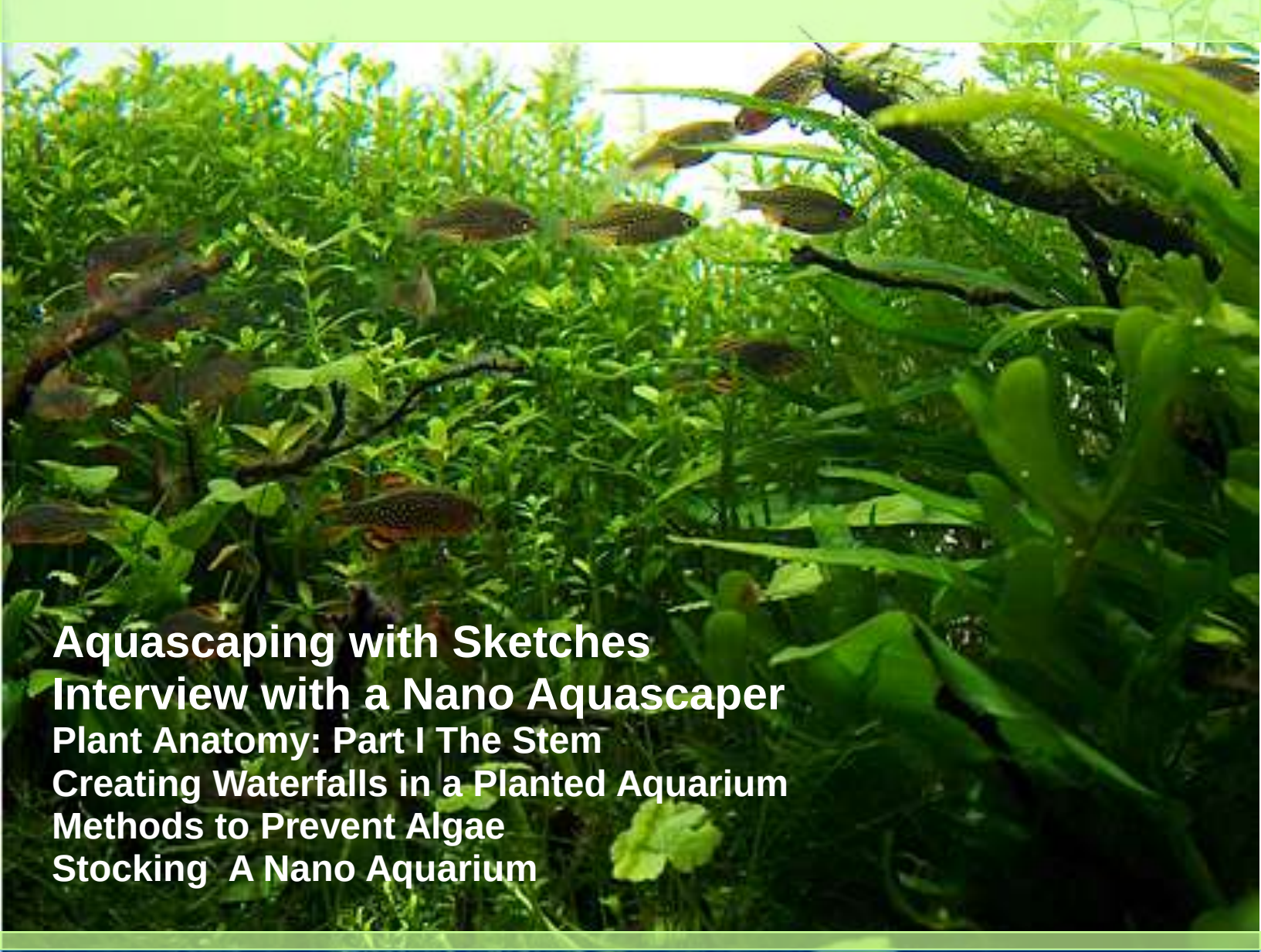
AquaScapingWorld

Making Magic In Glass Boxes



Aquascaping with Sketches
Interview with a Nano Aquascaper
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www.aquascapingworld.com

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Letter from the Editor

Welcome to the first issue of AquaScaping World Magazine!

This issue offers an excellent smorgasbord on a range of topics pertaining to Planted Aquariums and Aquascapes. I encourage you to challenge yourself, whether its in designing an aquascape, growing aquatic plants, or keeping healthy habitats for your livestock. One can never tell in our fast-moving Aquatic World when today's personal enthusiasm becomes tomorrow's inspiration for others.

AquaScaping World Magazine publishes on a monthly basis to bring you the best resource available to help you master the art of aquascaping and growing aquatic plants for your planted aquariums. Each issue will cover a wide range of topics from aquascaping, equipment, algae, fish and invertebrates, and of course aquatic plants.

Our writers have a tremendous amount of experience between them when it comes to planted aquariums. They write about their personal aquaria experiences and views to help and inspire budding and advanced hobbyists.

The planted aquarium hobby can be an overwhelming experience for the new enthusiast. We aim to deliver a quality magazine to aquascapers and planted aquarium hobbyists all over the globe that is not only understandable but simple, inspirational, and informative. We hope we achieve our mission and wish you well in your aquascaping adventures.

Enjoy reading our magazine and happy aquascaping!

John Nguyen
Editor in Chief
AquaScaping World Magazine

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Don't Let Algae Beat

Best Algae Eaters for Your Aquarium

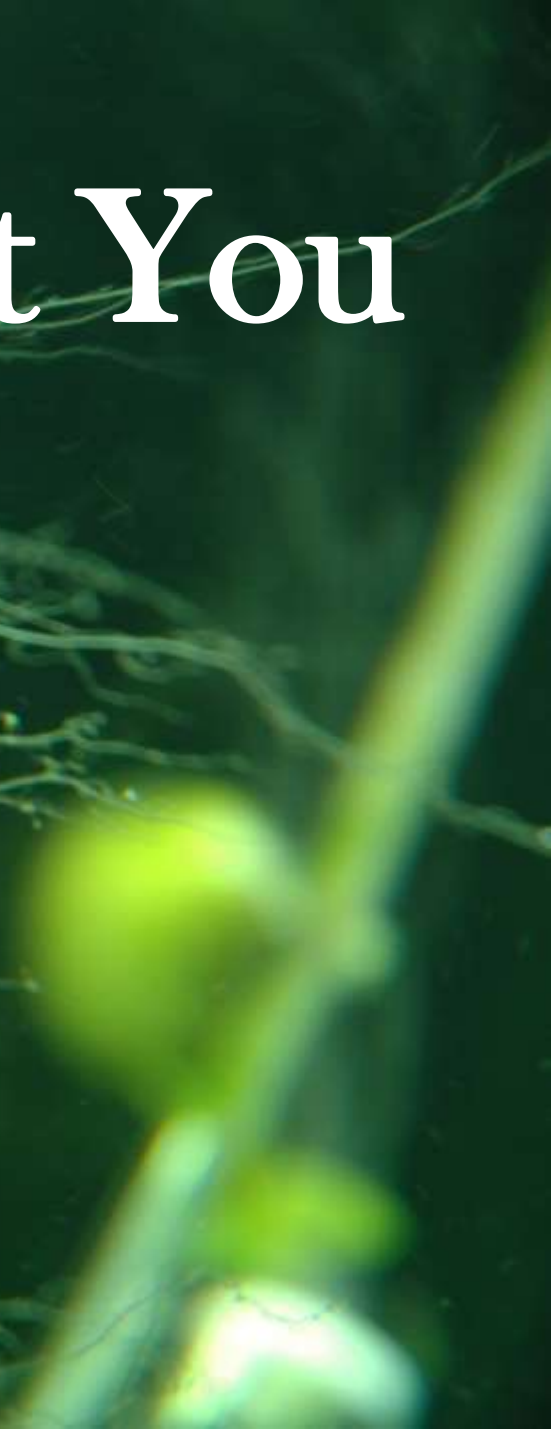
By Tom Messenger

Algae can become a problem in the aquarium if left unchecked or uncontrolled. Luckily, in a planted aquarium there are several species of fish and invertebrates that can help you win the war on algae. Their suitability will depend on the type and size of the aquarium , and current inhabiting species in the tank. Fortunately, most of algae eating fauna can survive in a wide range of aquarium environments. Here is a quick guide to some frontline defenders against algae.

