

# UnderWater

The Official Newsletter of the Iowa Aquaria Association

December 2004 | V1:N2

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Bristlenose Plecos

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Lighting: A user's guide

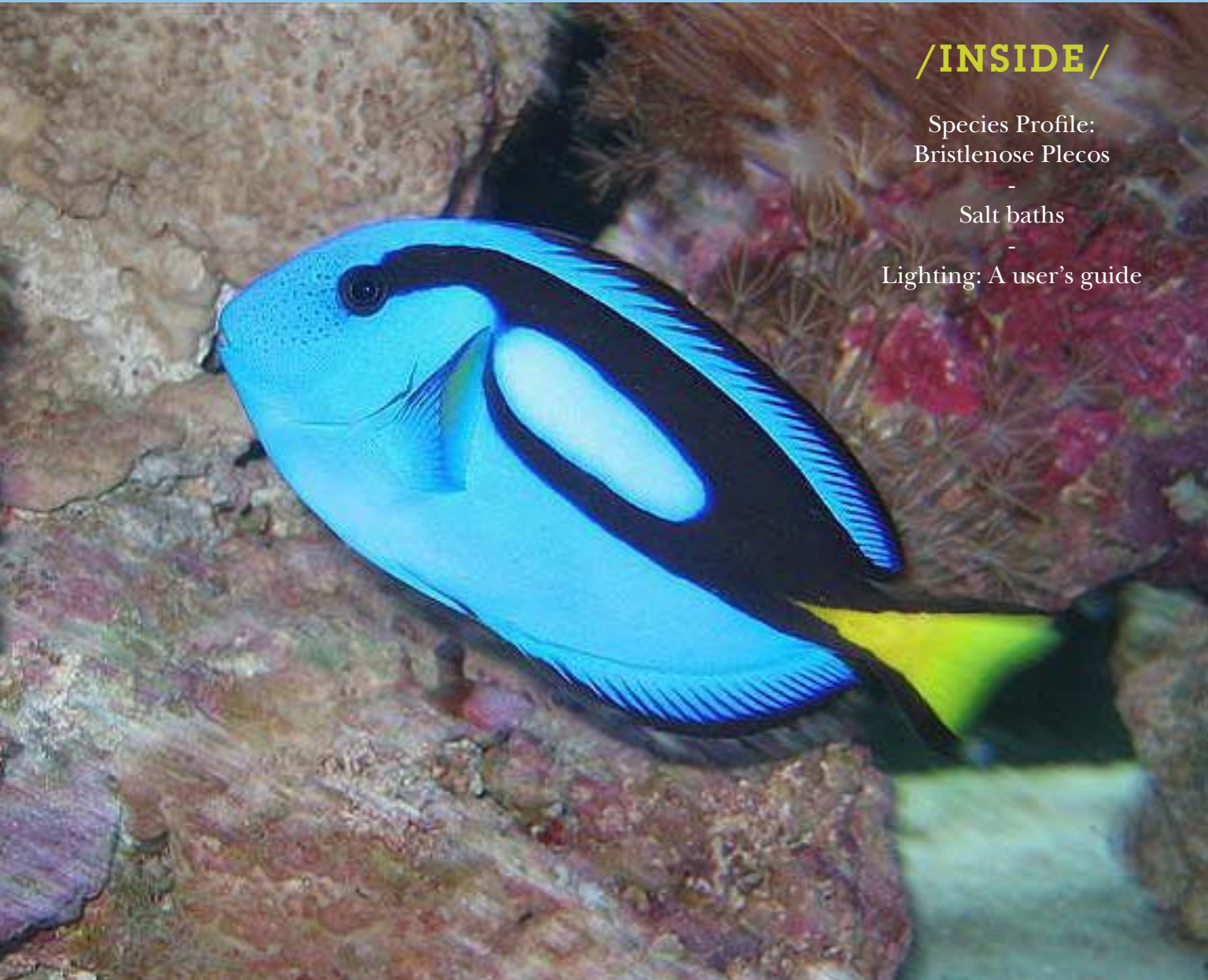


Photo by: Jeff Shelton (jeff)

Species: *Paracanthurus Hepatus* (also called Blue Tang, Hippo Tang, and Regal Tang)



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# UnderWater Welcome

The Davenport meeting and swap-meet was held Nov. 14th, and it was a great success. We took a positive first step at the meeting by adopting a revised version of the EIAA (Eastern Iowa Aquaria Association) by-laws. These shall be known from now on as the IAA by-laws. Thanks to Jo Meade and Bill Lass for their effort on this. While these are not a perfect fit that we just plug in and go with, they are certainly a great frame-work to build upon. Most importantly, they already facilitate fair decision making from here on out. Several of these decisions were discussed and can actually be decided upon at our next meeting in Des Moines on Feb 5th. This is exciting stuff.

