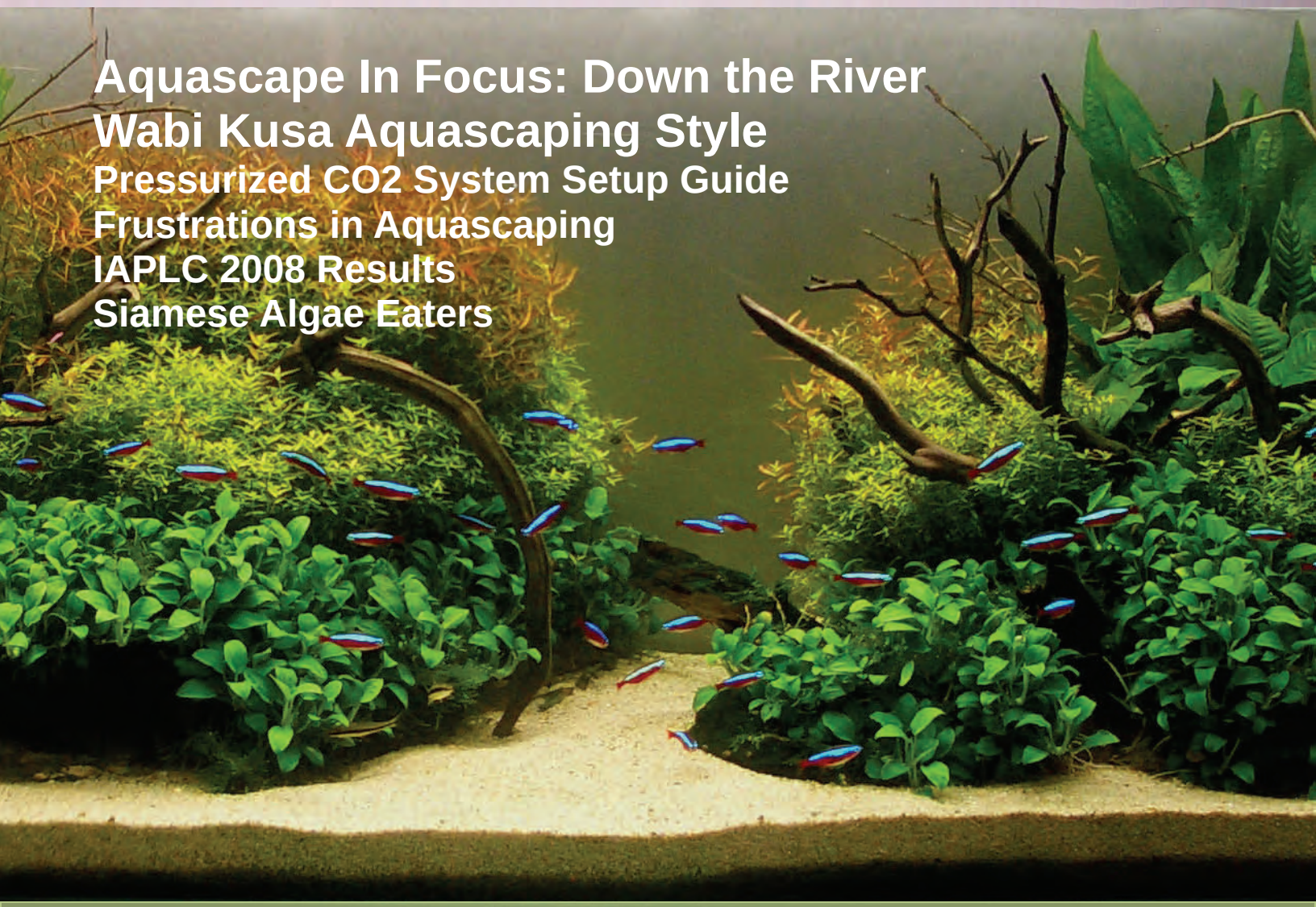
AquaScapingWorld

Making Magic In Glass Boxes



Aquascape In Focus: Down the River
Wabi Kusa Aquascaping Style
Pressurized CO2 System Setup Guide
Frustrations in Aquascaping
IAPLC 2008 Results
Siamese Algae Eaters

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Letter from the Editor

Inside our September Issue

The last week of summer approaches this month, but lucky for us aquascapers our planted aquarium hobby has no limits when it comes to weather!

The biggest news to hit our hobby this month is the official publication of the International Aquatic Plant Layout Contest 2008 Results. There are some beautiful aquascapes entered into the competition that we will focus in future articles. At this time I would like to extend an invitation to anyone who would be interested in having their aquascape featured. If you're interested just contact us. The aquascapes featured in the article about the contest offers a sample of the world class aquascapes entered into the competition.

Let me redirect your attention to this month's Aquascape in Focus. United States aquascaper, Sergio Canabal shows us how he grew massive Anubias islands from only a few plantlets to start. His beautiful aquascape, *Down the River*, is a difficult aquascape to complete, but having an automatic fertilizing doser and water changing system sure helps keep the maintenance time down.

Last but not least, if you're looking for something new to create, you might want to try your hand at the Wabi-Kusa Aquascaping Style. Steven Chong gives us a great overview on the style and describes how Wabi-Kusa is sweeping the aquascaping community.

Happy a great month aquascaping!

John Nguyen
Editor in Chief
AquaScaping World Magazine

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Asian Arowana
Photo by Fang Hong

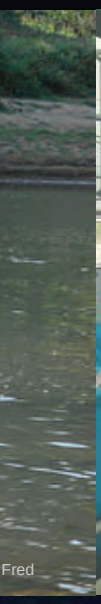
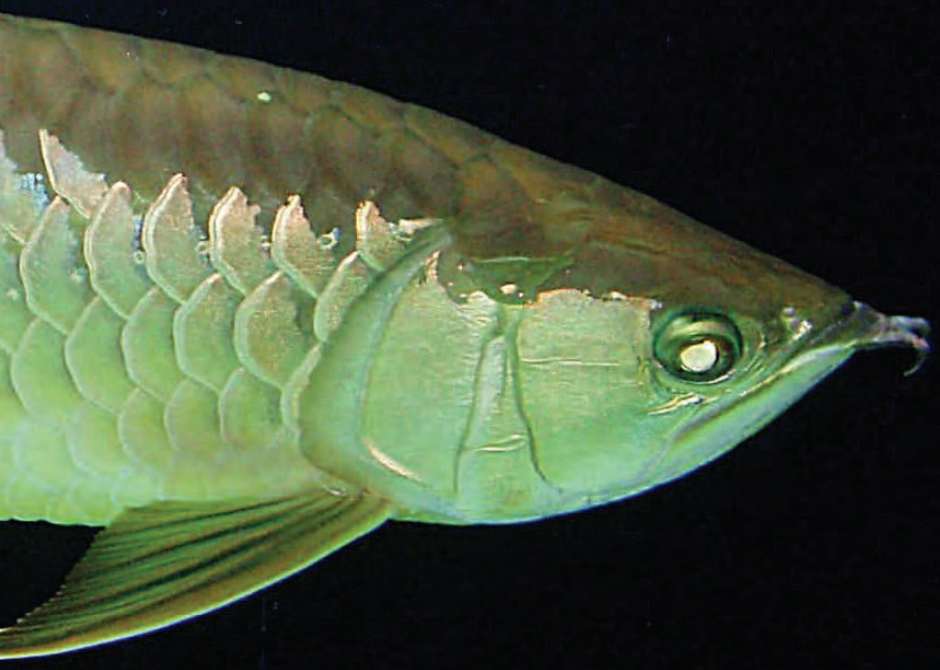

Fred


Photo by Hazorea Aquatics



Fish

By Douglas DuHamel

In today's aquarium hobby, almost every freshwater tropical fish has been bred in captivity. Many countries have set up fish farms, also known as aquaculture facilities, in order to avoid depleting fish from their native habitat. It is more cost effective for fish stores to buy livestock from fish farms.

Why Wild Caught Fish are Popular

- Wild caught fish usually have brighter colors than farmed fish; therefore, they show very well in an aquarium.
- Many aquarists are in search of exotic fish because it's considered a status symbol among their peers.
- Wild caught fish have a high re-sell value. For example, a rare Red Arrowana can sell for up to $5,000.
- Breeding wild caught fish can be a money-maker for aquarists.
- It is perceived as a conservation effort by saving the fish from predators and other hazards in their habitat.

These raising tanks in a hatchery outside of Mangalore City, India holds hundreds of fry that are protected from predators with a net covering. Angel Fish, Coryadoras, Cichliids, and various livebearers are some of the species breed in captivity here.