***Otocinclus* spp.**

Otocinclus spp. are one of the most popular fish used to help in the control of algae. There are a few species that I have seen available here in the UK, and these are *O. vestitus, O. affinis* and *O. macrospilus.* Most 0tocinclus sold are caught in the wild. When these fish are imported, they are often starved during the transport stages, and so many tend to die off even before they reach the wholesaler/ retailer. Because of this, you need to be careful when choosing your Otos. A fish with a nice, rounded silvery stomach should be fine, as this indicates that they have been fed on adequate foods since their import and should continue to do so. All too often though, Otos found in aquatic shops are very skinny and suffering from malnutrition. This is why they are often considered to be tricky to keep, and can die off during acclimatisation.

Most *Otocinclus* will grow to around 2" or less and eat a wide range of algae. These miniature size makes them a great choice



for an algae eater in either large or small aquariums. They should really be kept in groups of around 6 and will often stay close to each other in the aquarium. This is when they are at their most effective in a planted aquarium. In my experience they are very gentle with aquatic plants, and will not damage soft leaved plants like Rotala sp. 'wallichii' while feeding. *Otocinclus* are diligent eaters of green spot and green dust algae clusters when in large groups.

Crossochelius siamensis

Siamese Algae Eaters (*Crossochelius siamensis*), or SAE as it is often written, can grow much larger than the *Otocinclus* (up to 6") and because of this are suited to the larger aquarium only. I would suggest a minimum being a 36" tank to keep these fish at their eventual size. I have found they can be a bit boisterous and may uproot newly planted carpet plants and disturb substrate, which is a problem if it clouds easily. Like the Ottos, these algae eaters are said to eat a variety of algae types including black beard algae, or BBA. This is a common problem in planted aquaria and it is sometimes attributed to low CO2 in the water. There is often confusion between this species and the Chinese Algae Eater, or CAE, as they look very similar. One difference between them is the number of barbels, the SAE having one set and the CAE having 2 sets.

Caridina denticulata

The Amano Shrimp (*Caridina denticulata*, formally *japonica*), or Yamato Shrimp as it is sometimes known, was brought into popularity by Takashi Amano in his search for the perfect algae eating shrimp. He tested many shrimp, but eventually settling on the "Amano" Shrimp, a Japanese native species and ordering several thousand from the supplier! They will eat most types of algae and are very effective at their job. They will reach around 2" and are suitable to most size aquariums. One problem with keeping shrimp in the aquarium is that you will need to be careful about other occupants. Although Amano shrimp are one of the larger freshwater algae eating shrimp, they can be eaten by large fish such as Angelfish and Discus.

Neocaridina denticulata sinensis

Cherry Shrimp (*Neocaridina denticulata sinensis*) are another popular shrimp choice for the aquarium, mainly because of their size and colour. Female Cherry Shrimp are bright red, whereas males can be slightly drab in comparison. These shrimp are smaller than the Amano Shrimp, and I haven't had any grow past one inch. You will need to be wary of filter inlets due to the small size of the shrimp.

Crossochelius siamensis (top)
Caridina denticulata, (bottom)

Sometimes when you clean the filter during maintenance, you can find live baby shrimp that have been sucked in and are living off detritus or algae in the filter. I recommend placing a small cover over the filter intake if you want to save every shrimp.

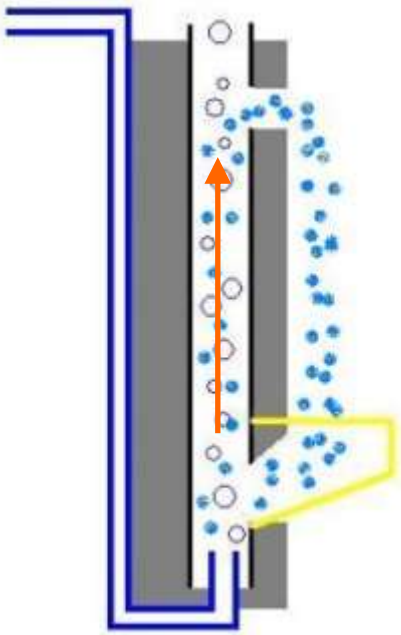
Cherry shrimp will readily breed in the average aquarium, given plenty of dense plant cover to protect the young from predatory fish. Tetras are known to snack on babies, whereas corycat fish and *Otocinclus* are considered shrimp safe companions the cherry shrimp.

Creating Waterfalls in a Planted Aquarium

By Andrew Nunn

I was curious as to how the tank above, which took World Ranking 7 in the Aqua Design Amano 2007 Aquascaping Contest created the waterfall illusion. I had seen similar effects created by rising bubbles, but this seems to end before reaching the surface, meaning it is created using a different method, or there was a good deal of photo editing involved. However, , a poster on my blog tipped me off to a website (www.xylema.net) that explains exactly how it was created, and it is quite creative.

Let's investigate how the effect is created. To start off, from the initial impression, the illusion appears to be created using rising bubbles that where either edited out with photo software, or vacuumed away into a hidden cavern. I come to find out neither were the case. Bubbles play a large role in the mechanics of the illusion, but they are not what the viewer is seeing. Instead, the viewer is observing a steady stream of falling sand. That's right, sand.



In this cross section illustration, sand grains (blue dots) are drawn into the rising water current, and pour out of the hidden space to form the waterfall.

Water fall illusion tested without the hardscape and plants (top)
Completed aquascapes with cascading waterfall (bottom)

Through a cross section of the "waterfall" we can identify how the sand is used for the effect. A tube and airstone blows bubbles up through a hidden space behind a wall. This creates a vacuum of bubbles that drives a water current towards to the surface.

As the water rises, tiny grains of sand from a reservoir are pulled into the vortex current. The sand grains move with the water current and drift out through an opening near the top of the wall, and fall back down the front side of the wall. A strategically placed incline ramp at the base catches the falling sand grains and returns them back into behind the scenes reservoir. The cycle is repeated and the viewer sees an endless cascading waterfall inside the aquarium.

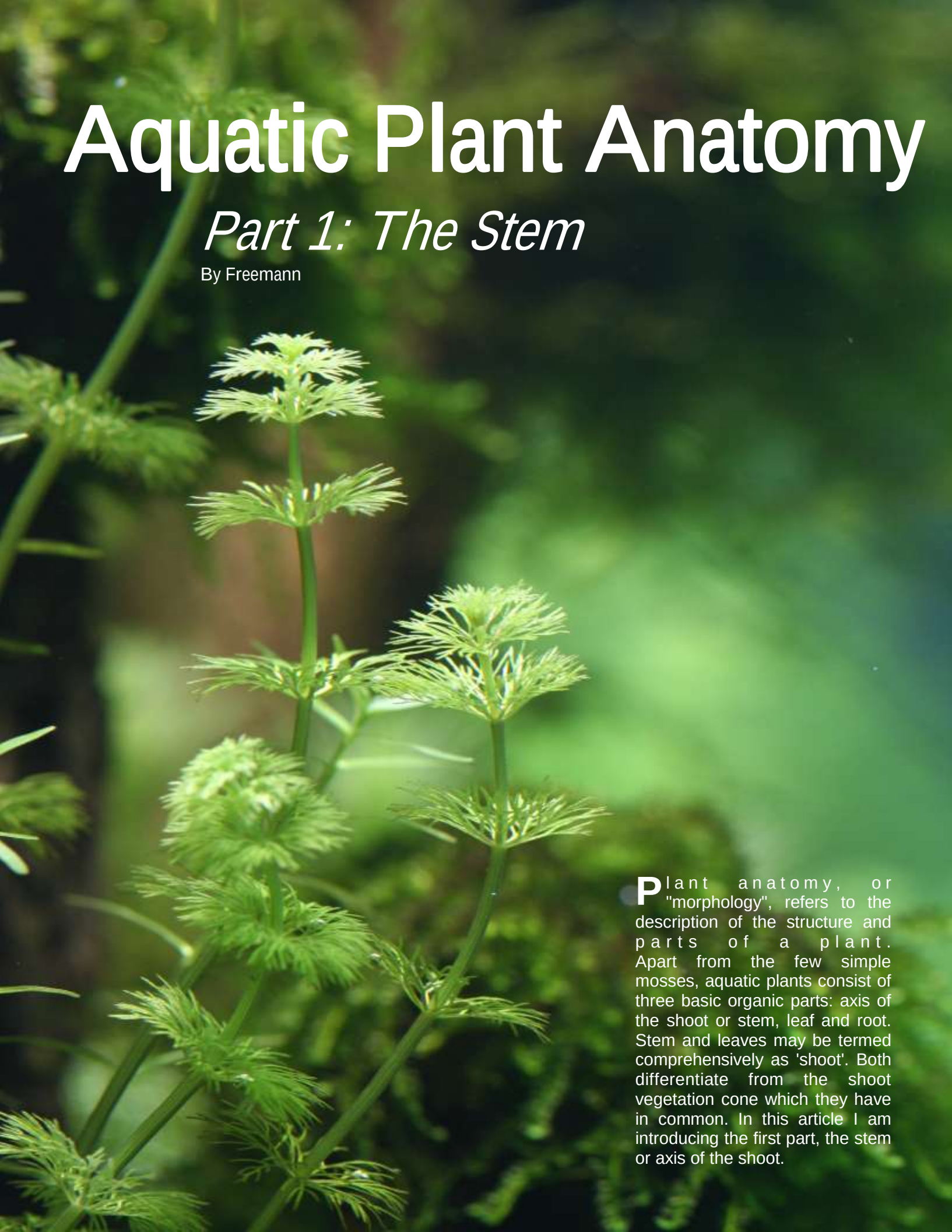
This effect is not the most practical for everyday use. A very fine sand must be used in order for it to be lift with the current. The falling sand is affected greatly by other currents inside the tank, and it will inevitably fall outside of the reservoir. With a filter running, it would probably blow the falling sand everywhere else in your aquarium. I'm sure much tweaking is necessary to find the best type of sand suited for this application, and what size space behind the wall works best.

