

AQUATICA

THE JOURNAL OF THE BROOKLYN AQUARIUM SOCIETY
VOL XXIV SEPTEMBER ~ OCTOBER 2010 No. 1

Four-Eyed Fish Anableps anableps

**WELCOME BACK
FOR A GREAT SEASON
OF EVENTS**

Photo: John Todaro



AQUATICA

VOL. XXIV SEPTEMBER - OCTOBER 2010 NO.1

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BROOKLYN AQUARIUM SOCIETY CALENDAR OF EVENTS ~ 2010 - 2011

SEPT 10 Jeff Bollbach ~ A Year In The Fish Room ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales

OCT 8 Fall Giant Auction ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods auction including a new 55 gal. tank & stand • Discount books & sales..

NOV 12 Pat Donston ~ Reef Care Conflicts, Who's Right? ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales

DEC 10 BAS Holiday Party ~ Members, their families and friends, all you can eat sit-down dinner • Fish Bingo & Prizes • BAS Awards presentations

2011

100 Years of Educating Aquarists ~ 1911- 2011

JAN 14 Rit Forcier ~ Freshwater fish ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales

FEB 11 Christine Williams ~ When Aquariums Attack! Bites, Stings, Infections & Other Unfortunate Events & What To Do! ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales.

MAR 11 TBA ~ Freshwater Speaker Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales

APR 8 Leslie Harris Life Styles Of The Wet And Spineless

MAY 13 Spring Auction ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods auction including a new 55 gallon tank & stand • Discount books & sales • Raffles • Door prize and much more.

JUN 10 Possible Speaker: Ad Konings ~ African Cichlids Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales

JULY 8 100th Anniversary Party to be held at the New York Aquarium More information to follow

SEPT 9 TBA ~ Marine Speaker ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales.

OCT 14 Fall Giant Auction ~ Freshwater fish, plants, marine fish, aqua-cultured corals & dry goods auction including a new 55 gal. tank & stand • Discount books & sales.

NOV 11 Anthony Stissi ~ Lake Tanganyikan Tropheus Species ~ Marine fish, aqua-cultured corals, freshwater fish, plants & dry goods auction • Discount books & sales

DEC 9 BAS Holiday Party ~ Members, their families and friends, all you can eat sit-down dinner • Fish Bingo & Prizes • BAS Awards presentations

All Events held the 2nd Friday of the Month at 7:30pm at the Education Hall of the
New York Aquarium ~ Surf Avenue & West 8th Street ~ Brooklyn, NY (unless stated)
We request a \$5 Donation for non-members, good towards membership the night of the event only.

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The Right Food for the Right Fish



I am often asked is how to feed our fishes: how much, how often, and what type(s) of food. Given the recent number of pet food recalls, which included several brands of fish food, I thought this would be a good time to discuss this topic in more depth.

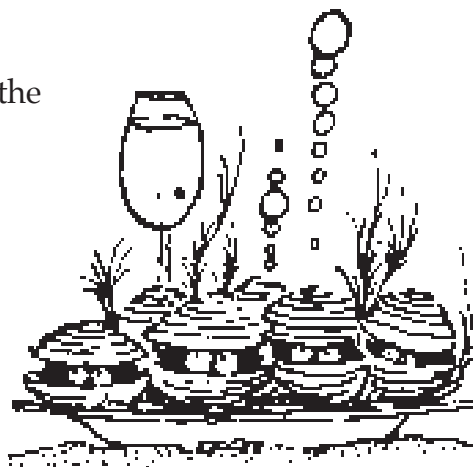
Feeding fish involves more than just opening a can of food and sprinkling it over the surface of the water. First off, fish food should be appropriate for the type of fish you have. You would not feed small tetras a large pelleted food, and you would not feed piscivorous (fish-eating) fishes flake food. It's important to match the size of the food to the size and type of the fish. The natural diet of the fish should be taken into consideration whenever possible, too. Herbivorous (plant-eating) fishes, for example, should be given a diet high in plant material whenever possible.

Fish food should be fresh. The older the food, the less nutritive it is as vitamins degrade over time. I suggest buying no more food than you can use in three months and keeping it in the freezer for the best shelf life. At the same time, try to vary your fishes' diet as much as possible. Since one flake food is very much like another, you may wish to use frozen and freeze-dried foods as well as looking into alternative foods (see sidebar page 4).

Flaked, Frozen and In-Between

Flake food is the most popular fish food available, and is usually accepted by a wide range of fishes. They come in different "blends," some being aimed at herbivorous fishes, others at piscivorous species, while others are a somewhat balanced blend suitable for all fishes (the so-called "staple diet"). The big advantage of flake food is that it can be used to feed a wide variety of fish as the flakes are easily crushed into smaller sizes to fit smaller mouths. Pelleted foods are also popular. Much like flake food, pellets are designed for fishes with large mouths, although some companies make a micro-pellet food, suitable for smaller fishes.

Frozen foods are another option. Bloodworms, brine shrimp, rotifers, Cyclops, clam, or mixtures thereof, can usually be found at your local fish shop. Unlike flake and pellet foods, however, it's essential to make sure frozen foods are NOT thawed prior to use, and should be fed frozen or partially thawed before





putting them in the tank to retain the most vitamins and other nutrients. Break off a small piece of frozen food and place it in the tank; the fish will nibble on it until it is gone, and larger fishes will gulp down full pieces (and no, they will not get an ice cream headache from doing so). Freeze-dried foods are another option, although they are not usually as popular as the afore-mentioned types.

Live foods are another option, although their popularity is not as great as it used to be.

The most common live fish foods are brine shrimp, Tubifex worms, blackworms and feeder goldfish / rosy red minnows / guppies. Live brine shrimp is really of dubious nutritional value, especially if it has been sitting around for more than a day, and should only be used as a treat or to entice a picky feeder to eat. Blackworms are probably the best of the live worms available, as they are cultured in captivity rather than collected from the wild. Tubifex worms, however, can carry a number of pathogens you would not want to release into your tank. Feeder fishes (goldfish, rosy red minnows, guppies) are also possible pathogen carriers (including fish lice) and I do not advise feeding live fishes

to other fishes. Most if not all piscivorous fishes can be trained to take prepared foods, so

there is no real reason to use live fishes as feeders.

The Seafood Diet

How much to feed your fish depends on the type you have. I usually advise feeding no more than your fish can consume in 5 minutes two to three times a day. This does not mean to dump in a bunch of food at one time.

Rather, you want to add a little at a time, making sure the fish eat everything before adding more. The five-minute rule is only a sugges-

tion. If your fish stop eating after two minutes, stop feeding. More fish die from over-feeding than under-feeding, so let their appetite be your guide.

