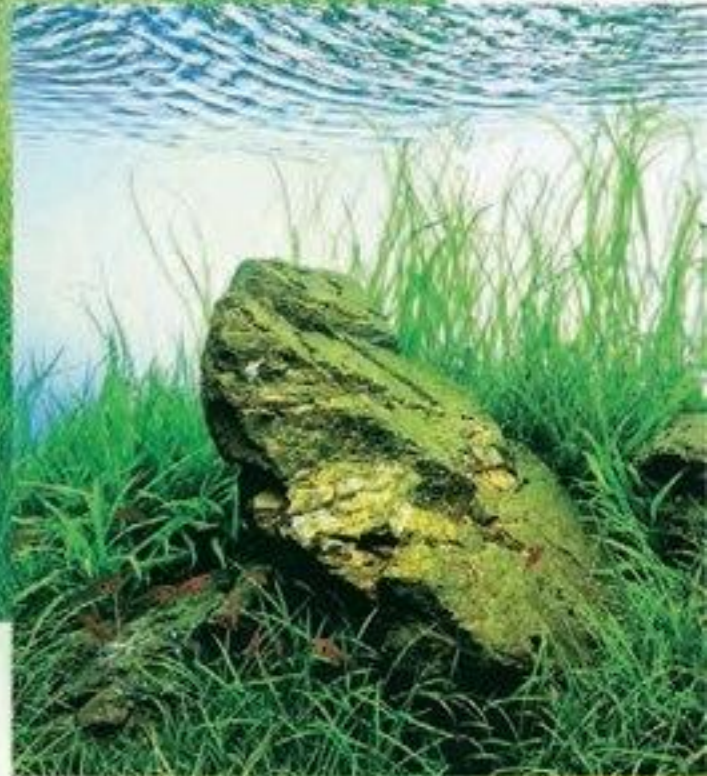


Nature Aquarium information magazine

AQUAJOURNAL

ADA
aqua design amano
APR.
2012

Special Feature
Absolutely
Useful
Expression
Techniques





NATURE AQUA

To know Mother Nature is to
We recreate the natural eco-system
a better understanding of





AQUARIUM GOODS

to love her smallest creations.
m in our aquarium, which leads to
of the global environment.





Travelling across Japan

Vol.41 Sado, Niigata, Japan



ADA NATURE AQUARIUM LAYOUT GOODS
Discover the art of natural representation

West Africa

ADA NATURE AQUARIUM LAYOUT GOODS

ADA layout materials are created to raise the completion level of your Nature Aquarium layout. Various types of natural representation are possible by using appropriate materials for the layout.



WOOD TIGHT



MOSS COTTON



RICCIA LINE



RICCIA STONE

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The Sea of Japan and Flowers of Waves (Sado, Niigata, Japan)

I visited Sado Island for TV program shooting when a cold wave came at the end of December last year. In the Sea of Japan in midwinter, we can see a phenomenon called "flower of waves", where wild waves break into foam by strong winter wind. White flowers of waves stirred up in intense wind are a wonderful winter feature in the Sea of Japan. The name "flower of waves" sounds beautiful, but its white foam is in fact produced by dead plankton.

Shooting data /Ebony 8x20, Super-Symmar 210mm XL, 1 sec at f45, Velvia 100F 8x20 inch format film
Text and photographs by Takashi Amano

AQUA JOURNAL

APRIL 2012

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Special Feature
**Absolutely
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Expression
Techniques**

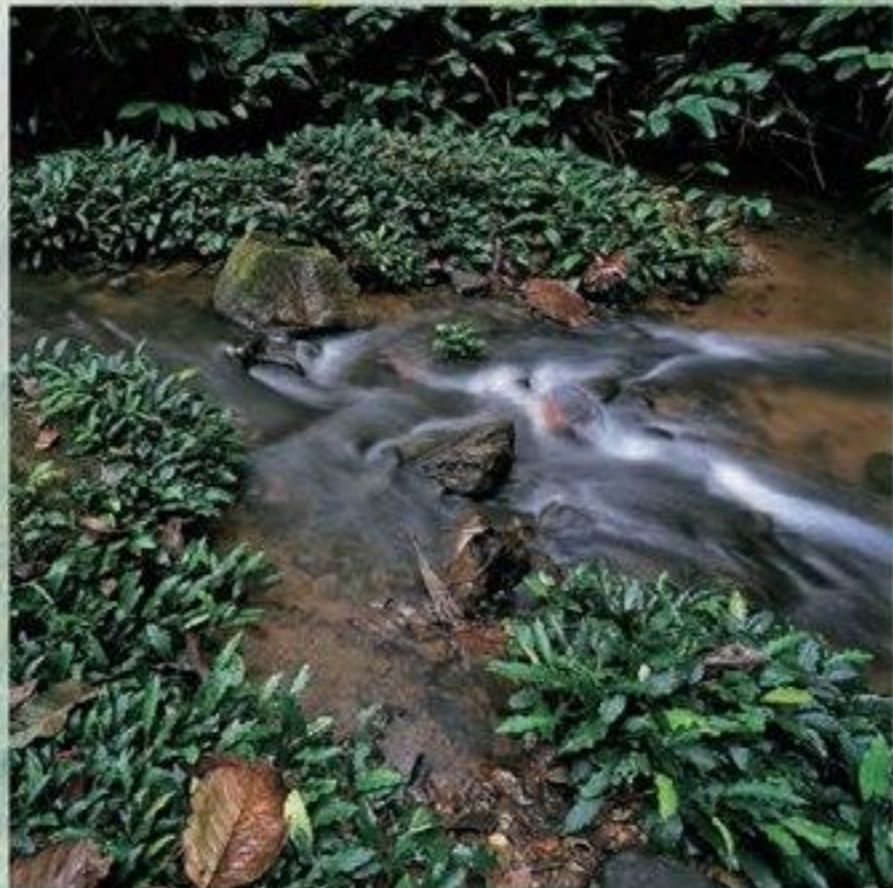
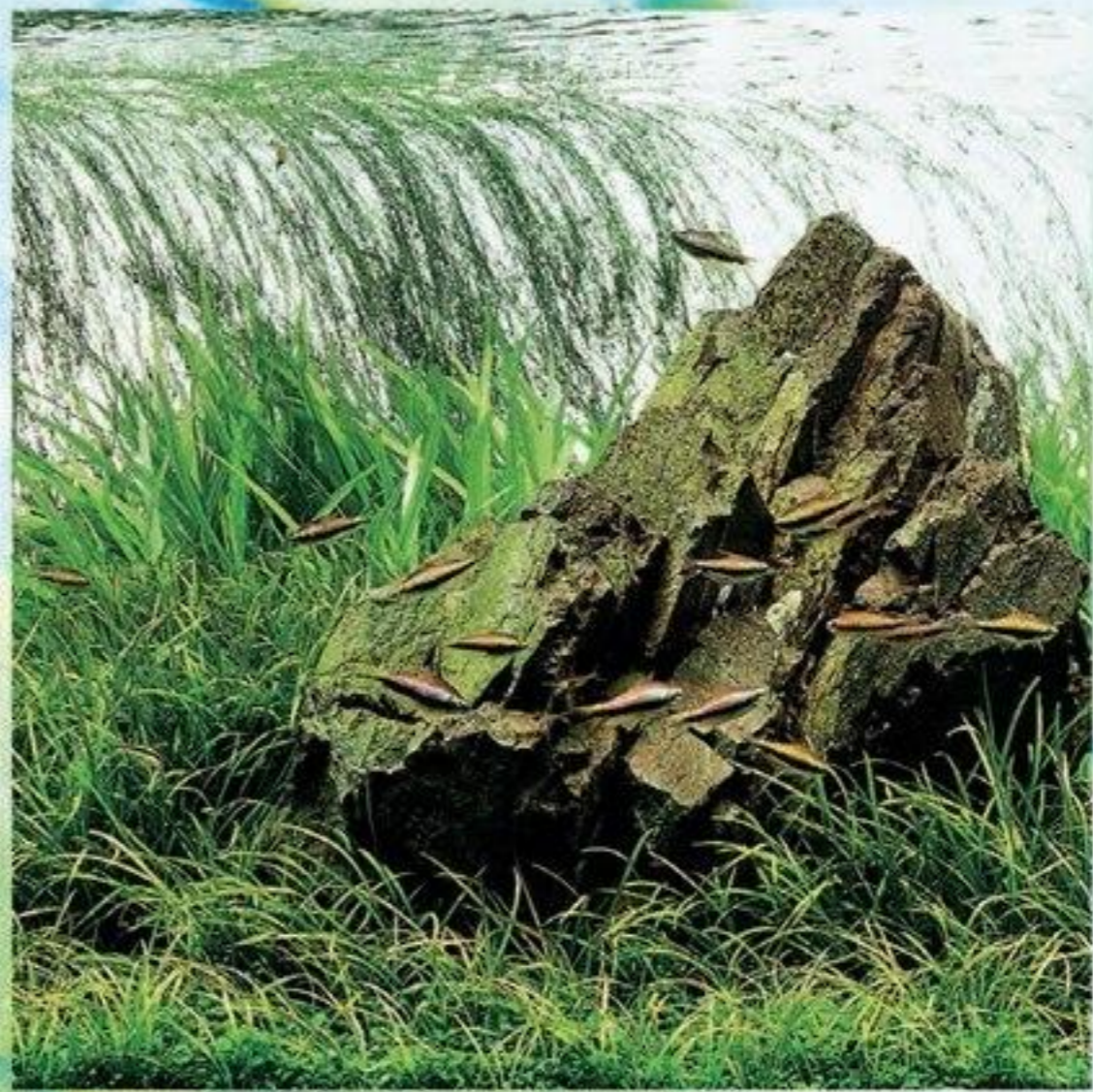
*Photographs by Takashi Amano
Text by Masatoshi Abe / Tsuyoshi Oiwa
Translation support by Laura Findley*

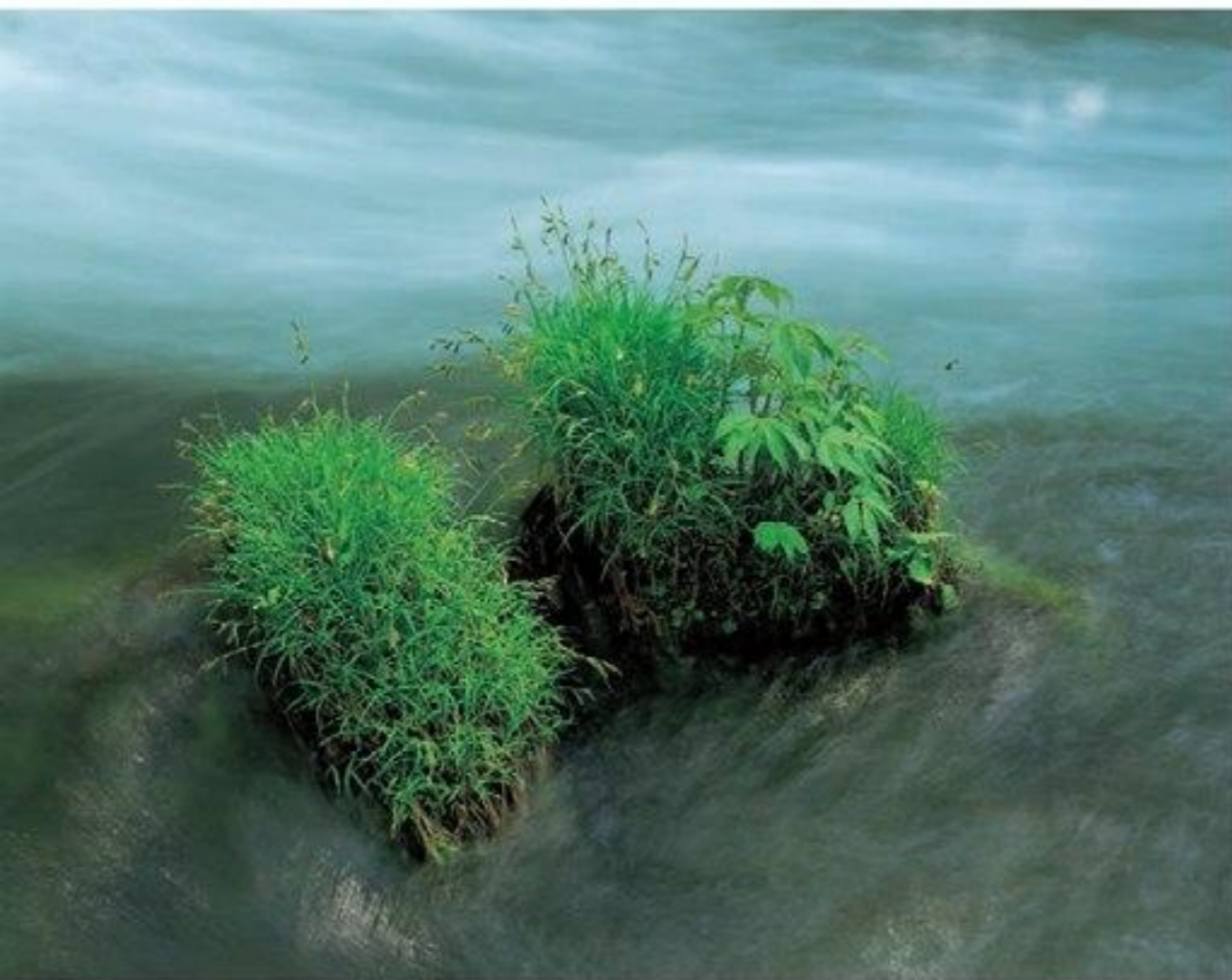
Nature shows us many different faces.

With the motto "Learn from nature", the Nature Aquarium discovers tips for aquatic layouts from nature and tries to re-create a natural aquascape in the aquarium.

The Nature Aquarium uses a wide variety of expressions, ranging from growing ferns and mosses, to sensory expression leading to the achievement of wabi-sabi.

If you want to create a beautiful Nature Aquarium, you must acquire the point of view that enables us to learn from, and be inspired by nature to help us create an original layout.





You can find expression tips not only in big nature but also in small nature.



Landscape photography is good training to appreciate an attractive slice of nature.

Expression Tips Using Inputs from Nature

A lot of information about nature is required to make a natural expression in the layout. Looking at pictures in photo books and magazines is also a way of collecting information, but you can gather much more abundant and detailed information by putting yourself in nature and seeing what surrounds you there. Taking photographs of nature is a very effective way to capture and appreciate vivid and impressive information. In nature, there are countless tips for layout expression; you just need to learn to see them!

Look at
Nature

IN
PUT

NATURE



Enhance
Your
Expressions
OUT
PUT AQUARIUM

Expressing Rules of Nature in Layout

In nature, every stone and driftwood exists according to the principles of physics. At a glance, they may seem unstable, but in fact, they all sit in a stable position at a stable angle depending on the gravity, water flow and slant/stability of the ground around them. In an aquarium layout, too, a natural and dynamic composition can be made by following the rules of nature, and likewise, a natural ambience can be produced by planting aquatic plants following the rules of nature. This is what we call "creating nature".



Natural ambience can be enhanced by understanding the lives of aquatic plants and planting them in an appropriate way.



It is essential to follow the rules of nature to place stones and plant aquatic plants around them.



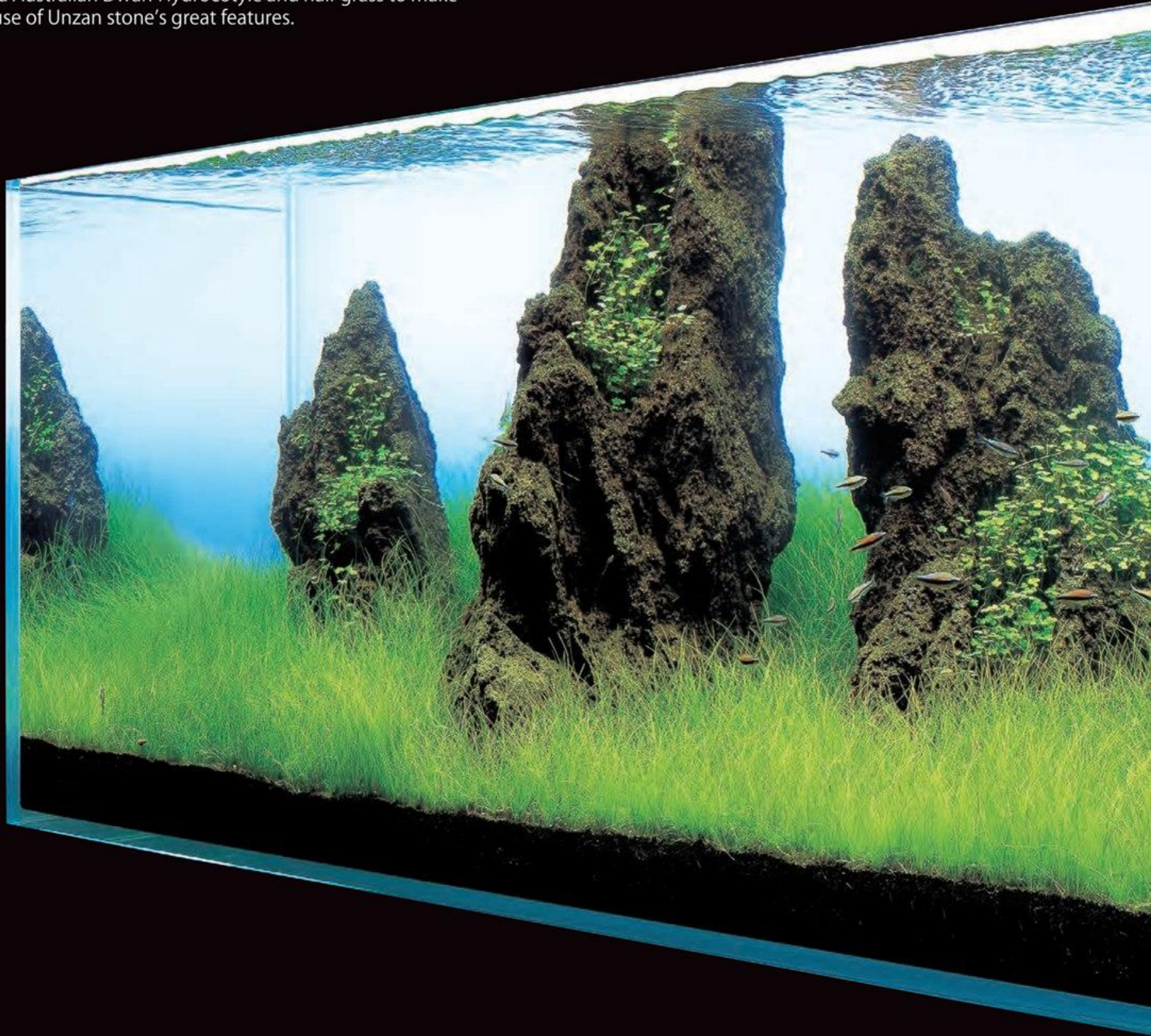


Combination of Plants and Stone Faces Observed in Nature

Rigid and soft; living and non-living; and changing and unchanging: plants and rocks seem totally opposite when looking at each of them alone. However, in nature, they co-exist in magnificent harmony. In nature, plants are often seen growing on rocks, clinging to them tightly whilst being nurtured by dripping water. This sight evokes a natural, wondrous feeling: it is truly beautiful. So, by consciously noticing this and then incorporating it into the Nature Aquarium layout by using a combination of rocks and plants, we can create a more natural ambience within the aquarium.