How the sand is ejected from the top of the bubble column is also probably a problem area that requires a lot of attention and adjustment. It's hard to tell from the diagram, but the bubble column space most likely extends above the water line. This forces the water pulled up by the bubbles out the sand-ejection opening. Otherwise, the sand would continue to follow the current of bubbles and water up and out the top of the column (and you'd have a messy volcano effect instead of a waterfall!). The final effect, if done correctly, looks absolutely stunning in aquascaped planted aquarium.

Aquatic Plant Anatomy

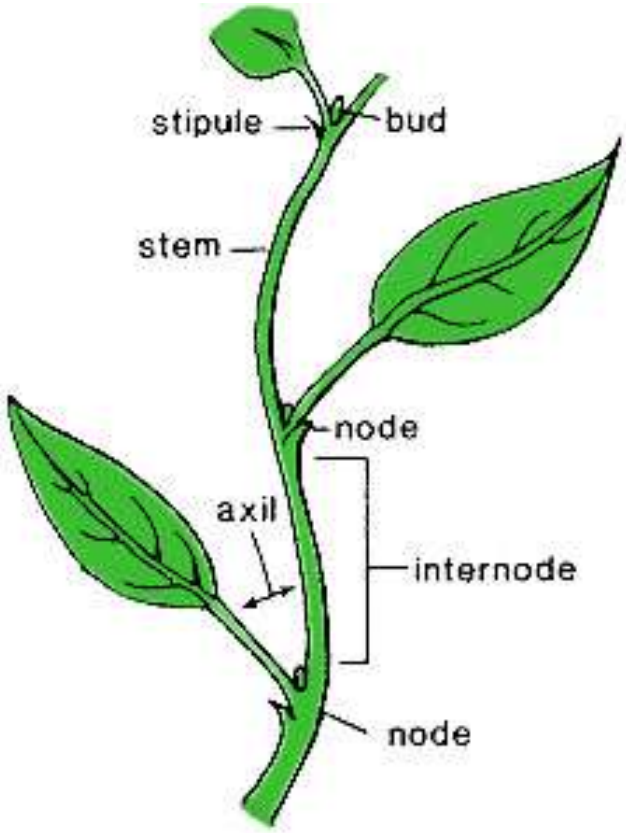
Part 1: The Stem

By Freemann



Plant anatomy, or "morphology", refers to the description of the structure and parts of a plant. Apart from the few simple mosses, aquatic plants consist of three basic organic parts: axis of the shoot or stem, leaf and root. Stem and leaves may be termed comprehensively as 'shoot'. Both differentiate from the shoot vegetation cone which they have in common. In this article I am introducing the first part, the stem or axis of the shoot.

Illustration 1: Parts of the Stem



Functions of the Stem

The stem develops either in the air, or in water or in the soil. Its growth is vertical to horizontal it can be the main axis or a branch. Stems have four main functions which are:

1. Support for and the elevation of leaves, flowers and fruits. The stems keep the leaves in the light and provide a place for the plant to keep its flowers and fruits.

2. Transport of fluids between the roots and the shoots in the xylem and phloem.

3. Storage of nutrients.

4. The production of new living tissue. The normal life span of plant cells is one to three years. Stems have cells called meristems that annually generate new living tissue.

Stems are composed of nodes, this hold buds which grow into one or more leaves, flowers, or other stems, Internodes, the segment of the stem between two nodes. (ill.1)

Plant Shape and Internodes

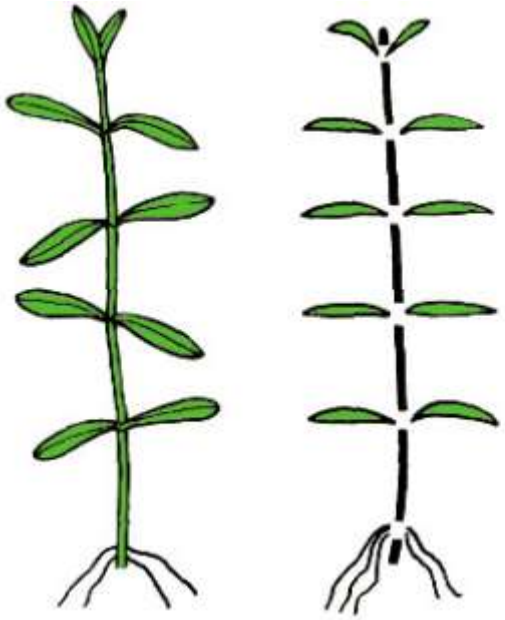
It is mainly the length of the internodes which determines the habit of aquatic plants (Ill. 1). With elongated internodes the stem is clearly visible and the leaves are positioned at some distance from each other. Hygrophila polysperma is an example of this type. With compressed internodes, the stem is not visible as its base is concealed by densely positioned leaves, e.g. Echinodorus and Cryptocoryne species. The length of the internodes influences the form of the plant.(ill.2)

Parts of the Stem

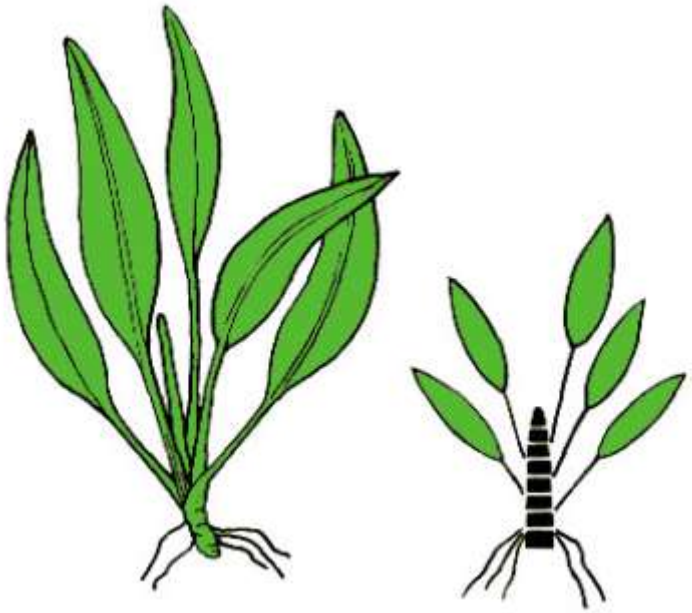
The Stem usually consist of three tissues, dermal tissue, ground tissue and vascular tissue.