Your fish should be fed every day (adult piscivorous fishes can be fed every other day).

Remember that most fish in nature feed from sunup to sundown, picking here and there, nibbling on whatever they can find. Frequent daily feedings are far better than one large feeding, and your fish will be the better for it.

Frank M. Greco is a long-time hobbyist and Senior Aquarist at the New York Aquarium. He writes a column for *New York Tails Magazine*

Visit him on the Web at <http://www.franksaquarium.com>.



ALTERNATIVE DIETS

The pet store isn't the only place to buy fish food anymore; try your local supermarket! Parsley, kale and collard greens are great sources of vitamin C and calcium, and green peas are a good source of vitamin E. All are usually eagerly accepted by most herbivorous fishes (and even some non-herbivores). Freeze these foods for 24 hours before feeding--never heat, as heating destroys a good amount of their vitamin content. Non-oily fish from the fresh fish market is another good food choice, especially for piscivorous fishes. You can also make a gelatin-based diet, which will allow you to combine any number of foods into one carrier. For a good fish food recipe, visit my website at <http://www.frankm-greco.com/geldiet.htm>.



To learn more about making fish foods & live food culturing tips,
pick up a copy of BAS's

Scrumptious Meals & Live Food Treats

at the next BAS event. Compiled and written by John Todaro. The book contains over 60 pages of fish food recipes & live food culturing tips for freshwater and marine fish and reef tank inhabitants.



IS YOUR MEMBERSHIP DUE?

1. To check, look at the address label on the cover.
2. At the end of the first line, you'll see the date your membership expires.
3. On the inside back cover is a convenient form. If you're due...do it now!
4. Fill it out and send it in. Don't miss all the great events coming up this year.

John Todaro

Jeremy Gay

This article was first published in the August 2009 issue of *Practical Fishkeeping*.

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How to avoid summer pond problems

It's mid-summer and, apart from algae growth, your pond will more than likely be looking great. However, it won't stay that way without a bit of attention, says Jeremy Gay.

A pond in this beautiful season is what many of us imagine as an idyllic scenario; clear water, luscious pond plants, active fish and lots of insect life. Your pond should be looking its best, the fish their most ravenous — and at last you can get to sit outside and appreciate the fruits of your earlier labours.

As good as your pond gets, however, it may actually be balancing on a knife-edge — and here's why...

Oxygen

Oxygen, or the lack of it, is the biggest risk to your fish in summer. On the plus side you have aquatic plants, pond pumps and maybe an air pump. Among the negatives are the reduced ability of warm water to hold oxygen, increasing demands of your fish, and the fact that aquatic plants actually demand oxygen at night instead of producing it.



The signs

How do you know when your pond is short of oxygen? You may not know until too late when you look one morning after a hot, sticky night and some of your fish have gone belly up.

If you find that fish have died overnight for no apparent reason, it is more than likely through lack of oxygen. What's more, it will often just be the larger fish that go as they demand more of it.

Another giveaway is when you just lose Golden orfe, as they are the most oxygen demanding of the pond fish commonly available.

How to fix it

Aeration is the key to increasing oxygen levels and driving off harmful CO₂. Pond water can be aerated by moving it with a pump — a fountain attachment or waterfall are best, though beware that turning these off at night often causes problems. Leave these fountains or waterfalls running 24/7 in hot weather.

An air pump designed just for pond use is ideal.

The reason why many people turn off

fountains and waterfalls is not so much to save energy as to reduce noise at night. If so, consider a pond air pump and one or more large air stones as they will efficiently aerate at a noise level that won't be audible.

Aeration from air stones can also help with pond filtration. Filter bacteria are aerobic and the more oxygen you provide them with the more efficiently they do their job. Drop an air stone into a pond box filter and it may be able to cope with more waste.

Pond plants are great, but you don't want too many 'oxygenating plants' in the water because of the reversal of gases at night. Aim for surface coverage of about one third and only have more if accompanied by constant water movement or an air pump and air stone.

Filter care

If you have fish, you should have a filter in all but the largest and most lightly stocked ponds. Summertime is when the filter is working hardest, especially if a pressurized filter and UV.

The UV disrupts the green algal cells that cause green water and they get trapped in a fine sponge. In summer, the filter is in overtime clearing green water, but that also means more waste being trapped in the media.

Couple that with increased solid waste from increased fish feeding, larger fish as they grow and possible extra fish from spring breeding, and your filter will clog more quickly and need to be cleaned more frequently.

As efficient and compact as they are, I prefer standard gravity type box filters to the pressurized canister types as they clog more slowly — and if they do become clogged, water bypasses easily. Leave a pressurized



filter too long and, if it doesn't come with a bypass as fitted, you lose flow. This means that you also lose oxygenation and filtration to your pond.

I've seen many cases of people returning from summer holiday to find their pump and filter had stopped and their fish dead or dying. If you go away a lot and don't want to maintain your filter on a daily basis in summertime, choose a box filter over a pressurized one.

Algae

Warm sunlit water is most prone to algae growth and you will tend to get one of two types of algae, but never together. Green water is exactly how it sounds, with your pond water resembling pea soup. It is actually harmless and usually goes through boom and bust periods as nutrients accumulate, the green water blooming then crashing as the nutrients get used up.

Natural control includes shading the surface of the pond with plants. A combination of aquatic, marginal, deep water and floating plants will not only reduce light streaming through the water but soak up the nutrients the algae needs to bloom.

Another natural method is to add Daphnia, as these minute filter feeders consume green water and clear it. Swan mussels are said to clear it too, though they need perfect water conditions yet a constant food supply to filter out and consume, so good results are not gained by everyone.

Daphnia are a great addition to natural, unfiltered ponds and make for great first foods for fish fry. Add it to green water, then fish fry, and you get a lovely little food chain as the Daphnia eat the algae cells and the fish fry eat the Daphnia. However, a clinical, filtered pond will remove Daphnia quickly, either by filtering it out, having a lack of microscopic food or simply from being over predated by fish.

Blanket weed

This is a fairly modern phenomenon, possibly more common now as phosphate levels increase in our mains tapwater. Basically the bane of the pond keeper is to clear the pond of green water with a UV, only to suffer from blanket weed growth in the crystal clear water.

Again it feeds on nutrients, so excess algae growth means there are high levels of either phosphates or nitrates or both, coupled with too much sunlight.

Ultra violet clarifiers (UVCs) are not effective on blanket weed as it grows on the sides of the pond instead of being waterborne and passes through the filter and UVC.

Algae also produce oxygen and consume CO₂, yet it does the opposite at night. Too much

algae is like having too many plants and they may strip oxygen levels. So, apart from looking unsightly, algae can also cause breathing problems for your fish.

