



AQUATICA

THE ON-LINE JOURNAL OF THE BROOKLYN AQUARIUM SOCIETY
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Astronotus ocellatus



Photo: **John Todaro**



108 YEARS OF EDUCATING AQUARISTS
AQUATICA
VOL. 32 MARCH - APRIL 2019 NO. 3

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AQUATICA STAFF



Editor: **John Todaro**
Associate Designer: **Ginny Cahill**
Copy Editor: **Kay Martin**
Freshwater Shrimp Editor: **Ryan Curtis**
Marine Editor: **Open**
Plant Editor: **Open**
Catfish Editor: **Ian Fuller**
Illustrations: **John Todaro**
Norman Doughty
Chris Giam
Julia Noonan
Shelly Sacks
Bill Amely

Contributing Writers:
Sy Angelicus
Bilal Choudhry
Ryan Curtis
Drs. Foster & Smith

Joe Graffagnino
Anthony P. Kroeger
Marine and Reef.com
John Todaro



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ALL CORRESPONDENCE CONCERNING THIS PUBLICATION SHOULD BE SENT TO:

• Editor: **John Todaro, 247 Middletown Road, South Londonderry VT, 05155 - Phone: 802 824-3743**
Fax: Same. You can submit articles to the Editor by mail, fax, or E-mail to: **JTODDYBAS@AOL.COM**.

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.

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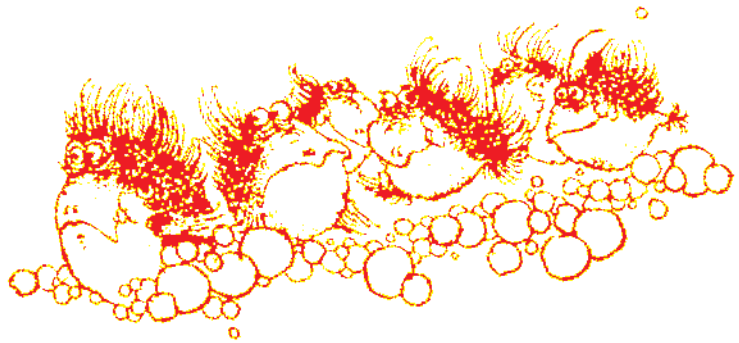
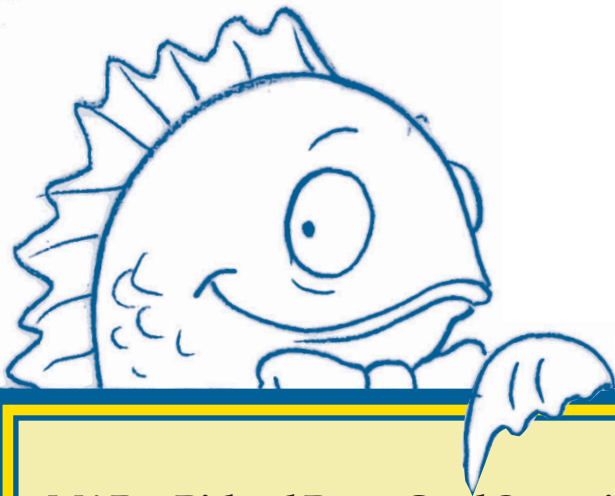
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Brooklyn Aquarium Society

CALENDAR OF EVENTS ~ 2019



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 marine fish, aqua-cultured corals, freshwater fish, plants & dry goods.

MAY 10 Giant Spring Auction ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods, including a brand new 55-gallon tank & stand.

JUN 14 Cameron Provost - House of Fins -Rare Marine Fish in the Aquarium Hobby ~ Followed by an auction of marine fish, aqua-cultured corals, freshwater fish, plants & dry goods.

NO MEETINGS JULY & AUGUST

SEPT 13 Tullio DelAquila ~ The Fact's of Light: A scientific approach to comparing light sources for aquarium use ~ Followed by an auction of marine fish, aqua-cultured corals, freshwater fish, plants & dry goods.

OCT 11 Giant Fall Auction ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods, including a brand new 55-gallon tank & stand.

NOV 8 Lou Ekus (Tropic Marin) - Reef Chemistry Made Easy ~ Followed by an auction of marine fish, aqua-cultured corals, freshwater fish, plants & dry goods.

DEC 13 Holiday Party ~ Members, Their Families & Friends • BAS awards presentations.

All BAS meetings begin at 7:30pm.

No members, other than those donating their help setting up or items for the auction, will be allowed in before that time.



Anthony P. Kroeger – BAS

IS MY FISH SICK – FISH DISEASE TIPS

Part 1 can be read in *Aquatica*, Sept/Oct 2017

Part 2 can be read in *Aquatica*, May/ Jun 2018

Part 3 can be read in *Aquatica*, Jan/Feb 2019

IS MY FISH SICK PART 4

FISH DISEASE TIPS

Commercial Remedies

This time we will look at what various drugs are available at your local pet store and online.

WHICH ONES SHOULD YOU USE AND HOW?

LISTED BELOW ARE SOME OF THE MOST COMMONLY AVAILABLE MEDICATIONS. ALWAYS FOLLOW THE MANUFACTURER'S INSTRUCTIONS EXACTLY AS TO HOW TO USE AND APPLY THEM TO YOUR FISH.

I'll list some diseases I know from personal experience that each remedy is effective upon. I also have listed some speculations (again from personal experience) to follow with each treatment.

This list is not exhaustive, but it will give you basic treatment options for the most common diseases.

NOTE:

I add 1 teaspoon of kosher salt per gallon of treatment water with each of these remedies. Salt does have anti-parasite capabilities, but in a



quarantine tank I use it more as a "tonic" because salt helps ease stress and helps balance out chemicals in a fish's system. I think of it as Gator-Ade for my fish!

As mentioned previously, however, never use salt with catfish, loaches and especially corydoras! Salt will kill these fish.

Now onto the list of my preferred treatments: I have listed these in the order I use the most.

#1 Formalin

(Not in conjunction with Malachite green.)

This drug is excellent for treating parasites, especially ick and velvet. It is also effective against the saltwater equivalents. Formalin, however, is toxic, so do not overdose.

Scaleless fish are sensitive to this drug; silver dollars, cardinal tetras, etc., should never get more than a one half dose.



2 Methylene Blue

In my opinion, this is the safest "dye" drug. It works great on ick and is helpful treating some funguses. Do not use this drug in a tank with a bio-filter; it will kill the bacteria that lives on the filter media.

3 Acriflavine

This is my go to drug of choice for bacterial diseases. It works well on fin and tail rot, costia and mouth fungus. This drug is more toxic than Methylene. Follow dosing instructions exactly.

4 Chelated Copper

This is equivalent to Formalin in treating parasites. It is more toxic and harder to monitor doses, however. Copper is a heavy metal and will sink to the substrate. A normal surface dose can be toxic at the substrate and kill infected fish. Corys, catfish, gobies, loaches and sharks are especially susceptible, if treating these fish use a 1/2 dose.

5 Sulfa Drugs

Very good treatment for most funguses. Most fish tolerate it well at manufacturer's recommended doses. I have not had sensitivity problems with this drug.

A family of drugs: Kanacyn, Erythromycin. These drugs work well on most bacterial diseases. Fish do not seem to be sensitive to them.

7 Malachite Green


This is my love/hate drug. I call it my kill or cure treatment. It can be highly toxic and easily kill sick fish. It will kill the toughest disease, assuming your fish survive the treatment. I recommend never using more than a half dose on any fish except danios, barbs, cichlids (not dwarf cichlids), and gouramis. For all catfish, rasbora, tetras, use a half dose. Livebearers are hit and miss. Some such as guppies, will take a full dose, mollies need half.