The swap meet was well attended. Somewhere around 70 attendees checked out the 12 sellers. The local news showed up and did a nice piece on us that was shown that night on channel 6. Derek Meek (Kazan) was interviewed. Nice work. Thanks to Paul Yeager from KWQC. Kevin Frankenberg from Pet Mart in Davenport generously donated a 55 gallon tank with hood and lights. It was raffled off. Rich Collins (Zell) won it. Congratulations, Zell. Thanks again Kevin. Randy Stricklin (Tang Master) donated several bags of fish and a new air pump. He also bought 25 raffle tickets. When 4 of his tickets were winners, he refused the prizes. Very cool. Thank you for your support Randy. Thanks also go to Mike Hel-

ford from GCCA (Greater Chicago Cichlid Association). Mike donated a bag of rare Victorian blue fire-fin cichlids. Larry at Aqualand in Des Moines, Mike at Pets Playhouse in Cedar Rapids and Adam at Aquatic Environments in Davenport all donated generous gift certificates. Thank you to all who helped to make the event a success. Sorry to anyone I may have forgotten. It's late... I'm tired.

The minutes of the meeting and treasurer's report (Jan. issue) will more specifically reflect the progress of the meeting and the financial success of the swap-meet respectively. The future of the IAA is bright.

■ **Scott Carlson**  
IAA President

**Editor's Note:** Now that we have our first issue out the door, and you have seen how they work, it's time to get involved! There are four main ways that you can

contribute to UnderWater.

- 1. Photography** – Cover AND article photos
- 2. Feature articles** – About anything fish-related.

- 3. Fishroom bios** – A pictorial guide to IAA members' fishrooms or tanks.
- 4. Species profiles** – A brief "how to" guide for a specific fish.

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# LIGHTING

## A USER'S GUIDE

By Robert Fenner

As important as lighting is to the appearance, health of livestock and cost of planted aquarium keeping, it is not surprising that it is an oft-discussed topic. What is shocking to me is how much ignorance and dissonance surrounds illumination. There really is a giant difference between what looks good to humans and what is functional in marine systems with or without photosynthetic organisms. For looks; "beauty is indeed, in the eye of the beholder", but the same buyer ought to be aware and beware. The ambient amount and quality of light energy that reaches various depths has been accurately measured; and technology exists to replicate, even better, these conditions in captivity. So why the prolif-

eration of lighting fixturization, lamp types, wattages, timing devices, and controversy about what is best? And wherefore the lack of success given all the money, burned hands and big energy bills? Perhaps it's our ignorance regarding proper light and lighting.

Arguably a chief input to keeping aquatic garden systems, though not the only critical one, is light. This form of energy is poorly understood and manipulated by aquarists. Fixtures and lamps (we'll use the generic term for all artificial light sources; bulbs, tubes, etc.) generally provided in the trade are inadequate for planted aquariums. Lighting is way too often of the wrong spectral mix and too low in luminosity. But don't

despair. Light/lighting is not difficult to grasp, and fixtures and lamps that provide optimum illumination are to be had at modest cost.

For the Conscientious Aquarist light and lighting provide two functions; 1) aesthetic and 2) functional, or put another way; 1) illumination and 2) health benefits including possible photosynthesis. The former is a matter of taste; what you, the aquarist considers beautiful. The latter is a matter of science and economics: given the depth and given conditions of a system, providing the quality, quantity and duration of light is "simply" a selection of what your organisms require and what you're willing to spend.

### **So How Do I Get the 'Right' Amount and Type of Light at the Lowest Cost?**

What fixtures and lamps can get you this magical mix of spectral quality with the greatest of ease? And why not just use sunlight? The last question first. Natural sunlight is ill-suited for most set-ups. Most of us live in houses, in the less-tropical parts of the world, and want to see our systems flourishing whether the sun's up or not. Besides, the sun has an annoying habit of over-heating aquariums for the reasons stated in the introduction.