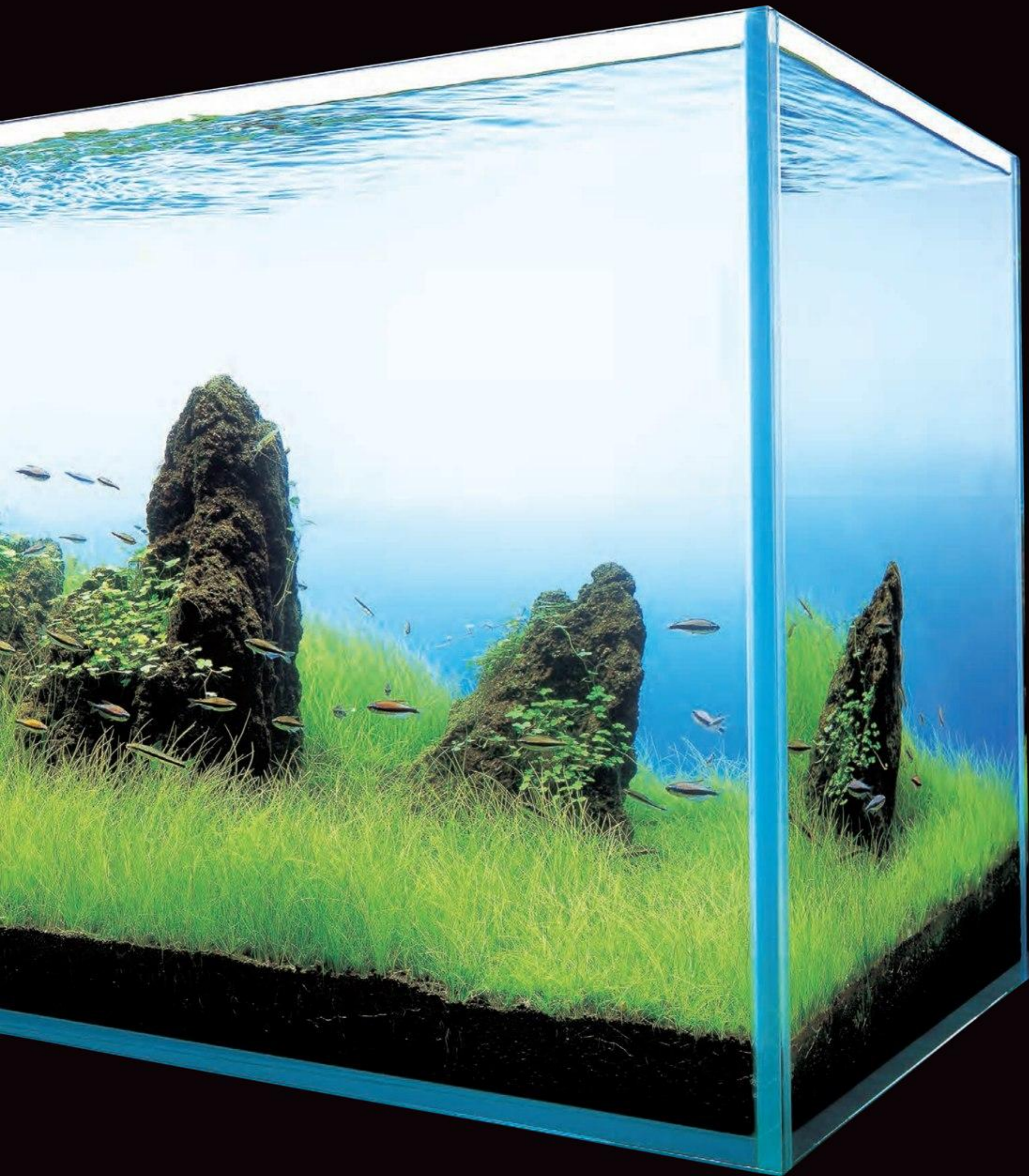
Simple Combination of Unzan Stone and Wabi-Kusa

Unzan stone, one of ADA's new layout materials, is a volcanic stone in a natural shape, with pockets that are perfect for placing Wabi-Kusa into. It's rough and uneven surface, which is a unique feature of volcanic rock, is an ideal match with green aquatic plants and allows hobbyists to explore their creativity in new and adventurous ways. This layout uses a simple mix of Wabi-Kusa Australian Dwarf Hydrocotyle and hair grass to make the best use of Unzan stone's great features.



DATA

Tank	/ Cube Garden W180×D60×H60 (cm)	Additives	/ Brighty K & Green Brighty STEP 2
Lighting system	/ Grand Solar I (NAG-150W-Green) ×3 units Lighting for 10 hours a day	Water change	/ 1/3 water change once a week
Filtration system	/ Super Jet Filter ES-2400 (Bio Rio, NA Carbon)	Water quality	/ Water temperature: 25°C; pH: 6.8; TH: 20mg/l
Substrate system	/ Aqua Soil – Amazonia, Power Sand Special L, Bacter 100, Clear Super, PENAC W for Aquarium, PENAC P for Plants, Tourmaline BC	Aquatic plants	/ <i>Hydrocotyle sp.</i> <i>Eleocharis acicularis</i> <i>Fontinalis antipyretica</i>
CO ₂ system	/ Pollen Glass Beetle 50Ø – 6 bubbles per second with CO2 Beetle Counter	Fish species	/ <i>Inpaichthys kerri</i> <i>Crossocheilus siamensis</i> <i>Otocinclus sp.</i> <i>Caridina japonica</i>
Air	/ Aeration with Lily Pipe P-6 for 14 hours when lighting is OFF at night		



New Layout Materials Create New Expressions

Expression Technique 1 New Expressions using
Unzan Stone

Amano has introduced diverse layout expressions to planted aquarium hobbyists across the globe. Coming up with a whole new layout expression is not easy. But sometimes, using a new material provides the inspiration needed to create an original layout. Unzan stone featured on this page was also an excellent source of inspiration.

Layouts using Unzan stone have been introduced in three consecutive issues of Aqua Journal. All of them were produced during the Nature Aquarium Seminar which was held at the end of September last year at ADA Headquarters. Some dear readers might have seen the production process of these layouts broadcast live worldwide via USTREAM. Among the broadcast programs, the one that received the biggest response was the layout using Unzan stone. Aside from the excitement created by the introduction of a new layout material, the viewers showed the greatest interest in Mr Amano's new method of placing a Wabi-Kusa in the pocket of the Unzan stone and also in the way Mr Amano attached finely-chopped willow moss to the stone's surface. According to Amano, these methods are not what he had prepared in his mind in advance but were an impromptu idea he had while arranging the Unzan stones. Amano says, "I can make a wider array of layout expressions only if there are more new layout materials available." Certainly, there is nothing like meeting with a new layout material that stimulates our creativity for layout ideas.

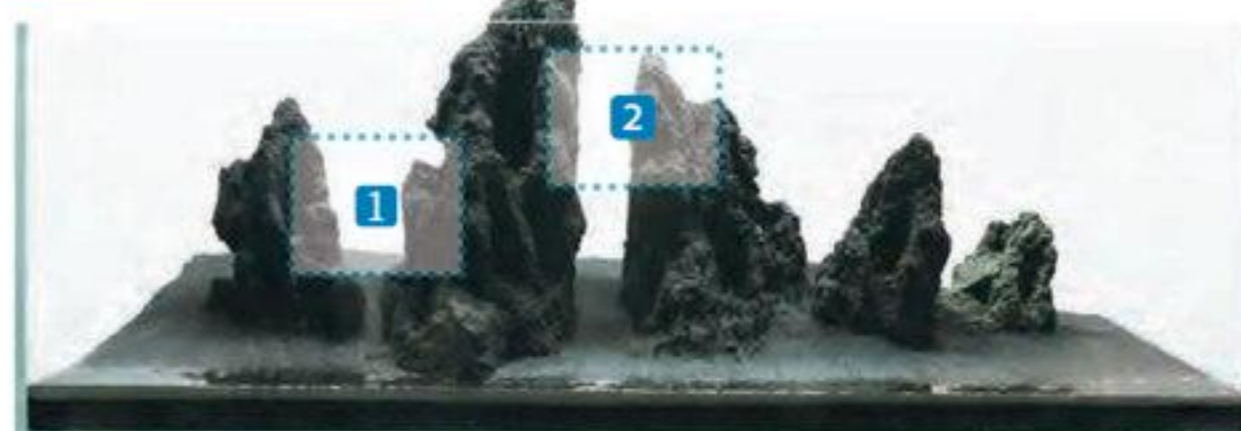


1 Adjustment of Soil

Once it is confirmed that five pieces of Unzan stone have been arranged in a balanced manner, pour soil on the substrate. Finally, slant the soil surface using a plastic case while making fine adjustment of the soil thickness.



Composition Framework



Number of stones used, the position of the main stone and balance of stone sizes – All of these aspects follow the basics and make us feel beautiful.

3 Planting Hair Grass

The only aquatic plant used for this layout was hair grass. It was planted at the density shown in the picture. The water level should be adjusted to the level at which the substrate is barely submerged for easy planting of aquatic plants.

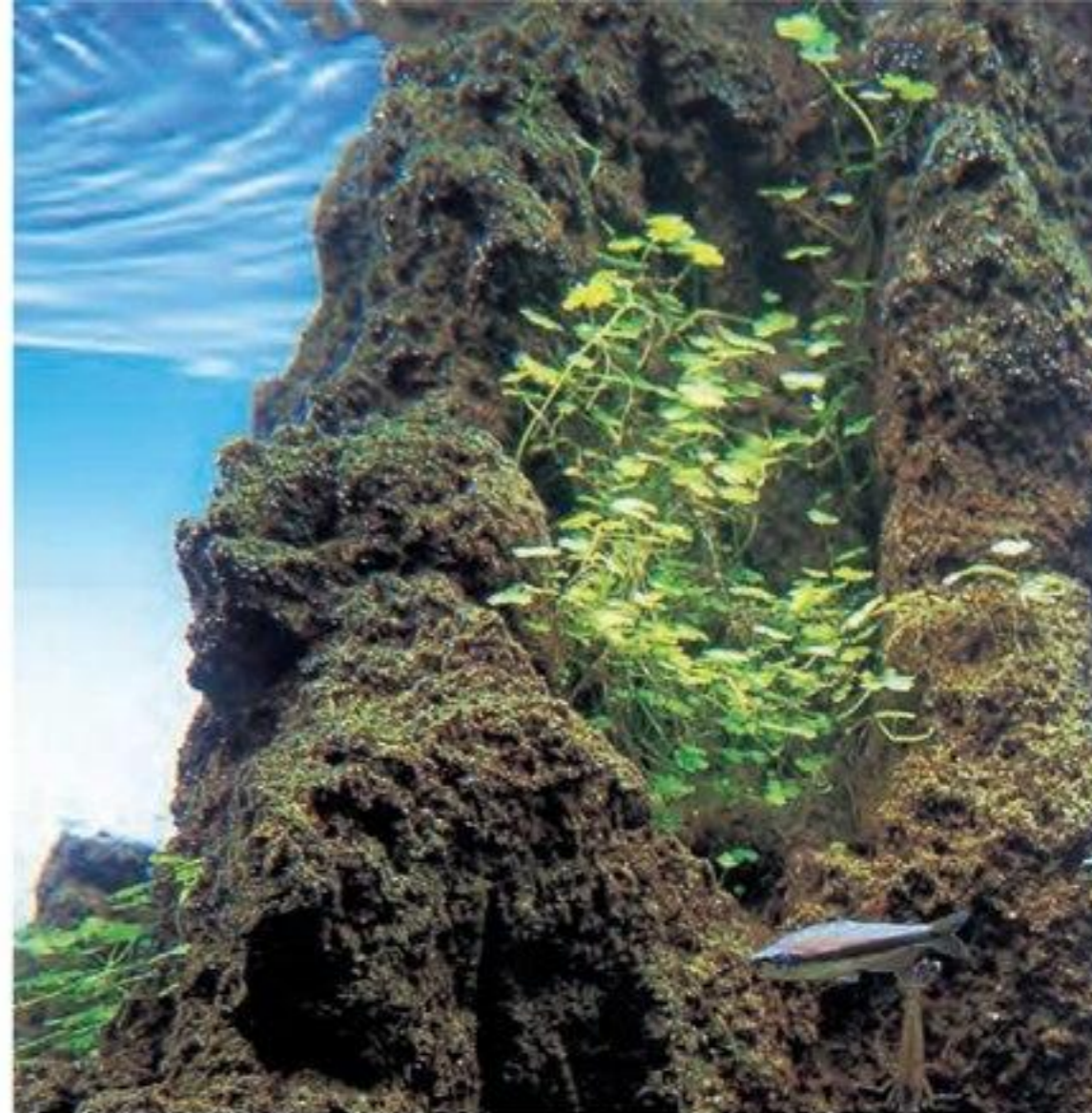


4 Joy of Participatory Seminar

In the seminar, participants joined Amano and made the layout together. This opportunity brings a sense of unity to the production site at the Nature Aquarium Gallery.

2 Considering the Layout Composition

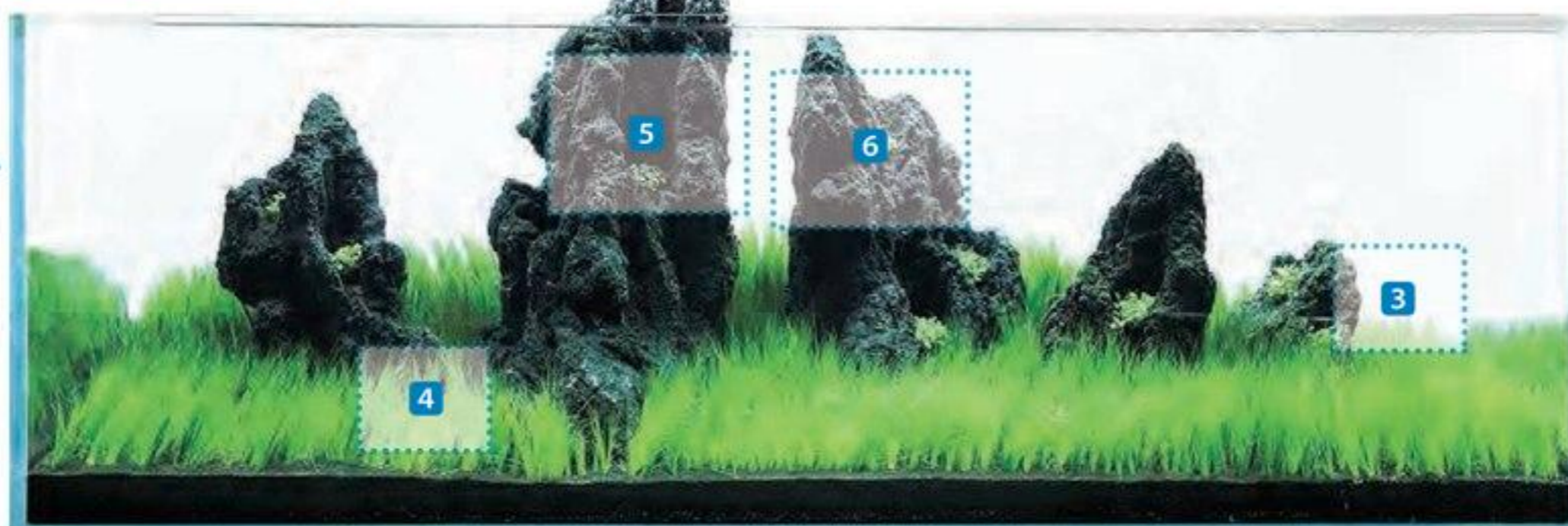
Putting branch wood over an Unzan stone was considered, but the idea was discarded after much trial and error. A simple composition was finally selected.



5 Expression of Stones and Wabi-Kusa

One of the points of this expression is the combination of stone and wabi-kusa. How to place Wabi-Kusa Australian Dwarf Hydrocotyle on Unzan stone is a highlight of the layout.