8 Metronidazole

For hole-in-the-head disease, nothing works better. I have not had sensitivity problems using this drug.

9 Potassium Permanganate

I close with a drug for treating parasites that I do not use, but many people swear by it. I have killed many fish using this drug. Both Formalin and Copper are more effective and safer.

I hope this basic list helps you select the proper treatment for your sick fish. 

Healthy fishkeeping.



Is My Fish Sick Part 5
will be in
Aquatica, May/Jun 2019

Tony



Nannacara anomala

BEFORE & AFTER



I recently discovered a copy of "The Aquarium Magazine", dated April 1951 published by The Innes Publishing Company. As I flipped through the age-worn pages of the pamphlet-sized magazine, (I was almost 3 years old at the time of printing) that was still in very good shape. I discovered an article that provided me with an answer to a current problem. This magazine and many others were donated by the wife of one of our former Presidents – **Steve Selznick (1977-1979)**. Steve had passed away and his estate wanted to donate his books and magazines to the society he loved.

The article was written by **Fritz Mayer** and was accompanied by a beautiful hand drawing of the male and female of this dwarf cichlid species. The artist drawing was created by **Regan**. The commentary stated that Mister Mayer obtained a pair of these beauties in 1936. He kept them in a 15-gallon tank that was heated to 77° degrees. Upon reading the current literature, the aquatic environment for this South American species is a pH range of 6.0-8.0 and a DH of 5-19, which covers a wide variable in both ph and water hardness. They reside in the freshwaters of Guyana and Surinam. They have common names such as GoldenEye and Golden Dwarf. They are reputed



to be an easily kept species with the male growing to 2 ½ inches and the female an inch smaller.

The modern literature that I have read states that they are excellent parents and provide devoted behavior to their fry. I have not found this to be true. I have had several spawns and after the fry has been free swimming for a few weeks I noticed that the group of fry has been getting smaller and smaller as time went by. I usually kept the pair alone in a 10-gallon wide Metaframe aquarium with live plants, caves and pebble size gravel. A medium size sponge filter provided adequate filtration. After witnessing many baby losses I started to look deeper into what was going on in the tank. I found several older siblings from a previous spawn and thought that they may have been preying on their smaller brothers and sisters. I removed them but I continued to lose fry. I then removed the male to another tank. Lo and behold, I still lost babies.

Upon reading Fritz Mayer's article, he states that the pair enjoyed laying their eggs, which never numbered more than 100 (today's literature states that the eggs can be up to 300), on the interior of a flower pot on its side. After spawning, the female takes over the caring of the

fry and the male guards the outside area. Mayer mentions that it is best to remove the male at this point because the female will chase and harass him. After the eggs are laid, they hatch in 2-3 days and are free-swimming 5 days later. Found the following sentence to be most illuminating and I quote, "It is not advisable to leave the female in with the fry after they once become free-swimming as there is a real danger that she will start eating them." Now I know that the fry was eaten by mom!

Fritz Mayer goes on to say that the fry requires large amounts of infusoria and as they grow larger move to tubifex, white worms or brine shrimp chopped up into tiny pieces. At 8 months they are mature and can start to spawn. It's interesting and exciting to know that an article printed 67 years ago on fish that he obtained in 1936 (15 years prior to the article being published) was able to solve the mystery of missing fry in 2018.

This proves a couple of things – that you are never too old to learn and that old articles contain answers that modern articles may not have the answers to your questions. Read the articles from our ancestors and maybe you also will learn something. 🐟





TheShrimpFarm.com is the place to go for freshwater shrimp. The new owner is **Ryan Curtis**, with a new mailing address: The Shrimp Farm USA, 2401 East Washington St, STE 200 A2, Bloomington, IL 61704 and has set up an Aquarium Shrimp Forum <http://theshrimpfarm.com/forum/index.php>. You can go to this forum and ask questions, talk to other shrimp nuts and discuss anything and everything related to Freshwater Aquarium Shrimp.

Green Jade Shrimp



Scientific Name: *Neocaridina davidi*.
Common Name: Green Shrimp.
Other Common Name: Green Jade Shrimp.
Origin: India, Malaysia.
Found in the wild: No.

pH Range: 6.8 - 8.0.
Temperature Range: 65° - 85°F.
Hardness Range: 6 - 12 dkh.
Ideal Hardness: 8 dkh.
Life Span: 1 - 2 Years.
Gestation Period: 30 Days.

Ideal pH: 7.2.
Ideal Temperature: 78°F.
Ideal Hardness: 6 - 8 dkh.
Size 0.5" - 1.5"
Diet: Omnivore.

Ryan



BREEDING DWARF SHRIMP



When keeping Dwarf Shrimp in the home aquarium, one of the most exciting aspects is their ability to multiply rapidly. Most Dwarf Shrimp can double their population in three to six months, and this trait is making them more and more popular in that home aquarium trade.

For the purposes of this article, Dwarf Shrimp will be defined as any freshwater species of shrimp found in the *Caridina* and *Neocaridina* genera. These genera include the extremely popular Red Cherry Shrimp (*Neocaridina heteropoda*), the highly refined Crystal Red Shrimp (*Caridina cf. cantonensis*), and one of the first shrimp in the hobby, the Amano Shrimp (*Caridina multidentata*).

For Dwarf Shrimp to breed, there are 3 conditions that must be met. There must be a sexed pair of shrimp in the aquarium, all water parameters must be stable and there has to be a stable source of food. Each individual species of Dwarf Shrimp will have their own individual water parameter requirements and different ways of sexing the shrimp.



Sexing Dwarf Shrimp varies from species to species, but there are a few constants among most Dwarf Shrimp. In general the female will be larger and often more colorful. The female will also

have a larger, broader tail section. In shrimp species that have a clear to semi-clear exoskeleton, a saddle can be seen on mature females. This saddle is the eggs developing in the female's ovaries. Most male Dwarf Shrimp are smaller in size, often less colorful and have a thinner tail section.

Although the water requirements vary from species of Dwarf Shrimp to species, it is most important that all parameters be stable. Dwarf Shrimp should only be kept in a fully cycled and well-established aquarium. Ammonia and Nitrites are very toxic to Dwarf Shrimp and should always be kept at 0 PPM (parts per million). Nitrate can be toxic as well and should be kept below 20 PPM, with less than 10 PPM being ideal.

Many of the *Caridina* species require soft, slightly acidic (pH 6.0 – 6.8) water that is slightly cooler than tropical (65°-72° F). Most *Neocaridina* species are a little less demanding. They often require a neutral pH (6.8-7.5) and are undemanding when it comes to water hardness. *Neocaridina* species prefer more tropical water temperatures (72°-80° F). Again, stability is the most important factor.

A healthy Dwarf Shrimp will breed more



readily and more prolifically and food is an important factor in Dwarf Shrimp health. To ensure optimal breeding conditions for Dwarf Shrimp, a constant food source must be provided.

Whether it be an aquarium with a large amount of naturally occurring algae, or foods specifically intended for Dwarf Shrimp, as long as there is a stable source of food, Dwarf Shrimp will reproduce quickly.

Once the three conditions have been met, and the sexed pair of shrimp are mature, the breeding process will begin. First a female will find a comfortable hiding spot in the aquarium. Once she has become comfortable, she will molt (molting is the shedding of the exoskeleton to enable growth of invertebrates). After molting, the female will release a pheromone into the water indicating to the male shrimp her readiness to breed.

The pheromone in the water will sometimes cause the male shrimp to swim erratically in search of the female. Once the male finds the female, he will mate with her. They will mate belly-to-belly, and the male will deposit sperm. This process does not last very long, and because the female is hiding most times it is rarely observed.