Furthermore, oxygenate heavily when using algae-killing liquids and powders as oxygen may be stripped from the water. Test the water, as if significant algae dies off it can foul the water. Previously, as unsightly as it was, it may have actually been benefiting the reduction of nutrients, not adding to it.

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Skimming

I'm not talking protein skimming here, as this is more the domain of the top-end Koi ponds. This is surface skimming; a simple practice that can aid gaseous exchange, lighten mechanical and biological load and generally make your pond look nicer.

Surface skimmers can be adapted filter inlets which draw water across the pond, scaling down to simple skimmer nets used regularly to remove floating debris by hand.

The surface of a pond can build up with all sorts of rubbish in summertime: dead insects,



pollen, foaming from use of algae treatments and proteins and oils from heavy feeding. Floating duckweed is a particular pain. It is a tiny green plant that plagues some ponds, suffocating everything beneath it and becoming a real risk to oxygen levels. It's a good nutrient filter but that is about it, and too much looks unsightly.

Install a surface skimmer and all these problems go away, quickly and effectively. A clean surface free of debris goes back to that all-important element—oxygen—so by skimming the surface, keeping the water moving and keeping an eye on planting and algae you help to prevent a heatwave wipe-out.

Heatwave advice

If your fish look to be suffering, the last thing to do is add food. This will add to the biological demands of the entire pond and cause the oxygen-consuming bacteria to take more of it. Fish will not eat if too hot, with uneaten food causing pollution—or they will eat, excreting more ammonia from their gills as they demand more oxygen. In short, in a heatwave, don't feed.

Try to shade the pond, keeping it cool long term. Floating ice or a massive water change aren't brilliant ideas, as a sudden change to cooler water will often bring on whitespot through stress.

Tip

If yet to dig your pond, site it away from full sunlight as this will cause a rise in temperature and nuisance algae. Dig it as deep as possible, as a deeper pond will stay cooler in summer and warmer in winter, yet will fluctuate much less.

If you think of the shape of your pond in profile, try not to create a shallow, satellite dish as, although it will have a high surface area, this will also mean temperature fluctuations and lots of algae growth. 





Dan Hagan runs TheShrimpFarm.com. This site sells freshwater shrimp. Dwarf freshwater shrimp are the perfect aquatic inhabitants for your under water planted garden. If you're interested in keeping dwarf freshwater shrimp or have a question about them, go to Dan's blog site and ask your question. It's a great site with reliable and accurate information on dwarf shrimp, ShrimpFarm.com.



LIVING WITH THE BLUES

Scientific Name: *Neocaridina cf. zhangjiajiensis*

Other Scientific Names: N/A

Common Name: Blue Pearl Shrimp

Other Common Names: N/A

Origin: South East Asia

Found in the wild: No

pH Range: 6.5 - 6.8 Ideal Ph 7.2

Temperature Range: 68° - 80°

Ideal Temperature: 75°F

Hardness Range: 3-10 dkh

Ideal Hardness: 7 dkh

Life Span: 1 - 2 years Size 1 - 2 inches

Gestation Period: 30 days

Diet: Omnivore

• Blue Pearl Shrimp History

The Blue Pearl Shrimp is one of the newer shrimp to the Dwarf Shrimp hobby. This blue color variant of the *Neocaridina cf. zhangjiajiensis* was originally bred in Germany and has quickly made its way to the American hobby. The Blue Pearl Shrimp was the first true breeding blue Dwarf Shrimp. The Snowball Shrimp is another variant of the *Neocaridina cf. zhangjiajiensis*.

• Blue Pearl Shrimp Care

Blue Pearl Shrimp share similar care requirements with most other *Neocaridina* species, such as the Red Cherry Shrimp. As long as the Blue Pearl Shrimp is kept in a well established aquarium with very stable parameters, the Blue Pearl Shrimp is a rather undemanding Dwarf Shrimp. While the Blue Pearl Shrimp can adapt to a wide variety of water parameters, as with most Dwarf Shrimp, stability is key!

• Blue Pearl Shrimp Diet

Being an omnivore, Blue Pearl Shrimp will eat just about any food found in an aquarium. They will eat algae in small amounts, but will often times require additional feeding. Most foods intended for bottom feeders or aquatic invertebrates make great foods for Blue Pearl Shrimp.

• Blue Pearl Shrimp Breeding

The Blue Pearl Shrimp is very easy to breed in the home aquarium. As long as there is a male shrimp and a female shrimp in a well established, well maintained aquarium, they will breed. Blue

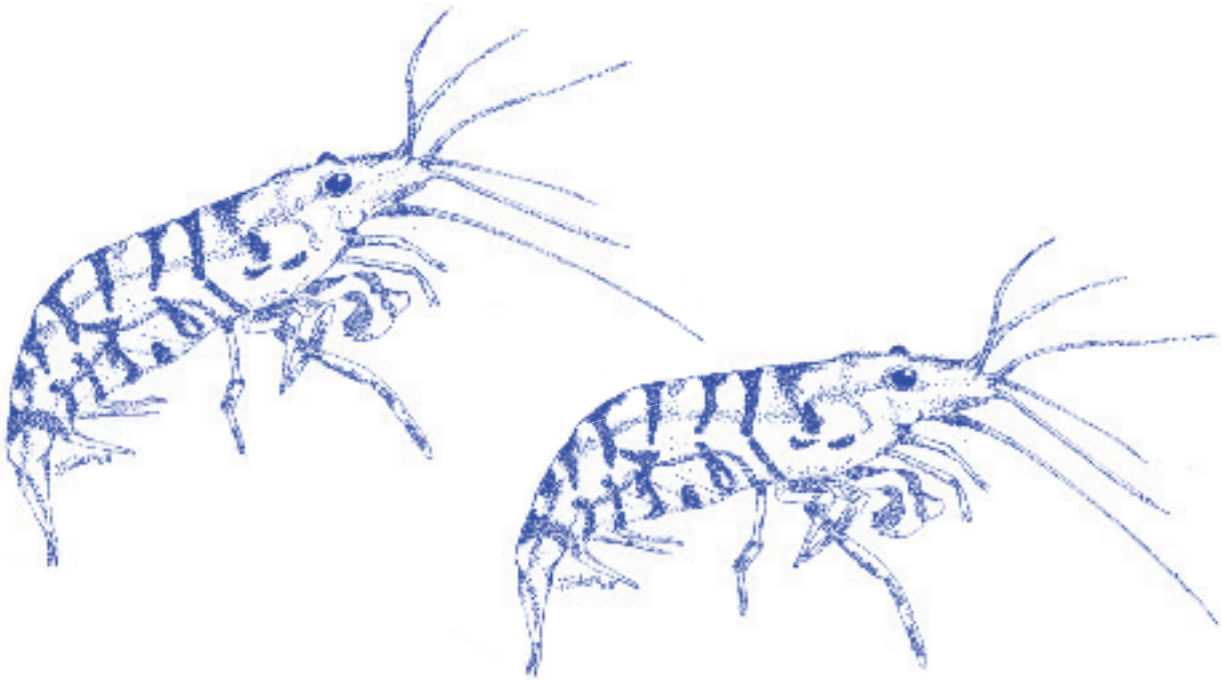
Pearl Shrimp are high order shrimp so the shrimp hatch as miniature versions of the adult. For a more detailed description of breeding Blue Pearl Shrimp, read the detailed article about Breeding Red Cherry Shrimp as they breed in the exact same manner.