Requirements for Raising Wild Caught Fish

Research and learn all that there is to know about the species. For example:

- Water temperature and water conditions such as the pH and hardness
- Diseases which are common to the species and the prescribed treatment
- Dietary requirements for regular feeding and supplementary meals
- Compatibility with other fish, if placed in a community tank
- Tank requirements such as hiding places or type of substrate

The Downside of Raising Wild Caught Fish

- Fish are being removed from their natural habitat; therefore, the potential for breeding and maintaining the fish population is lessened.
- An inexperienced aquarist may not be able to keep the fish alive so the loss of life can also be a financial loss.
- Some fish naturally have a short life span and others are longer so it's best to research the species.
- Wild caught fish can harbor more parasites and are not as hardy as farmed fish.

If you choose to buy wild caught fish, be sure the seller has the correct paper work and the species of fish is allowed to be sold in your country. There are unscrupulous dealers who are smuggling fish. If you are in possession of illegal fish, you are subject to a fine and the seizure of your fish.

Wild caught fish are attractive because of their vibrant colors and their rarity. This makes each fish and the related shipping costs extremely expensive. They are much more difficult to keep in captivity and any losses are very costly.

Only an experienced aquarist should raise wild caught fish. In addition, the impact of removing fish from their natural habitat is something that needs to be considered.

Farm Raised Fish

Farm raised aquarium fish found in breeding facilities all over the world offer an alternative to the wild caught supply. Fish raised here offer a somewhat sustainable supply of fauna for the needs of the hobbyists without directly effecting actually fish populations in rivers and streams.

The trade and sell of wild caught fish will remain attractive to hobbyists who seek the rare and exotic species for their aquariums.

The picture on the left shows a harvest of Angels being done. Once the fish reach the desired size they are harvested and stocked in tanks for a purging process that ensures a healthy stock of fish.

After two days in the holding tanks, the fish are then packed up and shipped out to Aquarium Shops and distributors around the world.

Photo Credit
Hatchery Photos: www.aquarium.hub.googlepages.com/

Wabi-kusa Aquasc

「侘び草」

caping Style

By Steven Chong

Wabi-Kusa "Magic Balls" is an aquascaping style just in now sweeping the world

Two years ago when I first heard of ADA's「侘び草」 "Wabi-Kusa," I was both intrigued and put off at the same time. Creating the appeal of the aquarium's design by relying on the random growth of the plants grouped in the Wabi-Kusa is undeniably a very nature-esque concept. It also speaks to a part of us aquarium keepers who are not only artists but also fish-nuts as the idea of letting things run wild has a definite allure to those who enjoy tramping through wild ponds and marshes. On the other hand though, it also is a direct attack on the necessity for

the trained skill of a frequent aquascaper. Instead of relying on the practiced eye and well thought out plans for layout, one simply places two or three Wabi-Kusa in the tank, and off it goes. I would be lying if I said I did not have my doubts. After these few years though, it is apparent the idea has taken off, and that the power of Wabi-Kusa as a design tool is both real and appealing.

For those who do not know, Wabi-Kusa is a product made by Aqua Design Amano. It is essentially a ball covered by aquatic plants grown in their terrestrial form, very similar to hydroponics used commonly in plant nurseries. Unlike typically sold aquarium plants though, the Wabi-Kusa is generally covered with a variety of plants, and is not meant to be separated and inserted into the substrate, but rather placed directly into the aquarium, as it naturally sinks. Wabi-Kusa can be placed inside the filled aquarium or in a container with only a small amount of water to allow the plants to maintain their terrestrial form in a more potted-plant type existence. Either way, the results can be stunning as the idea is to create a natural beauty by allowing the wildness, the small "chaos" of the mixed plants to grow together.

The name Wabi-Kusa is a reference to the Japanese aesthetic sense of Wabi-Sabi that appeals to the beauty in the slight chaos of nature. Kusa means weeds or plants. Even in his earliest books Amano-san referred to finding beauty in a patch of weeds, and this beauty has been turned into product. While it is unlikely that anyone will be topping the contests with these types of layouts, I have to say they do have a strong appeal and a refreshing free-spiritedness.

While it is possible to incorporate wood and stones with Wabi-Kusa into a more complex design, more often Wabi-Kusa are featured by ADA alone. A few stem-using groups in the back laid out on simple sand, or using *Glossostigma elatinoides* only Wabi-Sabi to build a foreground.

While traditionally a plant-only layout has the risk of becoming flat and monotonous (hence traditionally it is left only to skilled Dutch style aquascapes), the sheer chaos of the Wabi-Kusa, the mixing that occurs with the plants' unified grouping, breaks up the monotony surprisingly well. Wabi-Kusa was well named, and truly does capture a Wabi-Sabi feeling.

Perhaps what I respect most about Wabi-Kusa is the capacity it represents for allowing much

more casual hobbyists or simple nature-lovers to create beautiful layouts. I have always seen spreading aquascaping to a wider audience as an important task for the aquascaping community.

However getting into it is quite difficult. Even though we can get the plants growing well, we all know the frustrations of not being able to get things to look good and perfectly arranged. With ADA's cheaper and easier to use Do!Aqua line of products, and the simple to use yet visually refreshing Wabi-Kusa, the task of creating a beautiful tank without great amounts of skill and experience has become much easier. The potential to bring in more hobbyists is very tangible and exciting to me. I will be looking forward to a wabi-future.

Frustrations in Aquasca

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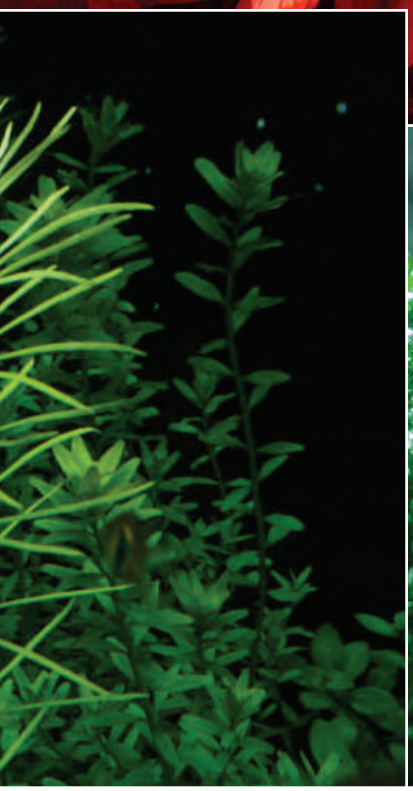
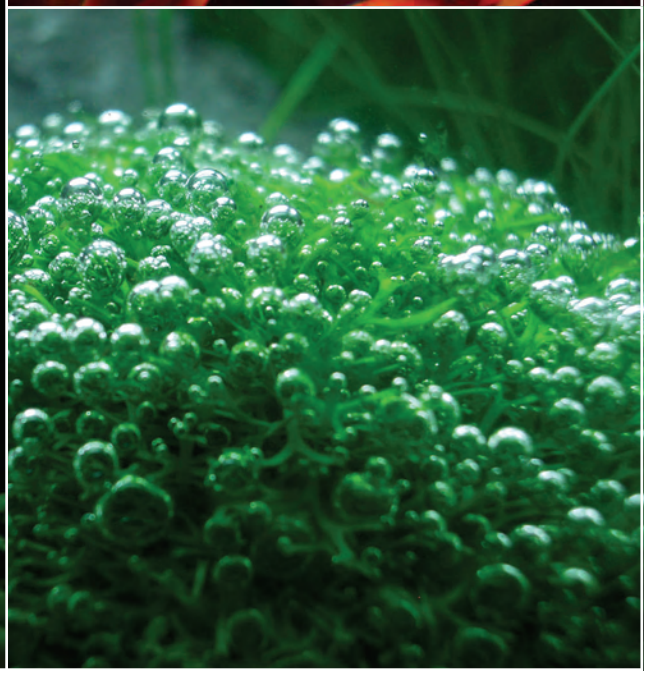
Is it Worth it?





By Donald Lee

Elodea, cabomba, salivinia, ludwigia, vallisneria, water lettuce, and even milfoil! What do these plants all have in common? They're all plants listed as invasive species in the U.S. More importantly, they're all aquarium plants that have likely, at one point, been disposed of only to find themselves thriving in new territories thanks to the frustration of a beginning aquascaper who was incapable of making them thrive in their fish tank.