After the mating process has occurred, the female will pass her eggs through the sperm and deposit them in her pleopods (swimming legs) under her tail. The female shrimp will carry the eggs until they hatch, normally in 20-40 days. The female will often be observed fanning and



cleaning the eggs. Once the eggs hatch, there is no longer any parental care of the young shrimp.

There are two types of Dwarf Shrimp, high order and low order. Low order shrimp hatch as larva and often times require saltwater or brackish water to mature into small shrimp. High order shrimp hatch as miniature versions of the adult shrimp and require no special care.

Raising low order shrimp can be quite challenging. Upon hatching, the larva need to be transferred to saltwater. These larvae are very


small and require food that they can fit into their mouths. Many of the larvae require single cell algae as a first food and graduate to larger foods as they grow. Once the larvae metamorphosis into miniature versions of the adult shrimp, they need to be transferred back into freshwater and cared for the same way an adult shrimp would be.

Raising young high order Dwarf Shrimp (or post metamorphosis low order) is fairly easy. They have the same care requirements as the adult shrimp and require no special attention. To



increase growth rate smaller high protein foods are recommended (decapsulated brine shrimp eggs are great). And when performing water changes (recommended 15% twice weekly), it is important to make sure not to suck up the young shrimp. Placing a piece of new panty hose over the intake of the siphon tube will prevent small shrimp from being sucked up!

If you are interested in breeding Dwarf

Shrimp,, make sure you have a sexed pair of shrimp, place them in a cycled and well-established aquarium, and feed them well. Nature will take its course and soon you will be caring for young shrimp. Dwarf Shrimp will breed faster and the young will survive at a much higher rate if the aquarium is a species-specific aquarium. So keep these things in mind and beware of the addictive nature of caring for Dwarf Shrimp. 



Ryan



How Long Should Aquarium Lights Be On?

We often get questions about the lighting schedules for aquarium lights. This primer gives advice on schedules. But before discussing schedules, we'll go over why aquarium light is important.

1. You need light to see into your aquarium. While the organisms in your tank need light, aquariums lights are often turned on just for your viewing enjoyment.
2. Lighting gives your fish a source of Vitamin D, and they give your fish a natural daily rhythm. However, not much light is needed for fish to have adequate Vitamin D.
3. Lighting provides nutrition to your aquatic plants and corals. If you have plants or corals the amount of light and the lighting schedule is more critical than with a fish-only tank. Here are our recommendations for fish-only, freshwater planted-tanks and reef tanks.

On/Off Lights, 6-8 Hour Lighting Schedule

For lights that simply turn on and off, you should leave your lights on for 6-8 hours a day. Even though the sun is up far longer than this, the sun does not shine at full strength all day. Leaving lights on for extended periods will lead to excessive algae growth. If your light does not have a timer then consider adding one to make sure that the lights are on for a consistent amount of time each day.

Our T5/HO lights with just two bulbs and some of our less expensive LED Fish-Only Aquarium Lights usually fit into this category.



Lights with Multiple Cords, Up to 12 Hour Lighting Schedule

(Peak Intensity 6 to 8 Hours)

For lights with multiple cords you can run your lights as long as 12 hours a day. Make sure that your lights are only at their peak intensity for no longer than 8 hours, as longer light periods can lead to algae. Most lights with multiple cords will have two or three cords for different color light bulbs. Most people will turn on the dimmer bulbs or blue bulbs for 1-2 hours and then turn on brighter bulbs for 6-8 hours followed by an additional period of just the dimmer or blue bulbs for another 1-2 hours (with the dimmer or blue bulbs running the entire 8 to 12 hour period). Light timers can help in creating this dawn/dusk effect.

These days most of the lights with multiple cords are the T5/HO lights with four or six bulbs. When using combinations of lights, such as with the AquaticLife Black T5/LED Hybrid Reef Lights or multiple of LED strips, you will have multiple cords and lights that can be controlled independently.

Lights with Dimming, Up to 12 Hour Lighting Schedule

(Peak Intensity 6 to 8 Hours)

In recent years more and more lights—especially LED lights—have built in dimmers. Dimmers are great for viewing your aquarium. The slow ramping-up and ramping-down of lights greatly adds to the look of an aquarium.

For lights with dimming you can run your lights as long as 12 hours a day. Make sure to only run your lights at their peak intensity for only 6 to 8 hours a day. Running your lights at high intensities for long periods can lead to excessive algae.

With dimmable LED lights we recommend you run just the dim/blue colored setting for 3 hours and then add the bright white lights for 6 hours and then transition back down to running only the dim/blue colored setting for another 3 hours before turning


off all the lights (with the dimmer or blue bulbs running the entire 12 hour period). You may have some very dim moon lights running for the other 12 hours.

There are several LED lights on the market with dimmers that are either built into the light or controllers that you connect the light to that dim the light. The Kessil LED Lights, AquaticLife Edge Reef LED Lights, Fluval Sea Marine & Reef 3.0 LED Lights and most other high-end aquarium lights fall into this category.

Please note that there are some cheaper LED lights that have a sunrise/sunset period that typically lasts for half an hour, but do not have independent control over two or more light channels. In these cases you would not want to run the light more than eight hours a day because after a short ramp up period the light will be at full intensity.

There are also some LED lights that do not ramp-up and ramp-down (get gradually brighter and dimmer). But they have two or more LED channels. In these cases you would treat each channel light like a separate power cord. Turn on the dimmer or blue LED channel for 1-2 hours and then turn on brighter LED channel for 6-8 hours followed by an additional period of just the dimmer or blue LED channel for another 1-2 hours (with the dimmer or blue LEDs running the entire 8 to 12 hour period).

Moon Lights

If you would like a moon light (night light) make sure that you have a light that is specifically designed for this purpose. Many aquarists purchase regular lights for night lights that are too bright, resulting in excessive algae. True moon lights can stay on 24 hours a day. Many LED lights these days have moon light functions built in. 

Please contact us with any questions you have.
sales@marineandreef.com

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Monday-Friday 8am-11:30am & 12:30pm-4pm MT

Note: we do not have daylight savings time in Arizona.



RASPBERRIES ARE GOOD FOR YOU



Raspberry Corals In Your Aquarium

Pocillopora damicornis

Most people do not like getting the raspberries, but getting a raspberry coral for your reef tank is a pleasant surprise.

Native to East Africa, Western Australia and the Red Sea raspberries are not the most common coral but are well worth the effort to obtain. Very attractive, its color ranges

from a light pinkish blue to deep blue. Normal reef parameter water quality suits it fine.

Be sure to sit this coral near the top of your reef tank, fairly close to the light source. In nature



this species is generally near the surface of reefs. As such it also likes a steady current too. Not a reef surge zone coral generally, but still it appreciates good water circulation around it. This coral needs and likes bright lighting.

Feeding is standard as for most stony corals with one exception; raspberry corals in particular seem to need regular supplements of calcium, strontium and other trace elements, even more than other stony coral species.

Do not buy raspberry corals if you cannot. Raspberries that do not receive timely, regular additions of the elements mentioned will decline very quickly.


Prices on wild African or Red Sea collected specimens can be fairly steep. But small frags from captive sources are usually quite reasonable. The darker the blue the higher the price you usually expect to pay.

In my personal experience I have not found raspberry corals to be particularly susceptible to coral diseases.

Given good lighting, proper feeding and its mandatory supplements, raspberries seem to be moderately hardy for a stony coral.

Beware of allowing filamentous algae from smothering it. This coral wants and needs all the bright lighting it can get, just be sure to be vigilant against the formation of filamentous algae and remove it when you see it.