Immediately after Planting



Beautiful balance of Unzan stones stands out by simple arrangement of aquatic plants.

6 Technique for Attaching Willow Moss

The method of rubbing and attaching coarsely-chopped willow moss onto the stone might be a drastic technique that can only be used for Unzan stone having a rough surface. This is a layout expression that has come out of Amano's impromptu idea.






Natural Color and Texture of Unzan stone in Good Match with Green Aquatic Plants



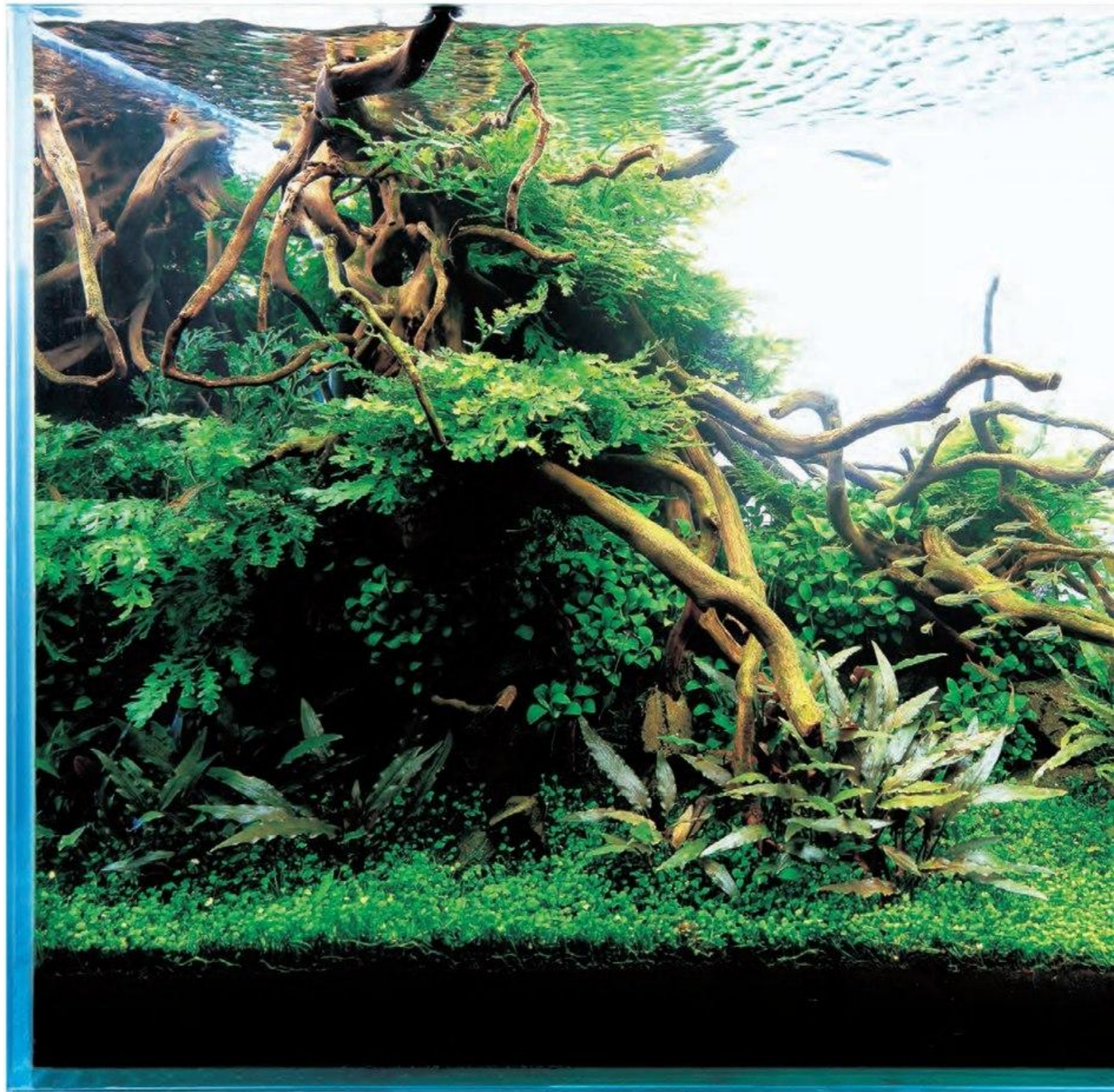
Unzan stone is originally black in color but it will turn a distinctive earth-like color once it has been soaked in water for a while. When this stone is placed under light, the rough, uneven surface texture that is unique to volcanic stone is emphasized by the shadows cast by the light. Unzan stone's natural color and texture perfectly matches the green aquatic plants and creates a profound natural ambience in the layout. The unique blue body color of *Inpaichthys kerri*, when caught in the light, also matches well with the combination of Unzan stone and the green of the aquatic plants.

A lush green forest landscape with a stream and a mossy rock in the foreground. The scene is filled with vibrant green foliage, including ferns and various trees. A large, dark, moss-covered rock sits in the foreground, partially submerged in the water. The water is calm, reflecting the surrounding greenery. The overall atmosphere is serene and tranquil.

Wabi-Sabi in Tranquil
and Serene Landscape



Nature is filled with diverse colors, like pale pink cherry blossoms, vivid and fresh spring foliage, dynamic and vigorous greenery and brightly-colored autumn leaves, just to name a few. These colors add great charm to the natural landscape. Nonetheless, colorful and beautiful landscapes are not all that we can see in nature; there are also calm and serene landscapes which incorporate a sense of wabi-sabi like the sight of the forest floor, rocks and fallen trees along the stream, moss, ferns and many other species of epiphytic plants. It does not have striking beauty but instead is filled with profound natural charm and a sense of the passage of time.

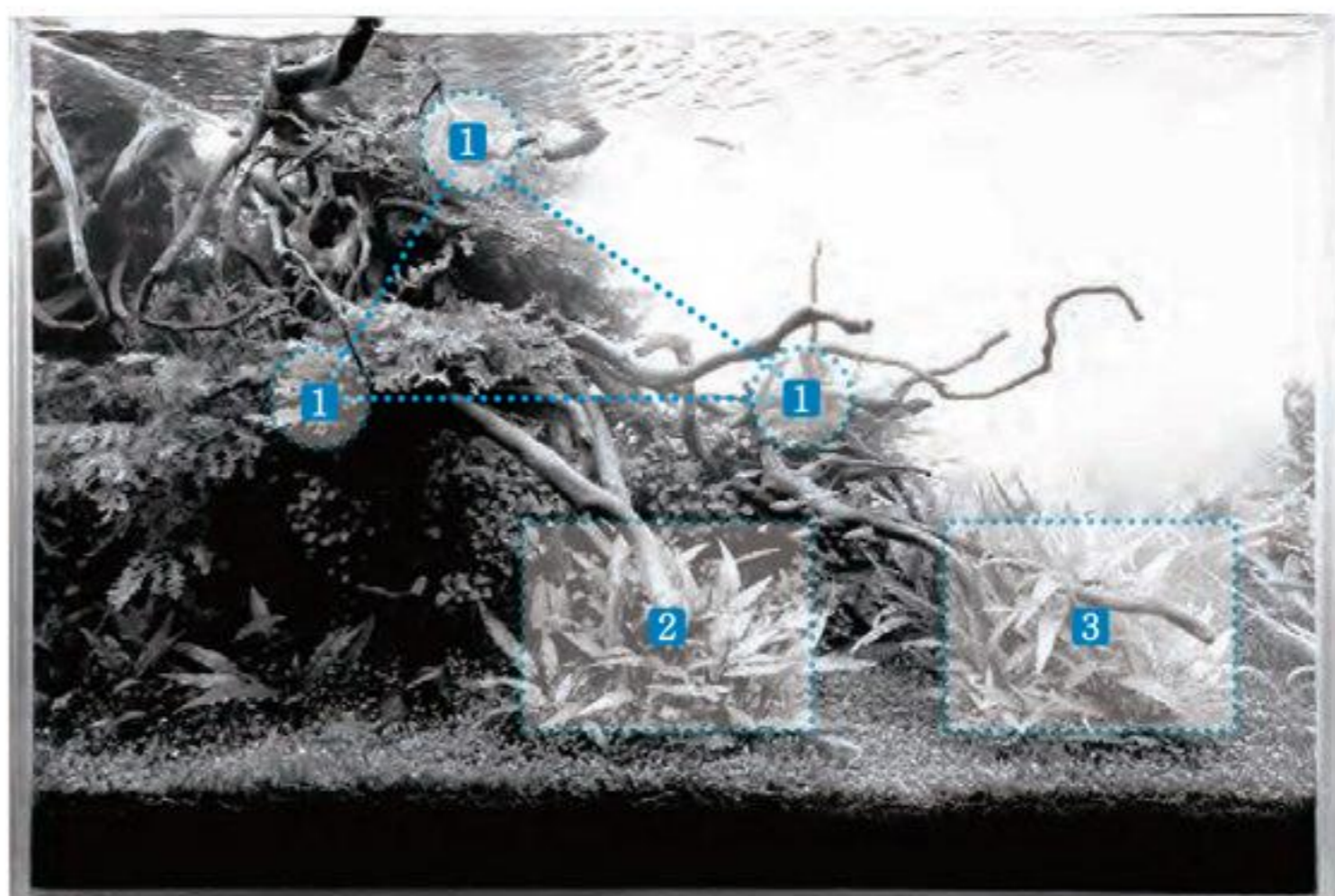


Expression of the Sense of Wabi-Sabi Created by Shade Plants

Expression Technique 2 Expression of Wabi-Sabi

Ferns and moss grown on driftwood tell us the long passage of time and add the ambience of wabi-sabi to the aquascape. They have tranquility and profoundness that cannot be expressed in a short time. It would be a great idea to make a layout using shade plants as a main element and spend some time to observe their growth.

Illustrative Explanation of Aquascape



Triangular composition is made by branch woods.



DATA. Bolbitis heudelotii
 Anubias barteri var.nana "Petit"
 Cryptocoryne albida
 Cryptocoryne beckettii var. petchii
 Cryptocoryne wendtii (Green)
 Marsilea angustifolia
 Fontinalis antipyretica

This layout shows us a drama where plants take roots and form an aquascape centering on the driftwood.
 Tank size: W90×D45×H60 (cm)

Each aquatic plant has its unique atmosphere. Sun-loving aquatic plants such as Riccia and stem plants give a bright and colorful impression while shade-loving aquatic plants represented by ferns and Cryptocoryne have a calm and elegant image. This aquascape has a tranquil atmosphere on the whole because mostly shade plants, including Bolbitis, Anubias, Cryptocoryne and European clover, are used. Shade plants are relatively slow-growing and the aquascape is formed gradually over long periods of time. This passage of time naturally adds a profound touch to the aquascape. We feel calm when we look at this type of aquascape, and this feeling leads to wabi-sabi, one of Japan's traditional aesthetic values. The austere elegance of brown Cryptocoryne also contributes to creating the atmosphere of wabi-sabi in the aquascape. Cryptocoryne is planted along the branches of the driftwood spreading like plant roots to create a secluded area in the layout. One of the reasons why short European Clover was chosen as the foreground plant is to ensure a tranquil atmosphere throughout the aquascape and maintain the aforementioned secluded area.

| Points of Expression of Wabi-Sabi |



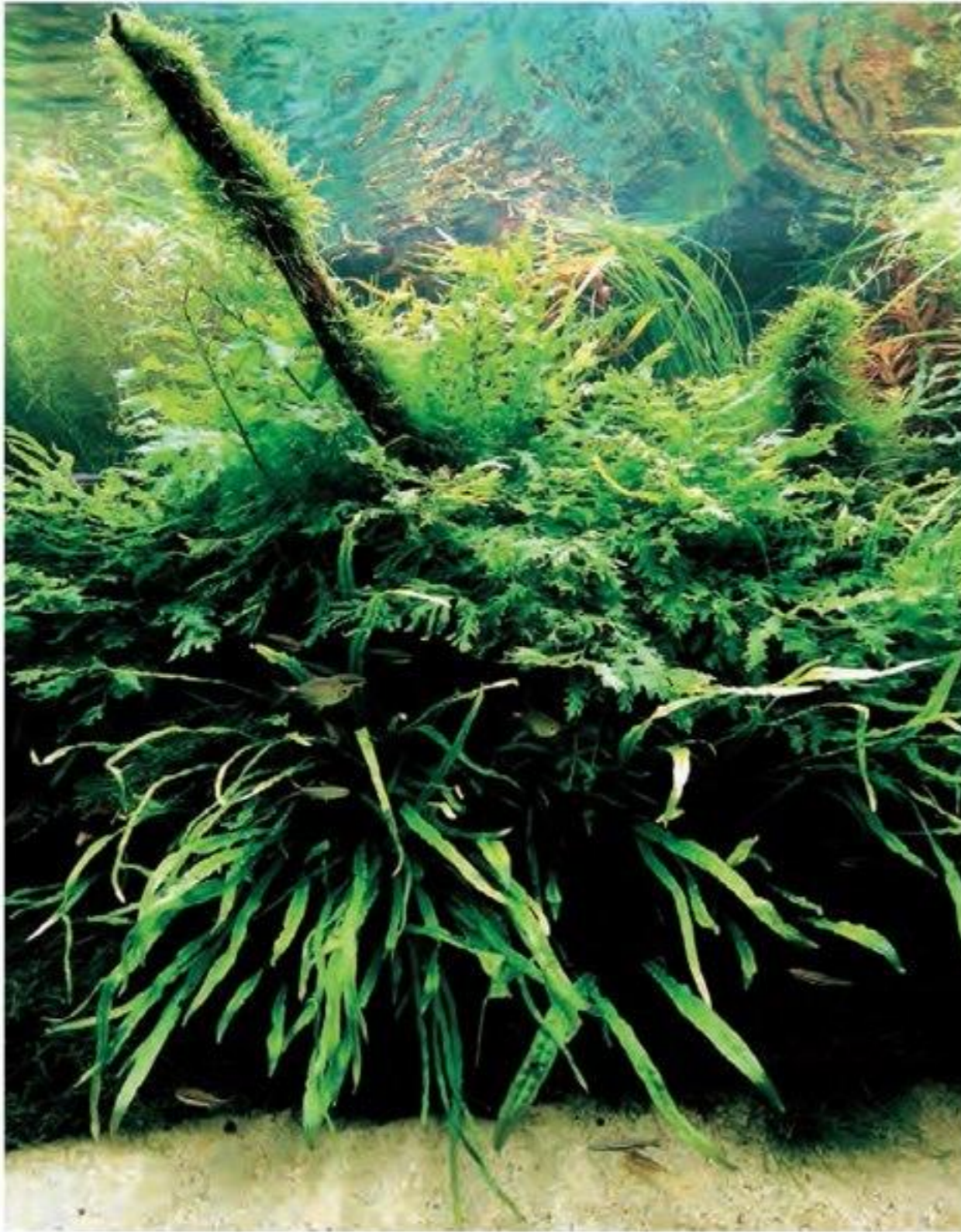
1 Bolbitis is attached to the driftwood in such a way to form a scalene triangle.



2 Brown Cryptocoryne in austere elegant color creates a tranquil atmosphere.

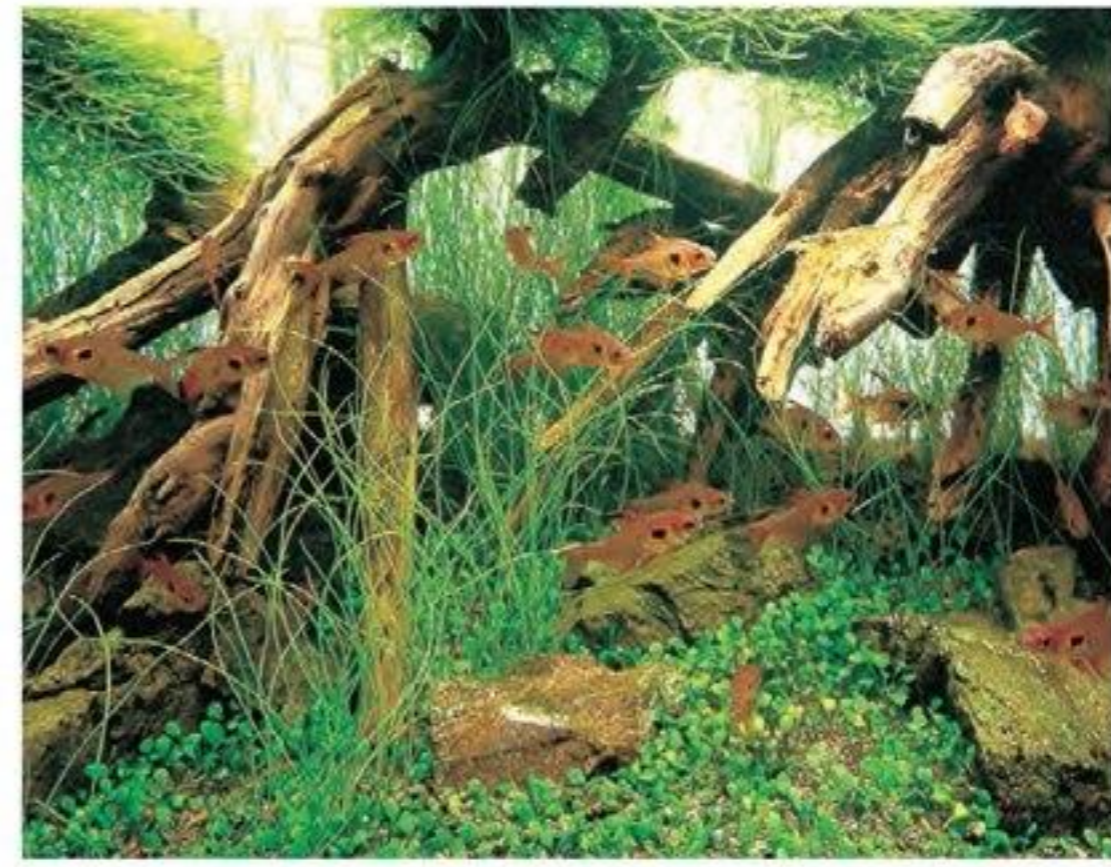


3 Secluded space created by European clover adds modest elegance to the aquascape.



1. Expression using ferns

Ferns express “shade” while stem plants express “light”. An effective mixture of these plants adds a fine elegance to the aquascape.