The Woes of Introductory Aquascaping

It seems that there is that added frustration most aquascapers give themselves when considering a plant: certainly, they can purchase the plant for their tank for a few dollars more, but in the end they often end up with a brown pile of mush and a welling sense of frustration. Is it a scheme of sorts?

Keeping fish is a varied degree of difficulty for the early fish owner, but plants seem to offer new degrees of frustration to the formula. Are plants worth it?

To be honest, it has nothing to do with any schemes of any sort—though one may think otherwise as pet stores do have a tendency to mix emersed plants with their aquatic selection—it mostly has to do with the aquarium.

This is Not Your Father's Fish Tank

Admittedly, we have come a long way from the days when guppies came in only one variety and plecos were rare novelties for the most experienced and spendthrift of freshwater aquarists. The aquarium has advanced quite a bit, but the emphasis has mainly been towards fish.

For example, the typical lighting system offers a pleasant fluorescent or incandescent appearance to the tank, but barely musters any light to encourage photosynthesis. Plants are usually recommended to have 2.5 watts of light per gallon, but most tanks can only provide 1 watt or even less. The fish don't mind the poor lights. In fact, it is often encouraged to keep lights low since strong lights promote stress for certain species who often thrive in cover or are nocturnal. For the plant, however, we are barely throwing it a bone.

Filtration also encourages removal of carbon dioxide ($C0^2$) from tanks through devices that encourage disturbing water tension. Considering how many people run their tanks exclusively with fish, this is a very good thing! Too much $C0^2$ is bad for the inhabitants, just as too much $C0^2$ is bad for us. For plants, however, it is far from unfavorable. In fact, the filtering often encourages the more diehard planter to install their own method of putting more $C0^2$ back into the water!

Why Bother?

It seems that aquascaping from the very beginning is an uphill struggle. But with that said, it is far from an impossible task for the person willing to make some changes while understanding the limits of both their tank and its residents. Keeping plants has many rewards in the end that most fishkeepers appreciate, as do their fish.

Plants (especially of the "invasive weed" variety) siphon out the nitrates from your tank that your fish produce, providing less for the algae to grow off. The tank thus gains a little more breathing room for its inhabitants as a result.

Plants will aerate your tank from what $C0^2$ they are receiving.

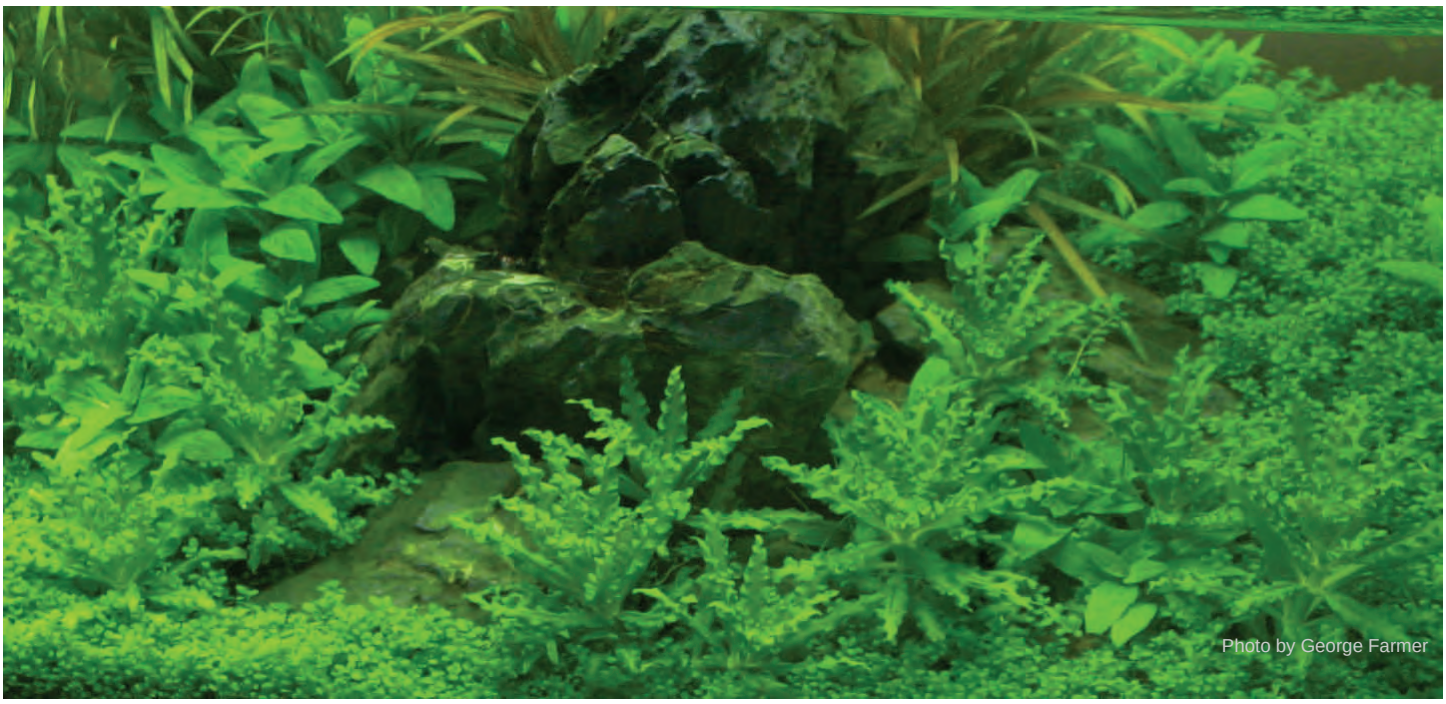
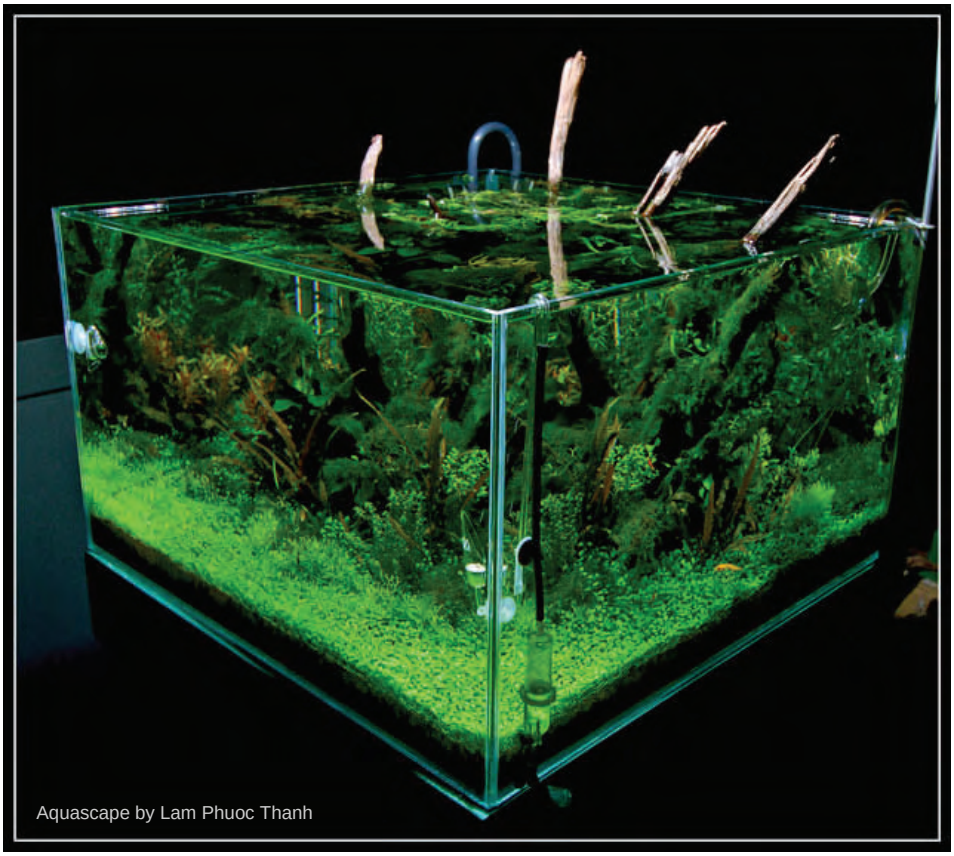


Photo by George Farmer

The tank inhabitants will appreciate the plants, as they offer cover and will make them feel less like they are in a tank and more like they are in their wild habitat. Unlike the plastic variety, they do not encourage damaging the fish as much, either.

Plants help in breeding tanks by encouraging infusoria, which are tiny microorganisms that very small fry will eat.