For these reasons artificial light sources are almost universally employed. I

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## Lighting, cont. from page 3

will specifically address the major types of fixtures and lamps available to the hobbyist in a couple of sections. For our objective here, I want to quickly dispense with the 'losing' technologies of incandescent, quartz halogen, metal halide, mercury vapor, and all other than full-spectrum fluorescent lighting.

**Incandescent bulbs** may provide many of the desired spectra needed by live plants, but the electrical cost of their operation per amount of light produced is dismal, their concomitant production of waste heat prodigious, and lamp replacement interval all too short. Some 'old-timers' swear by them, and they do work; but those folks have hot homes and high electric bills, not to mention trash cans filled-up with burnt out bulbs.

**Metal Halide & Mercury Vapor** technologies are not for the mainstream marine aquarist. Though some types of metal halides produce good quantities of the desirable qualities of light at a low enough cost, they also many drawbacks. Let me name the most notable: 1) They cost big bucks to acquire and operate, 2) Generate an abundance of ultraviolet radiation. Make sure you employ units engineered for marine systems, and utilize the ultraviolet filters provided. For the sake of your aquatic charges and your own

health, you should be wary of too much UV exposure. 3) They're hot; take care not to burn yourself or your house to the ground. Much more about this under the "Fixture" section.

Both metal halide and mercury vapor types of lighting share other drawbacks.

They should be mounted in hoods that can be raised and lowered for light and heat control, probably will require motorized fans,



**Light/lighting is not difficult to grasp, and fixtures and lamps that provide optimum illumination are to be had at modest cost.**



and incorporate reflective mechanisms to direct and shield their super-nova blasts downward. Also they are limited to high wattages, most coming in a few to several hundred watt sizes, up. Admittedly, the efficacy of metal halides is increasing, with operating lifespans, wattages and replacement costs rivaling fluorescents; but the facts remain: These fixtures are hot, often requiring specialized ventilation and other provisions for preventing over-heating of system water. A strong argument can be made for the sheer beauty of the light and the fixtures of these light instal-

lations; there are some that are gorgeous. Halides have their places; for huge systems with needs for high outputs, desire for concentrated light, designer... But the bottom line is that they are functionally much more money to acquire, operate and replace than...

**Full-Spectrum Fluorescent lighting.** In standard, as contrasted with High Output (HO), and Very High Output (VHO) bal-

lasted formats has been and still is the best available, most appropriate lighting technique for 99.99% of aquarists. It provides the best quality and quantity light at the lowest up front, operational and replacement cost. Period.

And now to give credit to where credit is tremendously due, my specific and whole-hearted endorsement for the all-fish marine, reef system, planted aquarium, paludarium, vivarium lights par excellence: Duro-Test Corporation's Vita-Lite (c) and Vita-Lite Supreme (c). The original Vita-Lite hit

the market in 1967 (!) as the world's first patented, natural-daylight-stimulating fluorescent tube. For over twenty five years (until the advent of their Vita-Lite Supreme) Duro's Vita-Lite was the closest simulation of natural daylight ever created by anyone, anywhere. (No, I'm not being paid for this plug) Specifications: 5500 K, 91 CRI, 2180 Lumens. For folks looking for more luminosity Duro-Test offers another lamp, the Vita-Lite Plus; the only specification difference being the generation of 2,750 lumens. The Vita-Lite Supreme offers 5500K, a CRI of 96 at 2000 lumens; it is the best match yet to natural outdoor light. These are great (the best available) lamps for the marine aquarist, aquatic gardener, herptile keeper, photographer wanting to skip filters, and human work place. They grow aquatic organisms better than any other light system, without specialized fixturing at the lowest cost. What is more, your fishes and photosynthetic organisms look and live better under these lamps. Yes, these products are that good. You can reach Duro to find your nearest dealer by dialing 1-800-289-3876. Also, in all fairness, I'd like to mention three other manufacturers of full-spectrum fluorescents. They are Philips with the Colortone 50, General Electric with their Chromaline 50 and

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# Salt baths for fish by S.N. Nagendra

We have all given salt baths to fishes. A short-period-dip and they are out, back to the tank. Many times we have also seen that the moment they are released back into main tank they wriggle about, run randomly, dart back and forth, etc. with heavy breathing. Hardy type fishes survive, the sensitive ones die! Why does this happen? Read further to find out...



tent will be high inside its cells...therefore there is a possibility of cell rupturing happening inside the fish's body...which may even lead to the death of the fish within a few minutes. This is definite if the fish is of a delicate species.

