish food from **Brine Shrimp Direct**, one of our club sponsors and suppliers of amazing food that gets results.

Remember, almost everything that your tanks produce has value to someone in this hobby.

Anthony P. Kroeger - BAS

# GUPPY PLAGUE/AIDS

## A Commercial Perspective: Part 1

**Ornamental aquarium fish import/export breeding and distribution have been my career for decades now. During this time I believe I've encountered most if not all ornamental fish diseases. Fancy guppies are one of the most popular fish I deal with in high volume on a weekly basis. Fancy guppies also present me with one of the most puzzling "diseases" problems on a regular basis, that being what is euphemistically known in the trade as guppy "plague" or AIDS."**

**This discussion/article will look at what my observations have been regarding this problem, In Part 2, I will discuss my experiments and treatment protocols for it.**

**I am not an aquatic veterinarian, virologist or anything of the sort. My opinions are based upon my personal experiences as an importer/breeder in dealing with this problem.**
**The two major questions to be answered in part 1 are:**

**#1 What causes this problem?**

**#2 How can I tell if my guppies have plague/AIDS?**

### #1

To my knowledge, no one has conclusively identified the causative agent of this problem. I personally believe it is viral in nature. I believe the agent to be a highly contagious, extremely fast acting virus that either totally or mainly collapses an infected fish's immune system for a period of 72 to 96 hours, post infection.

Ever present secondary bacterial infections take advantage of this immune system collapse and rapidly kill most or all infected fish during this brief time frame, resulting in close to 100% mortality rates at times.

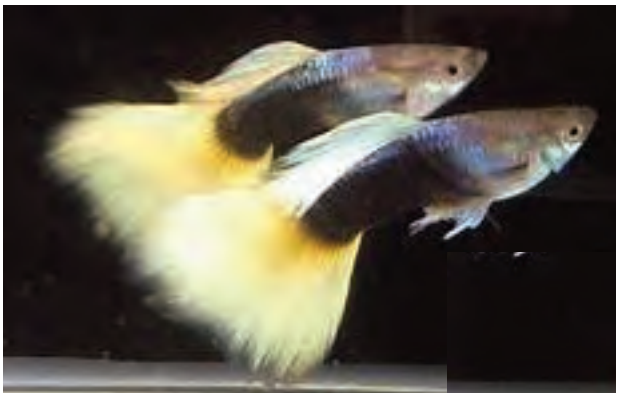
I believe this virus is not exclusive to guppies. I have experienced similar problems with Angelfish (known in the trade as "angelplague/pox") and oddly enough a relatively similar phenomenon with longfin serpae tetras only. More conjecture on this a bit later.

How do I draw these conclusions? Let me explain. On a normal week, I import thousands of guppies of multiple strains, usually my guppies come from Singapore and

Malaysia, and occasionally from Thailand and Indonesia.

"Plague/AIDS" in my experience is most prevalent in Singapore imports, but all countries' fish have come down with it at times.

There is no doubt in my mind that this problem is highly contagious. A single infected fish will contaminate all susceptible fish housed with it within 12 hours with mortalities occurring within 24 hours. Mortalities peak at 49 - 60 hours post infection; fish alive after 96 hours usually survive. "Plague/AIDS" can certainly be transfered by direct fish to fish contact. But it is also transmittable through infected tank water. As



an experiment, I took a teacup of water from an infected tank and poured it into an uninfected tank. Within 24 hours all guppies in the previously uninfected tank were ill and initial mortalities were occurring. Any nets, equipment, etc., used in an infected tank can easily transfer this problem. When I observe this problem, I immediately seal the cover with masking tape to avoid any water splash transfer.

I am unsure if this problem can be transfered aerially. I believe this to be a virus as I have yet to find any medication that works on it. Nothing works in my experience. Only viruses do not respond to medications, hence my conviction on this point.

I do not believe it is the virus itself that is fatal to the fish, but rather the aggressive, opportunistic secondary bacterial infections which follow the actual plague/AIDS infection.

I firmly believe this virus temporarily, totally or mainly collapses the fish's immune system; death follows when the fish cannot fight off bacteria in its environment during the temporary immune system collapse.