Unlike the more easily available species of fish, there is often demand for aquatic plants. There is not as much value towards the "weed" varieties, but there is always someone willing to buy if the stock is healthy.


Aquascape by Lam Phuoc Thanh

Tips Towards Aquatic Plants

- If it looks like it should be in a flower pot, chances are that it is an emersed plant. These plants will live underwater, but given a month without air, they will die. Certain species include names like "dragon flame" or "purple waffle" and often appear very colorful.

- Most fish will nibble on your plants or thrash them, silver dollars and goldfish especially. Diehard plants are often recommended for such species, such as java fern, java moss, and anubias. Conversely, you may also use plenty of fast-growing plants for them to nibble on and keep in check, such as hornwort. If you are considering the plants before the fish, then consider getting fish that have a small maximum size (3-4 inches). Most bottom feeders should be avoided as well.

- Most low-light plants are recommended for a beginner tank. These generally include elodea, java moss, java fern, and *anubias*. *Cryptocoryne* will also work, and certain melon swords will live in the tank as long as you keep them within closer range to the light source and will maintain a nice small size. This also applies to the banana plant.

- Floating plants have the benefit of being closer to your light source as well as receiving $C0^2$ from the air, making them a little easier to grow.

- Unless the plant itself is normally red, a lightening/ yellowing of the plant is a sign of malnourishment. It will need some more nutrients in there in the form of trace elements and may require some liquid fertilizer to substantiate it.

- Do not use regular fertilizer unless you understand how to plant it properly. If you do attempt to use regular fertilizer, try something with the lowest nitrates and phosphates possible. Otherwise, stick to liquid fertilizer, which can be purchased for a reasonable price.

- Just because you have plants does not mean that you can stop cleaning the tank unless you are growing a jungle. Use a turkey baster to flush the fish waste out of the ground and have a hose suck it out of the aquarium.

Fish Profile: Algae Eating Fish

Siame

C

se Algae Eater

rossocheilus siamensis

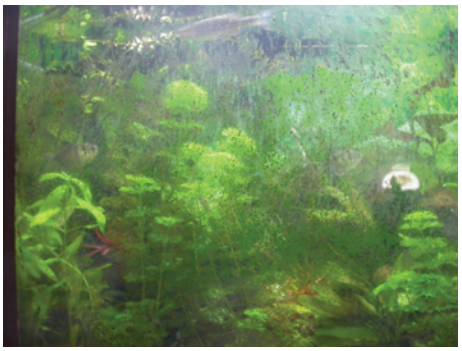
By Aziz Dhanani

Prior to converting my 40 gallon unplanted aquarium to a 40 gallon planted aquarium, I had a real Siamese algae eater (*Crossocheilus siamensis)* that was a long time (8 years) inhabitant. He was a solitary resident who kept to himself, was not aggressive towards any of the other inhabitants, and had grown to about 6 inches in length. I even named him Nessie (after the fabled Loch Ness Monster). I still remember how my family and friends were in awe of Nessie owing to his size.

Sadly things took a turn for the worse for Nessie. This was due to the fact that I turned up $C0^2$ levels too high. As soon as I realized my mistake, I tried pumping the aquarium with oxygen, but it was too late for Nessie. He never recovered.

Fish Profile: Siamese Algae Eater

engulfed my aquarium as I did not coordinate lighting, CO^2 injection, and fertilization in a way that would have prevented this. To give you an idea of what my aquarium looked like. This is a picture of the aquarium a few days after I converted it to a planted tank.



The different types of algae that plagued the tank included: Black beard/black brush algae, green dust algae, and green thread algae. Frequent water changes (two to three times a week), overdosing Seachem Excel (three times the daily dosage), and a reduced lighting period, all but eradicated the algae, with the exception of the black beard/brush algae. In my desperate attempts to try and eradicate this algae, I decided to add an Albino Bristlenose Plecostomus and Siamese Algae Eater. I watched in utter amazement as this dynamic duo grazed on the black brush/black beard algae. It was like watching cattle grazing madly at field grass. They literally eradicated the algae in less then a week.

This is the same tank 3 months after the algae breakout and action taken to eradicate the algae, including the introduction of the "dynamic duo."

Siamese Algae Eater Really Eats Algae!

It is not uncommon for people new to planted tanks and even experienced individuals to struggle with black beard/brush algae, not to mention the dreaded red algae. Although I am not suggesting that algae eaters be solely used to control or eliminate algae without addressing the underlying causes, the Siamese Algae eater (SAE) may prove a helpful ally for anyone faced with the daunting task of battling a black brush/beard algae bloom. Interestingly, it first garnered interest in the 1970's when it was observed eating red brush algae. It is even said by sources from Badman's Tropical Fish Site that "..the SAE, when coupled with the Amano shrimp (Caridina japonica), can deliver a knockout punch to any algae-ridden tank!"

Origins of the SAE

The real Siamese Algae Eater (not to be confused with the Chinese Algae Eater) is found in densely planted streams and rivers and even flooded forests in South East Asia, including Thailand and the Malay peninsula. Females are said to appear fuller/fatter than the males. This often is the sole factor used to distinguish males from females. The real Siamese algae eater is said to reach a maximum size of six inches and have a life span of approximately ten years. It has not been successfully bred in captivity. All specimens purchased from pet stores have allegedly been captured from the wild and imported. The Siamese algae eater is only suitable for tanks for 20 gallons as it will easily grow to six inches.

Compatibility

With respect to compatibility, the real Siamese's algae eater is said to be compatible with most fish. However, the real Siamese algae eater should not be kept with the red tailed shark. The red tailed shark is related to the Siamese algae eater and this fact is known to bring out the territorial and hence aggressive tendencies of both fish. Having more than one real Siamese algae eater in the same tank is also not recommended as males are known to behave aggressively towards one another in staking out territory.

Also, the real Siamese algae eater not be kept with some fish that are spawning such as dwarf cichlids. Siamese algae eaters are highly active fish. Their activity could potentially stress out fish that are spawning.

I have seen my Siamese algae eater chase my black skirt tetras when the black skirt tetras invade his territory and attempt to feed off the algae eater's piece of zucchini. Ironically, the black skirt tetras often harassed my Siamese algae eater when I first purchased him. At that time, he was considerably smaller than the black skirt tetras. I still remember how they would nip at his tail constantly as he would try and eat at the algae caked on the glass.

Although there is no scientific evidence of this, there is a possibility that smaller fish that share the body color may bring out the Siamese algae eater's aggression. I have yet to see my Siamese algae chase any of my other fish that are the same size or larger with different color and body markings. In fact, I have seen these fish freely venture into the Siamese algae's territory and even feed off the zucchini left for the Siamese algae eater. In such cases, my Siamese algae eater will often leave the area or return when the other fish leave.

The real Siamese algae eater is not destructive towards aquarium plants.

Care Requirements

They prefer a temperature of 21 -29 degrees Celsius, a ph of 6.2-8.0, 5-20 dh water hardness. A soft water current and a densely planted aquarium is recommended to try and mimic its natural habitat. It is really important to keep them in a covered aquarium as they are known aquarium jumpers. I have a custom made aquarium and since the tank cover accidently cracked I was unable to replace it. I have been resorting to maintaining a dense mass of floating plants. This has effectively served to keep my Siamese algae eater from jumping out.

As far as feeding goes, the real Siamese algae eater has no special requirements. They are known to accept normal fish food, algae disks, and blanched zucchini. Overfeeding these fish allegedly causes them to become lazy and develop a preference for flake food over algae. If you have a heavy black beard/brush algae infestation, you should feed these fish as little as possible to entice them to feed off the black beard/brush algae.

The Siamese algae eater is even said to eat planarian worms, making them ideal additions to any tank infested with such worms.

My real Siamese algae eater loves feeding off zucchini that has been microwaved for 60-80 seconds. Once a week he enjoys a special treat of frozen blood worms. Below is a picture of my real Siamese algae eater enjoying some zucchini. As you can see, he has no problems sharing with my Albino Bristlenose Pleco.

Slow Acclimation

Equally important is ensuring that your tank is properly cycled and that you properly acclimatize the fish prior to adding him or her to your tank. I find that the drip acclimatization method works best for me. When acclimatizing any fish to a new tank, slowly introduce small amounts of new tank water to a large bowl where your fish is waiting in its original water.

Get a "Real" Siamese Algae

Siamese Algae Eaters swim at all levels of the aquarium and occasionally sit still like this one resting at the bottom of the aquarium.