• Blue Pearl Shrimp Behavior

Blue Pearl Shrimp are non-aggressive, and are quite active. In an aquarium that has no predators Blue Pearl Shrimp will often be observed grazing on algae on aquarium plants, decorations and on the substrate. When fed, the shrimp will often form large groups that are quite striking in appearance.

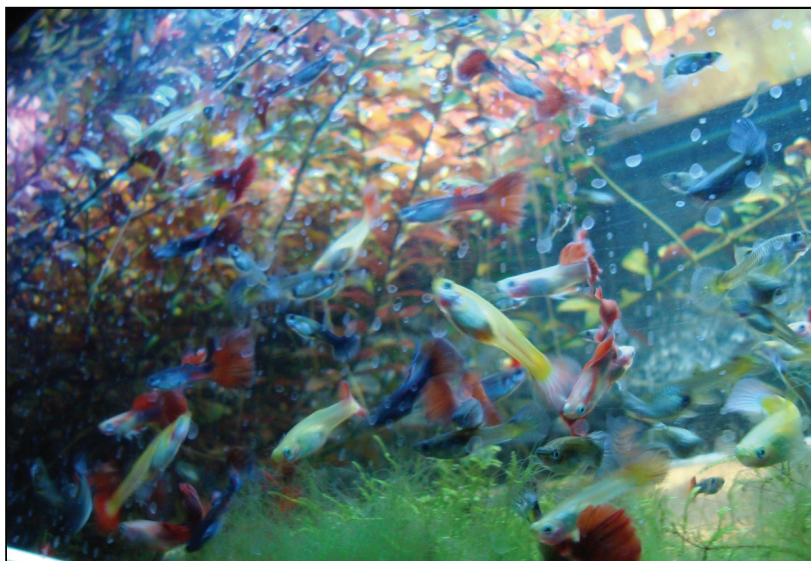
• Special Notes

As with all aquatic invertebrates, it is important to make sure copper does not get into the aquarium. Copper is toxic to all Dwarf Shrimp. Many medications contain elevated levels of copper, so it is recommended not to medicate an aquarium with Dwarf Shrimp in it. 





Dwarf Shrimp Tank Mates



A question that is often asked by new Dwarf Shrimp hobbyist is what makes for a good tank mate. Well, the obvious answer if you are planning on breeding the shrimp and being able to raise the young is to avoid just about any fish. Even the smallest fish found commonly in the aquarium trade will make a quick meal out of baby shrimp, but there are a few options for tank mates that work just fine.

The most common animals found in Dwarf Shrimp aquariums are snails. Red Ramhorn Snails (*Planorbis corneus*), Malaysian Trumpet Snails (*Melanoides tuberculata*) and Spixi Snails (*Asolene spixi*) are the most useful. These snails will not eat live plants, they do not eat baby shrimp or live adults, and they are all great scavengers. Having these snails in your aquarium add life and help keep the aquarium clean, and each have their own

unique attributes that make them rather valuable to the Dwarf Shrimp aquarium.

Red Ramshorn Snails are a very prolific species of snail. They will eat a small amount of algae from the glass and other surfaces as well as consume any uneaten food. This species is often selectively bred for color and there are bright red, pink, and even blue species available. These different colors of snails add quite a bit of beauty to the aquarium.



The Malaysian Trumpet Snail is a great snail for keeping oxygen in the substrate. They spend most of their day burrowed in the substrate and come out at night and during feeding time. This snail is a great scavenger and devours uneaten food. They are live bearing snails, so a small population will grow rapidly.

Spixi Snails are a species of the popular Apple Snails.

They are a larger snail and are not appropriate for small aquariums. Spixi Snails are popular because of their appetite for hydra (a small stinging animal that could eat baby shrimp). These snails also eat algae and uneaten food.

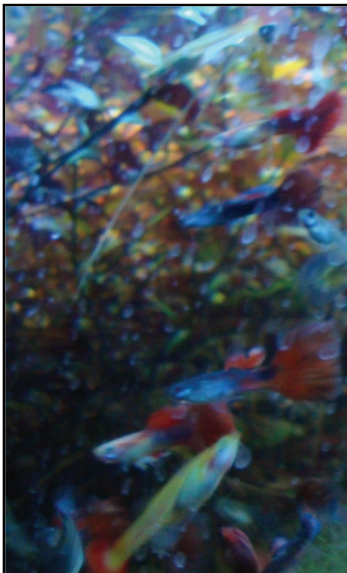
Snails are not the only animals that make good tank mates for Dwarf Shrimp; there are a few fish that will not eat baby shrimp. The most popular of these fish are the Otto cat (*Otocin-*

clus sp.) and smaller species of *Plecostomus*. Both of these fish are algae eaters with "sucker" type mouths. The Otto cat is better for smaller aquariums while the *Plecostomus* spp are more suited to larger aquariums.

If you plan on keeping Dwarf Shrimp but not breeding them or raising the young, there are many fish that

make great tank mates. Endlers Livebearers, Guppies, many species of Tetras, and most species of Killiefish make great cohabitants. One thing that must be considered is aggressiveness and size. If the fish is non-aggressive and has a mouth less than half the size of a full grown shrimp, odds are the fish is adult shrimp safe! 

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Frank M. Greco – Senior Aquarist at the New York Aquarium and *New York Tails* Columnist

BELIEVE IT OR NOT!

FOUR-EYED FISH



There are many unusual fish available to hobbyists, but perhaps none as unusual as the four-eyed fish, *Anableps*. The common name 'four-eye' is a bit of a misnomer as this fish has only two eyes, but a line of pigment divides each eye so that the fish can see both below and above the water. As *Anableps* are surface-dwelling fish, this type of eye is advantageous to their mode of living. Not only can they see potential predators coming at them from below, but from above as well. The upper portion of the eye even has a glare shield to protect it from light reflecting from the water's surface. And the eyes are not the only unusual part of this fish, as I'll explain later.