Some strains of guppies (and other fish) are much more susceptible to this virus, in my experience. Delta guppies of any strain are much more susceptible than, say, double/single sword strain or lesser finnaged fish. I have had problems with such fish after intentional exposure, but the effects were much more minimal. Long finned fish definitely

suffer worse fatalities from secondary badterial pressures. In my experience, blue delta guppies of any type always suffer the greatest mortalities, followed by green deltas of any kind. The longfin connection applies to angels and longfin serpaes as well. Shortfin angels are susceptible, but losses are always less than veils. Longfin serpaes have problems, but in my experience regular serpaes are immune.

Some Malaysian guppy strains seem to be totally immune to this problem. "Yellow tequila" guppies from Malaysia are totally immune. I have never seen this problem in them or lost one to this problem in over a decade of importing them.

All yellow or white guppy strains show at least some resistance. Gold cobra, red/blond, 1/2 black/white, 1/2 black yellow all show moderate resistance.

As an experiment, I crossed Malaysian "yellow tequila" with 1/2 black/yellow deltas. The resulting fry were

immune and showed no effects even when intentionally exposed.

I believe introducing genes from "tequila yellow" guppies into suitable strains would provide some immunity to this problem. Black strains also show some resistance, especially 3/4 black, as long as no blue or green genetics are involved. Standard 3/4 black show almost as much immunity as "tequila yellow" but not quite. In my experience, "tequila yellow" is completely immune.

## #2

**How can I tell if my guppies have plague/AIDS?**

Infected guppies initially exhibit what I call "shimmying anchovy" behavior. They shimmy all "clumped" together in a bunch in an upper corner (near the surface) of the aquarium. Fins are clamped, but no signs of disease are evident. No itching/scratching, but movements are darting or exaggerated in nature. The fish will eat at this "clamping stage." All infected fish will "clump" together initially.

Within 6 to 12 hours of initialization of this behavior, black discoloration (indicative

of bacterial infection) will be noticeable on either the upper or lower caudal fin edge or the dorsal saddle, that is the base of the dorsal fin, not the dorsal fin itself. This black discoloration expands exponentially inward toward the caudal fin base in a relatively in-line swath. In other words, it does not expand outward covering a wider area of finage in width. Rather it makes a bee-line towards the caudal peduncle. At this stage the fish still eats.

Within 18 hours, the black areas become transparent.

Rapid complete fin degeneration now occurs. Finnage between rays disintegrates, leaving exposed fin rays. If infected at the dorsal saddle, degeneration works its way out from the dorsal base. Once fin rays are exposed,

fish refuse to eat.

Initial mortalities occur after 24 hours. Any fish in which the black discoloration reaches the caudal peduncle is doomed. Destroy it! There is no recovery if the caudal peduncle is infected. Fish develop a tail down posture once degeneration starts.

Once fin rays are exposed, the fish no longer "clump" together. Movement is erratic, usually stationary, sometimes on the substrate. I am unsure what bacteria causes this fin destruction, but I do know that normal bacteria which causes fin rot in other hi-fin fish (Ex. lyretail hi-fin swordtails) always has a white leading margin. That is not the case in guppy plague/AIDS. There the leading edge is always black; a white margin will sometimes trail the black leading edge but never lead the black edge. Perhaps the standard fin rot bacteria follows the black edge? That appears to me to be the case on occasion.

Any black discoloration on the caudal or dorsal saddle indicates an impending outbreak of guppy plague/AIDS usually.

In the next issue of *Aquatica* (January/February), we will look at some of my experimental treatments,some successful, some not.

Tony

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Reprinted from Marine and Reef online Newsletter

# UV Sterilizer
# TROUBLE SHOOTING GUIDE

*The typical first step when a UV does not appear to be working is to replace the bulb. This is not a bad first step, especially if it's been a year or more since the bulb was last replaced. However, it is not always the most logical first step and quite often it doesn't solve the problem.*

**Here is a recommended diagnostic troubleshooting guide for when you suspect your UV is not working properly.**

### 1) Does the UV Turn On?

If the lamp does not turn on, then the problem is either a bad lamp, bad wiring or a bad ballast. **NOTE**: When determining if a lamp is working, never look at the UV lamp directly while it is on as it will burn your pupils. Use the clear portion of your sterilizer to tell whether the light is on or not.

### First Possibility: The Lamp is Bad.

UV lamps need to be replaced yearly as by the end of the year they might have lost enough intensity to no longer be effective, but they should light up for several years. If your lamp does not turn on, and it is old, it is a wise first step to try a replacement lamp as you will need a new lamp anyway (see UV Sterilizer Replacement Lamp section). However, when you install the new lamp, if that lamp does not light up, then there is a good chance the problem is not the lamp. Very rarely are new lamps defective. Sometimes customers tell us that they believe a new lamp must be bad because it's black inside and the lamp rattles. This is normal. The most popular UV manufacturers test every lamp before they leave the factory (and this results in the black smudges inside the lamp). The rattling is not an indication of a bad lamp as UV lamps have mercury balls inside that help to produce the UV light.