Unique color shades of blue arrive occasionally with Red Sea shipments - such as cornflower blue. Except to pay a premium price for such specimens.

All told a very pleasing coral for your reef tank, so get your raspberries today! 

Happy Reefkeeping.



***MARINE ANGELFISH - PART 3***

BIG! BOLD! BEAUTIFUL!



The Blue Face Angel ***Euxiphipops xanthometopon***

This stunning angel is sometimes known as the yellow face angel. Growing to a length of about 15" inches, it is native to Indonesia and the Philippines.

Most specimens are exported from Indonesia.

This is not a common fish. Demand for it greatly exceeds supply. Expect to pay a premium, very high price for any specimen that may be available.

Coloration is simply gorgeous! The body color is a golden/olive. Each scale is flecked with blue. The head, throat and pectoral fins are canary yellow, overlaid with a riot of irregular electric blue strips edged in black. The nape is a dark blue/olive. Dorsal is yellow becoming orange rearward. A larger black irregularly shaped ocelli is at the rearmost base edge of the dorsal. Usually this ocelli is edged in electric blue. The gill cover



spike is bright blue; ventral fins have broad electric blue front and trailing edges which boundary a coal black center. The caudal fin is canary yellow to tangerine orange. The dorsal, anal, caudal and ventrals are all edged in metallic electric blue. The anal fin is large broad yellow and striped in a broken line pattern of neon blue. Portions of the dorsal are a light yellow to white. Interior initial portions of the anal fin are sometimes orange. Indistinct vertical white bands of narrow width overlay the flanks. This

is indeed a very beautiful angelfish.

It is also a very sensitive to chilling and will contract ick immediately if chilled.

Likewise, it will not tolerate any lapse of its water quality. Any lapse will invariably cause it to come down with marine velvet.

This angel demands only the best water quality, zero ammonia/nitrites/nitrates. Salinity of 1.022 - 1.024, and a temperature between 76 - 82° F and a pH of 8.2. I change 22% of its water weekly.



Because of its size it needs a larger tank - a 55-gallon for juveniles and at least 180-gallons for adults. A canister or high capacity power filter is mandatory. Cover their tank; this fish is too expensive to risk it jumping out.

Peaceful with all other fish, they will occasionally exist with other of its species, but watch closely all introductions to insure that no fights occur. Adults and juveniles will usually adapt to each other.

This angel is not reef safe. It loves to nibble on corals. Blue face angels are picky feeders initially. Do not buy a blue face that you do not see eating. Initially, it is often a struggle to get this fish to feed. Plus it has the bad habit of eating only one specific food or, worse yet, going off that food completely if something is not to its liking. Expect this angel to present a feeding problem at some time or other.

Deterioration of either dietary variety or water quality will result in the rapid onset of head and lateral line erosion in this angel. Assuming you remedy the cause immediately, the fish will recover. But this recovery process is extremely slow compared to every other large angel.

This is a sensitive fish and I do not recommend it except to experienced aquarists.

Blue face angels are rather shy in behavior. Blue faces need plenty of hiding places so as to feel comfortable. If frightened or disturbed, this angel will quickly duck into a hiding place and it will never be out flaunting its wares as a blue ring angel will.

Blue face angels are sensitive, expensive, not easy to find and a challenge to keep. But for an experienced aquarist who wants a challenge, this beautiful angel is well worth the effort.

Happy Fishkeeping. 

Tony



John Todaro - BAS

From the Brooklyn Aquarium Society's publication
SCRUMPTIOUS MEALS & LIVE FOOD TREATS Compiled, Edited & Written by John Todaro

Zucchini Strips & Chips Munchies

Bristlenose, plecos and sucker-mouth catfish keepers know that zucchini is one of their most favorite foods. They will spend hours gathered around zucchini strips or chips munching away. Many other fish love to nibble at zucchini.

Preparing zucchini is really simple, if you can boil water you can prepare Zucchini Strips & Chips.

As simple as it is, there are a few things you should know about feeding zucchini to your fish.


First thing to take into account is that raw zucchini floats. To get it to sink you have to par-boil it.

Another thing to consider is that as the catfish eat their way through the delicious tender center of the chip they can get their heads caught in a "zucchini skin necktie."



Not a good thing! This could dangerously block their gills. To make sure this doesn't happen, score the zucchini skin chip with a knife. So when they eat their way through, the skin will just fall open.

Really lazy aquarists serve zucchini's cut in long strips. This affords more than one bristlenose to spend happy hours munching-a-way with no danger of the dreaded "zucchini skin necktie."

If you're even lazier, serve it raw. Of course you'll have to hold the strips & chips in place with a rubber band to a small rock or driftwood, or you can use **The Pleco Feeder™**. You just secure the zucchini on it and you're ready to feed your plecos, or use a seaweed or lettuce clip with a suction cup to hold the zucchini in place. 

RECIPE

INGREDIENTS:

Fresh zucchini

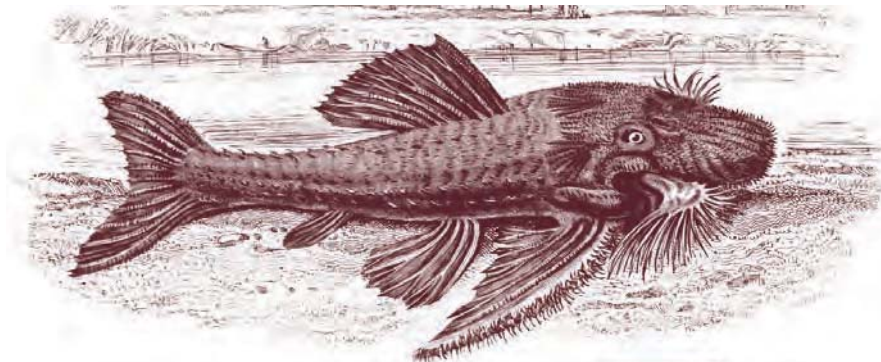
YOU WILL NEED:

Pot to par-boil zucchini

PREPARATION:

Cut zucchini into either chips (rounds) or strips (lengthwise)

Boil water and and par-boil the zucchini.
Cool the zucchini and serve.
Par-boil only what you will serve.
It will not do well refrigerated.





OSCAR MAYHEM!



Oscars are awesome! But admittedly they can cause problems too! Especially when they breed and you are not prepared for the results!

Let me tell you about my first spawning of oscars.

I import/export and distribute live aquarium fish. In Florida, wholesalers can buy boxes of wild caught oscars (caught right out of the Florida waterways).

A box usually contains six

8" to 10" inch oscars. They are usually a bit beat up being caught on hook and line. But with good care and food, they heal quickly. Wild oscars are green and brown with a red ringed ocellus. These are not red or albino oscars.

Somehow a box got forgotten.

Those six dined on earthworms, crayfish and crickets. Needless to say it was great conditioning!

One day while I was walking past the tanks, I noticed the forgotten oscars.

There were two badly beaten/shredded oscars hanging at the surface that caught my eye. Hmm! Oops! The other four had now become two pairs, one at each end of the 55-gallon tank they had been put in.



Both pairs were guarding well over 1,000 eggs each. I quickly removed the two beaten oscars. This was very easy, I put a black floating bucket into the tank and they swam right into it.

I decided to leave the two pairs alone for fear if I tried to remove them, I would lose at least one spawn if not both.

The two pairs were good as gold, fanning the eggs and removing any fungused ones. Soon the eggs hatched into wigglers.

That night I used a clear plastic siphon hose to remove the wigglers into my grow-out vats. Breathing a sign of relief, I went home.