Hence, once the salt bath is done, don't remove the fish from the bucket immediately. Instead, add water slowly to the bucket until the concentration of

## Salt as medicine:

Whenever a fish is affected by external parasites or injuries, it leads to infection. Basically because the water in which the fish live contains several different kinds of bacteria and although they are normally good, infection may give rise to bad ones.

As a response to the infection on the fish's body (inflammatory response), there will be an increase in the water content of the involved tissues.

Water tends to follow salt. Hence, a fish placed in a dip-tub with a high concentration of salt tends to lose water due to osmosis (the movement of water molecules from an area of high concentration to an area of low concentration). Cell membranes are completely permeable to water; therefore the environment to which the cell is exposed can have a dramatic effect on the cell.

If the tank water has a



higher salt concentration than the fish's intrinsic salt concentration, it will tend to draw out some of the fluid from the infected cells of the fish thereby killing the infectious bacteria. This will give some relief to the fish, but the fish will feel an energy burnout.

salt becomes negligible. Then, after a brief period of confinement, move the fish back to the main tank. Make sure it is adapted to the main tank temperature. This ensures that the fish will not be affected by sudden changes in water conditions.

## After salt bath:

The fish when placed in the main tank after a salt dip, tends to absorb a lot of water as the salt con-

*Originally published on [www.indianaquariumhobbyist.com](http://www.indianaquariumhobbyist.com) and [www.aquarticles.com](http://www.aquarticles.com). Photos by Joe Lover (loverland).*



# Bristlenose Plecostomus

## Origins:

Originally these little rascals came from the Amazon River basin. Supposedly, some 50 species cruise the channels and tributaries of this longest river in the world. But the albinos more likely came from an Asian fish farm.

## Size:

Bristlenose plecos eat algae assiduously. The common plecos grow so large, they turn into destructive behemoths. Bristlenoses stay small – all under six inches. The albinos stay under four inches.

## Foods:

Bristlenoses love algae, of course. They also like blanched zucchini and other vegetables. One breeder recommends French-cut green beans. Another insists that green peas with skins removed are better. Since these little devils can chew into wood, you probably don't need to peel their peas. We like the frozen ones because 97% of them sink as soon as they thaw. The African cichlids eat the floaters. Our nosers ignore the peas. Jo Meade feeds hers spirulina tablets. Bristlenosers also eat sinking pellets, algae wafers, and frozen bloodworms. Go



easy on the meaty foods.

## Plants:

Planted tanks work great. These little guys rarely eat or tear up plants. They love exploring your aquascaping and looking for small bits of algae in the greenery. However, I would not trust any plecos with Amazon sword plants.

## Housing/Water:

Avoid bright lights and provide frequent water changes. Add bogwood or driftwood to their aquarium. It drops the pH, darkens their tank, and gives them something to chew with their raspy dental work. If you put several young ones in a tank, you'll notice them accumulating

on the wood.

## Sexing:

Sexing won't happen on the babies. Both sexes grow bristles. Males grow a larger and occasionally forked crop of bristles. Males also grow a double row of bristles down the middle of their snouts. Females grow smaller and fewer bristles.

## Schedule:

Bristlenose plecos are nocturnal. Like the shoe-maker's assistants, adults do their main work at night. Young ones also work during the day. You can observe them in action at night with a dim flashlight. A bright flashlight sends them scurrying into hiding places.