**Pro Tip:**
When you replace a UV lamp, and the old lamp still works, it's a good idea to keep the old lamp until the next change. This way, if the new lamp doesn't work, but the old lamp works, you know the problem is something other than the lamp.
**If the lamp is good, then the problem is either the wiring or the ballast**

**Wiring.**
Bad wiring is usually obvious from visual inspection. If you notice loose, discolored or broken wires or connectors, you should replace them.

**Ballast.**
The ballast or transformer for a UV sterilizer usually lasts around 5 years. If you try a new lamp and the wiring looks intact but your lamp still won't light up, then you most likely need a new ballast. Ballasts ensure that UV lamps receive the correct amount of power and are necessary for a UV to function. We carry ballasts for most of the UVs we sell in the UV Sterilizer Replacement Parts section.

If there is any water inside of the quartz sleeve due to a broken quartz sleeve or bad gasket, then that is probably the problem. The water may have destroyed the lamp and the ballast. After replacing the quartz sleeve and gasket as needed (visit UV Sterilizer Replacement Parts for replacements), and making sure everything is dry, you will need to replace the ballast or the bulb or both.

**2) Is There Adequate Water Flow?**
If water is going through the UV Sterilizer, and the bulb is newish and lighting up, but you are not killing the free floating algae, then there is likely a problem with your pump or plumbing. First, make sure the pump is not broken and your plumbing is not clogged.

If there is water flow, and it appears the UV is still not doing the job, then it may be an issue of too much or too little water flow. Without the correct amount of water flow going through the sterilizer, then the sterilizer will not work properly. UV sterilizers require a very specific flow rate for optimal performance.

Check the sterilizer's recommended flow rate in the manual and then check your pump. Too much flow though the sterilizer is more common than too little. Try to make sure the pump's GPH is close to the required GPH for your sterilizer. But keep in mind that the nominal flow and actual flow will never be the same due to head pressure, If you want a more exact measurement you can place the outlet hose from your sterilizer in a 1 gallon bucket and measure how long it takes to fill it, then calculate the flow rate. Or you can use the Neptune Systems FMK Flow Monitoring Kit to get an exact digital readout of the flow rate along with alerts when the flow rate changes.

**3) Everything Appears To Be Working... But It's Not Working.**
In some cases the bulb lights up, the bulb is new, and there is adequate water flow, but you are still not getting the desired result. It could be because you expect your UV sterilizer to do something it is not designed to do. Keep this in mind:
UV sterilizers only sterilize whatever passes through the UV sterilizer. With algae, this is limited to free floating algae. A sterilizer will not destroy algae growing on your rocks or substrate or clinging to the walls of your aquarium unless it is dislodged and passed through the sterilizer. To get algae into your sterilizer it helps to clean the glass with an algae magnet. It's the same with fish diseases. To kill a parasite, it must pass through the sterilizer. UV sterilizers will not cure a sick fish. A UV will only help prevent the transmission of disease from a sick fish to the other fish in an aquarium.

**Avoiding Future Problems.**
It's always best to prevent future problems rather than waiting for them to occur.

**Here Are Some Best Practices:**
**1)** Replace gaskets/o-rings. UV failure often occurs when the UV sterilizer leaks and water gets to the bulb or the power supply electrical connection. We have sections on our Web site for UV Sterilizer Replacement Parts, and we have replacement gaskets/o-rings for the higher end units. Emperor Aquatics has sets of gaskets/o-rings that include o-rings for the inlet/outlet, while for Aqua Ultraviolet and Lifegard Aquatics sell the quartz sleeve gaskets. Quartz sleeve gaskets are the most critical and should be replaced yearly.

**2)** As mentioned before, keep an old, working bulb around. That way, if your UV fails to light up, you will have a working bulb you can use to test the power supply.

**3)** Replace bulbs according to the manufacturer's recommendations. This is typically at least once a year. However, if you are using your UV less than 100% of the time (with ponds, UVs are often not run in the winter), then your bulbs will last longer.

**4)** At some point, it becomes hard to clean the quartz sleeve. If light does not pass through the quartz sleeve, they are less efficient. We carry quartz sleeves for the UVs we sell in the UV Sterilizer Replacement Parts section.