2. Expression in great detail

A steady impression is produced by making an elaborate layout under the driftwood. This contributes to an expression focusing on the finer details.



3. Expression using Cryptocoryne

The brown leaves of Cryptocoryne have a sort of rustic atmosphere. It is not striking but filled with profound charm.

Layout Expression with Rich Ambience of Wabi-Sabi

Expression Technique 2 Expression of Wabi-Sabi

Use of epiphytic plants including ferns and willow moss as well as shade plants including Cryptocoryne is very effective for expressing wabi-sabi. These plants are generally slow-growing and it takes some time until an established aquascape is made. However, once such an aquascape is done, it will naturally have a profound and tasteful ambience.



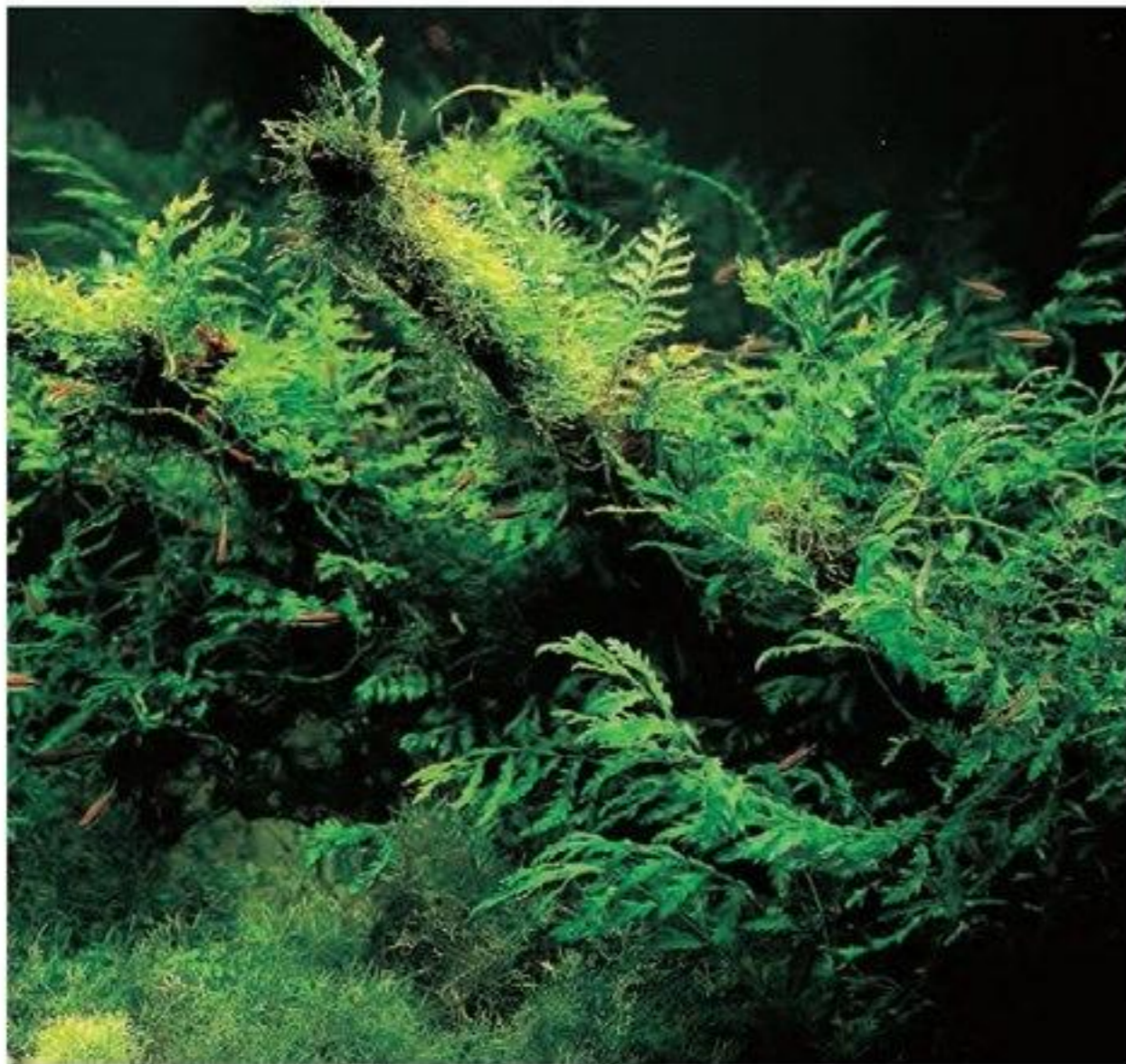
4. Expression using Microsorium

The presence of beautiful Microsorium clumps adds a quiet and graceful ambience to the aquascape. The natural feel is enhanced by attaching Microsorium to the driftwood in a balanced manner.



5. Expression using willow moss

We can feel the wabi-sabi created by the sight of the small amount of willow moss left on the stone.



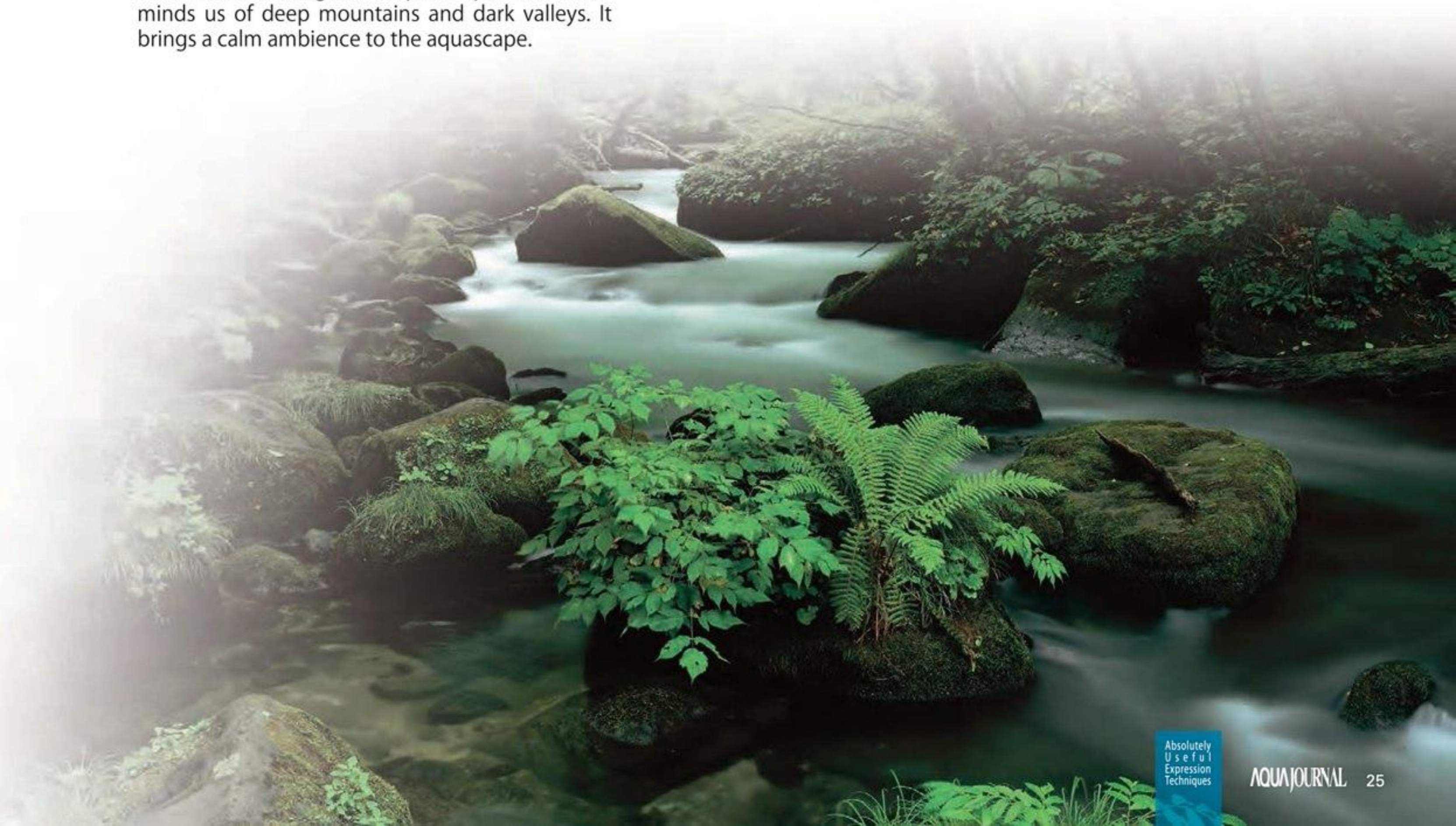
6. Expression using Bolbitis

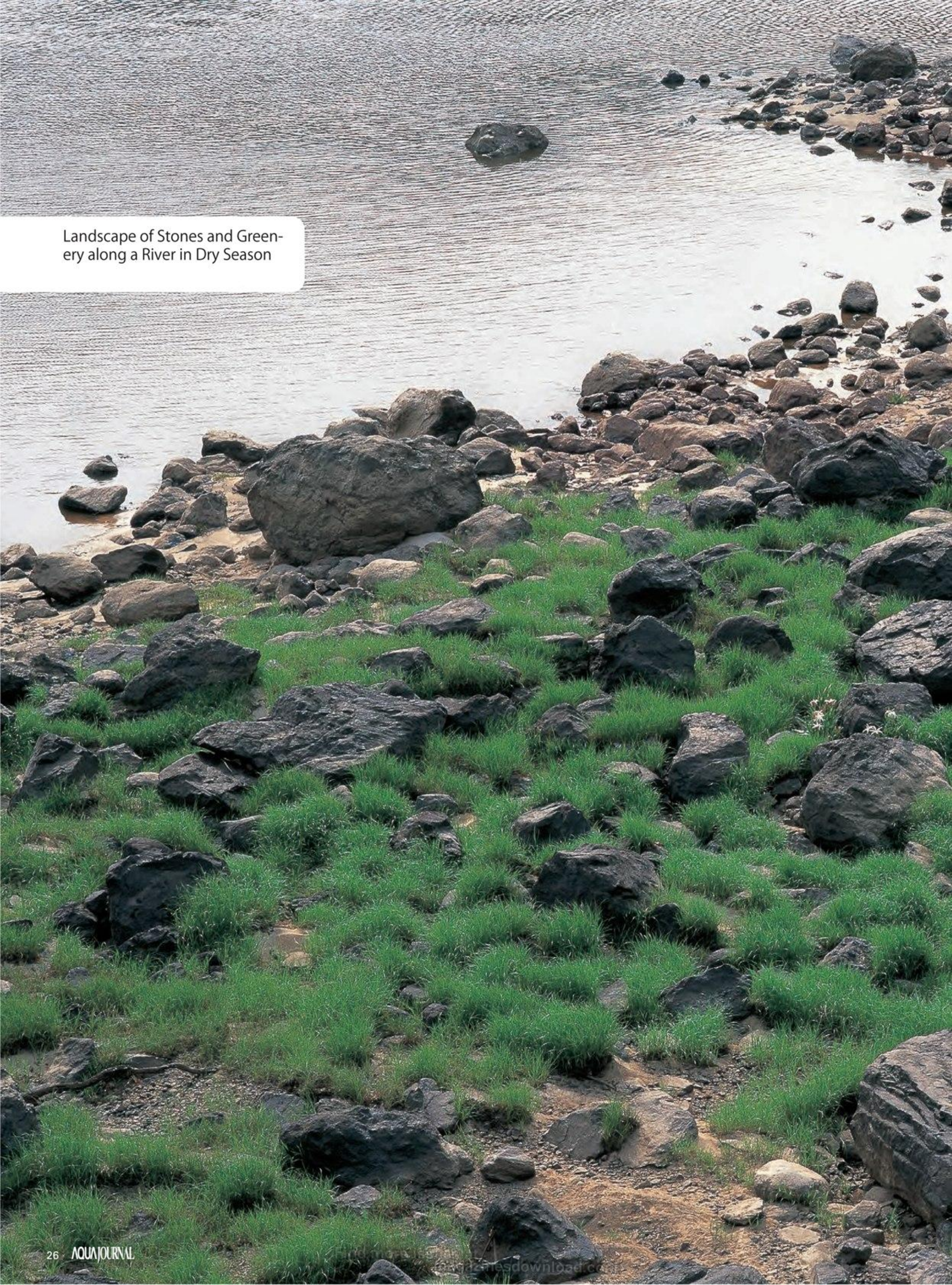
Lush Bolbitis having leaf shape unique to ferns reminds us of deep mountains and dark valleys. It brings a calm ambience to the aquascape.



7. Expression between stones

Vigor can be felt from the plants that take roots even in the narrow gaps between stones. Severity exists behind the beauty of nature.

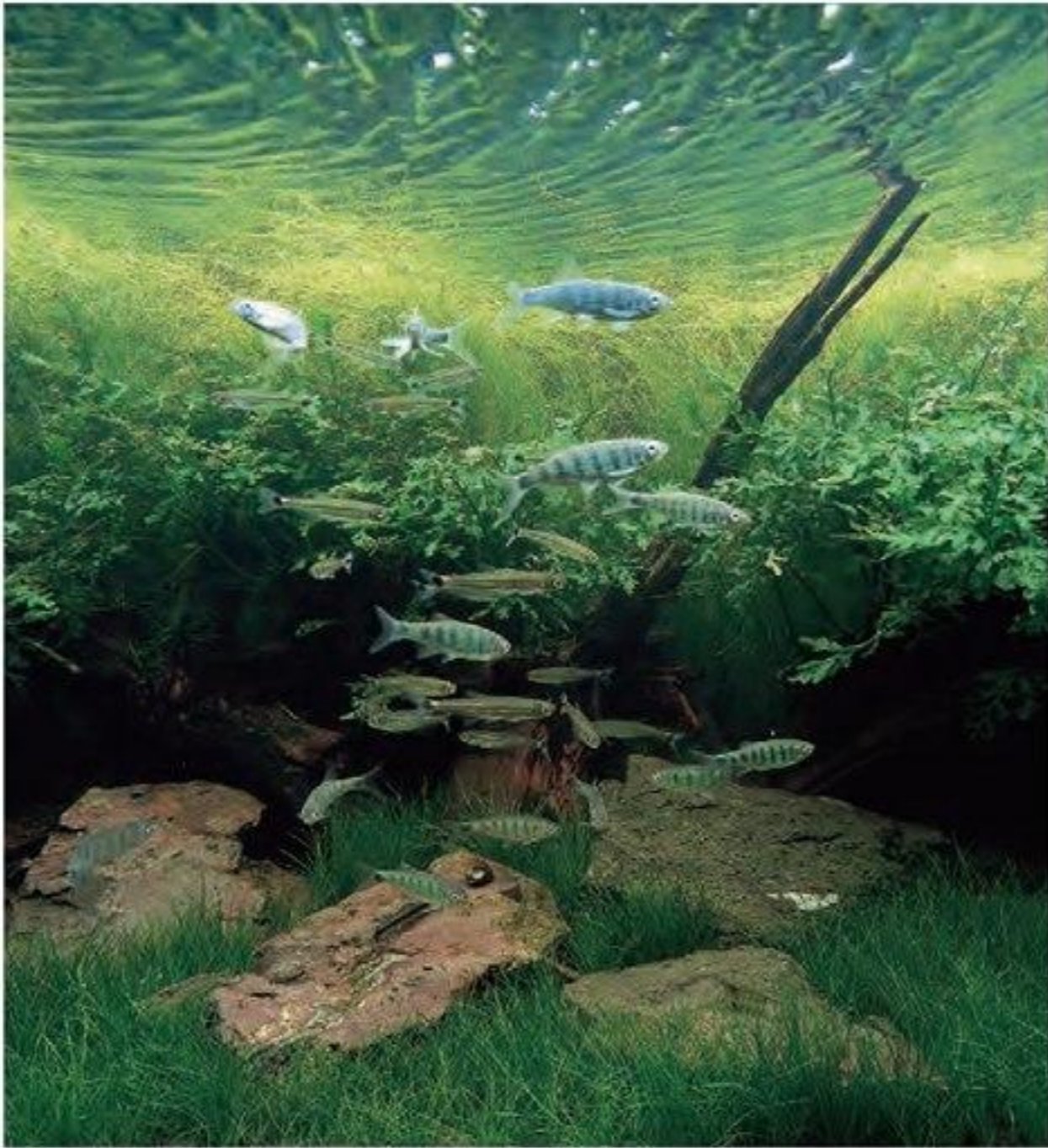




Landscape of Stones and Greenery along a River in Dry Season



The water level of tropical rivers varies greatly between dry and rainy seasons, and as it does, the landscape around the rivers changes significantly according to the seasons. In the dry season when the water level of the river decreases, submerged stones and sands come out of the water and appear at the side of the river. These stones will be edged with green by the sprouts grown from grass seeds. This landscape of stones and greenery will sink under water again upon the arrival of the rainy season and fishes will swim around it: like in an Iwagumi aquascape. So, as you can see, the tips for natural expression are all hidden in the natural landscape.