The next morning I returned to find that mayhem had broken out in the tank. All four were now beaten and ripped up, evidently blaming each other for the disappearance of their respective fry.

I separated both pair again feeding and conditioning them well. They spawned for many years for me.

Mayhem managed, I call it

Oscars are awesome! Just be ready for some mayhem!

Happy fishkeeping. 🐟

Tony





Welcome to the World, Little Fish. In 14 Days You'll Start Making Babies.



An adult male killifish, which goes from egg to sexually mature adult in just two weeks, can also have a flexible lifespan, researchers found.

Photo: R. Blæk

The African annual fish can reach sexual maturity in about two weeks, scientists found, the fastest known among vertebrates.

Killifish are a family of freshwater fish that have evolved to survive in the most difficult of situations. Here in the United States, for instance, the Atlantic killifish is known for having adapted to live in heavily polluted places like the Lower Passaic River.

But in small murky puddles that come after heavy rains in parts of East Africa, another killifish, called *Nothobranchius furzeri*, or the African annual fish, has developed its own unique adaptations to its environment. Its embryos are able to enter a state of diapause, similar to hibernation in bears, when conditions aren't right.

It turns out that entering dormancy isn't the only thing that's unusual about this African killifish. In a paper published on Monday in *Current Biology*, a team of Czech researchers report that *N. furzeri* has the quickest known rate of sexual maturity of

any vertebrate — approximately two weeks. By studying the fish's unusual life cycle, they hope to gain insights into the process of aging in other vertebrates, including us.

Dr. Martin Reichard, a biologist who is studying the evolution of aging at the Czech Academy of Sciences' Institute of Vertebrate Biology, led a team of colleagues to Mozambique to study the fish's developmental stages in the wild. There, they were able to observe embryos buried in the sand that had entered a dormant state. They also documented their maturation after rainfall.



7-day-old killifish observed in Mozambique.

Credit: M. Vrtílek, J. Žák, M. Reichard



The same killifish, 10 days later

Credit: M. Vrtílek, J. Žák, M. Reichard

When *N. furzeri* receive cues from their environment, they can be flexible in sexual development. Under these circumstances, their embryos enter a stage of dormancy called embryonic diapause, a reproductive strategy that extends their gestational period and helps them survive unfavorable conditions, like a dry season.

But when it rains, they undergo rapid growth, going from juvenile fish to mature adults that are able to reproduce in about two weeks.

That ability comes at the expense of the fish's life span. They have an earlier onset of aging than other vertebrates.

"The fish display comparable cellular deterioration and changes found in aging humans

after several decades," said Dr. Reichard.

With this information, the researchers found that the fish's life cycle depends on the environment in which the embryo is laid. For example, during long periods of drought, embryos will undergo three periods of dormancy to ensure their survival.

What makes this fish's life cycle different from other vertebrates is a trait that is commonly found in invertebrates. The embryos have a protective shell, shielding them from severe conditions.

"Usually, vertebrates cope with harsh conditions during their adult stage, like bears during wintertime. However, with the embryos, it can be observed during their early developmental stages," said Dr. Reichard.



A pool with killifish. For most of the year, the tiny fish live as embryos buried in sediments across the African savannah, hatching when rainwater fills the small pools. They then have to grow, mature and reproduce before the pool dries up.

Credit: M. Reichard

For now, the research could contribute to the study of aging. Can understanding this species' adaptations to its environment benefit humans by helping identify specific genetic codes unique to longevity? Or can it help pharmaceutical developers understand how drugs affect different age groups?

The answer remains undiscovered. 



PULSING OR XENIA CORAL THE CORAL THAT WAVES AT YOU!

"I really like Xenia coral! It's fascinating to watch as it pulses. It's like it's waving at you. Its motions are very relaxing."

Native from the Red Sea over to the Philippines and through most of the Indo-Pacific. Xenia coral is available for sale at reasonable prices in most marine aquarium stores. Xenia comes in a wide variety of colors.

Specimens offered for sale may be wild collected or more commonly frag propagated these days. Both kinds are fairly hardy and not too difficult to keep if you give them the conditions they need.

Xenia require good quality seawater SG 1.020 - 1.025, kind of warm; they like a temperature between 76 and 79° F, alkaline, 8.0 to 8.3 pH. They benefit from regular 20 to 25% water changes once or twice a month.

Xenia corals require high amounts of oxygen. Make sure you use a good power filter to keep the water clean. Using a powerhead to provide a current is also useful for keeping Xenia corals.

The open and close pulsing or waving that Xenias do constantly is to bring water currents to




the coral, thus bringing fresh oxygenated water to it.

You must maintain a high water quality standard with Xenia coral. Nitrate is very detrimental to Xenias! It does not like any significant level of ammonia or nitrite either.

Xenias require good high/bright lighting. Always situate them in the brightest area of your reef tank. Up front. Up top.

Xenias are easy to feed. They filter feed, but give them tiny meaty bits of shrimp, fish, clam, etc. too.

Xeni's are prone to "melt." This is where a whole colony suddenly turns to mush. It looks like it simply "melted." It can occur very rapidly, sometimes within 12 to 24 hours. Even well established colonies can suddenly "melt." A "melt" is sometimes, but not always, associated with water quality problems. If your Xenia "melts" change your water quality immediately. Do not throw a "melted" colony out unless it disintegrates and decays; an undisturbed colony will grow back generally, albeit slowly.

Xenias are popular because of their interesting behaviors. Watching one is very relaxing! ZZZZ! Shh! 

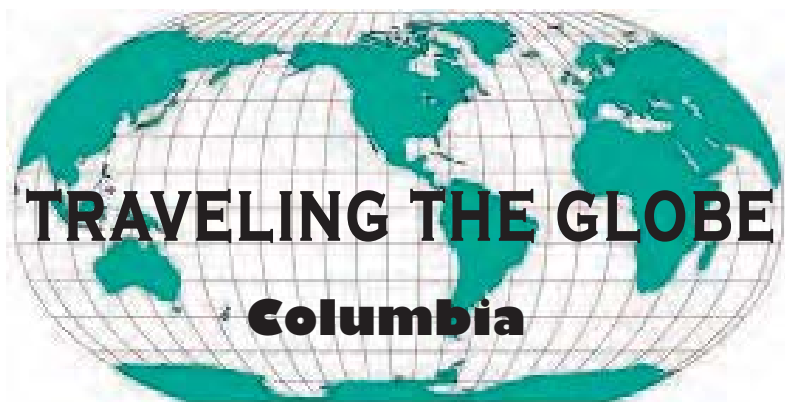
Happy reefkeeping.

Tony





Catfish Dreams



Pictus Catfish *Pimelodus pictus*

zzzz! This catfish will wake you up; its got the wow and flash factors down pat!

Hailing from Columbia, I've seen specimens in the aquarium that exceed 6" inches. Materials I've read say it grows larger, but I've never seen any larger, excluding its whiskers.

Pictus are really pretty Catfish. A metallic silver body covered in medium size spots and a snow white belly make this fish a standout. This pattern continues into the caudal,

dorsal and large adipose fin. The other fins are clear. Their eyes are black and rigged with a silver iris and very long whiskers.

This bread and butter catfish is regularly imported and available at most aquarium stores at very reasonable prices.

Pictus cats are easy to keep and fairly hardy

too. A 29-gallon aquarium will house 3 juveniles easily. I use a power filter to keep their water clean. I keep mine in medium hardness 7.0 - 7.8 pH, and a temperature between 74° and 80° F.





This fish loves large volume water changes. I change either 30% twice a week or 50% once a week, if time is tight. Be sure to give each pictus a cave or PVC pipe all their own. But many times they will share with a friend. Be sure to cover the tank; this fish jumps well.