The dermal tissue covers the outer surface of the stem, in aquatic plants it protects and control gas exchange. There is a thin (or no) cuticle, plant cuticles

Illustration 2: Stem variation of internodes



Elongated Internodes



Compressed Internodes

are a protective waxy covering produced only by the epidermal cells. The primary function of cuticles is to prevent water loss, thus most hydrophytes have no need for cuticles. The ground tissue usually consists mainly of parenchyma cells and fills in around the vascular tissue. It sometimes functions in photosynthesis. The vascular tissue provides long distance transport and structural support.

The angle between the leaf and the stem is called leaf axil. (ill.1). Potentially, each leaf axil is capable of producing a bud which may grow into a lateral shoot, leading to branching of the mother shoot. The degree of branching varies greatly from one species to another. As a rule, aquatic plants with elongated stems branch quite regularly thus those which are rooted in the bottom develop a bushy growth while the floating species grow into a dense mat. Aquatic plants with a compressed stem rarely develop lateral shoots.

Stem Branching and Flowering

Two different types of stem branching exist. In one type the top of the stem (vegetation cone) continues its growth provided it is not disturbed; all lateral shoots are then subordinate to the mother shoot, and flowers and inflorescences appear at the side of leaf axils. Flowering Ludwigia species is a good example(Ill.3).

In the other type, the vegetation cone of a shoot stops growing after some time; it either dies or loses strength after producing one flower or one interflorescence. The mother shoot is replaced and overgrown by a lateral shoot. Flowering Cryptocoryne species exemplify this type of branching (Ill. 4).

The vegetation cone (also Apex) is the length at the top part of the stem where growth carries out itself. In that part and at some distance from the tip undifferentiated divisible cells reach a state of permanency.

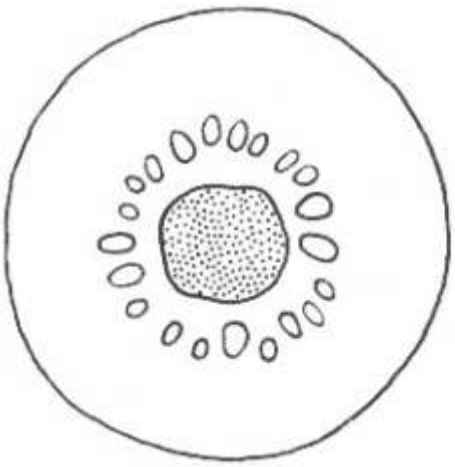
Illustration 3: Ludwigia

Luwidgia grow laterally as it flowers from shoots from varying positions along the length of the plant.

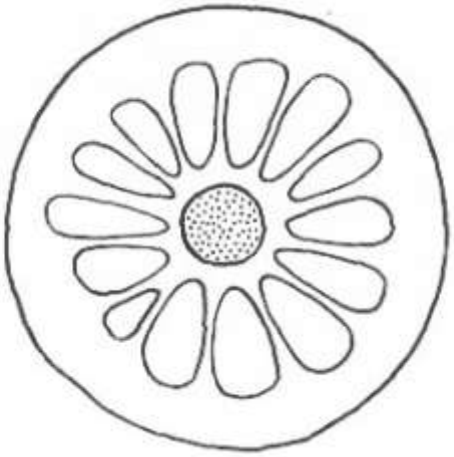
Illustration 4: Cryptocorynes

A Cryptocorynes flowers from a low apex near the base of the plant.

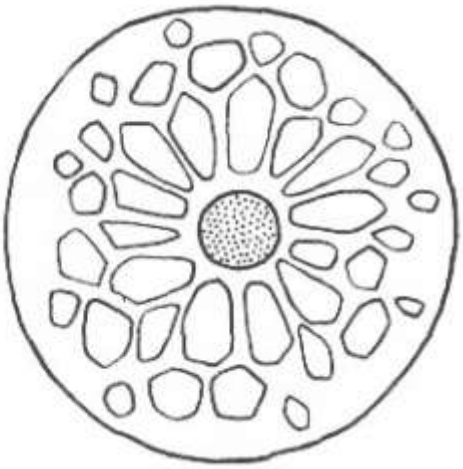
Illustration 5: Cross Section of a Stem



Ceratophyllum demersum



Myriophyllum spicatum



Limnophila aquatica

They take over certain functions, each of them being determined by their position in the stem. In the inner area of a stem there are bundles of conducting tissues called vascular tissues these are composed of more than one cell type and carry the water, organic and inorganic substances (ill.5).

Two main types of vascular tissue exist, the xylem and phloem. These two tissues extend from the leaves to the roots, and are vital conduits for transporting water and minerals from roots and sugar from leaves.

Cross Section of a Stem

The stem is a complex structure composed of several chambers and parts. Vascular tissue (dotted) and aeration ducts are shown in the cross section of submerged shoot axes. The following describes the main parts of stem:

- Apical (terminal) bud: The primary growing point located at the apex (tip) of the stem.
- Axillary (lateral) bud: A bud that develops in the axil of a leaf.
- Node: Region of stem from which leaves, or branches arise.
- Internodes: A region of stem between nodes.
- Leaf Scar: A mark indicating the precedent place of attachment of petiole or leaf base.
- Stipular Scar. A mark indicating former place of attachment of stipule.
- Lenticel: A pore in the bark.
- Prickle: A sharp pointed outgrowth from the epidermis or cortex.
- Terminal Bud Scale Scar Rings: A ring indicating the previous place of attachment of bud scale
- Vascular Bundle or Trace Scar: A mark showing former place of attachment within the leaf scar of the vascular bundle.

It is important to understand the anatomy of our aquatic plants to perfect our aquarium aquascaping. A solid grasp on how plants grow can effectively help the aquascapers trim and train plants to grow in a fashion that not only fits the aquascape but enhances the beauty of the aquatic plant.

References
www.cactus-art.biz/note-book/Dictionary
The Complete Guide to Water Plants - Muhlberg

Photos Courtesy of pdphoto.com

Finding Inspiration

By Roy Deki

There are many places in this world that have spectacular views and re-creating such views in an aquarium is just the first of many challenges for an aquascaper. I find inspiration for my aquascaping from many sources. My current aquascape idea came from a beautiful but rugged place called Big Sur California. The coastline along this majestic place is so spectacular that I just had to try to re-create it in an ADA 60p. This is just one example of how you can get inspiration for your next aquascape. Taking a piece of nature, whether it be a whole mountain range or just a small out-cropping of rocks is a great way to start an aquascape.

Another method of obtaining ideas is to view as many other tanks as you can; there are many great books out there to get ideas from. The person who has been the most influential in this hobby is Takashi Amano. Mr. Amano has published several books that display his work and also include names of plants and fish. I suggest that everyone have or at least view these beautiful books for inspiration. I often go to these books to look for new ideas. I personally do not want to re-create his exact design but instead I take small sections within one of his aquascapes to incorporate into my own design. I also find entering into or at least viewing contests is a great way to find new or unusual ideas. Nobody wants to copy another person's work but getting ideas from other designs is a great way to start a new layout.

The next method is using your own creative ideas and re-creating them into an aquascape. This may be the most difficult way for some of us. I think that my best aquascapes have come from this method. Envisioning a place you might find in nature but have never seen is very difficult but everyone can do it. Our minds can piece together images we've seen from magazines, books, television and other media.

Once I've developed the concept and place in my mind, it becomes an awarding experience to recreate my imaginary scene into a real life aquascape. Successfully completing such an aquascape gives you a great sense of accomplishment and personal satisfaction. It is a one-of-a-kind aquascape that came from within .

Whatever source you choose to use when finding inspiration is entirely up to you. The most important aspect of aquascaping is to have fun. So get out there and absorb as much nature as you can. Who knows, maybe the next award winning aquascape is right in your own backyard.

Stocking A Nano Aquarium

By Liz Marchio

Photo Credits:
Daniel Powell: lamp ocellatus, danio choprae, cory cat, kribensis
Matt Patrick: tiger shrimp, amano shrimp

The term "Nano" Aquarium is often used by hobbyists as a descriptor for small aquariums, usually under 20-gallons in total volume. Many "nanos" are 10-gallons or less. These tanks with their small footprints are ideal for kids and/or desktops. However, due to their size, stocking them successfully with fish and invertebrates can become problematic. Some simply find it too hard to resist adding "just one more"! So, let's talk about how to stock such aquariums with long-term success.