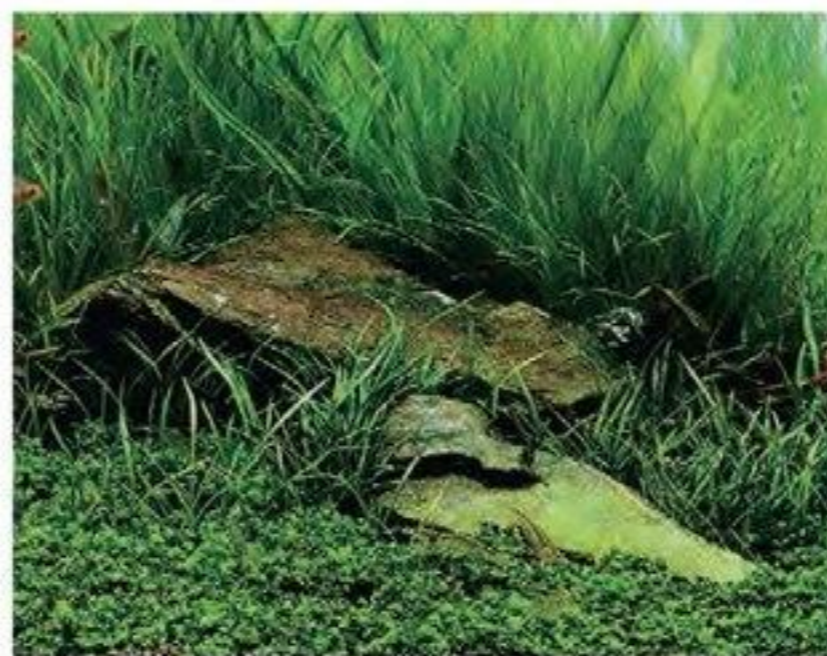
1. Expression of foreground using flat stones

Atmospheric foreground can be expressed by placing some flat stones and planting hair grass between them. Fully utilize your ideas to make the best of layout materials.

Expression of Casual Naturalness by Aquatic Plants at Stone Side

Expression Technique 3 Expression of Stones and Aquatic Plants

In nature, stones are often glimpsed through the grasses that naturally grow around them. This creates a feeling of natural relaxation. That is why in a Nature Aquarium layout that uses stones, placing aquatic plants around the stones is a key element of the layout. When doing this it is important to decide how much of the stone should be covered by the plants, and then select the plants based on the height they will attain once they are fully grown.



2. Expression of fresh impression

Bright, fresh impression can be expressed by a combination of Ryuoh stone in cool color and hair grass.



3. Presence of sacrificial stone

Hardly-sensible presence of sacrificial stones (Suteishi) that can be glimpsed in hair grass is a layout expression that adds depth to the aquascape.

4. Naturalness around stones

Skillful planting of aquatic plants of different heights, such as a combination of Cuba pearl grass, Cobra grass and Blyxa, further enhances the natural feel.



5. Tastefulness of stones covered by moss

Stones covered by moss make us feel the passage of time and create deep and profound ambience. There is a world of wabi-sabi in these stones.



6. Creation of seamless link between stones

In Iwagumi layout, a seamless link is created between stones by planting foreground plant around them. The foreground plant also plays a role of softening the impression of stone.



7. Expression between stones

Echinodorus tenellus grows by spreading its runners through the narrow gap between stones. This also helps create a natural ambience in the aquascape.



8. Impression of main stone (Oyaishi)

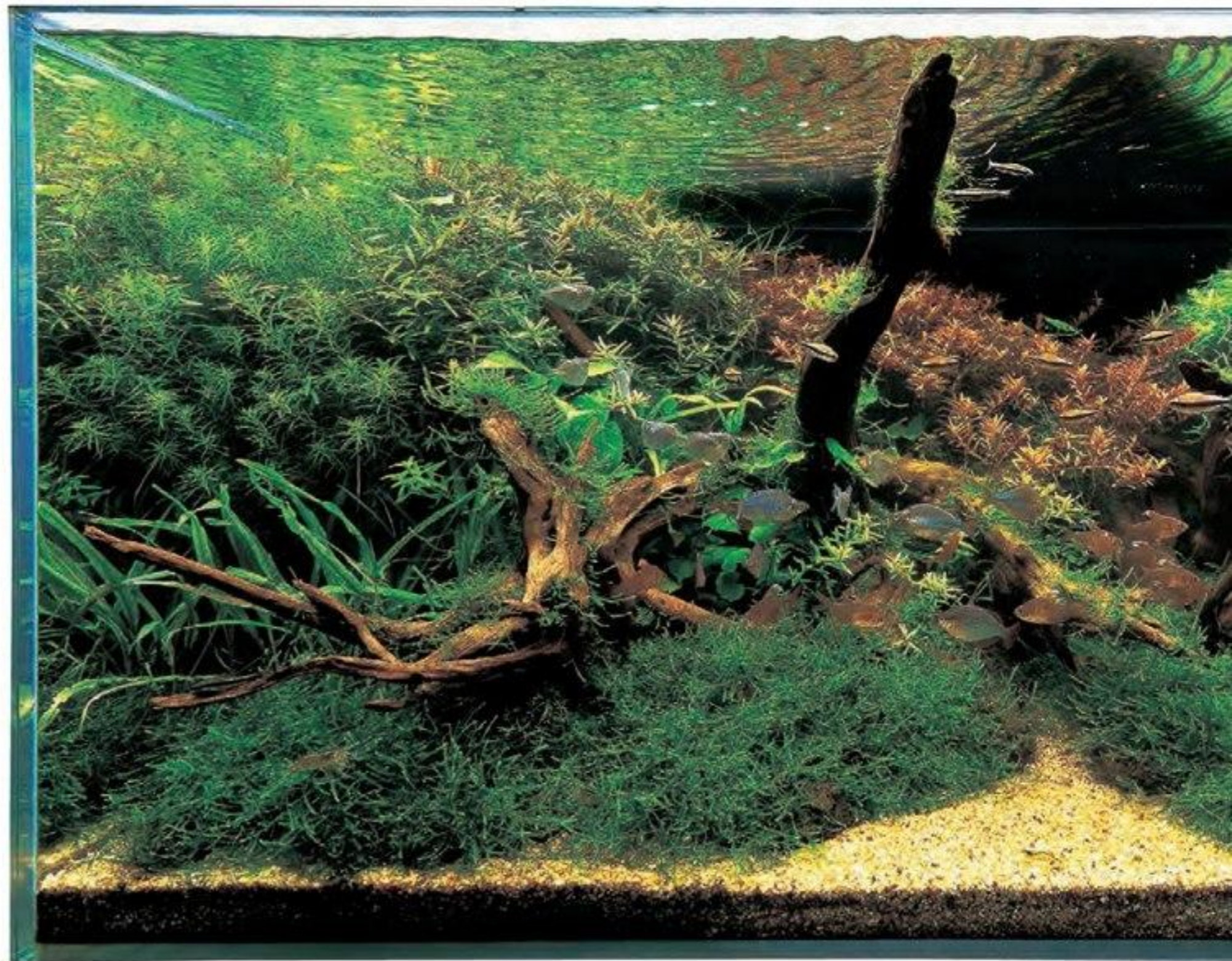
Cobra grass having a rigid impression emphasizes the solid, heavy texture of Hakkai stone. To ensure the well-balanced aquascape, hair grass having a soft impression was planted in the background.



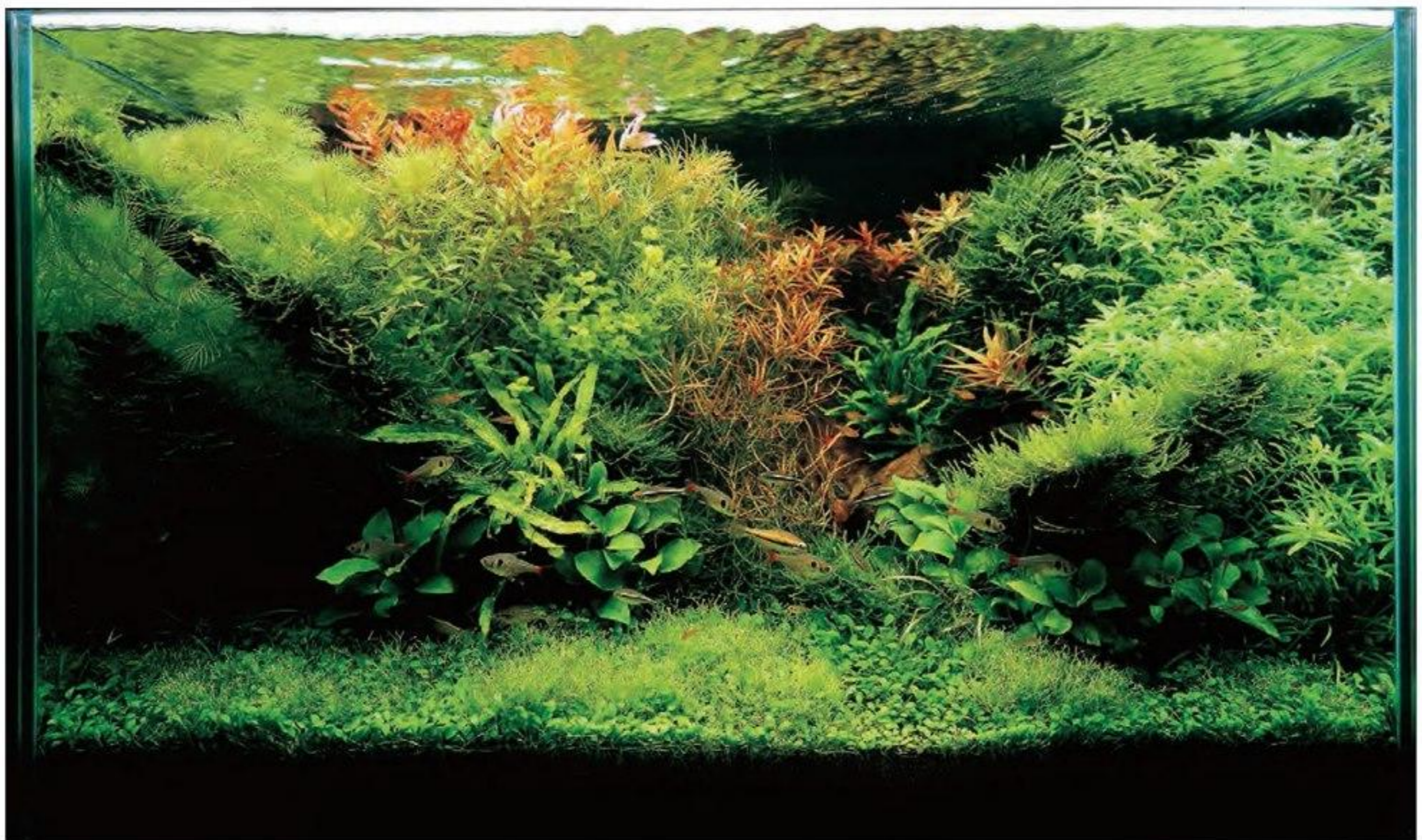
Perfection of Layout is Determined by How the Corners are Made

Expression Technique 4 Layout Expression of Four Corners

Whether making or looking at the layout, the center of the tank usually becomes the focal point. For this reason, it is often observed in many works that often the four corners of the aquarium layout are neglected, and only a rough plan is made for them as the focus is given to the centre of the layout, but this has a detrimental affect on the overall perfection of the aquascape. The expression of the four corners of the tank considerably influences the overall perfection of aquascape: so it is important to plan the layout of the corners as well as the centre.



As seen in willow moss in the foreground and the line of stem plants in the background, careful layout is made to every corner of the tank.
Tank size: W90×D45×H45 (cm)



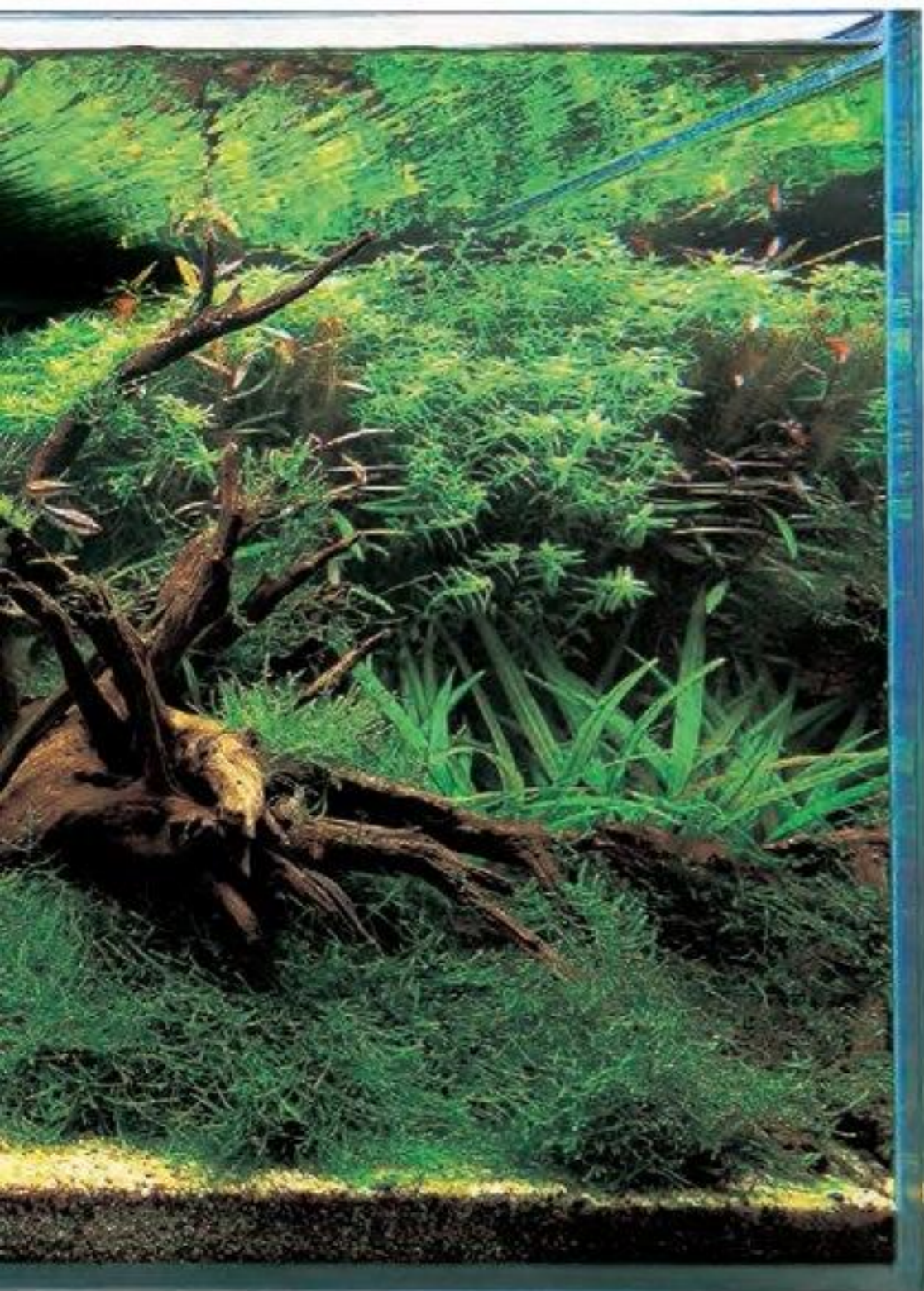
When making a concave composition where the open space in the center is a key element, attention should also be paid to the making of four corners of the tank.
Tank size: W60×D30×H36 (cm)

DATA. Myriophyllum mattogrossense (Green)
Rotala macrandra (Green)
Rotala nanjean
Rotala sp. (Ceylon)

Rotala rotundifolia (Green)
Micranthemum unbrosium
Ludwigia arcuata
Gratiola sp.