Pictus cats eat any food offered greedily. Flake, pellets, frozen, all are fine. They love small earthworms. They will stuff themselves with so much food that they look like they swallowed a marble.

That large mouth can easily swallow small tankmates too! This fish is sure death by night on neons, cardinals and guppies. Keep this fish ONLY with fish its same size or larger. It's peaceful with similar size fish.

Large fish, if they bother them at all, learn quickly to leave them alone. The dorsal and pectoral spines are venomous. I once had an 8" oscar harassing a 3" pictus, but once stabbed, the oscar never bothered the pictus again. Pictus will stab you too if you frighten it. If you are stung, run as hot a water as you can stand over the sting. This breaks down the venom. Seek a doctor's attention if needed. A sting burns like fire and is not a pleasant experience. Keep



your hand out of the tank! Pictus always get their fins snagged in a net. The only way to get them out is to cut them out of the net with a small scissors and you are asking to be stung if you do this, and anyway you will have ruined

the net. Always move pictus using a glass or plastic container and be careful!

Pictus are very active fish; they do fine alone or in small groups. They are nocturnal fish, but quickly get used to searching for food morsels in the light using their long whiskers... but they remain active at night too.

Pictus are fairly hardy, but do catch ich easily

if chilled. Use any dye or copper medications at 1/2 strength.

Never use malachite green on this fish; they're extremely sensitive to it.

This is one of the best catfish there is for the hobbyist and well worth dreaming about and owning.



Signing off until next time...ZZZZ! 🐟

Sy



SPECIES PROFILE

Scientific Name: *Pimelodus pictus*.

Common Name: Pictus Cat.

Distribution: Rio Orinoco and Amazon basins in Colombia, Venezuela, Peru and Brazil.

pH Range: 5.8 - 6.8.

Temperature Range: 72° - 77°F.

Water Hardness: 1-15 ppm.

Size: Around 5" inches.

Temperament: Peaceful enough, but bear in mind this is a predatory species. Unfortunately, it's often sold as a bottom dweller for the community of smaller fish, a situation which must have led to the deaths of countless neons, guppies and similarly-sized species. It's really only suitable for roomy tanks with occupants that can't be swallowed. It can also bother slower-moving tankmates (such as many cichlids) with its activity levels and long barbels, especially at night or when feeding. Robust, active species therefore make the best tankmates. Rainbowfish, medium to large-sized characins, cyprinids and tough catfish such as Loricariids or Doradids are all suitable.

Although a single specimen will survive by itself, it's a shoaling species by nature and will be much more outgoing and active when maintained in a group of six or more. If kept alone, it tends to remain hidden during daylight hours, emerging only after lights out.

Sexing: Unconfirmed, although adult females are likely to be stockier in build than males.

Diet: Very easy to feed. It mainly preys on aquatic invertebrates in nature, but in the aquarium will greedily accept just about anything offered. Meaty items such as live or frozen bloodworm, Tubifex or small earthworms are particularly relished, but dried sinking foods will also be taken. Take care not to overfeed as this is one of those species that will habitually gorge itself until it can literally take no more, ending up with a hugely distended stomach. It only really needs to be fed every few days when adult.

The feeding response of a group of these is very frisky indeed once they smell food in the water, quickly achieving a frenzied state. You may need to add food at night until the fish are acclimated to their surroundings.

Breeding: Not thought to have been achieved in the hobby.

Notes: There are currently 32 genera and over 80 species included in the family *Pimelodidae*. *P. pictus* is the most popular member of the genus in the hobby, as it's one of the smaller, prettier species. There are a couple of geographical variants imported. Fish from Colombia have a peppering of tiny dark spots all over the body, the Peruvian form has much larger spots on the body and small spots on the head.

Reference:
Seriously fish.com





Canister Filter Troubleshooting

How to Troubleshoot and Preempt Canister Filter Problems

Help! My Filter Is Leaking

Canister filters are more prone to leaking than any other type of filter. If your filter is leaking, you need to first find out where the filter is leaking from. Occasionally a leak occurs because a filter body, motorhead (top section with pump) or hose connector is cracked. But by far the most common location for a leak is the main filter o-ring.

We carry a wide variety of replacement canister filter o-rings in our Aquarium Filter Replacement Parts section. Even if your filter is not leaking, having an extra main o-ring on hand is a good idea. Having to shut down your filter while you wait for an o-ring to arrive can be costly. The main o-ring goes by many different names. AquaTop calls it the Barrel Head O-Ring. Fluval calls it the Motor Seal Ring and Hydor calls it the Motorhead O-Ring. We carry parts for AquaTop, Fluval, Hydor (Professional), JBJ (EFU Reaction), Lifegard, Marineland, Nu-Clear and Penn-Plax Canister Filters. See: Aquarium Filter Replacement Parts.

Canister filters also have other o-rings



where leaks can occur. Some common places with o-rings include the quick disconnect valves and the priming button. If you can identify where a leak is coming from, swapping out the o-ring should fix the problem. It's also a good practice to replace your o-ring as preventative maintenance. Spending a few dollars today on a new o-ring is a lot cheaper than having your carpet cleaned or hardwood floors re-finished because of a filter leak. O-rings should be replaced every year or at least every other year. New o-rings should be lubricated with silicone lubricant before installing. You can also extend the life of your o-rings

by applying Lifegard Aquatics Silicone O-Ring Lubricant every time you open up your filter for maintenance.

Help! My Filter Isn't Pumping Any Water

If your filter isn't pumping water the first thing to check is whether or not the impeller in the motor (pump) is moving. After turning off the filter, closing any valves, and disconnecting the



hoses (using the quick disconnect if there is one), open up the filter and locate the filter impeller. This is usually in the top of the filter motor head. Once you have located the impeller, remove it and inspect it. If the impeller is broken, worn or swollen, then replace the impeller. Make sure to also check the impeller shaft and impeller cover. If either of these is broken then they should be replaced.

Once you have confirmed that the impeller is intact, very briefly turn the filter on with the motor head removed. If you can see that the impeller starts to turn then you know the motor is working. If the motor still does not turn, then your main motor head is bad and needs to be replaced. We carry replacement motors, impellers, impeller covers and impeller shafts (also called motorheads or pumps) in the Aquarium Filter Replacement Parts section.

Once you know the filter motor works, reassemble the filter but leave the filter hoses disconnected. The next step is to check to make sure that the filter hoses are primed. Put a bucket below the aquarium and place the filter hoses in the bucket. Open the quick disconnect valves from the hoses. Water should freely flow through the hoses and into the bucket. If water does not flow through the hoses, the hoses either are still obstructed or need to be primed.

If you're certain the hoses line are clear, but the water is not flowing, you'll need to prime (to prime is to fill the hose lines with water) the filter. Many filters have a built in priming button. If the filter does have a prime button, reconnect the hoses and use the prime feature. If not, open the valve on the hose and suck on the valve to start a siphon (better dirty aquarium water than gasoline!). Let the water pour into the bucket to confirm that the siphon is complete. Once both lines are primed, close the valves, re-connect them to the filter, open the valves and plug in the filter.

Help! My Filter is Pumping Very Slowly

If your filter is pumping water slowly, then there is either a problem with the impeller, an obstruction in the filter hoses or dirty filter pads.

Filter Pads


If your filter pads and media are clogged, there will be less water flow. The more detritus in the filter, the harder the pump must work to push water through the media and less water is returned to the tank.

How often a filter pad should be cleaned and replaced is a function of your particular filter, the size of your aquarium and your bio-load. You definitely want to clean your filter pads at least monthly. Information on how often you change your filter pads and other media will be in your canister filter manual. We carry replacement media in the Aquarium Filter Replacement Media section.