**5)** Any time you change the amount of flow to your UV by changing the pump or plumbing you need to make sure you are still getting the recommended flow rate to your UV.

**Final Words:**
UV sterilizers are pretty simple devices and they are the most effective way to destroy free floating algae and parasites. We are not trying to convince you otherwise. Just always keep in mind these three things and you will have more practical knowledge about UV sterilizers than 99% of aquarists:
**1)** When you install a new bulb and it doesn't light up, the problem is rarely the new bulb. This is especially true if the old bulb isn't lighting up.
**2)** If you replace your quartz sleeve gasket every year, leakage will be very unlikely.
**3)** Pay close attention to the flow rate. Imagine that the inside of your UV sterilizer is an oven. The wattage is the temperature and the flow rate is the equivalent of cooking time. When a UV requires 300 GPH, it is the equivalent to a baking recipe telling you the cooking time. We all know what happens when you bake something for too little or too long--we don't get the desired result. It's the same with a UV.

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**Anthony P. Kroeger** – BAS

# PHEW!


# This Skunk Doesn't Stink!

## The Skunk Cory - *Corydoras Sp. CO20*

***Corydoras* catfish are very popular in the aquarium hobby, and skunk corys are one of the most popular corys. Skunks are popular for good reasons; they are hardy, easy to keep, readily available, peaceful, cheap, colorful (for a cory), and fun to breed.**

**What more can you ask of a good community fish?**

Skunk corys grow to about 2 ½" inches and have a pink body, white belly and a broad black stripe from the mouth to the tail. This stripe curves over the upper body. Some specimens have a thin gold stripe extending from the snout to the tail over the nape on top of the black stripe. A very pretty cory, indeed.

Most specimens offered for sale are wild caught and exported from Colombia. This cory also is found in Ecuador and Peru.

Keeping the Skunk cory is simplicity itself, even a 10-gallon tank will easily house a few specimens. Skunks love cory company, any cory company, so you can easily mix them with other corys. All corys do best in small shoals of 4 to 6 fish, so keep skunks with other skunks or other

cory "friends." Completely peaceful, skunk corys are very hardy and are recommended for any community tank where they will not be eaten by much larger fish. No glass or sharp substrate in their tank; it will damage their whiskers.

You can use sand, rocks, roots, and plants with a sponge filter or better yet a small power filter to make your skunks comfortable.

Any tap water you can drink is fine to keep this cory in. Keep water temperature between 74 and 78°F. I change 50% of the water weekly. All corys love massive water changes and are much more active after the changes.

Skunks eat all foods offered, but love worms (ex., bloodworms, black worms) best.

Skunks have very interesting behaviors: rushing to the surface for a breath of air, rolling their eyes at you and rooting happily in the substrate all day. All corys are fascinating to watch.

Males are smaller, more colorful and much less broad than females when viewed from above. Skunks breed in typical cory fashion. The spawning pair forms a T. The female taking the males sperm into her mouth and then proceeds to a spawning site elsewhere, cleaning it and attaching her sticky eggs and using the male's sperm to fertilize them. Fry are easy to raise and eat baby brine shrimp initially.

A hardy, long lived fish - recommended for beginners since they rarely fall ill. Skunk corys are awesome! Definitely not stinkers! Try some in your tank.

Happy fishkeeping. Tony

**Lee Van Hyfte** – EIAA

Reprinted from *Fin Flap*, September 2017.
The publication of Eastern Iowa Aquarium Association, Cedar Rapids, IA

# Breeding
## The Emperor Tetras
## *Inpaichthys Kerri & Nematobrycon palmeri*

**I've been breeding the Emperor Tetra on and off for a number of years but I chose to try yet again and, put a little more effort and increase the numbers produced.**

**I always take the time to find choice stock** so that I can try to control the quality of offspring produced. I take great pride in a quality animal and it took a fair bit of time to find healthy young animals with which to breed. I have found over the years that, in breeding tetras, it is key to find young fish, and optimally barely sex-able. Tetras as a whole are prone to infertility with age caused by being reared in hard water and calcification of the ovaries in females.