## Tank Mates:

Bristlenose plecos mix very well with all small and medium fishes except their own kind or near relatives. Male bristlenosers like to argue over territories. If you have several, make sure you provide more than one hiding place. They get along fine in a typical community tank as long as they have a hiding place. Feel free to mix these little guys with North, Central, and

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# FISHROOM '04 TOUR

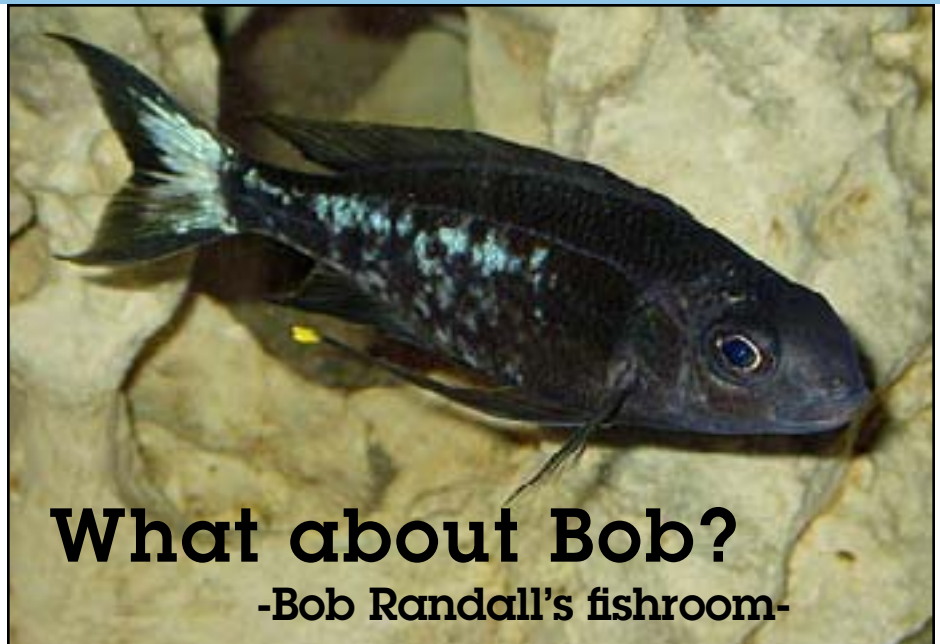
Hi friends, my name is Bob Randall. My passion is fish, specifically cichlids. Some day that may change, but cichlids have me for now.

My first fish were not cichlids but other beautiful fish. Unfortunately, those other fish lacked personality. Cichlids have personality. My first cichlids were Julidochromis marlieri. One jumped out of the tank and the other two were quite friendly. This was really odd behavior. Later the two Julies were

moved to a forty-gallon tank with some colorful mbuna. Felt sorry for the little Julies always hiding under some flowerpots at the bottom of the tank. Those colorful mbuna seemed like they were too rambunctious for the little guys. A while later, there were a cloud of fry swimming with the Julies. An addiction was born.

Today, there is a fish room attached to my home. It was built for cichlids. It is not fancy but has about forty tanks in it. Many of the cichlids are from Madagascar and the African rift lakes, Tanganyika and Malawi. There are also riverine fish from Africa, Central and South America. The smallest cichlid here is *Dicrossus filamentosus* and the largest either *Paretroplus menarambo* or *Cyphotilapia frontosa*. Thanks to Paul Garrity, there are *Bedotia geayi*, Madagascan rainbows here also. Thanks to Rich Smaciarz and Ken Bergland for introducing me to catfish like *Lophiobagrus cyclurus* and *Synodontis multipunctatus*. It happens that catfish go well in aquaria with cichlids. This turns out to be a big plus for me as catfish is a great fish family too.

Much of my ability to keep cichlids came to me from read-



ing books. Ad Konings writes many excellent books and also includes photos to prevent boredom. Paul Loiselle also has written an excellent book on cichlids. The cheapest book on cichlids is less than \$10 (written by Georg Zurlo), and is

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## Fishroom Tour '04, cont. from page 7

available at many large bookstores and online, too.

Another source of information are speakers. As a member of Minnesota Aquarium Society (MAS), it has been my privilege to listen to Ad Konings, Steve Lundblad, Chuck Rambo and Spencer Jack during last five years. There were other cichlid speakers for angelfish and discus but being a general fish club, MAS attempts to keep a limit on cichlid speakers. Eventually, it becomes necessary to hit the road to hear more cichlid talks. Another source of cichlid information comes from becoming a member of multiple clubs. My memberships include three cichlid clubs and two general clubs, all of which serve to provide me with more information on keeping cichlids. It does not hurt to have a host of friends in each club either.