Impeller Problems

Impeller problems are not always obvious. If the shaft or glue joint is broken, then the impeller will not turn and there will be zero water movement. If there is some water flow, the problem could be a build-up of material on the impeller. Clean it and see if that helps. Other problems could be some of the impeller blades have broken off or that the impeller or impeller magnet has swelled (this can happen if the pump runs dry). If there are broken blades or a swelled magnet you'll need to replace the impeller.

Filter Hose Problems

If the impeller appears to be clean and intact, the problem is likely an obstruction in the hoses. Start by removing the filter hoses and cleaning or replacing them. You can clean the hoses using an Aquatop Cleaning Brush, 24" or a Two Little Fishies MagFox Magnetic Hose Cleaning Brush. The Mag Fox is excellent for extra long clear hoses. Because tubing is relatively cheap it may be easier to simply replace the hoses. We carry replacement hose in the Aquarium Filter Replacement Parts section. 

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BLACKWATER JEWELS

THE LICORICE GOURAMIS

PAROSPHROMENUS SPP.

Licorice gouramis are a family of small blackwater loving gourami species. Beautiful, sensitive, challenging to keep and breed, Licorice gouramis are for experienced aquarists. No licorice gourami is a beginners fish.

As a whole, these species hail from an arc-like area extending from Peninsular Malaysia east to Borneo, different species inhabiting various areas. Most species are quite beautiful!

In general, all licorice gourami species have licorice black/dark chocolate horizontal striping over a golden honey colored body. Finnacle is colorful: adorned in blue or red edging/striping/spots. There are some less colorful licorice gourami species, but these are rarely if ever seen in the aquarium trade.

All species of licorice gouramis are small fish. Most species are about 1 ½ inches or less in size.



**Licorice gourami,
*Parosphromenus deissneri***

All licorice gouramis offered are wild caught. No commercial breeder/farmer of these species exist anywhere. Licorice gouramis are seasonally available only.

They also are extremely sensitive to shipping. It is not unusual to suffer 50% per bag or greater shipping losses. Due to the total lack of commercial producers, sensitive shipping and seasonal nature, all licorice

gourami species are difficult to find and command a premium price. If you can find them. Do not expect to find any "cheap" licorice gourami.

The best place to find them are high end retail stores or online vendors. All licorice gouramis are small, peaceful and timid.

You can keep them in a community tank, but due to their high price and sensitive nature they are best kept in a species only tank.

A well planted, dim 20-gallon long tank is fine for several pairs, use a black substrate and dark background. Plant the tank heavily with various Cryptocoryne species and cover the surface with floating plants to keep them at ease. Always



cover their tank. They jump well. Make sure you give them caves to hide and spawn in.

All licorice gourami species are very sensitive to water quality issues: ammonia and nitrite will not be tolerated at all.

All licorice gouramis are blackwater species. They require very soft, acidic (6.0 - 6.8 pH) water with a temperature between 76° and 82°F. You should use peat moss or oak leaves in your filter to add tannins to the water which will be tinted to the color of a cup of tea. Give them partial water changes often in very small amounts: 10% each time about 3 times a week.

These gouramis do not like larger volume water changes, they tolerate any fluctuations in their environment very poorly.

Licorice gouramis are very picky feeders initially. Try starting them on live daphnia or brine shrimp and wean them to frozen brine shrimp and mosquito larva. Eventually they will take quality flake foods.

Licorice gouramis are cave spawners. They blow their bubble nest under the roof of a cave.



Moon spot licorice gourami
Parosphromenus linkei



Spiketail licorice
Parosphromenus filamentosus



Strawberry licorice,
Parosphromenus nagi



Blue line licorice
Parosphromenus gunawani

(flower pot) Condition them with soft blackwater for breeding. Females are much less colorful than the males.

Following a typical gourami spawning embrace, the male drives the female out of the cave and assumes care of the eggs and fry.

Spawns are generally small, often 75 to 100 eggs. The eggs for most species hatch in about 72 hours at 77°F. Fry are tiny. For their first feeding try infusoria, cyclops and rotifers. After about 3 to 4 days feed newly hatched baby brine shrimp.

Fry grow slowly and are even more particular about high quality water than adults. Definitely some serious BAP point for these fish!

All licorice gouramis are hyper-sensitive to diseases, especially all bacterial diseases and ich. If they fall ill, expect massive losses. To treat them, raise the water temperature to 88 - 90°F. These gouramis are also hypersensitive to all medications. Never use more than 1 / 2 the manufacturers recommended dose at most.

On top of their disease, water quality and transport sensitivity, licorice gouramis




are photosensitive too! Instant light changes can often send them into a fatal shock. Never turn their tank light on in a dark room. Always turn on the room light first, then their tank light. use the reverse process to turn the lights off.

Licorice gouramis are not big on vibrations either. Move quietly around their tank.

Species most often available to aquarists area:

- Licorice gourami,
Parosphromenus deissneri
- Moon spot licorice gourami,
Parosphromenus linkei
- Spiketail licorice
Parosphromenus filamentosus
- Strawberry licorice,
Parosphromenus nagyi
- Blue line licorice
Parosphromenus gunawani

Demanding, difficult to obtain, care for and breed, all licorice gouramis are a real challenge, but well worth it if you can breed them. Try some if you find them and good luck. 

Happy fishkeeping.

Tony



Parosphromenus harveyi



LICORICE GOURAMI
Parosphromenus harveyi



Featuring live plants in your aquarium not only makes it more attractive, but is much healthier for your aquarium's inhabitants. Live plants provide your fish a natural food source with the ability to replenish.

By far the biggest benefit that live plants provide for your aquarium is that they produce oxygen (O_2) and absorb the carbon dioxide (CO_2) and ammonia (NH_3) that your fish generate. Adding live plants in your aquarium helps recreate a natural ecosystem in miniature, and may be one of the most beneficial ways to keep your fish healthy.

Plants provide shelter and security for the fish. Because they compete with algae for nutrients, they can help to reduce algae growth. Live plants enhance the appearance and provide a much more natural environment for the fish. By improving water quality and reducing stress, live plants are a great way to improve your fishes' health. Adding live plants, however, does not reduce the need for water changes. When selecting live plants, make sure that you select species that are true aquatic species and that are suitable for your specific water type and fish species.

Planted Aquarium

When first adding live plants in your aquarium, it is wise to choose hardy plants such as *Sagittaria*, Sword Plants, or Moneywort. As you gain more confidence and experience, you can start including the more sensitive plant species.

Plant Selection & Placement Tips:

- To create a natural-looking garden aquarium, add diverse variety of plant species. The visual effect is lush and beautiful.
- While foreground and background plants help define your composition, don't necessarily place only tall plants in back and short in front. Placing some shorter plants in back helps create the illusion of depth, like a tree viewed in the distance.
- Don't forget the reds! A bold splash of red plants against varied shades of green plants creates a dramatic visual focus. Red varieties of *Ludwigia* and *Rotala* make great choices



Aquascaping Tips


Caring for your maturing planted aquarium is both an art and a science. With the right technique and a creative eye, you too can enjoy the rewards of a beautifully sculpted garden.

Here are some tips how:

- Tall stem plants like *Rotala indica* will begin to bend over at the surface if not pruned back. While this surface growth is ideal for bubble-nesting gouramis, it also shades the plants below from precious light.
- Advantageous rooting plants can be pruned mid stem and replanted. Simply trim the bottom leaves of the cutting and place back into the substrate, using bendable plant weights if necessary to anchor. Replant with the same grouping for a fuller look, or experiment by interspersing these single cuttings among other established groupings.
- Sometimes a young plant that starts out looking fine in one location soon outgrows its space. To thin out, either cut and toss individual leaves or carefully pull out half the cluster by the roots and replant the extra in another location.