Longevity and Size

Many people think of fish as short lived animals. This is true for some species such as annual killifish (for example, *Nothobranchius* species), which live, breed, and die within a year in the wild. Fortunately, most fish will live several years and make great pets if properly cared for. Many fish will live considerably longer.

Larger fish such as Goldfish, some Cichlids and Catfish can live more than ten years. Koi, which are ornamental carp, can live seventy years or more. It is not just the tank busters that are long lived, however. There are accounts of *Corydoras aeneus* catfish, measuring a diminutive 3", living twenty years [site]. The point is: Take longevity into account. Part of the draw to keeping fish is to maintain them for their entire life.

Killifish may not live long, but they are productive during their time and are beautiful as well. These jewels may be ideal for children since their interests tend to wax and wane over time. It is important not to rope yourself into a larger growing, more long term pet if you cannot support it and its growth.

Goldfish are typically the quintessential child's first fish. However, this endeavor often ends in disaster for both the fish and the aquarist since these carp can grow large very quickly and consequently require copious amounts of work to properly maintain. In order to ensure your fish keeping experience is a positive one, steer clear of large species such as this.

"Fish Grow to the Size of Their Aquarium"

How many times have you heard this saying? The statement "it will only grow to the size of its aquarium" is true only because the fish become stunted due to confinement. The health of a fish confined in too small an aquarium will quickly decline leading to repetitive ailment and eventual death. Goldfish bear the brunt of this myth as they are often touted as the perfect bowl fish. A goldfish that could live ten years will only live one in such an environment. It is the responsibility of the aquarist to maintain appropriate volume of water for the fish species they intend to keep.

Simply put, know your limitations as an aquarist. If you cannot maintain a large species, don't buy juveniles of that species. Likewise, if you plan on growing out a large species in a smaller aquarium, maintain proper water quality and make a concise plan to upgrade their aquarium in a timely manner. Remember too that fish keeping's number one rule is to be an informed hobbyist. There are conscientious stores that will be honest about the care and adult size of certain fish, but there are also many stores that expect you to know what you are buying and thus will sell you anything you want. Buyer beware!

Stocking aquaria is usually the most confusing part of fish keeping. There is not a good way to simplify it. Most people will tell you that a freshwater aquarium

FISH TO AVOID FOR A NANO

- **Barbs:** Certain species of barbs if you're planning a plant-tank. Many love to eat plants.
- **Cichlids:** Lake Malawi African cichlids. These are not nano fish regardless of adult size. Their temperament is not compatible with small aquaria.
- **Angelfish**: These fish are always available quarter sized, but they get much larger and can get aggressive.
- **Line Breed:** Avoid line bred and selected color forms of fish such as powder blue dwarf gourami and fancy types of livebearers. Due to the line breeding used to develop these varieties they tend not to be as hardy as their wild-type counterparts and because of this they are often sick before you purchase them.
- **Painted Fish**: Painted and tattooed fish should also be ignored as possible purchases. Avoid fish that are "made" if you want to maintain the animal long term without illness or complications. This says nothing of the ethical and humane issues that the practice of tattooing, painting and dying fish brings about
- **Goldfish**: They are tempting buy because they are so cheap and cute when small but they can get big and are not community fish. Keep them outdoors in ornamental ponds for the best results.

can hold "one inch of fish per gallon of water". This is not a bad way to think of stocking a tank, especially when dealing with small fish but there are a few things to keep in mind. When you add ten pounds of gravel to a ten-gallon aquarium, it displaces a fair amount of water. When you add rock or driftwood, it displaces more water. The ten gallons you once had is now probably 10% less and thus cannot hold as many fish as the rule states. Some fish simply produce more waste than others.

Also it is important to take the mass of the fish into consideration. For example the body mass of one ten inch Oscar is far more than that of ten one inch neon tetras and so, length itself cannot be the only qualifier for stocking levels. Lastly it needs to be said that you should include your algae eating organisms within your stocking total. They are in fact producing waste like the rest of the fish.

The Curse of the Kit

Be aware that many "complete" kits are complete for what the manufacturer thinks you want or what they think you need. For example, there are kits that do not include a heater. Small aquariums are not able to maintain their temperature with a light alone.

A reliable heater is one of the most important parts of a complete tropical aquarium. There are very few cool water nano-sized fish available to hobbyists. Keep in mind that there are many different types of aquarium heaters. The best types are those that have a built-in thermostat and are fully submersible. Many beginners buy the $12 hang-on the tank heater only to break it during their first water change. Instead of making that mistake, invest in a more expensive and reliable heater.

Most aquarium kits come with sufficient filtration. The fun part of fish keeping is realizing where you can simplify. If you make your own kit, you can use anything from a sponge filter to a wet-dry filter. The most popular choice is a hang on the back filter power filter, which unlike the hang-on heaters, are very reliable. One the most interesting way to filter an aquarium is by employing live plants to uptake the fish's metabolites. You can strike a balance between the plants and fish where there is no need for outside filtration, however, water changes will still be necessary to maintain good water quality. This is a more advanced technique and will require some tinkering to get it right. Aquarium keeping is itself an experiment when you start out, so learn from your mistakes and take responsibility for your pets.

GREAT NANO FRIENDLY FISH

- **Sparkling gourami** (*Trichopsis pumila*): Beautiful and rainbow colored; grows to about one inch.
- **Peacock Gudgeon** (*Tateurdina ocellicauda*): Small goby, peaceful and colorful.
- **Threadfin Rainbow** (*Iriatherina werneri*): Flares amazingly.
- **Blue Eyed Rainbows** (*Popondetta furcata, Pseudomugl signifier*, etc): Amazingly colored rainbows that look like helicopters when they swim.
- **Rasboras** (*Trigonostigma espei,T.heteromorpha,Boraras maculata,* etc): Colorful schooling fish.
- **Honey Dwarf Gourami** (*Colisa chuna*): Larger nano fish, peaceful.
- **Giant Dwarf Gourami** (*Colisa fasciata)*: Multicolored gourami, peaceful.
- **Paradise fish** (*Macropodus opercularis*): Pugnacious but extremely hardy.
- **Yasuhikotakia** (*Botia*) sidthimunki: Small scavenger; schooling.
- **Danio choprae**: Oddball Danio, orange colored.
- **Danio species**: Fast moving and schooling fish; many new species on the market other than the die-hard Zebra Danio.
- **White Could Mountain Minnow** (*Tanichthys albonubes*): Peaceful and can tolerate low temps.
- **Chela species**: Danio-like and easy to keep.
- **Swordtails** (*Xiphophorus sp.*): Gaudy and breed able. Look for wild types such as Greens (*X. helleri*) or Montezumas (*X. montezumae*) for the best results.
- **Endler's Livebearers** (*Poecilia wingei*): Small streaks of color; great for a ten gallon.
- **Killifish**: Simply amazing coloration; productive and entertaining.
- **Rice fish** (*Oryzias latipes*): Eggs stick to their anal fin, hardy.
- **Neon tetra** (Paracheirodon innesi): Staple plant tank fish.
- **Cardinal tetra** (*Paracheirodon axelrodi*): bluer than the neon, same temperament/care.

Shrimp as Pets?!

Who would have thought that shrimp, those delicious denizens of the sea, could be good freshwater aquarium pets? Shrimp, such as *Neocaridina heteropoda*, the Cherry Red Shrimp, stay small and can be housed in groups or in community tanks with small-mouthed fish. They are also, most importantly, easy to keep and great at eating algae. Although invertebrates such as shrimp can be difficult to understand, once you've tried them and got them to live they are quite easy to maintain and breed. By difficult to understand, I mean that many people treat all aquatic life the same. Invertebrates cannot be thought of as fish. They cannot withstand medications or large swings in pH or temperature as many well acclimated fishes can. Medications for "Ich" containing elements such as copper will quickly kill all invertebrate life.

There are a great many shrimp species now available to hobbyists. There are tropical and cool water species, so make sure the proper choice is made. Crystal Red Shrimp and Tiger Shrimp are both commonly kept cool water shrimp. Keeping them in warmer water can result in shortened lifespan.

Note: Keep in mind that most small species are schooling fish and do best when housed with several of their own kind. While "one of this, one of that" stocking may be fun, it will not give you good long-term results.