By **Bob Randall** (bobrfish)  
Photos by Joe Lover (loverland)



## Lighting, cont. from page 4

Verilux with lamps of the same name. These companies also 'private label' full spectrum lamps for other labels. You will have to look for the CRI, Temperature in Kelvin, Luminosity in lumens, power curve, and average life ratings to make your own consumer judgments.

**Some information regarding 'other' types of fluorescent lamps.** Be wary of lamps termed wide of broad spectrum. These are not the same as full-spectrum lamps which provide the total range of necessary spectra, including some UV. Daylight, cool-white, warm-white similarly are not full-spectrum and used by themselves will not support hermatypic (or endo-symbiotic algal) life.

Cool white lamps, which are the most readily available for home and business use are the most efficient for their intended use; that is, they produce the most lumens per watt of energy consumed of human-visible light. The wavelengths produced are not suitable for aquatic systems. Cool Whites have a CRI of 62; yes, a pathetic sixty two.

The current, "latest and greatest" technology involves Compact Fluorescent lighting fixtures and lamps... these provide tremendous amounts of appropriate irradiation at a low cost per useful lumen... more and more being measured in PAR (Photosynthetically Available Radiation) ... the best indicator (yes, there are

meters) for real useful light energy produced.

I'm not saying that other lighting formats are a scam; my point is hopefully clear: Other light types may be better looking to any one person; that is a matter of taste. For the purpose of keeping, growing, and showing marine aquatics, full-spectrum fluorescents are by far best. Fixtures can be made or bought at reasonable cost, with little down-side of over-heating, burning you or your abode. The lamps suggested have functional life spans of about two years. The spectral shift and lumen depreciation are tractable and easily adjusted for.

### **Conclusion?**

The winning technology

is Compact Fluorescent and full-spectrum fluorescent lighting with boosted output fixtures. There is no improvement in sight for natural photosynthetic light-energy capturing mechanisms; what we are striving to do is artificially replicate conducive lighting conditions at a reasonable cost. The best way to do this since the late sixties is with full-spectrum fluorescents.

*Originally published on Bob's website in San Diego: [www.wetwebmedia.com](http://www.wetwebmedia.com) and [Aquarticles.com](http://Aquarticles.com). To read a much more detailed version of this article, visit [www.aquarticles.com/articles/management/Fenner\\_LightingQQD.html](http://www.aquarticles.com/articles/management/Fenner_LightingQQD.html).*

*Photography by Jeff Shelton (jeff).*

## Species Profile: Bristlenose Plecos, cont. from page 6

South American cichlids. Because of their set of frog stabbers that poke out their cheeks and their tendency to hide during the day, you can probably mix them with African cichlids, also. Watch carefully. African cichlids love to eat the eyeballs out of the common plecos.

### **Breeding Tips:**

Evidently PVC tubes grow wild in the Amazon River because the little rascals adapt quite readily to short PVC segments – not pretty



but utilitarian.

### **Breeding Activity:**

The bristly male takes over the tube he prefers. The

female moves in during a brief romantic interlude. After she deposits her orange eggs (on top of the tube's roof), he takes over

and cares for the eggs. Give the eggs five to six days to hatch. Give the larvae another five or six days to absorb their yolk sacs and emerge as small bristle-less versions of their parents.

### **Fry Care:**

They seem to like green beans, flakes, and pellets just fine.

*By Larry Arnold, [aqualandpetplus.com](http://aqualandpetplus.com)  
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**/ CALENDAR OF EVENTS /**

<b>DATE</b>	<b>TIME</b>	<b>EVENT</b>	<b>LOCATION</b>
12/14/04	7 PM	EIAA Meeting	Kenwood Park Presbyterian Church, Cedar Rapids, IA
1/06/05	7:30 PM	MAS Meeting	Roseville, MN
1/19/05	7 PM	GCCA Meeting	Holiday Inn, Rolling Meadows, IL
1/29/05	10 AM to 6 PM	MAS Auction	Bloomington, MN
2/03/05	7:30 PM	MAS Meeting	Roseville, MN
<b>2/05/05</b>	<b>TBA</b>	<b>IAA Meeting</b>	<b>Best Western, Merle Hay Rd., Des Moines, IA</b>
7/21-7/24	TBA	ACA 2005 Convention	Radisson Plaza Hotel, Fort Worth, TX