Regular pruning of tall background plants and the thinning out of mid- and foreground plants will provide your aquarium with a defined



and clean composition. It's the hobbyist's pleasure to watch nature grow wild in this small world we tend to, always pruning, shaping, clipping, and replanting for new roots to take hold. 

Other factors that ensure your plant aquarium is the healthiest you can achieve include:

- Full spectrum lighting at least 12 hours per day
- Temperature should be between 75-88° Fahrenheit
- pH between 6.5-7.4
- Five degrees KH (carbonate hardness)
- Eight degrees GH (general hardness)
- CO₂ levels as high as possible, but lower than 40 mg
- Low to zero surface turbulence to help retain CO₂
- 25% water changes every other week
- Appropriate substrate for root growth





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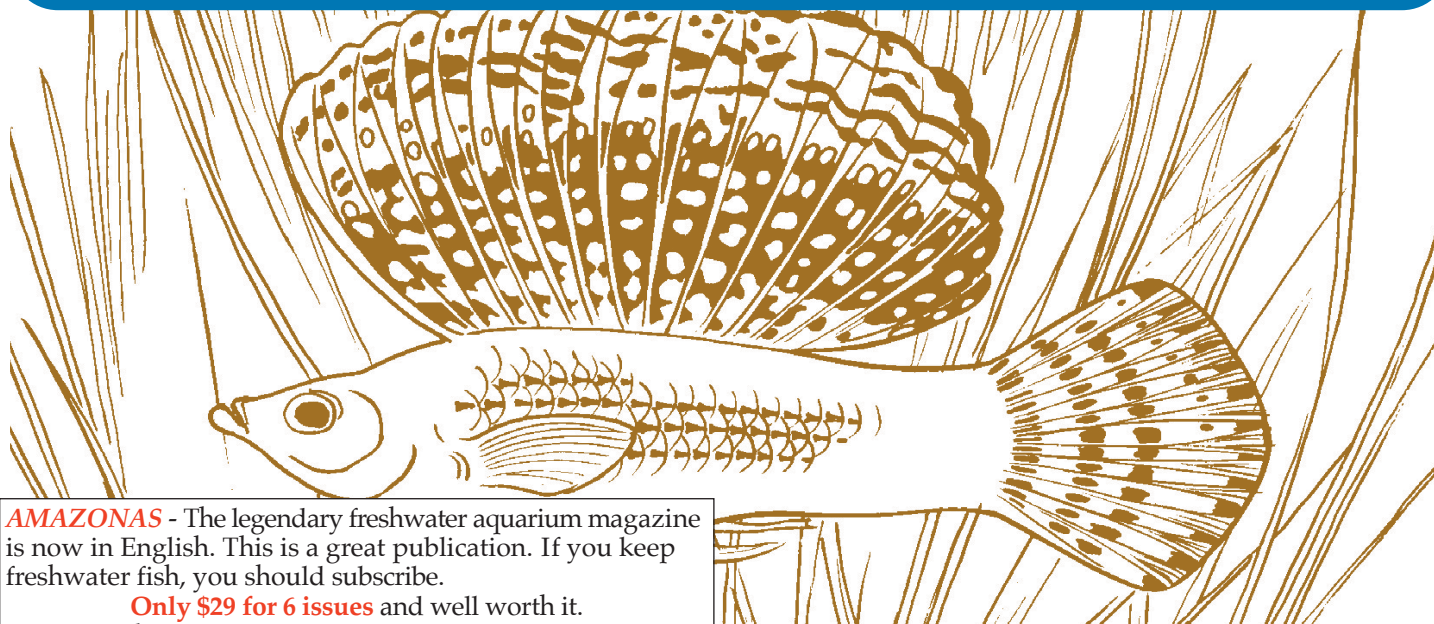
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Your Membership Card is your Passport to Becoming an "Educated Aquarist." Don't lose it. Put it in your wallet or purse. You'll need it to attend Monthly Events and get discounts at participating pet stores.

YOUR MEMBERSHIP BENEFITS INCLUDE:

Free Admission to all general meetings, held on the 2nd Friday of the month (except July & August) at 7:30 pm at the Education Hall of the New York Aquarium, Coney Island, Surf Avenue at West 8th Street, Brooklyn, N.Y. The Society presents expert speakers on all aspects of the hobby, from freshwater fish to marine aquatic life. Breeder Awards Program (BAP) – Certificates and trophies awarded.

General meetings are open to the public (a \$5 donation is requested for non-members, good towards membership that evening). Free parking and free refreshments.

Special Interest Groups (SIGs) hold meetings, free at members' homes, for members only. Here's your chance to network with members with the same interests. Discuss, ask questions, learn, teach and develop your expertise in freshwater and/or marine aquarium keeping.

Aquatica, The Journal of the Brooklyn Aquarium Society, our bi-monthly (5 issues except July & August) award winning publication is on our web site. Each issue is filled with articles on both marine and freshwater aquaria keeping. Articles can be downloaded.

The **BAS Bulletin**. All members receive our monthly (10 issues except July & August) Newsletter, the *BAS Bulletin* via email, keeping members up to date on the latest events at the Society, notices of interest and monthly regional society events. All non-commercial members are entitled to a free classified want ad in each issue, to sell, give away or request fish or dry goods.

The **BAS is on-line at BASNY.org**.

You'll find up-to-date information about our monthly events, links to other aquarium societies in the US and stores, manufacturers and related aquarium sites. We have an on-line library with downloadable articles. We have our own BAS forum, where you can interact with other freshwater, marine or reef members and post free hobby-related classifieds where members sell and trade fish, corals, plants and equipment.

BAS Hotline: For the latest information call the BAS 24 hour Hotline 718 837-4455 for event and inclement weather information. If you need advice on fish keeping, breeding or where you can find rare or hard to find fish, you can often get help calling the Hotline. Help from the Hotline is always free.

Volunteer: The Brooklyn Aquarium Society is an organization run by volunteers. Without them there would be no BAS. Volunteers help set up events, write articles, coordinate projects, assist and work on committees, help at auctions and meetings. Join in, help, learn and have fun doing it. Call **Steven Matassa**, President (718) 238-1792.

Discounts for Members at many BAS participating pet stores when you present your current BAS membership card.

Welcome and we hope you take advantage of the many benefits BAS has to offer.

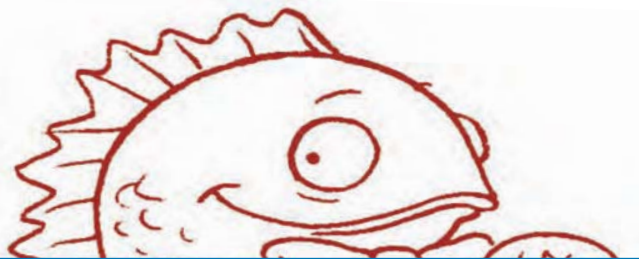
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* If family membership, please list all family members. Only first two listed will have voting rights.

1 _____ 2 _____ 3 _____

4 _____ 5 _____ 6 _____

Number of tanks [] marine [] freshwater [] Do you breed fish?
[yes] [no]

If yes, what types do you breed: _____

Special interest (if any) _____

How did you hear about BAS [friend] [dealer] [flyer] [Aquatica] [mag ad] [online]
other _____

To volunteer check [yes] [no] A board member will contact you if you check yes.

On occasion, the Brooklyn Aquarium Society uses its mailing list to send notices of interest to our members.

If you **DO NOT** wish to receive these mailings please check here []

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