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Fish Profile: Siamese Algae Eater

Get a "Real" Siamese Algae Eater

The most important thing for anyone who is considering purchasing this fish is ensuring that you purchase a "real" Siamese algae eater (*Crossocheilus siamensis*) vs. a flying fox (*Epalzeorhynchos kalopteru*), "false" Siamese algae eater (*Epalzeorhynchos sp. or Garra taeniata*), or Chinese algae eater (*Gyrinocheilus aymonieri*). This is particularly important if you are looking at getting this fish to help clean up algae. Only the "real" Siamese algae eater is known to consume thread algae, black beard algae, and black brush algae.

In my experience, it is not uncommon to find pet store staff and owners who are unable to distinguish these fish. I have had fish store clerk try and convince me that the flying fox and "real" Siamese algae eater were one in the same. Confusion also abounds as you may come across literature that mistakenly fails to provide a clear distinction between these different species.

When I hear aquarium fish keepers say how horrible, terrible, and aggressive the Siamese algae eater is and how they would never consider purchasing another since they have never observed them eating any algae, I often wonder if they have not mistakenly purchased a Chinese algae eater believing it to be a "real" Siamese algae eater. Apart from that, it is possible that the odd "real" algae eater may turn out to be more aggressive than normal. It is not uncommon for fish of the same species to behave differently with all other things being equal. This is not particular to Siamese algae eaters. This may be in large part be due to innate differences in personality or temperament.

Although this fish appears to look like a Siamese Algae Eater, it is actually a Flying Fox (*Epalzeorhynchos kalopteru*). Notice the smooth scales on its body compared to a real SAE.

The major distinguishing characteristics that set the "real" Siamese's algae eater apart from the other algae eaters is the more intense black and white contrast, transparent fins, and a black zig-zagged horizontal stripe which extends all the way down the tip of the tail. Since it is so easy to get fooled or be fooled into purchasing fish that may not be "real" Siamese algae eaters,

I strongly urge readers who are considering purchasing a "real" Siamese algae eater to refer to the different SAE Guides (below) on the internet as a reference to ensure that you purchase the right fish.

References:
www.wetwebmedia.com/FWSubWebindex/saes.htm
www.badmanstropicalfish.com
www.thekrib.com/Fish/Algae-Eaters/
www.fishpondinfo.com/

Aquascape In Focus

Down the River

An Int

erview with Sergio Canabal

Remember the Kenny Rogers and Dolly Parton song "Islands in the Stream"? What does that title mean? When you look at Sergio Canabal's aquascape *Down the River* one can't help but notice the separation of the two *Anubias* bordered islands. Each island is a near replica of the other, and despite the separation, the river that runs through the islands serves as the connective ribbon to bring them together into one complete aquascape. Perhaps the meaning of the song title, like this month's Aquascape in Focus, implies a story of two entities forever linked together. As you read more about Canabal's aquascape discover the more intricate details and trimming techniques for his aquascape, *Down the River*.

Sergio Canabal proudly displays his aquascape, *Down the River*.

Q: Sergio congratulations on creating such a well balanced aquascape. Before we get into your aquascape, let's get to know you a little better.

A: My name is Sergio Canabal. I'm 31 years old, and I live in Montclair, NJ with my wife and daughter. I'm a pharmacist by profession and I have found the chemistry (non-organic, organic, bio and medicinal) I've been "subjected" to has been very helpful in understanding some of the principles of maintaining a planted tank.

I've kept "fish" tanks since I'm very young. Surely it's been more than 20 years. I began keeping plants when my wife was pregnant with my daughter. Up until that point I spent quite a bit of free time woodworking. With a baby on the way, I knew that would have to take a back seat for a while (razor sharp hand-tools + power tools + baby = emergency room!). I wanted to keep myself occupied, but with something that I could do right at home and wasn't so dangerous. I had tried to keep aquatic plants previously but failed because I didn't understand any of the major principles. So I decided to read up and give it another shot.

I became a member of my local planted aquarium group, The New Jersey Aquatic Gardeners Club. The membership includes some of the nicest, most helpful people out there! They've help me grow aquatic plants better.

A buddy of mine and I began building $C0^2$ regulators this year for fellow planted tank enthusiasts, under the name SuMo. I've learned quite a bit from this and am grateful to have the opportunity to meet and dialogue with other hobbyists who are as excited about the hobby as I am!

I've also recently become interested in keeping Bonsai, though I still have quite a bit to learn on the subject.

Q: Manipulating Bonsai trees is very similar to what we do with our planted aquarium plants. Is that what inspired your aquascape "Down the River"?

A: There have been many influences and inspirations for this aquarium! The source of initial inspiration would probably be Jason Baliban's "Valley to the East" tank. Subsequent influences for the tank came from many, many places. So many individuals, situations and

experiences affected the tank and its progression that I think it would be difficult to cover every one!

Planning for the aquarium began in October/November 2006. The substrate went in at the February 2007 NJAGC Meeting. I did not really rush any aspect of the aquarium. I think patience is absolutely necessary in keeping a planted aquarium. When I look at the tank today, I still don't see it as complete!

Q: How did you separate the different islands and how did you create the rock/driftwood arrangements?

A: The substrate is the ADA System, and includes PowerSand Special M, Tourmaline BC, AquaSoil Amazonia (Type I) and BrightSand. Cardboard and stones were used to separate the "islands" for the initial layout. A stone called "Shou stone" was used as the final barrier between AquaSoil and BrightSand.

A decent width border helps to prevent substrate mixing (shrimp are the primary villains), though maintaining separate substrates does take a fair amount of maintenance. Everything is held in place by gravity. I do not have the wood tied down.

The driftwood was laid out by trial and *many* errors. The original driftwood layout was almost entirely "consumed" by the plants and vanished. About a year in, the tank had to be re-scaped to shift plants away from the front glass. I've recently added a bit more wood to re-acquire a bit of visible hardscape and have been toying around with the pieces to come up with a "final" layout.

From this aquascape I learned and would advise others who are planning to design a tank with a large plant mass to start with more hardscape than you think you will need. It does not take long for plants to grow in most tanks, so rather than having to redo things later on, start with the right amount of hardscape to begin with. This can obviously be tricky, as it isn't always easy to visualize what an aquarium will look like a year down the road!

Q: What does it take to keep an aquascape like this?

A: Water changes and dosing are done daily. I change 15% of daily via an auto-water changer. It utilizes a RO/DI filter, so I need to reconstitute for GH. I use Seachem Equilibrium for this which allows me to skip dosing for potassium.

The aquarium is dosed daily via an auto-dosing system to maintain target parameters of:

NO3 = 9ppm
PO4 = 1.5ppm
K = ~30ppm
KH = < 1dKH
GH = ~4dGH
pH = 5.00
T = 25°C
$C0^2$ ~30ppm

Flourish and Flourish Iron are dosed at 8mL each daily for micros. The automation was integrated to allow me a bit more time to spend with the family.

Trimming is usually done every 10 days or so, cleaning the pipes and substrate are done as needed – usually every few weeks.

Q: How have you overcome algae infestations?

A: Currently I get the occasional Green Spot Algae if I try extending my midday burst too long. BUT when the tank started up, it certainly went through all of the traditionally expected startup algae. That was a very frustrating period of time. The tank was first infected by diatoms, which time and a dozen Otocinculs fish helped to clear up. Then Staghorn Algae and Hair/Thread Algae took over. Hours of manual removal and about 60 Amano shrimp help to get rid of. It took about 2 to 3 months in total to be rid of everything.

I don't suspect that there is really a planted tank that is 100% algae free. That's not realistic to

A group of Siamese Algae Eaters looking for something to eat among the foliage of the *Anubias barteri* var "coffeefolia".

Three months into Initial Start

Nine months later

expect for a planted aquarium. We are after all, creating conditions that are good for plant growth. Most algae forms are like plants!

The best we can do is keep algae to a minimum in my experience. The trick is to provide good conditions and environmental consistency for the growth of "higher" plants. When the plants are growing happily, algae is kept at bay.

Q: How did you choose your plant species?

A: For this aquarium, I decided what plants were going to be kept based on what grows best with the parameters I was keeping. It takes a few months for plants to really "settle in" in my experience, but they are constantly developing. The "slow growers" in particular have not really stopped developing. There were no additional *Anubias barteri var nana* "petite" for example, added to the tank between nine months of development. You can see from the progression pictures how they have grown exponentially.

Rotala sp. 'Colorata' are trimmed every ten days by replanting the tops and discarding the bottom stems of the plant.