Hailing from Trinidad and Venezuela to the Amazon delta in Brazil, *Anableps* are mainly found in freshwater habitats, but also inhabit the brackish parts of lagoons and mangrove coastlines. They feed mainly on insects that fall into the water, as well as small aquatic invertebrates and diatoms living on the mud bottom. They can also catch and eat small fishes, so keep that in mind when considering tank mates!

Keeping *Anableps* in a hobbyist's tank is an easy task, although they will need a large tank as this fish grows to a foot long. Since they are a

schooling fish, you'll want to keep a minimum of four, so a tank size of 75 gallons minimum is advised.

I've found that keeping them in a brackish-water environment is preferable to keeping them in straight freshwater. The addition of 1/3 pound of marine salt per 10 gallons will make the water brackish enough for these fish. As a substrate, you'll want to use something that buffers the water. Aragonite sand is the best choice as these fish like to root around in the substrate from time to time, especially if kept in a shallow tank. If this



material can't be found, fine aragonite gravel will be a good substitute.

Feeding these four-eyed fish is a snap; they're not fussy. Frozen foods such as mysis shrimp are readily accepted, as are prepared foods such as pelleted and freeze-dried diets. *Anableps* also enjoy live wingless fruit flies and even pinhead crickets. Provide lots of plants (both floating and anchored) for the fish to hide in, as males can be aggressive towards each other. And you'll want to keep the tank well-covered, as these fish are excellent jumpers and can (and have) jumped right out of many an astonished keeper's tank. Suitable tank mates for these fish include any number of brackish-water species, including fingerfish (*Monodactylus*), Mollies, Mudskippers, Indian *Anableps* (not a true *Anableps*, but rather a mullet that fills the same niche as *Anableps*), and the like. Just remember, they can and will eat fish smaller than themselves.

So Baby, Are You a Lefty or a Righty?

There is one other thing that is unusual about these four-eyed fish other than the jumping out of the tank and growing up to a foot long. They are members of a family of fishes call *Anablepidae*, also known as one-sided livebearers. (Oh, I didn't mention they produce live young, did I?) Like other livebearers, the male possesses a gonopodium, the organ by which sperm is inserted into the female's genital opening (foricula). However, the gonopodium swings only one way, unlike other livebearers. This means that a 'right handed' male can mate only with a 'left-handed' female. Why this is so is not known, but it does add to the 'unusuality' of this fish, as if split eyes weren't enough! After a gestation of about three-months, 3-10 (more if the female is large) 1.5 inch babies are born. They are able to fend for themselves, and will eat the same food as the parents.

There are many wonderful unusual fish out there, but I think it's safe to say you'd be hard-pressed to find one more unusual than the four-eyed fish, *Anableps*. 

Frank M. Greco is a long-time hobbyist a former member of BAS and the Senior Aquarist at the New York Aquarium.

Visit him on the web at

www.franksaquarium.com, or send your fish questions to Frank at newyorktails@aol.com. He may answer it in his next New York Tails column!

There is one other
thing that is unusual
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of the tank and |
growing up to
a foot long...
they produce live
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Like other livebearers,
the male possesses a
gonopodium...
However, the
gonopodium swings
only one way, unlike
other livebearers. This
means that a 'right
handed' male can mate
only with a
'left-handed' female.





Family: *Anablepidae* (17 species in the family)

Scientific Name: *Anableps anableps*

Other Scientific Names: N/A

Common Name: Four-eyed fish

Other Common Names: Largescale Foureyes

Origin: Southern Mexico to South America

Found in the wild: Yes

pH Range: 7 - 8.4

Ideal: pH 7.5

Temperature Range: 74-82° F

Ideal Temperature: 75° F

Hardness Range: 10° - 25° dkh

Ideal Hardness: 20 dkh

Life Span: 6 years

Size: To 12 inches

Diet: Carnivorous, prefers live insects but will accept flakes.

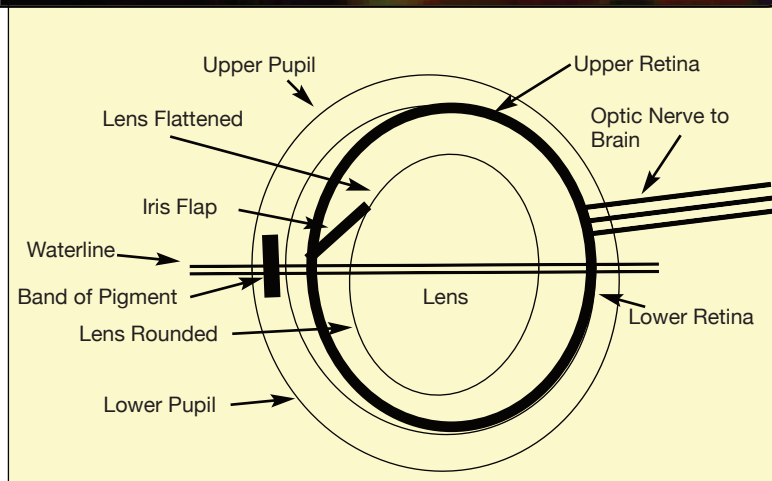
Temperament: Peaceful schooling fish

Sexing: Males have a gonopodium and females are considerably larger than the males.

Breeding: Four-eyed fish are livebearers. The gestation period of these fish is about 8 weeks, depending on the temperature of the water. 10-15 fry are born, that measure 5-7cm. Fry should be moved to their own tank, as the parents have been known to eat them. The fry grow quickly, maturing at 15-20cm and around 8 months.

Minimum Tank Size: 55 gallons.

Discription: The fish only has two eyes, but each eye is divided for seeing above and underwater. As an insectivore, it benefits from being able to see its prey above water, and able to see predators, possibly coming from below. Keep these fish in a half filled tank. They do not require a deep water tank as they spend their time at the surface. Also, partially filling the tank allows some distance between the eyes of these fish and the bright lights of the aquarium.



Anableps are surface dwellers. For survival the fish must be able to spot attackers from below and take evasive action. They also must be able to spot potential food, like; insects above the waterline. Their special eye provides the means to do both. The *Anablep* swims so that the band of pigments divides the eye horizontally at the waterline. Above that band is an iris flap that shields the upper pupil from the glare at the water's surface. The lens behind the upper flap is flattened to provide an undistorted image of what's going on above the water. The lens below the water is rounded; this provides the best image under water. This helps them see what is both above and below at pretty much the same time. 🐟



Breeding The Chocolate Gourami

Sphaerichthys osphromenoides

This is a small fish, no more than 5 cm long, with a flat-shaped body. It shows the typical characteristics found in all members of this family: filiform ventral fins, and the labyrinth; a specialized organ in the use of atmospheric air. Brown coloured (it gets its name from that), with several cream coloured stripes, which change according to its mood. It also shows a characteristic cream, brown and black pattern on the anal and part of the tail fin. The filiform fins are not easily seen, and most of the time stay folded over the body. It's a mouth brooder. Sex differences are not very significant in low breeding activity periods, but are outstanding when breeding. Males show a pronounced cream/white edge mainly on the dorsal fin, and a more intense reddish body. Females are rounder and acquire a less intense colour, showing a dark spot on the tail fin.