- **Green neon** (*Paracheirodon simulans*): Smaller cousin to the neon.
- **Apistogramma**: Dwarf cichlid genera; fantastic morphology and behavior.
- **Pelvicachromis**: African riverine dwarf cichlids; easy to breed.
- **Mikrogeophagus**: AKA Rams; easy and beautiful. Gold, blue (*M. ramerezi*)or Bolivian (*M. altispinosa*)
- **Corydoras**: Pygmies make great nano scavengers; schooling.
- **Guppies** (*Poecilia reticulata*): remember to pick a strong strain.
- **Bettas**: there's more to them than the *B. splendens* you see in bowls. Check out other species such as *B. smaragdina, B. macrostoma* (advanced), and *B. foerschi*,
- **Tanganyikan cichlids** (*Neolamprologus multifasciatus, Lamprologus ocellatus*, etc): The shell-dwelling fish need alkaline water and decorative shells to hide in.

HARD TO FIND OR DIFFICULT TO CARE FOR SPECIES:

- **Taenicara candidi**: dwarf cichlid, fantastic coloration and finnage.
- **Licorice gourami** (*Parosphronemus sp.*): tiny labyrithfish; gaudy.
- **Indostomus paradoxus**: the "paradoxfish"- species only aquaria! A freshwater elative of the pipefish.
- **Aspidoras sp**.: small genera of Cory-like catfish. More elongated body.
- **Pencil fish**: *Nannostomus mortenthaleri*, the Coral Red Pencilfish, are the pinnacle of pencilfish keeping.
- **Puffers** (Carinotetraodon sp., et al): cute and personable. Species only aquaria! Carnivores.
- **Bumblebee Gobies** (*Brachygobius sp.*): brackish and freshwater species available. Stay small and some school.
- **Dicrossus species**: the checkerboard dwarf cichlid; subtle yet interesting.
- **Nanochromis**: sometimes difficult to find; African riverine dwarf cichlid.

Bacteria: The Most Valuable Life in Your Aquarium

The nitrifying bacteria coating the filter media as well as every other surface of your aquarium for that mater are the most critical life form you maintain within your tank. They are the foundation of any healthy aquarium. Their microscopic stature often causes them to be overlooked. These colonies create the perfect ecosystem to house fish and invertebrates. They do this by breaking down the toxic wastes produces by the fish and invertebrates into nitrate which is removed by plants, algae, and water changes.

It is very important that anything you do in, around or to your aquarium does no harm to your nitrifying bacteria. For example, if there is a disease issue in your aquarium, you need to be careful of what medications you use as many of them will kill off your nitrifying bacteria colonies. Doing so will cause severe damage to the balance of the aquarium. Shaking the balance of your aquarium at its foundation will be difficult to rebound from without casualties. Take care of your bacterial base and build your dream nano aquarium from there. Good luck!

Aquascape In Fo

An Interview with Nano Aquascaper Antonio Nikolic

Although small in size, "Natural Mystic" captures nature at its best.

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Q: Tell me about yourself and how you got into planted aquariums.

A: My name is Antonio Nikolic. I am 24 years old and I am from Croatia. I started with this hobby almost 2 years ago, when I first came across internet photos of planted tanks created by the master himself, Mr. Takashi Amano. As I searched for more and more aquascapes designed by him, I became more inspired (obsessed) with planted tanks. His artistic work amazed me so much that I started looking at aquarium plants and planted tanks in my local area.

From the very beginning, small nano aquariums attracted my attention. They were small, intimate aquascapes that were affordable to create and posed a great artistic challenge. My first tank was 30 liter aquarium designed with some hardy aquatic plants and a small school of *Rasboras espei*.

Q: Describe how you developed the hardscape for your aquarium.

A: The hardscape consist of rocks and twigs placed in the midground. I took great care to place the tree branches within the substrate so that they would appear as natural as possible. I prefer the look of wild nature layouts more then the manicured garden design. I wanted to make the branches seem like they fell genuinely. As time passed I imagined the twigs becoming overgrown with plants to form a perfect home for new aquatic life. I used rocks helps to anchor the tree branches in the substrate, and as the plants grew in the rocks became nearly invisible within the aquascape.

Q: You definitely achieved the effected you wanted with the hardscape placement. What inspired the initial vision of your layout?

A: I found inspiration for this layout from the local thicket near my home. As I was searching for new decorative materials for my aquarium I saw several aspects of nature and wood pieces I liked. I couldn't think of anything better to use to create my slice of nature then "real" materials found in an actual natural environment. Knowing that the pieces I use came from the place of inspiration makes my aquascape more authentic. I think using real life materials embodies the spirit of nature in every aspect the design and layout. For this reason, I named the aquacape "Natural Mystic" just like the Bob Marley song.

Q: With such lush growth from your plants what is your fertilization method?

A: From the date of setup nearly six months ago I didn't have a routine in fertilizing. The first month of setup, I didn't even add any fertilizers and just did regular 50% waterchanges about every two days.

This past month I began adding in fertilizers more regularly because I noticed some plant deficiencies. I have started dosing microelements and adding potassium, and experiment with the Perceptual Preservation System (PPS-Pro) method. I am now dosing; 1.5 ppm KNO3, 0.2 ppm PO4, 15 drops Seachem flourish and 7 drops of Easy-life Easycarbo, every day.

This miniature aquascape "El Naninjo" is one of Antionio Nikolic's smallest aquascapes to date.

I have more nutrient dosing experiments to observe before I get into a regular routine of dosing. The only thing routine in my schedule is the 50% waterchanges about twice a week. Since every tank is different I have to figure out what fertilizer values works best to grow the plants in the color and condition that I envision.

Q: Let's talk plants and aquascaping. How do you keep up the plant growth and maintaining the aquascape layout?

A: I have to trim every 10-12 days to keep the plants from looking overgrown and ruining the hardscape effect that I worked tirelessly in designing. In this layout I have used more than 15 different species of plants, 7-8 species as larger (main) groups, and others plants as accents.

The midground consist of slow growing plants including *Monosolenium tenerum, Anubias barteri var. nana* 'Petite', *Taxiphyllum alternans, Fissidens fontanus, Microsorum pteropus* 'Windelov', *Microsorum pteropus* 'Narrow'. These are attached to rocks and twigs to anchor them down. The slow growing midground makes up the densest part of the aquascape, and doesn't require much attention. Since I don't have to touch the midground plants, the focus point of the aquascape keeps its overall shape, even when I have to trim the background plants.

The stem plants I placed in the background need the most frequent trimmings. For the background, I like to use fine leafed stems placed near the rear of the glass. This stem placement in the back achieves a greater depth perspective for the viewer by drawing the eye to the colors and finer leaf shapes that contrast distinctly with the midground plants.

Q: Tell me some of your greatest challenges with the aquascape?

A: My greatest challenge was been keeping the lush coloration in red stem plants. I kepted on getting stunted growth from the stems of *Rotala wallichii*. After trimming them, the bottom part rearly throws out side shoots. After struggling to get it to grow the way I wanted, I decide to replace it with *Rotala rotundifolia*. I'm happy that I did that. After adding in a double dose of Flourish regularly, the plants grew with great coloration.

Q: Now that you have overcome your challenges and completed this aquascape what other projects do you have in stored for the future?

A: Well, I'm working on several larger tanks right now, and I'm waiting for the right moment to display them. I'm looking forward to getting a new digital camera so I can truly capture the beauty of the tanks from my perspective.

I will always have one of my smallest aquascapes "El Naninjo" to keep me busy. Nano aquascapes are a challenge and pleasure to create. I sometimes think after I'm done, "Wow I did that?" It is my hope to inspire and add to the creative "think tank" so that other aquascapers (new and old) can push that envelop for aquatic aquarium designs.