Q: Describe your initial planting and ongoing trimming techniques for your plants.

A: Initially, the tank was planted with as many fast growing stems that I could get my hands on. This was to follow the conventional wisdom that packing the tank with fast growers may save me from "startup algae." In my case, there was no saving! The algae came, and had to run its course anyway!

There is no good way to trim *Cyperus helferi* that I'm aware of. When mine become too tall, I remove and replace them with new, younger plants. While I was keeping *Rotala macrandra* I trimmed them by cutting off the top six or so inches, removing the bottoms, and replanting only the tops. The *Rotala sp.* 'Colorata' species and currently *Ludwigia arcuata* are trimmed by

Current layout

essentially mowing them into the shape I want. I do not replant the tops (unless I need more stems) and simply leave the bottoms in place to thicken up.

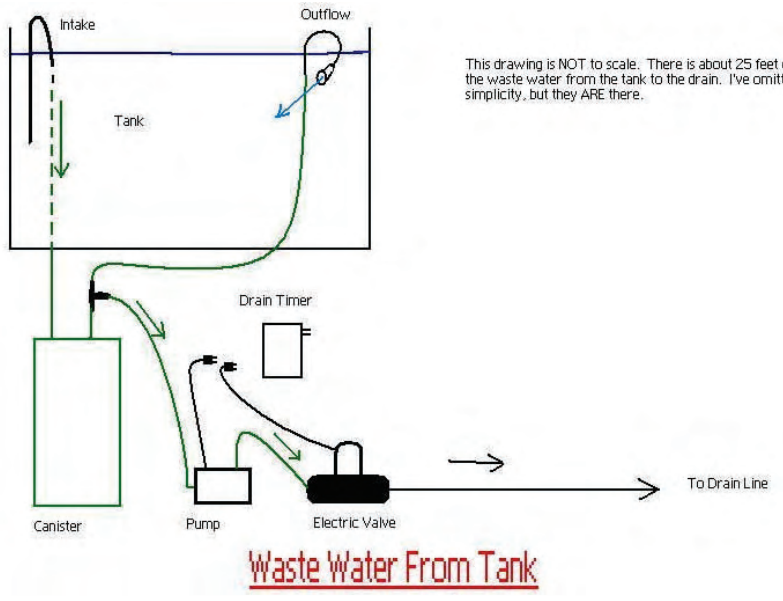
Q: What are some of the DIY elements to your tank?

A: During the warmer months I use cooling fans to maintain the water temperature at about 25°C. They are Azoo Cooling Fans and work by means of evaporation which cools the water. Topping off the tank is necessary with these fans as I'd be loosing a gallon or more daily through evaporation. The depth sensor on the auto water-changer keeps the tank at the appropriate level for me.

The other DIY elements to the tank are the plumbing manifold that keeps most of the instrumentation out of the tank, the auto-water changer and the auto-dosing system, all inspired by some of the brilliant members of the planted aquarium community!

My auto-water change works by Approximately 4 gallons of water are drained from the tank daily. Overnight, an electric solenoid and water pump (Eheim 1250) which are plumbed into the waste line, kick on at the same time via a timer. When the solenoid receives power, it opens, allowing water to run through the waste line and down the drain. The water pump is there to speed the process along.

Draining the desired amount of water takes 19 minutes. The timer then cuts power to the pump and the solenoid (which closes without power). That completes the draining procedure.



A diagram of the Automatic Water Change system created by Sergio Canabal for his planted aquarium.

Q: What will you do with this aquascape now that it's about complete?

A: Well, I'm not really sure that it is complete! I may continue the tank making "small" changes here and there, or I may tear it down and start over! Only time will tell!

Down the River

Dimensions: 48" x 18" x 23"
Volume: 240 liters
Light: 4x54W T5HO (Teklight)
Photoperiod: 8 hours, with 4x54 watt 4 hour midday burst
Substrate: ADA Substrate System
(PowerSand, Tourmaline BC, AquaSoil Amazonia and BrightSand)
$C0^2$: Pressurized $C0^2$

Plant List
Anubias barteri var "coffeefolia"
Anubias barteri var *nana* "petite"
Cyperus helferi
Ludwigia arcuata
Microsorum pteropus - Java Fern
Poaceae sp. 'Purple Bamboo'
Rotala sp. 'Colorata'

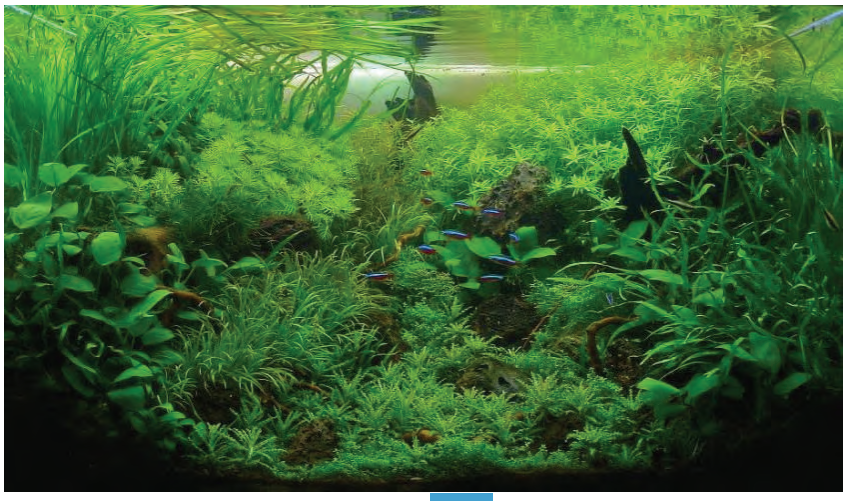
Fauna
Paracheirodon axelrodi
Crossocheilus langei
Otocinclus vittatus
Various Snails

Rank #178: Herpin Renaud from France

Rank #68: Marcin Peczek **from Poland**

International Aquatic Plant Layout Contest 2008

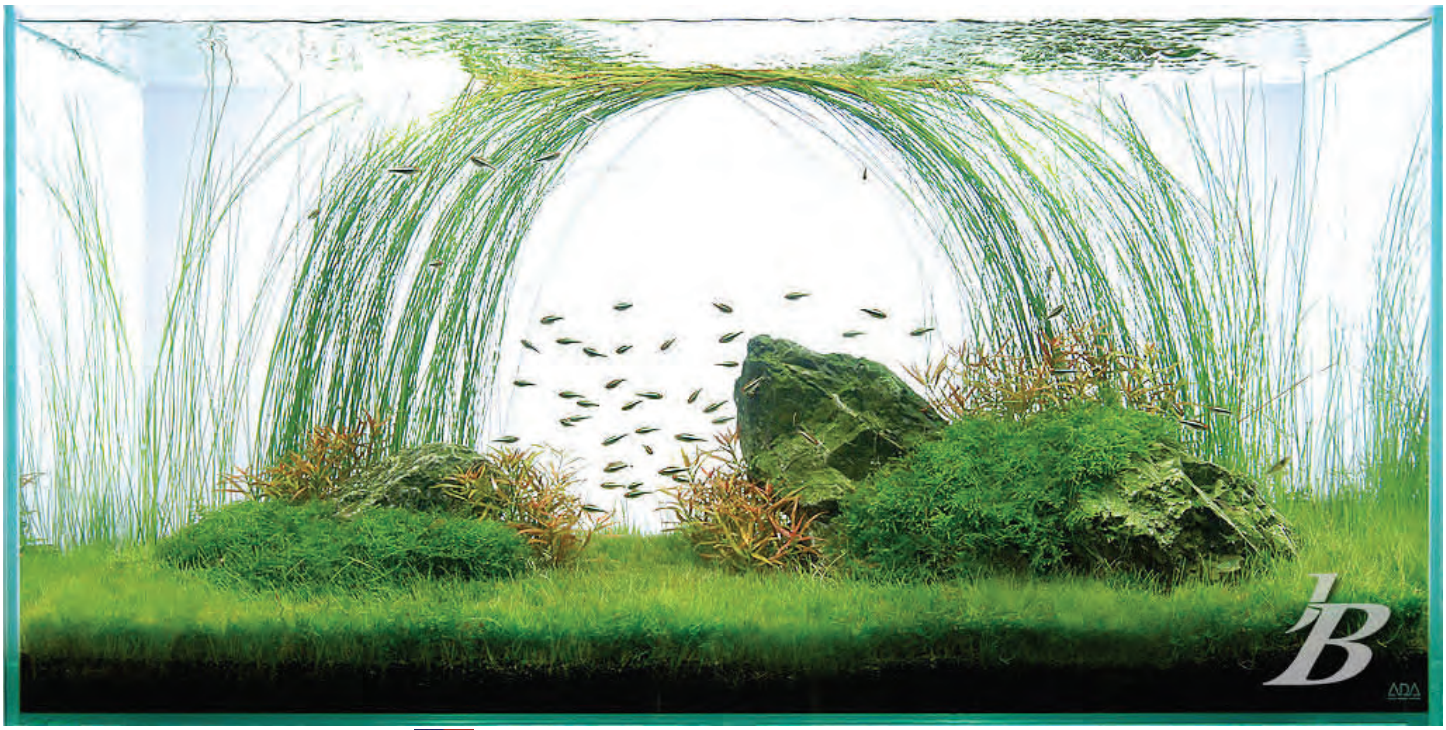
And the Winners Are...