Breeding set up

We can choose from two possibilities to try to breed it:

Keep a more or less crowded bunch in a certain size aquarium, for example 10 fish in 150 to 200L. Or have a couple in an only-breeding aquarium.

In both cases, water parameters must be fairly good. The appropriate parameters are: pH 5-6,5; kH 0-4 and GH 0-5; nitrates, nitrites and

phosphates must be kept as low as possible. The more acidic and purer the water (referring to dissolved salts) the better they will be and the higher the breeding chances are.

Concerning the aquarium equipment, we must have in mind this fish's shyness and therefore try to offer an appropriate environment. Plants are a must, as well as tree roots and logs, which help us to get the right pH. Another option we have is to introduce some dry leaves, which must



be hard or they will disintegrate in a few days. I have had good results with the *Platanus hispanica* and *Quercus faginea* leaves. Other more than appropriate species could include *Fagus sylvatica* and any other species of the *Quercus* genus. The plants we can introduce belong mainly to the *Cryptocorine* genus, as well as the *Microsorium pteropus* and some other fast growers such as the *Ceratophyllum demersum*. As floating plants we can put *Limnium laevigatum* and *Pistia stratiotes*. As we will see further on, in the fry's aquaria, introducing *Riccia fluitans* and *Vesicularia daubiana* can be a fine solution.

If we set a large tank for a breeding group, powerful filtration is a must. For a breeding pair aquaria, a corner sponge filter and weekly water changes are more than enough. Nevertheless I always tend to oversize all filters when concerning this particular fish.

Once the aquaria is fully set up and all fish are in it, we should encourage them to breed. The right conditions are easily set: water temperature should be around 27-28° C, and so should be air temperature. If we have open aquariums and all other parameters are OK, breeding will only happen when air temperature is appropriate. Water must be kept as soft and acid as possible, as well as free of any kind of nitrogen compounds, easily done by regular water changes with osmosis water in the right proportions.

We should not forget about feeding, as the fish's health will be directly related. We should provide live or frozen food such as red or black larvae, water fleas, grindal worms, brine shrimp, etc.

If all goes well, we will soon see outstand-

ingly beautiful colours in our fish, and we can verify how males fight among themselves and display beside the females. At this time we must decide if we will try to breed them in a group, or as a couple in a separate aquarium. Both methods are equally valid.

The male will court the female inducing her to spawn in an open space. If she is willing, the male will quickly fertilize the eggs, and right away she will pick them up in her mouth. Having

kept chocolate gouramis for two years, I have not been able to see this particular behaviour, as it takes place in the most hidden parts of the aquaria where it is difficult to see. If we decided on the "separate couple" method, as soon as the female shows a noticeable swollen throat we can take out the male, leaving the female by herself, keeping a soft light. It's also recom-

mendable to cover the aquaria to avoid shocking her. If she is in the aquaria with the rest of the group, we should not fear for her, just needing to keep an eye on her the few days she carries the eggs.

When she carries the eggs in her mouth, the symptoms are more than evident, as well as a swollen throat (noticeable or not) she shows an apathetic behaviour, staying out of the way of all males and refusing to eat. She seems to seek food, but obviously cannot swallow it, just staring at it. She also moves her mouth often, just like she was chewing something (obviously the eggs), and when she swims up to breathe loses some bubbles on the way down. (Concerning this, some authors mention that she also occasionally loses one





or two fry, that are quickly swallowed again, but I have never seen this).

Breeding

If all goes well, after 8 days she will let all fry out. If during the first 3 to 5 days, all "pregnancy" symptoms vanish, it means that the eggs were not fertilized and they probably produced a bad taste causing her to either eat them or spit them out.

Seven days after, if the female has remained with the rest of the group, she should be taken to a separate spawning aquarium where we have previously placed some dry leaves, twigs, Java moss, *Riccia fluitans* and *Limnium laeviagatum*. The temperature and water in this aquarium should be exactly the same as in the first one.

On the 8th day she will begin to "give birth," at first just a few fry, growing in number as the day goes on, making a total of 40 to 60 (as far as I can tell). It's more than vital that the birthing aquarium was set up long before, therefore having much moss and riccia, as these plants will provide food for the fry, since rotifers and Cyclops grow spontaneously among them. If this was not our case, we must have newly hatched artemia ready to be given to the gourami fry, because if they do not eat in the next few hours, they will starve to death. Once all the fry have come out of the female we can take her away and re-introduce her in the main aquarium.

The fry are born totally formed, and are approximately 7 mm long. They show at this very instance a reddish/brownish colour with a cream coloured stripe right in the middle of their bodies. They will eagerly feed on newly hatched brine shrimp, which should be given to them several times a day. Daily water changes and gravel vacuum cleaning are a must to remove any unhatched shrimp eggs that could have been accidentally introduced.

Maintain this feeding routine for a month or so, by which time they should have acquired a fully adult shape, only differing in size (1.5 or 2 cm long). At this time we should vary their feeding, introducing some type of dry micronized food, or something like small sized mosquito larvae. After 2 months, they will eat just about anything they can get in their mouth. But we should not stop suddenly providing them brine shrimp; it must be stopped gradually.

I must say that fry mortality in my particular case has not been too high, about 2 to 4 fry per spawn. It mainly happens in the first few weeks, probably directly related with the growing of the labyrinth (the special organ used to breathe atmospheric air), or maybe it has something to do with a few fry not eating well becoming weak and eventually dying. Anyway, if we keep the feeding and cleaning routines constant, mortality should be low. 





Bill Bleyer, Newsday August 2, 2010 Bill.bleyer@newsday.com
This article was submitted by 2 members, **Ron Kasman** and **Kay Martin**.
It talks about breeding sea horses by BAS member and guest speaker,
Todd Gardner who is a biologist at **Atlantis Marine World**.