“Natural Mystic”

Tank Dimensions: 38 x 18 x 21 cm
Volume: 15 liter
Lighting: MH Giesemann Megachrome tropic 70W
Photoperiod: 8 hours
Filtration System: Resun canister filter 200 l/h
Water Parameters: pH 6.3 - 6.6, KH 5, GH 7, temp. 24 'C
C02 Supplementation: Pressurized CO2 with solenoid 7.5h/day
ON - 30 minutes before the light turn on
OFF - 1 hour before the light turn off
Diffusion Method/Rate: Glass Diffuser 1 bubble/sec.
Substrate: Bottom Layer — Potting soil, volcanic gravel and laterite (2-3 cm)
Top Layer— Quartz gravel 1-3mm sized granulation (2-5cm)

Plant Selection
Hemianthus micranthemoides
Hemianthus callitrichoides
Rotala rotundifolia
Ludwigia arcuata
Anubias barteri var. nana 'Petite'
Monosolenium tenerum
Hydrocotyle sibthorpioides
Hydrocotyle microphylla
Taxiphyllum alternans
Fissidens fontanus
Microsorum pteropus 'Windelow'
Microsorum pteropus 'Narrow'
Myriophyllum mattogrossense
Mayaca fulvitalis
Lindernia rotundifolia
Lilaeopsis Nuova-zelandie
Riccia fluitans
Eleocharis parvula
Didiplis diandra

Fauna Selection
Celestichthys margaritatus
Neocaridina heteropoda var. red

Aquascaping with Sk

By Steven Chong

No matter the art form, an artist would do well to keep a sketchbook. Sculptors, photographers—many artists of many disciplines keep this trusty tool by them at all times. An aquascaper is the same in this regard. It is an incredibly valuable tool for visualizing pieces, tracking progress, and developing one's ability overall. Even if you have very little drawing experience, a sketchbook is incredibly valuable.

Value of the Sketchbook

A sketchbook is not just a plaything to scribble around in. Artists use them for a variety of tasks of the creative process. A sketchbook is a visualization tool that helps every step of the way. When you come up with ideas, you write them in. When you can't visualize something, you draw it in. Even when you do visualize it, you draw it in so it will be there when you need it.

Especially with 3D arts such as sculpting and aquascaping, scribbles in the sketchbook are valuable for figuring out proportions, spacing and positioning that the actual piece will have when it is put together. Sculptors like Michael Angelo have left many, many drawings—and many of stunning quality—that were never intended for the public eye. These drawings though would be the foundation of the designs for the final sculptures of such artists. From the vague form, to the specific

ketches

proportions, to the tiniest details—drawings can develop in a sketchbook, and the total idea of the final piece will first be realized on paper.

This same process of visualization applies to aquascaping. Taking the time to sketch, one will piece the composition together; but the sketches will continue to help with piecing together how colors should move, how textures should be placed, and how the entirety of the work will come together. Or not. The sketchbook does not have to be used in anyway an artist does not want to use it—no one sees it, no one judges it. It is a place of refuge and freedom for the artist to do anything he wants. Be crazy, stupid, put any line or any content. The things one includes can be completely off topic or intensively focused. The important thing is that the way we think and work has a place to develop that does not just disappear into the recesses of memory to be forgotten or left undeveloped or un-followed.

Speaking of following, the sketchbook is a great way to track one's progress. Whatever we do in it, the sketchbook reflects what we were doing/ thinking/trying/following at the time where we worked in it. Whether they resemble the finished pieces we make or not, the sketchbook shows the flow of our development. This is valuable to an artist for a number of reasons.

First of all, confidence is important and it can be great when an artist can look back and see how he has improved. In his development there will always be tough times, halts and slows where little will improve. Looking back at the old times reflected in the sketchbooks can be a big help to remind us of how we have grown. But then again maybe not.

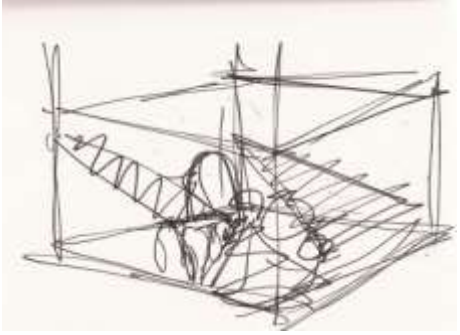
Sometimes we loose our way, and instead of looking back at old work to see how we have improved, we look back to see where we lost our way. Though it is important to always keep moving forward, there are still many times when an artist says he wants to "go back to his roots." Sometimes we loose sight of the objectives that are important to us. Sometimes we forget where it was we wanted to be, and what we wanted to achieve. The sketchbook isn't only drawings—its thoughts we thought, feelings we felt, and dreams we dreamt. It ties us to our past, and can remind us of the places we still want to go.

Using a Sketchbook

How does one use one's sketchbook towards his goals? This depends from person to person, but for the sake of example I can describe my methods for sketchbook usage:

Information Collection

One of the sketchbook's best uses is as a place to store ideas. To artists, our ideas are the lifeblood of our work, so being sure to remember them when we have them is very important. It does not have to be elaborate—just a scribe of words or drawings in the sketchbook you use a lot



can be a big help in remembering ideas later on. Once it is in the sketchbook, you will at least reference back to it, and so ideas in the sketchbook develop as well. Once they are in there, an idea that was a mere scribbling on one page may find itself a full-scale intricate plan a few pages down the road.

Ideas in the sketchbook do not have to be fully formed. The important thing is that you have them down. Even if it's just the basic framework of an idea, rough and sketchy—it does not matter. Even if it is only a general idea and you have only words in your head with no images to go with it, write it down. The idea will develop as it sits in your sketchbook. Even if it does not, at least it is there. You can always buy more sketchbooks, but you do not know when the next time you will remember the idea. Even if you, the next time you remember an idea, it will be different from before because you will be a different artist than before. Try to keep track of all the ideas you get.

When you are walking down the street and you see a very pretty tree, if the feeling of that

STEP 1: Aquasketch

STEP 2: Designing the Hardscape

scene makes you pause, remember to do something about it in your sketchbook. Even a few words, even a bare sketch is good. When you wake up from a beautiful dream, quickly flip open the book (sitting next to your nightstand) and sketch/write the general contents of it down before it fades. When thinking about an old idea and a new add-on to it occurs to you, go to the sketchbook and revise the idea. Recording ideas also forces you to put ideas into at least some form of expression, which will help develop your thinking, artistic intuition and insight as well.

A sketchbook is a place to record and develop who we are as artists, and so it is also a great place to keep things that influence us. Bits of clippings of writings that inspire you, cuttings from magazines or print outs of work from other artists—these are things that one would do well to paste into the sketchbook. I like to take print outs of landscape photos in particular and keep them in my sketchbook.

One may think that these types of materials are not our own development of our ideas, but in actuality they are. No two people will ever see the same picture despite looking at the same photograph. Everyone interprets things different. Taking the barrage of images and ideas from the world, and reinterpreting them to what is important to us makes each idea that we come up with very unique.

A great artist knows the moment he takes an idea from elsewhere, even if someone else used it, that idea is his own now. He is certain to do it in his own way. Being an artist is also being able to recognize inspiration outside him that will lead him forward. These influences from outside sources are important to remember as our artistic talent branches away from them, and our art becomes our own.

Don't doodle, *Draw*!

A former art teacher of mine once complained to me that many of his students were too hesitant in their drawing. If they draw a line wrong, and they new it was wrong, they would leave it anyway because "they did not want to ruin the drawing." Forget ruining drawings. Who cares if a drawing is ruined? It is far from the end of the world.

If there's a line there, draw it in. If the line is wrong draw it in again. Draw over it! Do not hesitate because you care about how neat or pretty your drawing or paper is. Neat and pretty count for nothing, especially when it comes to drawing in the sketchbook. Save that for the photography of the finished aquarium. When playing with a layout idea, draw it in again and again in order to get right proportions and parts. Draw on your paper until you get it right.

Step 3: Naming your Aquascape—"The Hau Coast"

There's a technique called "blocking in" that is similar to this flurry of sketching. When "blocking in," the artist puts the most important information on the paper first, least important last. Most important being locations of points, proportions, angles, and least important being contours. When blocking in, don't worry about "line drawing," that is trying to draw the outline of whatever it is you are drawing. Start with the location of points—the top of a rock, the far left side of the sand, the lowest point of the stem plants.

Instead of contours, draw in the important points first: where they are, and how they are located compared to each other in space. Draw straight lines between the important points to measure distance, angles and other important information. Measure things on paper. What is the best-looking angle and width between a branch and the rock that supports it? How is the curvature of the stem plants relative to that of the hardscape? How wide is the branch proportionately? Where should negative space be, and what shape should it have? These types of questions should be your foremost concern when blocking in, and draw many lines, draw over lines, to find the ones you like most. This is like "building a drawing," as opposed to doodling.