Glossostigma elatinoides
Echinodorus tenellus
Riccia fluitans
Anubias barteri var.nana (Narrow)

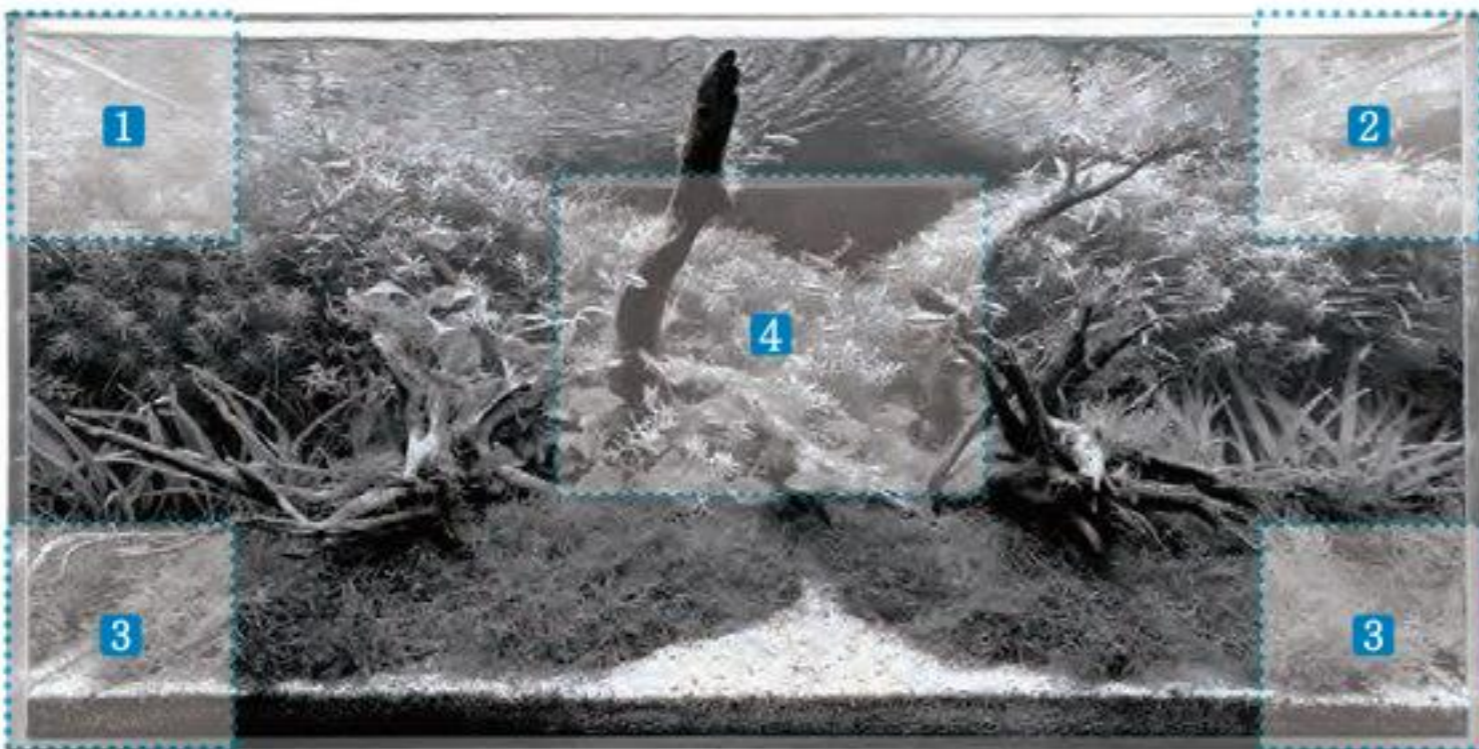
Microsorium sp. (Narrow Leaf)
Fontinalis antipyretica



DATA.

- Rotala rotundifolia (Green)
- Rotala rotundifolia
- Rotala sp. (Ceylon)
- Rotala wallichii
- Rotala nanjean
- Polygonum sp. "Pink"
- Hydrocotyle leucocephala
- Eleocharis vivipara
- Cryptocoryne albida
- Microsorium sp. (Narrow Leaf)
- Fontinalis antipyretica

| Illustrative Explanation of Aquascape |



To ensure the perfection of the layout, it is advised to check not only the center but also the four corners of the tank.

Concave composition is a relatively easy layout to make for planted aquarium and it is the most popular composition among the entries to the International Aquatic Plants Layout Contest (IAPLC). Concave composition has some open space in the center, which is accompanied by clumps of aquatic plants on both sides. Since the launch of the IAPLC, the level of skill seen in the layouts has improved significantly and many works have adopted the skillful techniques such as placing the focal point according to the Golden Ratio (1:1.618), planting the position of red aquatic plants and trimming the line of stem plants for securing the open space. On the other hand, there are many works that demonstrate the way in which the four corners of the tank are often overlooked, in contrast to the

carefully made centre of the layout that serves as the focal point of the layout. Furthermore, the corners of the tank receive less light compared to the center and this can affect the growth and density of the stem plants and foreground plants at the corners. In view of these points, it can be said that an aquascape elaborately made to every corner of the tank demonstrates excellence in layout and management skills. The layout expression used in such an aquascape is not something that can be made by chance. A recommended way to objectively determine the perfection level of the aquascape is to photograph it. By looking at the layout on the photograph, you will see how much the composition and quality of the four corners influences the overall perfection level of the layout.

| Points of Expression of Four Corners |



1 The terminal buds of stem plants have just reached the water surface and they are adequately dense. Good condition at this stage is important.



2 A beautiful slope formed by well-aligned terminal buds demonstrates the efforts for careful trimming.



3 Well-pruned willow moss looks neat and tidy. Small area of cosmetic sand also adds a taste to the aquascape.



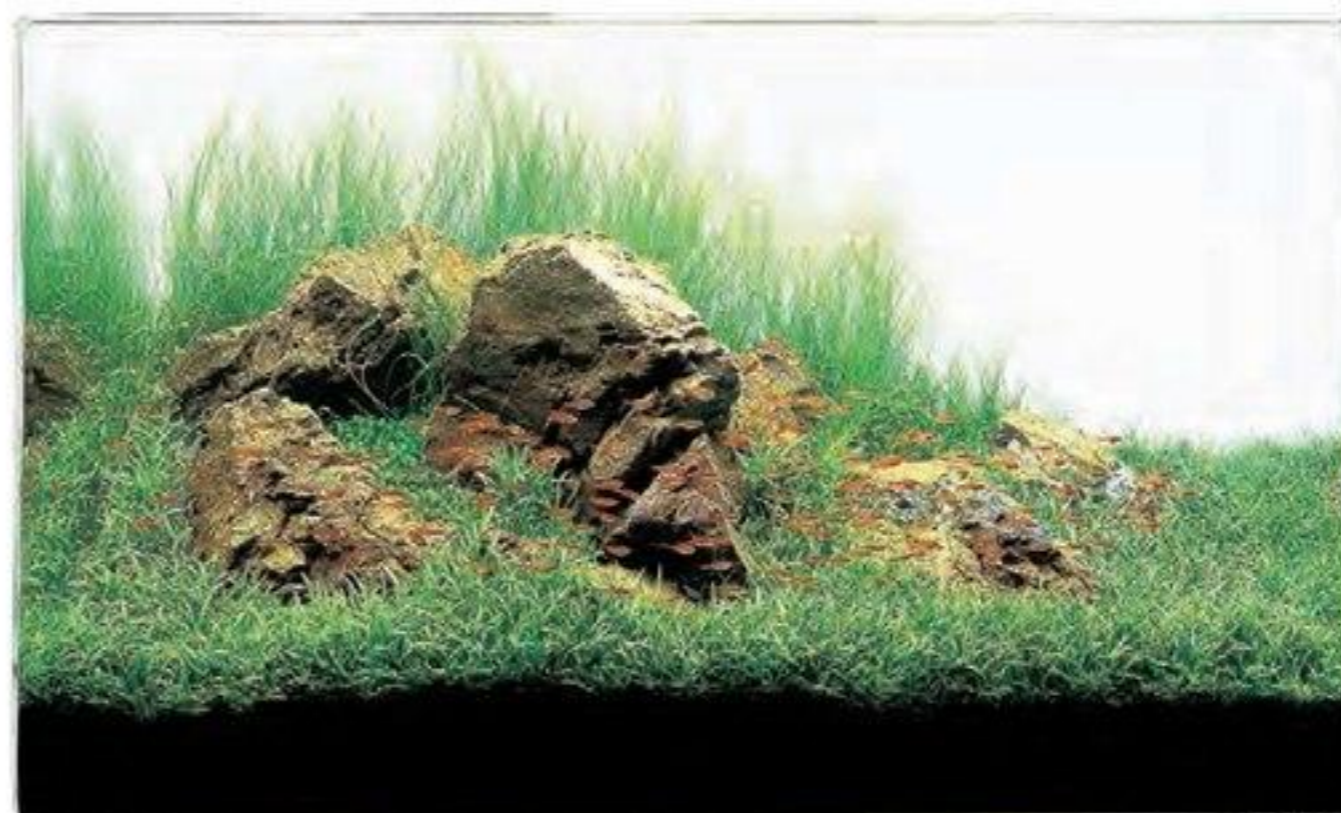
4 Careful layout should be considered not only for the center part which is a focal point but also for the four corners.

Different Impression by Different Layout Expression – Sozo Haishoku

Expression Technique 5 Expression by Creative Planting

When the stone arrangement is close to perfection, the image of Iwagumi layout can be changed just by replacing the aquatic plants used. This is called “Sozo Haishoku” in ADA. Even with the same stone arrangement, the impression of the layout changes significantly depending on how it is expressed.

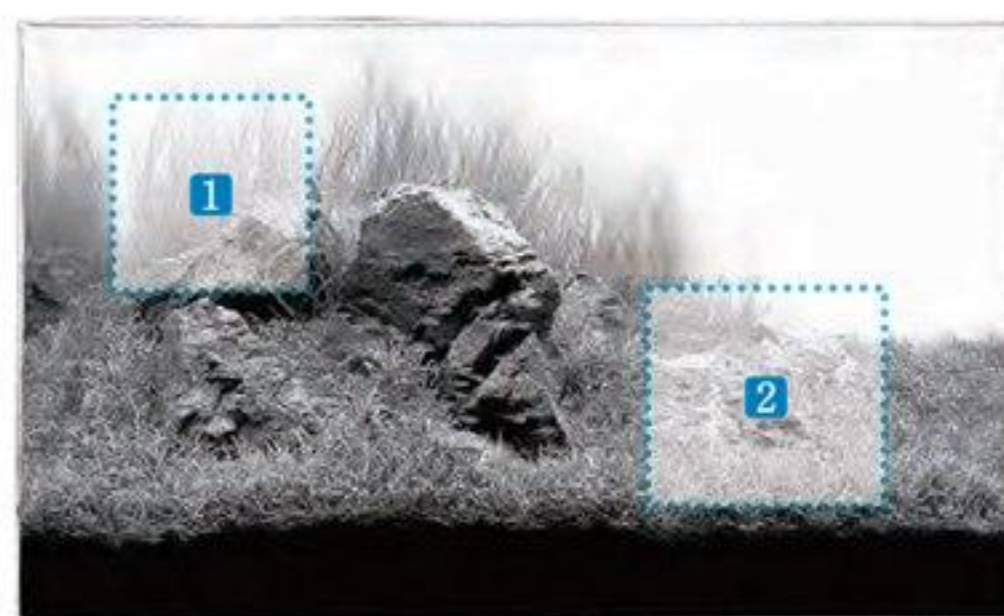
Unlike driftwood which serves as a framework in most of the driftwood layouts, stones are purely a subject for aesthetic appreciation in an Iwagumi layout. Stone arrangement has a great impact on the perfection of aquascape. In other words, as long as the stone arrangement is well made, a change in species of aquatic plants or their combination would not have a big impact on the perfection level of the aquascape, allowing hobbyists to enjoy diverse sorts of layout expressions. As you can see from these descriptions, Sozo Haishoku is a layout expression technique that can only be used for an Iwagumi layout. For example, the simplest Iwagumi layout consisting only of hair grass and stones gives a fresh impression: but it can be transformed into a colorful layout with a very different look by simply replacing the background plants with stem plants. In view of the fact that the stones are usually not replaced with new ones every time the layout is made over, Sozo Haishoku can be seen as an effective layout technique that allows amateur hobbyists to enjoy having different styles of layouts while keeping the same stone arrangement. Keeping the stone arrangement the same in an aquascape for a long time, whilst changing the aquatic plant arrangement is an important technique for controlling the aquarium and practicing new styles. Why don't you try Sozo Haishoku when you make a satisfactory stone arrangement?



Before Layout

Illustrative Explanation of Aquascape

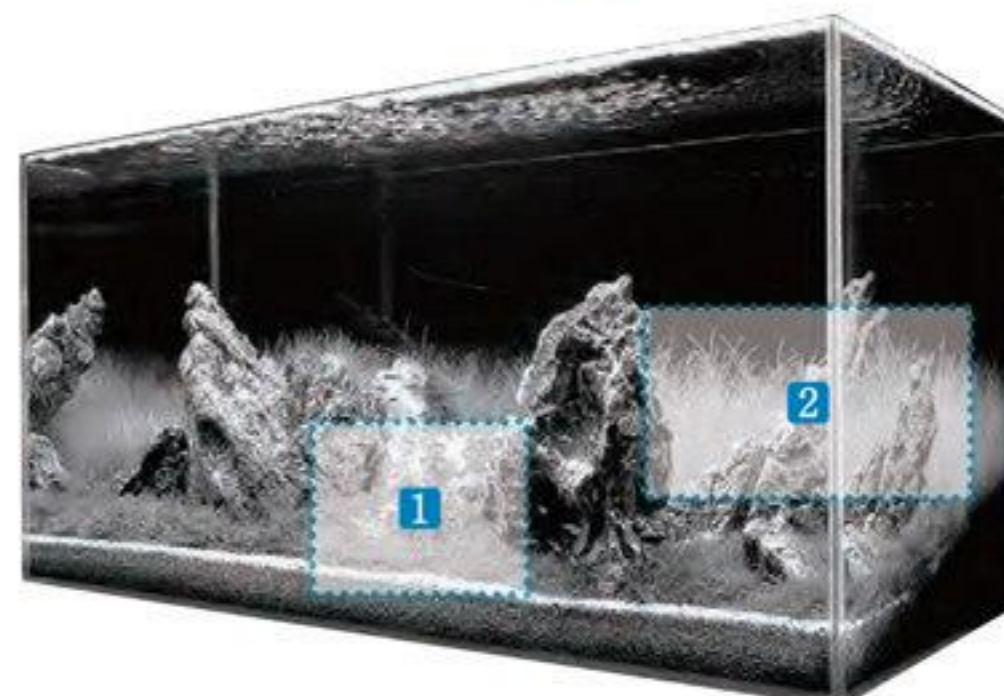
Hair grass and Cobra grass were originally planted. Densely grown Cobra grass will remain while hair grass will be replaced with another plant.

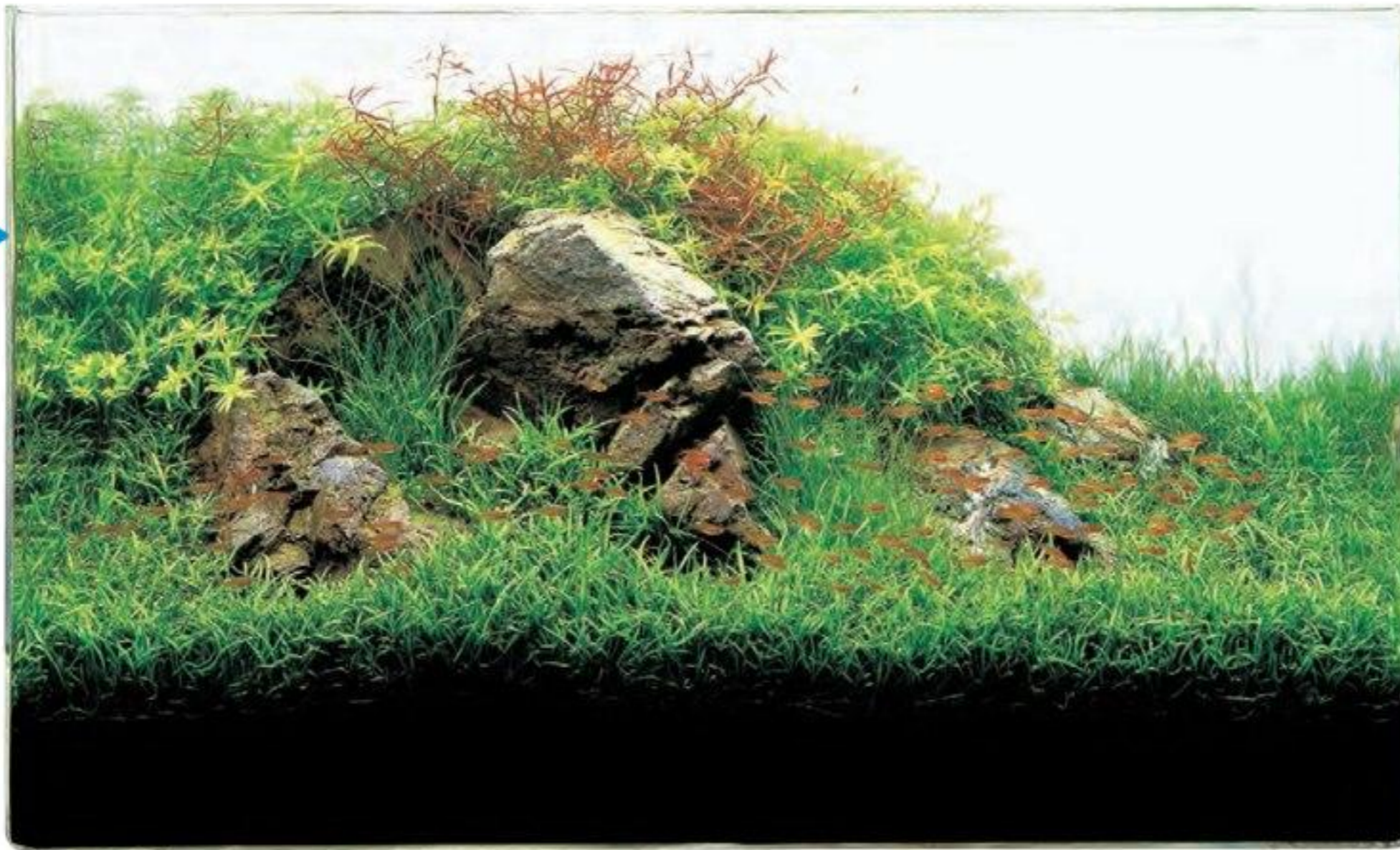


Before Layout

Illustrative Explanation of Aquascape

Hair grass in the background was replaced with stem plants. To enhance the bright atmosphere, willow moss was also changed to Riccia.