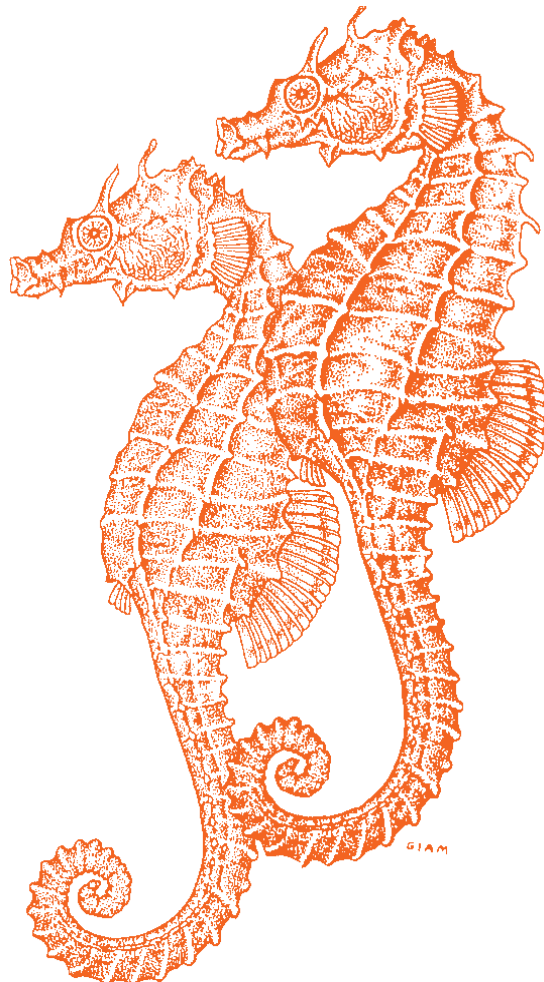
REVIVING SEA HORSES

Population was decimated by disease, pollution

Looking for a sea horse off Long Island is like trying to find a needle in an aquatic haystack. It wasn't always that hard. Sea horses were commonly found in fishing nets and spotted in shallow waters. But their preferred habitat, a form of sea vegetation called eelgrass, was decimated by a pathogen called "wasting disease" in the 1930s, then poisoned by runoff from shoreline development before brown tides smothered much of the surviving beds in the 1980s.

Now researchers at a Cornell Cooperative Extension lab in Southold are trying to turn things around by unlocking some of the mystery surrounding the species known as *Hippocampus erectus* - or the "lined sea horse" because of their distinctive markings - and breeding them in captivity with an eye to placing them in local waterways to jump-start the natural population.

No systematic count of sea horses, which are a food source for crabs and larger fin fish, has ever been attempted.



RARE AND ELUSIVE

"They're very rare, and they're very elusive," said **Kim Petersen Manzo**, a Cornell eelgrass and sea horse expert. "We only see a few every year. They're very habitat-dependent and the estimate is that less than 10 percent of the eelgrass is left from what was here in the 1930s."

Dispite their rarity, Manzo said "three years ago we started seeing sea horses in the eelgrass we were monitoring. Out of curiosity, we brought a few back to keep at the lab for the public to see and they started breeding - like crazy."



She began taking the babies out of the larger tank away from the adults and placing them in smaller tanks to see if they could survive. "Sea horses are notoriously difficult to raise in captivity," she said, adding survival rates can fluctuate widely.

At the moment, she has three tanks going in the laboratory at Cedar Beach. One is for breeding adults, including Manzo's biggest success story so far. a female bred 14 months ago in the lab that has grown to about 5 inches long. The others contain babies.

Manzo, who hopes to obtain a grant to pay for a sea horse population survey of East End waters, eventually would like to breed enough sea horses to release some into local waters. "The ultimate goal is to raise them to a size where they would be less vulnerable to predation and bring them back out into the wild...," she said.

Manzo regularly seeks advice from **Todd Gardner**, a biologist at **Atlantis Marine World**, aquarium in Riverhead, which captures sea horses in Shinnecock Bay for display and breeding for their exhibits. Gardner said the aquarium has had up to an 85 percent survival rate in its breeding, with some sea horses surviving more than two years.

POSSIBLE ETHICAL QUALMS

Manzo and Gardner have discussed introducing lab-bred sea horses into East End waters, but acknowledge much research and discussion would be required. Some marine biologists have scientific and ethical qualms with the concept, questioning the propriety of increasing the survival rate, affecting the natural selection of the fittest offspring. And there are concerns about introducing harmful bacteria or diseases.

To avoid contamination, Manzo said, "we'll want to keep everything as natural as possible," particularly the food. That requires gathering plankton and other nutrients daily from a nearby creek and changing tank water frequently.

"It's really like a full-time job," Manzo said. But she doesn't mind coming in on weekends to feed the sea horses because "they're almost a mystical creature." 

SEA HORSE 101

- **There are about 35 species** of sea horses found around the world. The ones seen around Long Island are called the Lines Sea horse (*Hippocampus erectus*). They are found from Canada to South America.

- **Sea horses change color** from yellow to red to black to blend into their surroundings. Poor swimmers, they use their tails to hold on to eelgrass to avoid being swept away and to hide from predators.

- **Male sea horses become** pregnant. They have a brood pouch like kangaroos. The female deposits eggs into the male's pouch, where they are fertilized. Three to four weeks later the male gives birth.

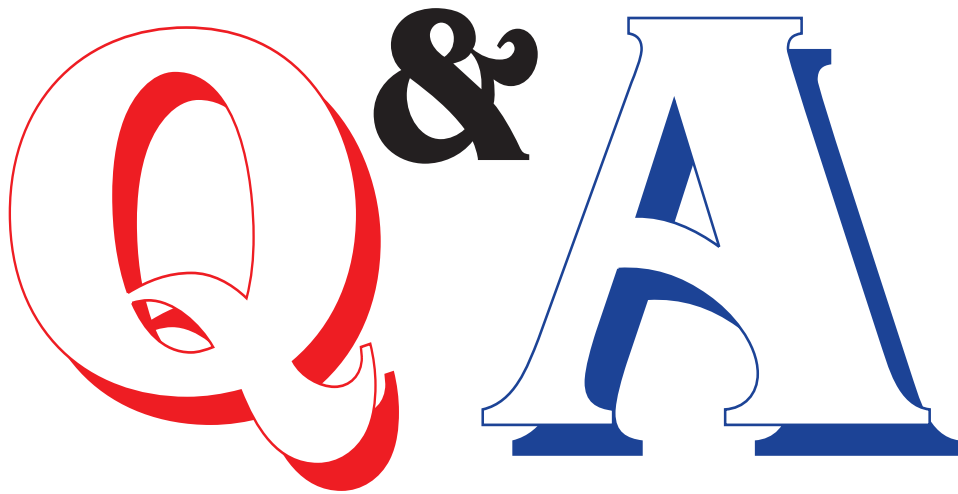
- **Breeding pairs are monogamous** by "promenading," circling around each other, which is believed to get them in sync for reproduction.

- **For more information**, go to http://counties.cce.cornell.edu/suffolk/habitat_restoration/seagrassli/ecology/fauna_flora/seahorses.html





Killifish



Q

What pH is best for keeping Killies?