Only when the important information is on the paper should you worry about making the actual outlines of things, or trying to make the drawings look pretty. You could even save that for another page. It is definitely less important than getting proportions and angles right. This is especially true for aquascape planning when no one will ever see the drawing, and the important thing is the finished aquascape. The sketchbook is the place for the initial set-up of idea work, and the drawings in the sketchbook should reflect this. Of course getting an idea of what a finished tank could look like in one's drawings is important too, but it is best to build into that.

Keep it with you, and never throw it away

All this is pointless if you do not carry your sketchbook with you and aim to use it. Keep it by your bed when you sleep, on your desk if not on your person in other hours. It is important that whenever you want to use it, you have it even for quick jottings. The sketchbook will be most valuable if it is treated like a living thing that grows as its owner grows. Keeping the sketchbook is important as well. As one grows, one may want to look through old work. Following one's own development will help one to reach even greater improvements. Instead of wandering about, the sketchbook helps one stand on one's own shoulders, to improve on what he has already done.

Methods to Prevent ALGAE

By Aziz Dhanani

In my quest to gain the knowledge necessary to set up a beautiful planted tank, it was evident in my search that many people gave up on planted tanks because of massive algae blooms and continuous algae issues. The struggle to contain it and permanently eliminate algae was simply too much, and the would be aquascaper gives up on planted aquariums. Are algae wars magically selective for one person, and not another? Of course not. Yet the truth remains, there are some who seem ideal algae aquarium growers, and there are those lushly planted aquascapes without a signal sign of algae. How does one keep an algae free aquarium?

It is generally agreed upon in the aquarium world that the best way to prevent and manage algae was through proper chemical fertilization of a planted tank including Carbon Dioxide (C02) injection. When supplemented properly, these chemical injections promote a balance and stable tank that would not only facilitate healthy plant growth, but also create an inhospitable environment for algae. However, with each aquarium being different from home to home there seems to be no true "proper" fertilization method that can achieve the same optimum nutrient balance needed to grow lush plants without the algae too. I felt that there had to be other methods that could be simultaneously employed with the proper balance philosophy to help further deter algae.

The focus of this article is to recount my experiences in testing a combination of anti-algae measures. These algae repulsion methods include using barley straw, Japanese Marismo Balls to absorb excess nutrients, *Eigera densa* to ward against blue green algae, and disrupting algae growth with burst photo intensity and a variable photo period. I will employ each of these methods to see if algae grows in my aquarium. Let's discuss the techniques.

1) Barley Straw Repulse Algae

According to a study by the Integrated Approach to Crop Research Centre for Aquatic Plant Management the use of barley straw placed in a mesh in a pond or aquarium will release chemicals, specifically hydrogen peroxide as it decays under intense light. Low levels of peroxide are said to be hinder and prevent algae growth.

2) Moss Ball Heavy Eaters

Japanese Marimo moss ball are high consumers of phosphates. As the moss ball grows, it out competes algae for phosphates and other nutrients. With limited phosphates available in the water column, algae is observed to have a difficult time gaining a foothold in the planted aquarium.

3) *Eigera densa* Chemicals

Eigera densa is believed to secrete an antibiotic substance that prevents blue green algae (which is a type of bacteria that can dominate an aquarium).

4) Noon Burst Lighting

By creating a cycle of a four hour photo period of light, few hours of no light, and then another four hour photo period, algae has been observed by hobbyists to have an adverse reaction to this lunch time siesta of light. The reasoning behind this has not been tested thoroughly enough to yield a concise result, however plants are know to be a higher organism and therefore can adapted more so than algae to varying lighting conditions.

Undergoing the Experiment

In July 2007 I experimented with these algae repulsion methods in a 10 gallon tank. I first wrapped a piece of barley straw within a pantyhose mesh and placed it close to the light and filter out flow. Secondly, to help consume excess nutrients, I decided to plant heavily from the start with marimo moss balls and *Eigera densa*. Lastly, I configured the lighting which consisting of 30 total watts for a noon burst type photo period. One tube was timed to come on for 5 hours, with the other tube time to come on after 5 hours so that both tubes were on for a total of 10 hours. No heater was used and the tank temperature was 25-29 degrees Celsius. I started off with Perpetual Perseveration System (PPS-Pro) fertilization scheme. PH was 7.0.

After four months of continuous fertilization using PPS -pro, signs of green spot and blue green algae appeared. To combat the algae, I increased water changes to twice a week. I also began injecting CO2 through do-it-yourself C02 injection and a Hagen Submersible Filter to diffuse the CO2. In less than, two weeks, the tank exploded with plant growth forcing me to do a major trim of the plants.

My Algae Repulsion Results

There were no indications of black beard algae, black brush algae, green dust algae, or diatoms for a while. But despite having the moss balls and other algae repulsion methods in place, blue green algae did appeared and green spot algae began taking over some plants. In order to eliminate the blue green algae, I dosed erythromycin as per package directions and eventually it disappeared.

After a while I noticed some plants began doing poorly like *Ludwigia repens* 'rubin' and *Bacopa monnieri* (money wort) but most plants remained healthy with a slow growth. In an attempt to address plant growth issues that I felt stemmed from nutrient deficiencies, I decided to switch from PPS-Pro and try Tom Barr's Liquid Estimative Index (www.barrreport.com).

At first, I dosed Seachem Flourish and calcium sulphate to supplement the already high nitrate and phosphate levels, and low iron levels in my tank. However this appeared to make no difference in plant growth, so I began dosing ¼ teaspoon of Kent Pro Plant and ¼ teaspoon of Seachem Iron on Monday, Wednesday and Friday; and 6 ml of Tom Barr's Liquid EI solution combined with 1.25 ml Seachem Flourish Comprehensive once a week after 50% water change. This resulted in a major growth explosion in two weeks.

Despite the algae repulsion methods, algae still appeared. Ultimately this experiment confirms that finding the optimal fertilization scheme is key to keeping aquatic plants healthy.

Planting and Caring for Nana Petite (Anubias barteri

by Stan Chung

Anubias nana 'Petite'

Nicknamed by hobbyists as "nana petite" this neat little plant is one of my favorite low maintenance mid-ground plants. It's not demanding and fills up the little empty spaces in between nooks and crannies. Best of all this tiny plant can be moved around since it's best tied onto small rocks or small pieces of driftwood. This plant has great aquascaping potential just about every aquarium, including nanos.

Planting

Break into smaller branches of 1.5-2.5 inches. Plant by tying to rock or wood blocks with nylon or twist tie-plastic coated wires.

These can be removed once the plant has rooted onto the rock or wood securely. I normally just leave it especially since the thread will eventually dissolve or become hidden. Makes sure you space the rhizomes of each plant within about an inch of each other to create a fuller look as it grows.

Algae Treatment

Anubias can be prone to algae, but there is an easy way to remove it from the plant. Trim the infected leaves, and soak in 1 part bleach to 20 parts water. The thin filaments of the algae infesting the plant will start to whiten. At this point remove the nana and rinse in some fresh water with a few drops of anti-chlorine and rub each leaf off. Rinse again and your nana's will be looking great again!

var nana petite)

Maintenance

Like most anubias, nana petite does not require much attention. Regular water changes, and the occasional dose of fertilizers will keep this plant healthy. I recommend trimming once a month to allow new leaves to grow.

Nanas are susceptible to black brush algae [BBA], and Green spot algae [GSA]. This can be an eyesore but as mentioned previously, it is easily remedied.

Trimming & planting

trim gangly rhizomes to ~2" stalks

arrange cuttings on tray

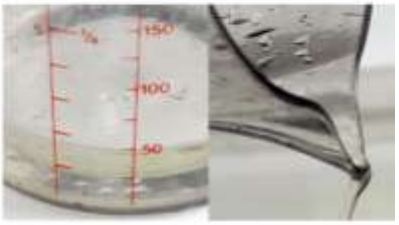
use rock or wood and fishing line

tie the rhizomes apart to allow space for growth

Plant in the shade to minimize algae problems!

Algae treatment

trim infected leaves



mix bleach/water 1/20 parts

soak plants and rock together

remove when hair algae pales

water + anti-chlorine and rinse

rub leaves off mushy algae and rinse


AquaScaping
World