After Layout Lush stem plants brought colorfulness to the Iwagumi layout.
Tank size: W60×D30×H36 (cm)

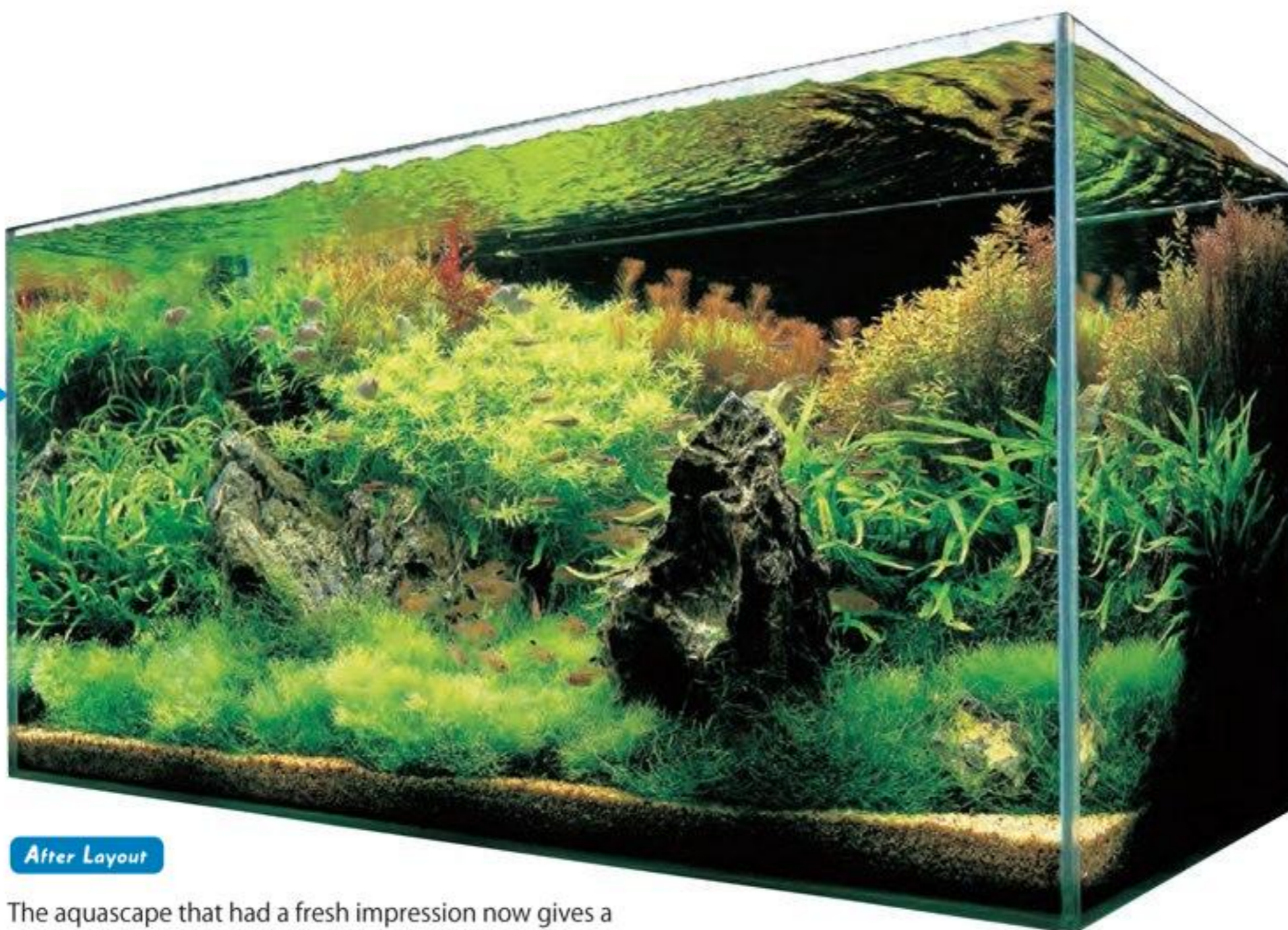
DATA. Rotala rotundifolia (Green) Lilaeopsis novae-zelandiae
Ludwigia arcuata Eleocharis acicularis



1 The cluster of Green rotala softens the rigid impression of the stones and red Needle leaf ludwigia adds colorfulness to the layout.



2 It is easy to combine slow-growing Cobra grass that remained unchanged with fast-growing stem plants.

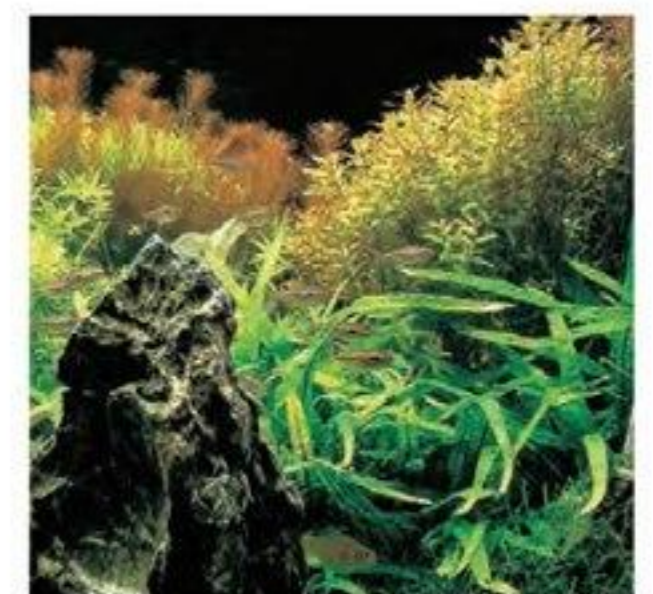


After Layout
The aquascape that had a fresh impression now gives a bright, colorful image. The impression of aquascape drastically changes even with the same stone arrangement.
Tank size: W90×D45×H45 (cm)

DATA. Rotala rotundifolia (Green) Rotala rotundifolia "Colorata" Pogostemon sp. "Dassen"
Rotala macrandra (Green) Rotala macrandra (Narrow Leaf) Ludwigia arcuata
Rotala wallichii Hygrophila sp. Lilaeopsis novae-zelandiae
Rotala nanjean Eichhornia sp. Eleocharis acicularis



1 The willow moss is changed to Riccia to match the bright image of the stem plants in the background.



2 Microsorium is planted at the side of the stone to conceal the unsightly bottom part of the stem plants behind it.





Learn the Natural Expression
using Shade Aquatic Plants
from Their Native Environ-
ment in West Africa

Anubias and Bolbitis are representative aquatic plant species originating from West Africa. Both being epiphytic shade-loving plants, they are usually attached to stones and driftwood in the Nature Aquarium. How they grow in their native land has been shrouded in mystery for a long time, but these photographs which are actually taken in their native environment in West Africa, show these plants growing on stones and driftwood, which is exactly the same as how they are used in Nature Aquarium. The key of natural expression in a layout lies in using aquatic plants in a way that mirrors and mimics their natural occurrence in the wild.



■ *Microsorium pteropus*



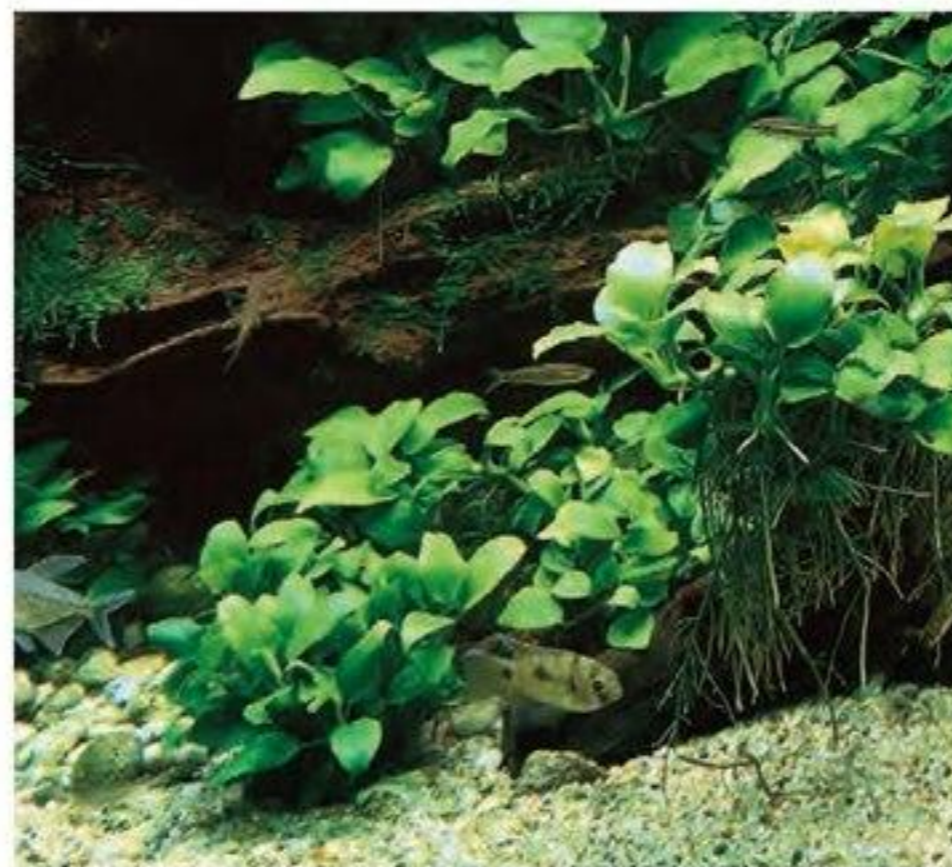
Exercise your skill to have a beautiful clump of this popular *Microsorium* species.

■ *Microsorium* sp.



This narrow leaf variety has many different leaf widths. This species is usually relatively slow-growing.

■ *Anubias barteri* var. *nana* "Narrow"



There are many varieties of *Anubias nana* with different sizes of leaves, including narrow (or yellow heart) and petit.

■ *Bolbitis heudelotii*



The unusual leaf shape, unique to ferns, creates an atmosphere of deep mountains and dark valleys. The leaves should be trimmed frequently to facilitate the development of new leaves.

Points of Growing Epiphytic Aquatic Plants

Most epiphytic aquatic plants such as ferns grow on stone, rock or driftwood that is exposed to splashes of fresh stream water, under dappled sunshine falling through foliage. To recreate these kind of conditions, they prefer relatively low-temperature, clean water at about 22-25°C that contains a relatively low amount of organic nutrients. In summer when water temperature usually rises, the condition of epiphytic aquatic plants easily deteriorates in highly eutrophic water caused by infrequent water changes. Even when these plants are growing well, they may have difficulties developing beautiful leaves if they grow too densely and become exposed to problems such as poor water circulation between leaves and sediment deposits on the plant. A key

point to avoid these problems and grow beautiful plants is to thin out the leaves on a periodic basis to ensure good water circulation. You may feel hesitant to trim off the leaves since the growth rate of epiphytic aquatic plants is slower than other species of aquatic plants. Nevertheless, make sure to perform periodic thinning of the leaves and cut off the leaves with black spots and damaged leaves as part of regular maintenance. As to light intensity, epiphytic aquatic plants can grow even in low light, but some ferns tend to bear larger leaves and look flat under low-intensity light. To achieve a good-looking clump of fern, it is essential to grow it under adequate light (about 60-80W for 60cm tank) and trim the leaves frequently.



Immediately after planting



The basic arrangement of epiphytic aquatic plants is a scalene-triangular form. It adds a good accent to the aquascape.

Wood Tight

Completed aquascape



Epiphytic aquatic plants produce a natural feel in the layout and also have the effect of softening the rigid impression of the surface of the driftwood.

Attaching method ①



After removing damaged leaves, place the roots around the driftwood and secure them with Wood Tight.

Attaching method ②



Prepare a plant that has already been secured to a small stone with Wood Tight and just place it in the tank.

Attaching method ③



If Bolbitis has a lot of damaged leaves, you may cut off all the leaves before securing to driftwood.



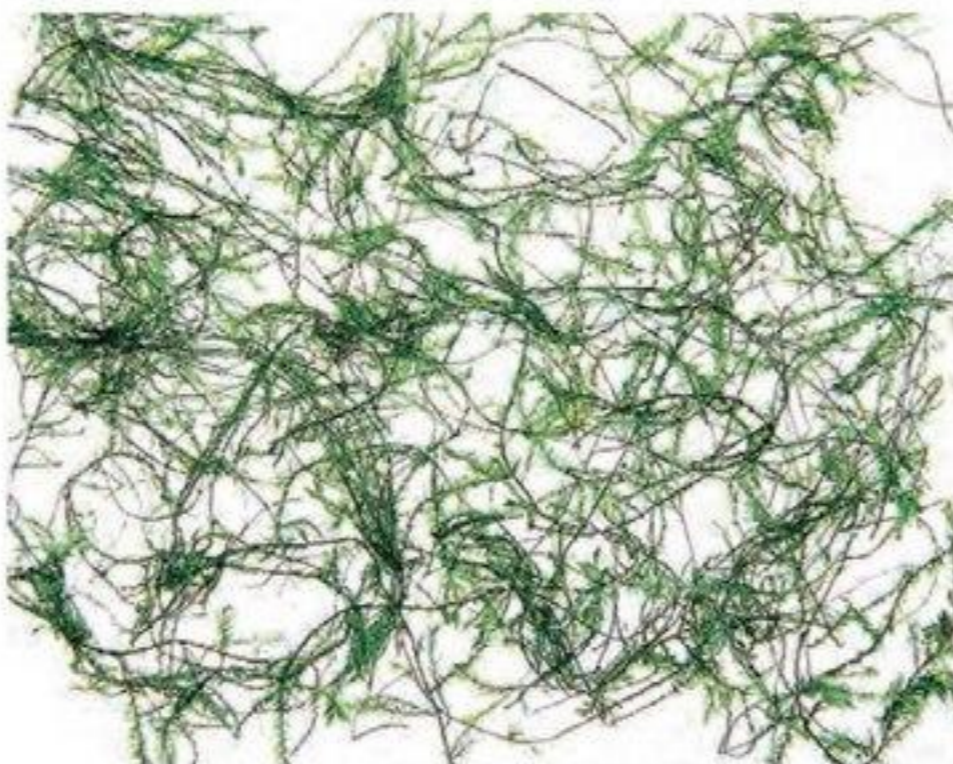
Sample of Layout Expression using Epiphytic Plants

Using a lot of epiphytic aquatic plants for layout of mid-ground also has the effect of concealing the unsightly bottom part of the stem plants in the background. It has another benefit of adding depth to the aquascape by providing the expression of "shade" in addition to the expression of "light" created by stem plants.

Willow moss (*Taxiphyllum barbieri*)

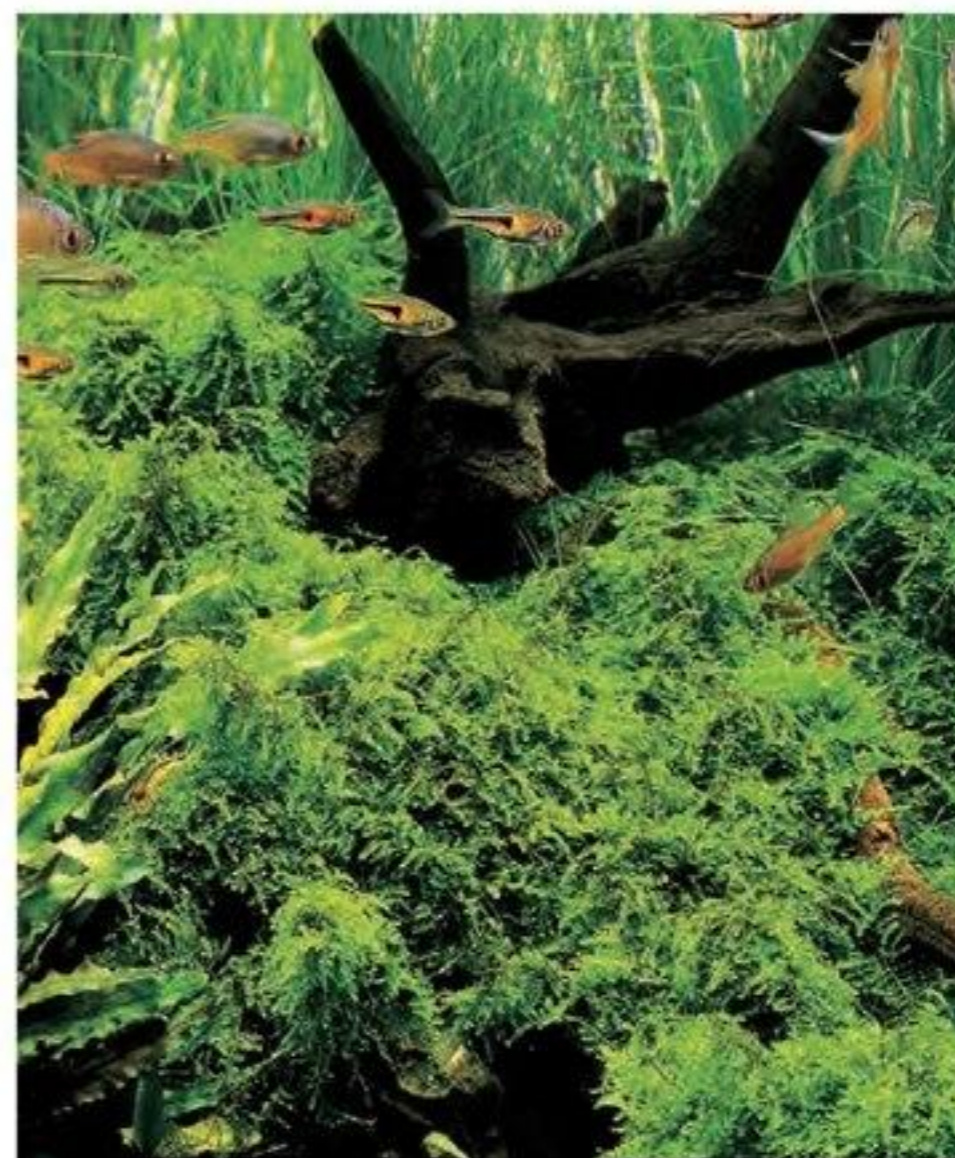


Willow moss is one of the aquatic moss species that are very easy to attach to other objects. Driftwood covered by willow moss makes us feel the passage of time, by creating a great sense of age.