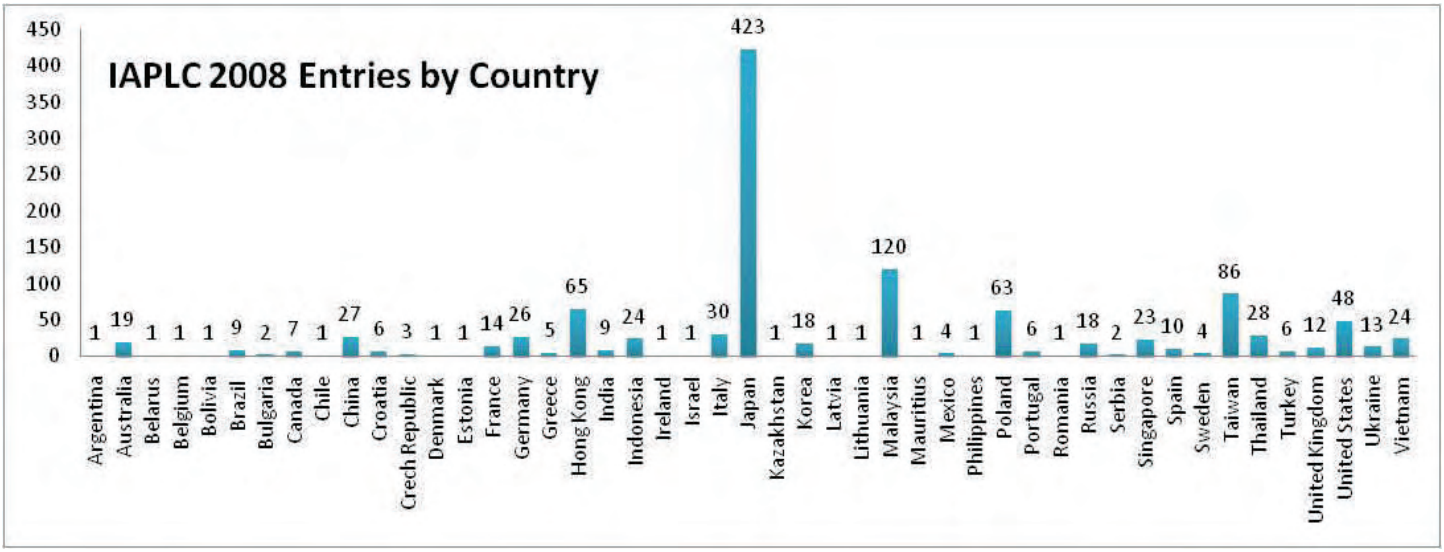
Rank #68: Alexsander Grebenyuk **from Ukraine**

Come one, come all. The International Aquatic Plant Layout Contest 2008 Results have been announced. The International Aquatic Plant Contest (IAPLC) is the largest planted aquarium aquascaping contest in the world. The competition is organized by the number one planted aquarium company, Aqua Design Amano. Aquascapers from all over the globe spend months to years designing their planted aquariums all for a chance to win thousands of dollars in prize

Rank #476: Tobias Coring **from Germany**



Rank #105: Jason Baliban **from United States**



money.

However, for most it's not about the money. It's about the ranking. Many aquascapers are seeking bragging rights and recognition for their pieces of "living art." It's a chance to compete and compare your aquascapes to the world's best. Each year there is excitement in the air as the results come out and the final ranking number appears next to their aquascapes and names. You'll find these same aquascapers announcing their ranking on the forums, blogs, and personal websites. Some are very surprised with how well they ranked, and there are always some who are upset with how other aquascapes ranked better than theirs.

This much can be said though; each participant should be proud no matter what their final ranking may be. The compilation of aquascapes in this competition is truly world class. Aquascapers keep pushing the bar, from including waterfalls in their aquariums, to uniquely layout mosses on pedestals. It's large leap from the standard three stone Iwagumi layouts that used to dominate the aquascaping hobby. New aquatic plants, new arrangements, and attention to detail are all elements that improve year to year. It is mind boggling to see what each aquascaper has achieved. There is no aquascaping competition like this one.

This year boasted 1169 entries from all over the world, the highest number of entries since it began in 2001. The competition revolutionizes the world's understanding of what an aquarium can be. With a top panel of aquascaping judges, including Takashi Amano providing comments to each aquascape it's no surprise the number of entries keeps growing. The competition gives purpose and meaning for some hobbyists, while for others it's a chance to find inspiration and a renewed passion to aquascaping planted aquariums.

The IAPLC 2008 does the official commentating and prize awarding in mid-September. The top aquascapes will be displayed at the Nature Aquarium Party held in Tokyo.Takashi Amano and the panel of judges will discuss the winning aquascapes in detail and award the finalists with their prizes. Aquascapers will be able to rub noses with the top aquascapers of the world. It's a wonderful end to a competition that celebrates and advances the planted aquarium hobby. For the full list of winners visit the ADA website.

References:

Photos credit to respective authors
www.adana.co.jp

Carbon Dioxide Injecting Method Pressurized CO^2 Syst

By Hector Ortiz

Understanding t
achieve the plan

e
ls
tems

this essential ingredient will help you
ted aquarium you've always wanted

Carbon Dioxide ($C0^2$) is a indispensible component for effective photosynthesis and plant growth. $C0^2$ is necessary when your lighting is above the standard 2.0 watts per gallon threshold. In lower lighting setups, supplementing $C0^2$ can only help plant growth and keep algae away. At first it may be slightly intimidating, however understanding and applying $C0^2$ injection is very simple. As you will see, there are three easy, mainstream methods to inject carbon dioxide. I will walk you through the pressurized $C0^2$ setup.

Carbon Dioxide Injection Methods

1) Pressurized $C0^2$ gas
2) Do It Yourself (DIY) $C0^2$ gas,
3) Liquid $C0^2$ i.e. Seachem Excel.

What do I need for a Pressurized C0^2 Setup?

Pressurized C0^{2}is the best form of injecting C0^2 gas in a planted aquarium because it offers a continuous flow of gas that offers consistent levels of C0^2. Besides the initial setup, there's no additional maintenance required. Although the startup costs of $150-200 can be deterring, the low maintenance and guarantee that C0^2 is constant from day to day make pressurized C0^2 an attractive method to be used for any planted aquarium. I will describe the main components of a pressurized C0^2 setup so that your aquarium is one step closer to an optimal environment for aquatic plants.

Essential C0^2 Components

- Regulator
- C0^2 Cylinder
- Reactor/Diffuser
- Check Valves
- C0^2 Tubing

Regulator

The common C0^2 regulators brands used in this hobby are the Milwaukee, JBJ and the Azoo C0^2 regulators. These three regulators are excellent and affordable components for any system. They can run anywhere between $75-90. You can find them on eBay auctions, drsfostersmith.com, and a number of other online retail stores.. There are some planted tank hobbyist oriented online vendors like greenleafaquariums.com, and aquabotanic.com that are now offering their own custom build regulator systems as well.

One of the key parts to an aquarium made regulator is the a part called the solenoid. A solenoid is essentially the on/off switch to your regulator. When on, the solenoid opens a magnetic gate that allows gas to flow from the cylinder to the tubing line. When turned off, C0^2 flow stops. When you place a solenoid on a light timer, you can automate your C0^2 system and have C0^2 flow stop when the lights go out, and have the flow resume when the lights go on. That's important because plants utilize (photosynthesize) carbon dioxide when the light goes on.