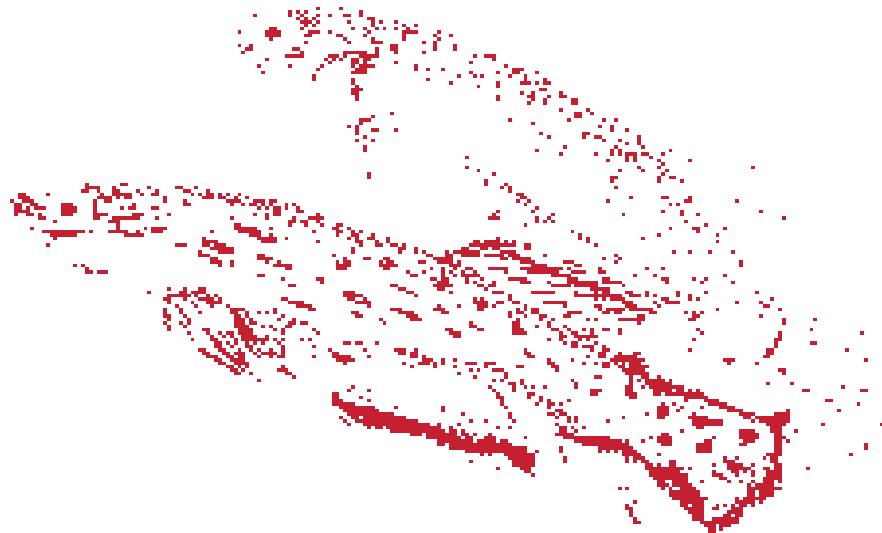
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There isn't any one pH value to keep killifish.

Killifish occur in a wide range of pH values. *Aphyosemion australe*, *A. bualanum*, *A. exiguum* as well as the Cynolebias-like species all do well in slight to moderate acidity (5.0- 6.4 pH).

Aplocheilichthys macrophthalmus does well with more moderate to neutral pH (6.8-7.0).

In contrast, the pupfish (Genus *Cyprinodon*) generally require higher pH value (7.8-8.2). The Lake Tanganyika killie *Lamprichthys tanganicus* (as with most Rift Lake fish) require a very high pH (8.2-8.6). 





EDITORS NOTE: Members with questions about aquatic plants or setting up a planted tank can contact Isidore (Izzy) Zwerin, our plant editor. You can call him at (718) 449-0031 between 7pm to 10pm, Monday to Friday.



The Practical Plant

Propagating: *Marsilea quadrifolia*

A great all round candidate for almost any aquarium would be *Marsilea quadrifolia*. The common name is Four Leaf Clover, but when the plant is grown submersed, it usually only has a single leaf. It is technically a fern and shares that creeping rhizome and fiddlehead structure seen in Java fern and *Bolbitis*. This, however, is a much smaller plant, which I have never seen grown anchored to wood the way those are. This plant is typically grown in the substrate. It will spread in a short dense green carpet about 1" high. Because of its short compact growth, and slow growth habits, it is ideal for smaller tanks.

I have seen this plant repeatedly recommended for systems with moderate lighting or in shaded areas. I have grown it this way myself in the past. Truthfully, the plant should be fine there, but it will grow very slowly. I have mine currently growing under very intense light. The setup is a 10 gallon tank with a 54 watt compact fluorescent fixture. This of course is 5.4 watts/gallon on a tank only 12" deep. The plant is doing fine and growing faster than ever, but it's still pretty slow. The water conditions in this tank are pH 6.5 and fairly soft. The GH is 4°, the KH is about 60. The temperature is kept at 78°. I enrich available carbon by both CO₂ injection and Seachems Excel. The substrate is Carib Seas Eco-Complete. I follow the Estimated Index (EI) method of fertilization. This basically means I make a massive water change (50-75%) every week. The rest of the weekday supplementations alternate between Seachems Flourish (the macronutrients) and Seachems Trace

Elements (the micronutrients). The filtration is provided by a mini canister filter made by TOM Aquarium Products with the output directed thru a submerged spray bar.

Marsilea is usually sold potted in glass wool. What I do is take some rhizome cuttings from this for immediate planting and I keep the rest of the plant in its potted form. It will continue to grow and you can harvest more cuttings later. Keep your water quality high because its slow growth makes it a little susceptible to algae. To propagate just divide the rhizome.

The tank I grow this plant in is home to a small school of Bloodfin Tetras (*Aphyocharax*). I have seen these Tetras take bites out of some of the other plants in this tank, but they will not touch the *Marsilea*.

Overall *Marsilea* is a really nice plant. It looks great in the foreground, and is fairly tolerant of water conditions. If you would prefer something a little less intense than my "high



tech" system, this plant will still thrive without the CF lighting and CO₂ injection. the macronutrients) and Seachems Trace Elements (the micronutrients). The filtration is provided by a mini canister filter made by TOM Aquarium Products with the output directed thru a submerged spray bar.

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Bill Loesch

First published in *Shoreline*, Jersey Shore Aquarium Society, March 2004
Reprinted from Aquarticles:

Spawning the Black Neon

Hyphessobrycon herbertaxelrodi



Ido not breed fish. For that matter, I do not believe anyone can make that claim. The best we can do is establish an environment conducive to spawning. With patience, good feeding habits, and regular water changes, the fish will do the rest.

Setting up an Amazonian tank is easy, culturing live food can be done, but it takes patience to wait for the fish to mature. I purchased a school of eight young fish and had them in a community tank for about a year. By the time I felt they were ready to spawn, I was down to six fish: two females; four males.

I set up a 20 long with marbles on the bottom and a covering of Spanish moss. The ph was dropped to 6.6 in the 20 long from 6.8 in the community tank. The males chased

the females (as with many egg scatterers) and once the spawning was complete, the adults were removed.

The eggs are tiny and hatch in a couple of days at 78°F to 80°F. The fry are free-swimming a couple of days after that and need tiny food, like infusoria, at first.

Oh, by the way, the black neon is not really related to the neon or blue neon. I think Axelrod just thought it was a cool name!





Black Neon



Scientific Name: *Hyphessobrycon herbertaxelrodi*

Other Names: Black Neon

Family: *Characidae*

Origin: Brazil

Adult Size: 1.5 inches (4 cm)

Social: Peaceful, suitable for community tank

Lifespan: 5 years

Tank Level: Mid, top dweller

Minimum Tank Size: 3 gallon

Diet: Omnivore, eats most foods

Breeding: Egglayer

Care: Intermediate

pH: 5.5 - 7.5

Hardness: to 6 dGH

Temperature: 73-81° F (23-27 C)





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