*Inpaichthys kerri*
Blue/Purple Emperor tetra


*Nematobrycon palmeri* - Emperor tetra

**I managed to find some young wild caught brood stock** that came from the **Wet Spot in Portland Oregon**. These fish met all of my mandatory criteria: healthy, young, and colorful even at a young age. I selected 2 pair out of 50 fish and brought them home. I began to grow out the fish in a 10-gallon tank with a few *Apistogramma* species in the aquarium. This would incidentally become a breeding tank much to my surprise. The growing Emperors would act as dither fish until mature. Unfortunately, I found Emperors to be a poor dithers due to their predatory nature so the Apistos were removed. This left the group of 4 tetras alone in the 10-gallon tank.

- The water was kept at 78-80˚F, with water parameters as follows:
- pH was not assessed but assumed to be low due to use of RO water with almond leaf and alder cones added for tannins. TDS reading was 75 ppm accomplished with RO water and the use of RO right, I added 1/4 tsp per 10-gallons as is typical for my Apisto breeding conditions.

**I had utilized a sand bottom for the Apistos and kept conditions identical** for both the Blue Emperor or King

Tetra and the Common Emperor. I utilized Malaysian driftwood (my favorite for its high Tannin release). Plants in the aquarium were Java Moss and Java fern. Both of these plants are ideal and will thrive on ambient light from the room. Let me stress ambient light, as many Tetra species' eggs and fry are sensitive to light and too high light could prove fatal to the offspring.

**The foundations of breeding were laid out.** Quality water and quality conditions were previously established. I find that with both species if maintained in a soft water planted tank, offspring will appear with little intervention though the production numbers will be greatly diminished without these parameters. Parents as well as other offspring will predate on freshly hatched fry. I change 50% of the water with aged RO and RO that has been treated with soaked almond and alder cone. I utilize a 50/50 mix.

**From what I have read, the Blue Emperor is keyed into higher temps** to induce spawning and have noted greater production at 82˚F. The common emperor seems stressed over 82˚F so this number was avoided. Both species are essentially continuous breeders in my experience and would benefit from a continuous breeding set up that would isolate young fry from the adults. I utilized a more natural method for both species allowing small numbers of fry to develop on their own in with the parents. This is the point at which Java moss and spawning mops become a critical ingredient to assure production.

**Fry develop utilizing microorganisms in the Java moss** and older spawning mops. That indeed is their first food supply. It also serves as an excellent zone for fry to escape from predatory parents. Fry accept freshly hatched baby brine shrimp quite well and that provides an adequate first food as well. I never observed spawning or egg development due to utilizing a natural method for production. I did notice episodes of aggression, particularly in the common Emperor often showing signs of injury, particularly to the females as well as substantial spawning ritual dances. In both species, the males will often flare their fins and dance for dominance and it is quite a beautiful sight to behold. I began to notice fry of the common Emperor near the bottom of the aquarium at 3/16" long. They would assume the standard head stander pose in the aquarium with an angle of about 30 degrees. At this young age, the defining black line was quite evident. The Blue Emperors were often found displaced in varying zones of the aquarium, but appeared to be more top oriented and in a perfect horizontal position, which is observed in the Blue Emperor adults.

**Feeding the adults was quite simple.** Frequent feedings were provided of Baby Brine Shrimp, Frozen Blood Worms, and Frozen Brine Shrimp. I found particularly in the Blue Emperor that Baby Brine Shrimp (BBS) were a key element in production in the natural mode. If and when I would back off on BBS supply, production numbers would steeply decline. I do not feel that BBS is a particular trigger inasmuch as the parents were simply too full to bother eating the fry, as well as supplying the young fish with a stronger food supply. I would like to comment that utilizing Grindal Worms in particular is very effective to induce ovarian development in all species of Tetras that I have attempted.

**In summation, these are wonderful spirited fish that are all too often overlooked and forgotten in the aquarium hobby.**

I would really like to encourage people to give them a shot. Their behaviors and colors will not go unnoticed and you may be rewarded with a few more fish than you started out with.

**Photos from the original article**

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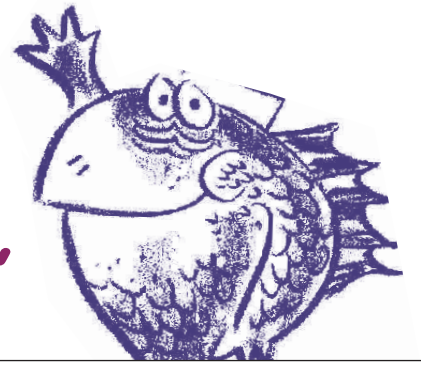

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The Officers & Board of the Brooklyn Aquarium Society

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