Aquarium regulators will have another necessary component called the needle valve. This allows you to change the rate of gas flow. C0^2 gas is measured in parts per millions (ppms) or observationally by the amount of bubbles flowing into a tank per second. A bubble counter (a see-through container filled with water) allows the aquarist to see and count the bubble rate. Generally, depending on your tank size, a rate of 3-5 bubbles per second is a good rate to have for a planted aquarium. This will produce around the optimal 30 ppms of dissolved C0^2 gas in a planted aquarium. A CO2 drop checker product can also help measure your CO2 levels.

5-10 lb $C0^2$ Cylinder

$C0^2$ cylinders are best bought locally from your fire extinguisher supply depots and welding supply shops. Pick up the phone book and call around. With the paintball hobby in full swing, these $C0^2$ distributors won't blink an eye when you say you need a 5-10 lb $C0^2$ cylinder for your aquarium.

A 5 lb cylinder can produce at least six months of $C0^2$ for your aquarium. The bigger, 10 lb cylinder can last double that. I recommend getting the largest sized cylinder that can fit in your home and under your aquarium The cylinders can run anywhere between $60-100 from a local supplier. Refills are about $20 at most locations.

In the heyday of introducing pressurized $C0^2$ in the late 1990s, hobbyists used to make a big stink over whether or not one should get an aluminum cylinder or a steel-composed cylinder. In all honesty, it doesn't make a squat of difference when it comes to planted aquariums. A full steel 10lb $C0^2$ cylinder weights around 40 lbs. Aluminum cylinders are lighter so I suppose you should take that in mind if lifting 40 or so pounds is difficult. Aluminum cylinders can run about $50 more than a steel cylinder of the same size.

It is also important to remember your $C0^2$ cylinder will be hidden under your aquarium and out of sight. So when your $C0^2$ distributor tells you they only have refurbished cylinders for sell, don't worry and just get it. $C0^2$ cylinders are tested about every 5 years by the distributors to ensure they are safe enough to hold $C0^2$ under pressure. You'll find $C0^2$ cylinders dating back to the 1960s still on the selling floor today. So the worn looking refurbish cylinder will work just as well as a new shiny one.

Reactor/Diffuser

In my opinion, reactors and diffusers represent the most difficult aspect of the system. There are many ways to dissolve the $C0^2$ gas. The common methods include:

External Reactor

An external reactor such as a Aquamedic 1000 or a DIY reactor is set inline with the plumbing of your canister filter. It works by dissolving $C0^2$ gas in the turbulent water created inside the external reactor. This is an effective way of dissolving $C0^2$ without worrying about cleaning out an in-tank diffuser like the ones describes later.

Remember to put the external reactor on the water output side of your canister filter to ensure that only clean water goes through it.

There are many tutorials available on the internet on how to make your own DIY External reactor so at the moment I will not go into the process. The key for any external reactor is to get as close to 100% dissolution of your $C0^2$ gas before it enters the aquarium.

$C0^2$ Glass Diffusers

Using a glass diffuser or "pollen glass diffuser" as it can be referred to after an Aqua Design Amano product, is another effective means of introducing carbon dioxide to a tank. This diffuser is a glorified (yet efficient) airstone that is placed inside the aquarium underneath a flow of water.

What makes it so effective? The diffuser disc is composed of tiny pores that results in very fine, mist like bubbles as the $C0^2$ bust through the membrane. The resulting fine bubbles are easily dissolved into the water column, and some of the mist-like bubbles even find their way underneath plant leaves which is said to aid in aquatic plant $C0^2$ absorption.

Glass diffusers in the past three years have taken the hobby by storm. Most planted aquarists now use this method over external reactors. The caveat of using glass diffusers as I mentioned earlier is that they require frequent (every 2 weeks) cleanings to keep the disc surface as clean and effective as possible.

Over time, algae and bacterial film may grow on the disc surface which covers up the fine pores on the surface. This results in larger, and less dissolvable bubbles of $C0^2$ gas. The remedy to a dirty disc is to soak the glass diffuser in a solution of bleach for ten minutes during a tank cleaning. Some people purchase two diffusers and swap the dirty one out for a new one to save time.

$C0^2$ line in the intake Method

Now this is the "cost efficient" way of dissolving $C0^2$. It's as simple as sticking the output end of the $C0^2$ tubing directly into a filter intake and using your filter as a reaction chamber to dissolve the gas.

This all-in-one regulator with bubble counter allows the hobbyists to calculate the injection rate of the $C0^2$.

dosing - made easy

The planted-aquarium hobby is growing rapidly worldwide. To make this hobby more accessible to everyone, pfertz™ has created an easy-to-use, innovative fertilizer system that makes growing aquarium plants so easy, that anyone can do it. The features that make pfertz™ unique are:

- Easy-to-use customizable system
- Comfortable, organic bottle shape
- Locking pump for spill-proof storage
- Pump bottles allow for quick, convenient, no-mess dosing. No caps to remove means no accidental spills.
- Innovative daily-dosing regimen is easy to remember and integrate into a routine
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- All fertilizers made in the USA

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Sounds easy enough? Well it is, but filters aren't exactly made to handle the acid byproduct that $C0^2$ gas inherently has. Some filters parts such as the impeller, rubber areas, and motor may wear out prematurely as a result. In extreme cases, a filter may stop working altogether if the gas builds up in the filter and stops the impeller from catching water.

However, this method can be effective depending on how well the $C0^2$ dissolves as it makes it way through the filter. Just be careful.

The dissolution method that works best will vary with every tank. I personally like to use external reactors because I like to take one less thing out of the tank maintenance process. But I know several others swear by the extra effectiveness of bubbles from the glass diffusers. As long as you're pumping $C0^2$ gas into your aquarium, I'll be happy and your plants will be happy too.

Check Valves

Check valves are designed to prevent water from back siphoning out from the tank when the $C0^2$ flow is turned off or runs out. The best check valves are the metal type (brass) check valves. Plastic check valves will work but they are susceptible to $C0^2$ deterioration and will need yearly replacing. These are placed on the $C0^2$ tubing between the regulator and diffuser end.

Brass check valves prevent water from back siphoning from your tank to your regulator.

You might think that you won't need a $C0^2$ check valve, but you'll soon realize your mistake. Water will siphon back out from your aquarium and down to your expensive $C0^2$ regulator. Getting water inside the regulator or more likely the solenoid part will render your expensive gismo inoperable.

$C0^2$ Tubing

Typical airline tubing and silicone tubing are highly permeable to $C0^2$ gas and they can become brittle/crack over time. Specialized $C0^2$ tubing like Poly urethane tubing is one of the best choices for offering low gas permeability and $C0^2$ resistant degradation. To ensure 100% of the $C0^2$ gas makes it to the tank use tubing that is made for $C0^2$ gas.

pH Controller

This is an optional component for a pressurized system. A pH Controller such as the Milwaukee SMS125 pH Controller helps regulate the amount of $C0^2$ injected in a tank. The user sets the pH level at a desired level, and the controller will make sure it stays around that level (much like a heater thermostat). The reason why this is an optional product is because a light timer designed to turn off the solenoid at night will do the same thing. A timer will eliminate the flow of $C0^2$ when the plants are not using it if it is set to turn off when the lights go out. off.

What do I need for DIY $C0^2$?

DIY $C0^2$ is an applicable system for 30 gallon tanks or less. It uses yeast, sugar and water to produce a reaction that has $C0^2$ gas as a byproduct. The reaction can last anywhere between 2-4 weeks and will need

to be replaced regularly. Compared to Pressurized $C0^2$, it is economically cheaper, but the time and maintenance required to keep it producing gas at the highest level can be costly. I will talk about how to make a DIY $C0^2$ setup in a future article.

Can I use Seachem Excel for $C0^2$?

Seachem Excel is an organic based liquid carbon source. It requires daily administration but is very effective at providing $C0^2$ to plants. Seachem Excel can be used alone or as a supplement to DIY $C0^2$ or pressurized $C0^2$. In the long run Seachem Excel can become expensive to use every day on a large tank, but on tanks under 20-30 gallons it is relatively inexpensive. To minimize costs buy Excel in bulk 2 liter bottles for around $23.

Pressurized $C0^2$ Wrap-up

Now that you know all about pressurized $C0^2$ and have been introduced to the other common methods of $C0^2$ injection, be sure to inject the gas slowly if this is your first time. Also, be sure to secure your $C0^2$ cylinder inside your stand and away from any wandering kids who may be interested in turning knobs or have a tendency of tipping things over. Once you begin introducing $C0^2$ you'll notice within a few days the positive effects it has on plant growth and health. You'll wonder to yourself, why you hadn't started with pressurized $C0^2$ in the first place.

www.aquascapingworld.com