Willow moss is a vernacular term for *Taxiphyllum barbieri*. It has a higher tolerance for high water temperature compared to *Fontinalis antipyretica* that is native to Japan.

South American willow moss (*Vesicularia* sp.)



This willow moss grows in the form of overlapped triangles and helps form a unique aquascape. It looks brighter than *Taxiphyllum barbieri*.



Riccia Line is used to attach this less-epiphytic species. Although this is commonly called "South American willow moss", it grows in Southeast Asian countries.

Points of Growing Willow Moss

The key to maintaining willow moss in a finely-attached state is to trim it before it grows too dense. Particularly for the first six months after planting, when the willow moss still has not taken root yet, you must not pluck off the leaves by hand but instead should trim them with Trimming Scissors. The process of repeat trimming will cause the willow moss to gradually attach to the surface of the driftwood or stone and its appearance will change from a fluffy to a nice mossy look. Trim the moss if it has grown too long to avoid a rough and untidy impression as that would be detrimental to the overall appearance of the aquascape. Willow moss is a tough

shade plant and easily becomes the dominant species in the tank. If tiny trimmed pieces of willow moss fall onto the foreground plants, it will eventually grow by creeping across the foreground plants and spoil the aquascape. To prevent this, the trimmed pieces of willow moss must be carefully removed as much as possible by suctioning them off with a thin hose. Some hobbyists add Siamese Flying Fox to the tank for eliminating algae. In this case, close attention must be paid to the condition of willow moss since Siamese Flying Fox kept in the tank may bite the willow moss leaves until only the stems are left.



Framework of aquascape



The color of driftwood may create a rigid impression if its surface is left bare.



Moss Cotton

Immediately after planting



Natural feel of the aquascape will be enhanced just by attaching willow moss to the branch tips and cut edges of the driftwood.

Attaching method



Place a thin layer of willow moss and tie it tightly onto the driftwood using Moss Cotton.



Trim off the protruding willow moss carefully with scissors.

Trimming



An attractive aquascape with beautifully grown moss can be maintained by trimming willow moss before it gets too thick.



Sample of Layout Expression using Willow Moss

Willow moss is attached to branch wood. Grown willow moss hanging down from the branches resembles a deep forest.

Floating /Underwater



Riccia generating oxygen bubbles is one of the aquarium scenes that every hobbyist longs for.

Submerged/Underwater



Originally floating Riccia can be grown completely submerged if it is kept under water for a long time. This type of Riccia has a darker color and narrower leaves.

Field/Semi-submerged



Riccia grown in a cluster in a natural stream. Clear water helps it grow beautifully.

Field/Emersed



Riccia is one of the most common aquatic plant species native to Japan. It can be found even in paddy fields as shown in the above picture.

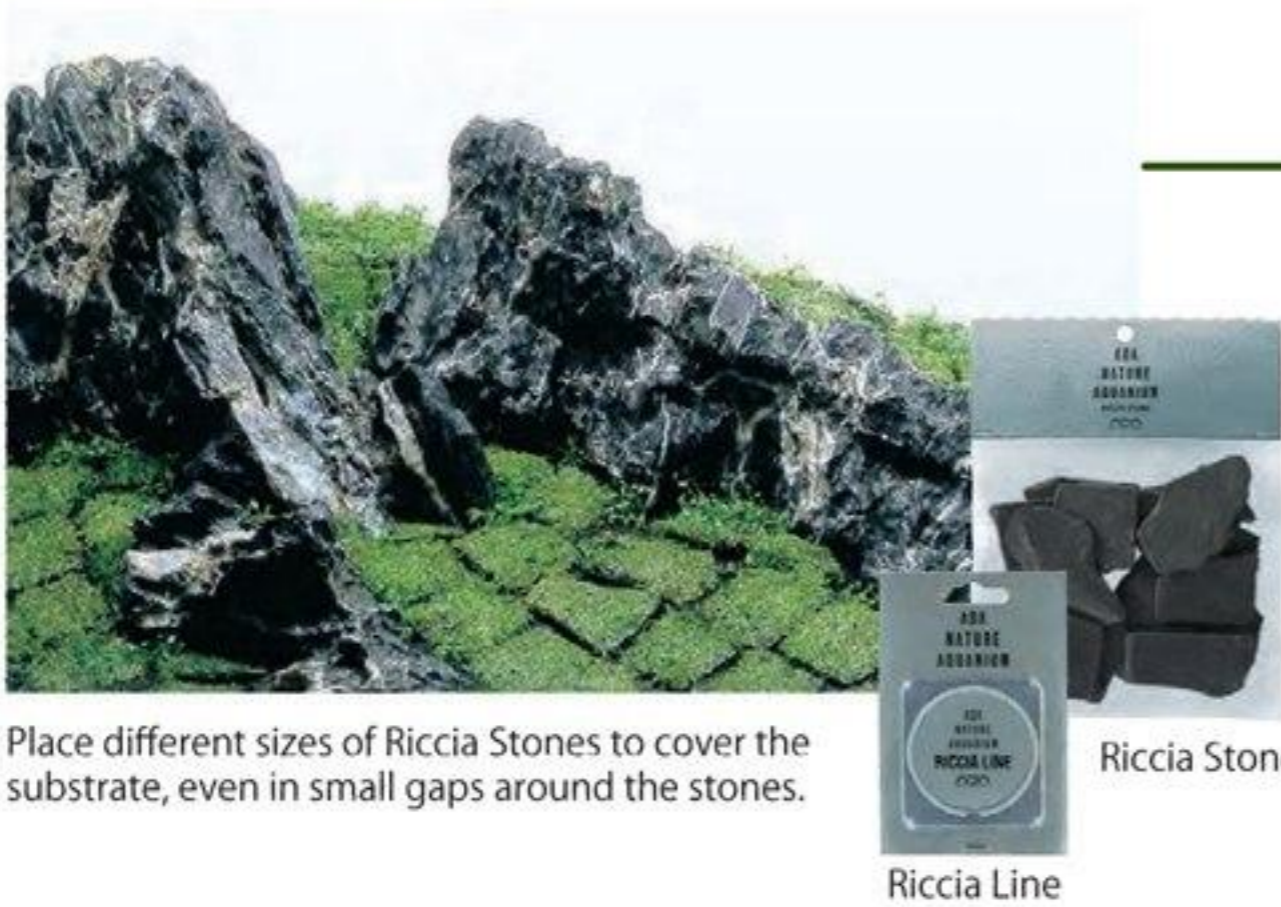
Points of Growing Riccia

Riccia requires high light (about 80W for 60cm tank) and CO₂ supplement for growth. Riccia, a species of floating bladderwort, is a non-epiphytic and floating plant. When using Riccia in a planted aquarium, it should be tied to Riccia Stone with insoluble Riccia Line to prevent it from floating up. This process in fact requires the users to take extra time and effort, but it is a very beneficial method of planting that allows us to plant Riccia even in the narrow gaps at the side of the stones and enables us to make an elaborate layout where Glossostigma and hair grass are planted between Riccia Stones. The

current upgraded lineup of Riccia Stone under Nature Aquarium Goods offers various sizes of stones, ranging from fine pieces to large pieces, to facilitate smooth layout work. The biggest concern for the layout using Riccia is the maintenance of the aquascape while suppressing Riccia's buoyancy. Its buoyancy can be restrained naturally if Riccia is planted together with foreground plant which spreads runners. This arrangement not only makes the maintenance of the aquascape easier but also has the effect of enhancing the natural ambience of the layout.



Immediately after planting



Place different sizes of Riccia Stones to cover the substrate, even in small gaps around the stones.

Ricciascape

Riccia Line

Completed aquascape



A carpet of green is made by densely grown Riccia. Mixed planting with Glossostigma looks natural.

Attaching method



The Riccia onto Riccia Stone using Riccia Line in such a way that every corner is covered with Riccia.

Suppressing buoyancy

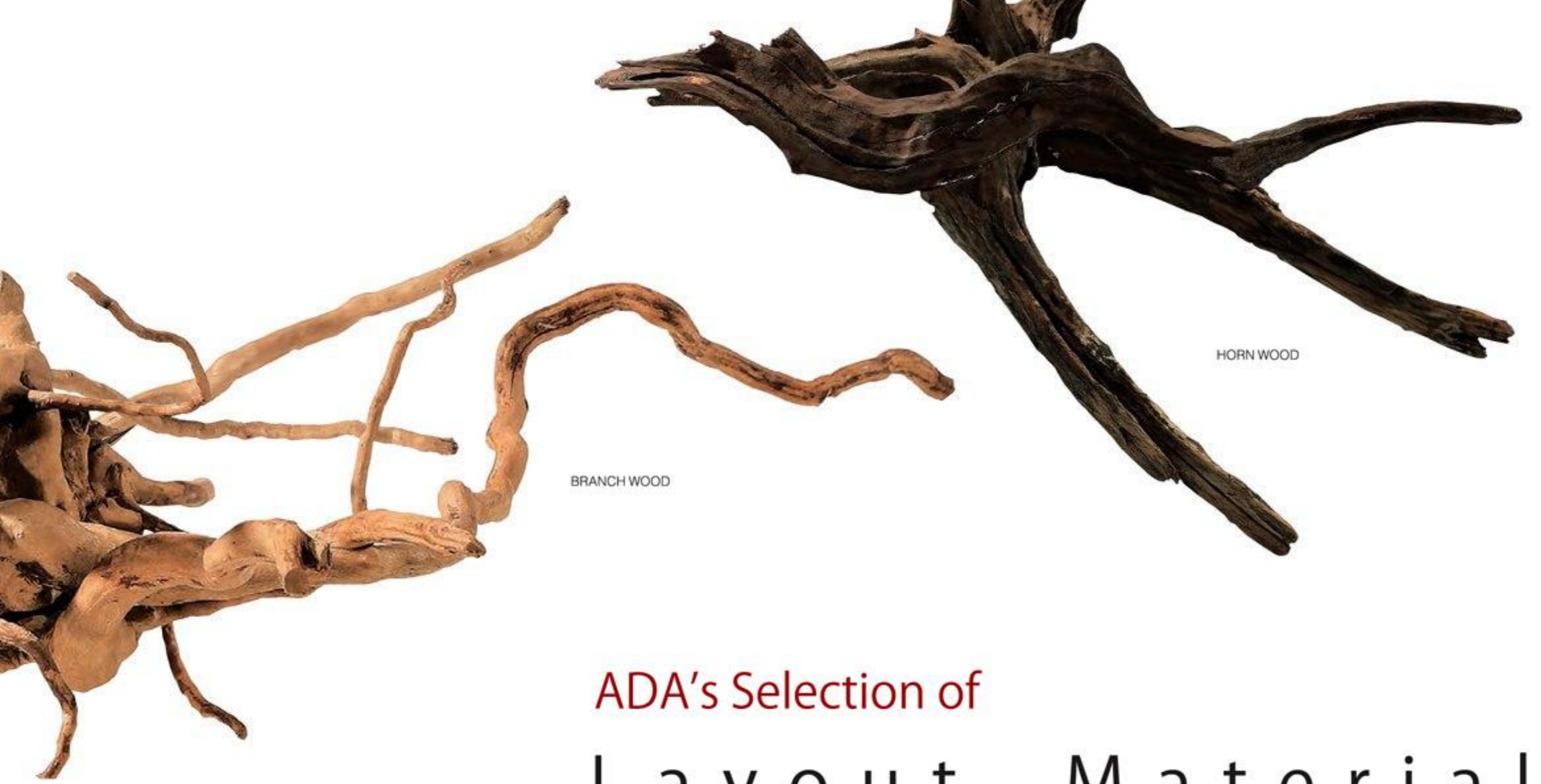


If Riccia is about to float up, place some small stones to which Riccia is attached in spots.



Sample of Layout Expression using Riccia

There is another method where Riccia is attached to the base layer of epiphytic willow moss. Different tones of soft green can be expressed by this method.



BRANCH WOOD

HORN WOOD

ADA's Selection of

Layout Materials Natural Ambience

N A T U R E

A Q U A R I U M



CONGO SAND

In the Nature Aquarium, a natural ambience is created by using layout materials such as stones and driftwood, in addition to aquatic plants. In view of the fact that the impression of the layout materials varies greatly depending on their colors and shapes, the discovery of new layout material helps increase the variety of styles that we can achieve when aquascaping. Among the wide range of layout materials offered by ADA, some materials that are currently available will be featured here. The first items to be mentioned are branch wood and horn wood. Branch wood, which is in fact the root of a tree, features a complicated shape formed by its thin, bendy branches. With this material, a natural landscape where tree branches are complexly tangled can be expressed in the layout. Horn wood is a relatively traditional type of

driftwood and its natural color and texture makes it a perfect partner for willow moss and ferns. As for stones, three new types, namely Kei stone, Sado-Akadama stone and Unzan stone, are added to ADA's current lineup consisting of Manten stone, Ryuoh stone and Yamaya stone. Among these six types of stones, Manten stone and Ryuoh stone can be used for a wide variety of layouts ranging from the classic Iwagumi layout to those that use a combination of stones and driftwood. Smaller-sized Yamaya stone is suitable for the use in a mini or nano tank. It can also be used as a substrate material by piling many pieces on top of each other, to increase the height of the substrate. Newly released Kei stone and Sado-Akadama stone feature warm colors, such as ocher, reddish purple and reddish brown, that have never been seen before in



MEKONG SAND



COLORADO SAND



LA PLATA SAND



UNZAN STONE



SADO-AKADAMA STONE

for Creation of in Nature Aquarium

L A Y O U T M A T E R I A L S

ADA's stone lineup. Their applications are the same as conventional types of stones. Unzan stone which is a natural volcanic stone has a shape that looks great just by itself in the tank. It features pockets that are perfect for placing Wabi-Kusa in to, enabling hobbyists to create even more new expressions by using Wabi-Kusa. Besides layout materials including stones and driftwood, cosmetic sand used for substrate also adds a natural ambience to the layout. We can find many sandy landscapes in nature, such as riverbanks and beaches and each have a different color and grain size depending on the natural location. To express such a landscape, several types of cosmetic sands have been used in the Nature Aquarium. Some sands are no longer available due to the restrictions on the sand source locations, but new sand products have been released to

complement them. The latest cosmetic sand released are La Plata sand and Colorado sand, which widen the current lineup consisting of Congo sand and Mekong sand. For La Plata sand, the larger-grain version, called 'La Plata Sand Big' is now available and can be used for further enhancement of the natural ambience of the layout by using the two different grain sizes of sand together, to create a very natural look. Colorado sand is a whole new type of cosmetic sand and is reddish in color. This new sand will provide hobbyists with a wider range of expression and creativity. Please make the best use of these layout materials and cosmetic sand and take on the challenge of creating your own original natural expression!



MANTEN STONE



KEI STONE



YAMAYA STONE

LA PLATA SAND BIG



RYUOH STONE





 World Ranking 0002

TAIWAN
Xue Hai

W150 x D60 x H50 (cm)

This aquascape uses the technique to express perspective by standing many branches of different sizes. This style has been seen quite often in recent IAPLC. The line of white cosmetic sand looks like a small stream flowing in a forest.

Layout Styles of the IAPLC 2011 Top Prize Winners

Planted aquarium hobbyists across the globe pursue their own original layout expressions. Their passion can be felt from the aquascapes created by the winners of International Aquatic Plants Layout Contest (IAPLC) 2011.



 World Ranking 0001

VIETNAM
Long Tran Hoang

W150 x D81 x H48 (cm)

A distinctive layout expression is created by piling the stones having unique depressions. Young moss and ferns grown on the stones enhance the natural ambience of the aquascape.



 World Ranking 0003

RUSSIA
Dmitriy Parshin

W120 x D45 x H45 (cm)

The use of unique material is a way to draw attention in the Contest. The combination of Eriocaulales and the layout material using tree bark in this picture is a good example.



 World Ranking 0006

JAPAN
Koji Kogure

W120 x D45 x H45 (cm)

The layout resembling mountain landscape is one of the recent trends. This layout depicts woodland skillfully by way of effective pruning of the stem plants.



BRAZIL
Luis Carlos Galarraga

W100 x D45 x H45 (cm)

Colorful contrast of red and green stem plants catch viewers' eyes. This kind of planting arrangement is rarely seen in the aquascapes made by Japanese hobbyists. It is filled with merry Latin atmosphere.



TURKEY
Abdullah Tezer

W100 x D40 x H50 (cm)

As seen in this layout, there are some aquascapes depicting trees as close as possible to those in nature. This type of aquascape has once created controversy over whether its layout depicts territorial or underwater landscape.



CHINA
Chen Yu Qing

W85 x D45 x H45 (cm)

This layout resembles Taifu stone highly esteemed in China. It is a fun to discover the characters of each country in the aquascape layouts in an international contest.



HONG KONG
Cliff Hui

W120 x D45 x H50 (cm)

The aquascape with mossy stones and driftwoods is filled with natural ambience. This layout expression is not something new, but the technique used for this layout is outstandingly skillful.



SINGAPORE
Robert Oei

W90 x D45 x H45 (cm)

This layout finely depicts the casual nature by the roadside. A line of white cosmetic sand in the center adds depth and accent to the aquascape.

Making Full Use of Additives for Water Quality Control

The quality of water in the Nature Aquarium water is kept in good condition by the photosynthesis and healthy growth of aquatic plants, which thereby contributes to the realization of an environment conducive to keeping healthy fish and shrimps. If a problem arises with the water quality for some reason, the healthy growth of aquatic plants and the condition of fish and shrimps will be affected. The Nature Aquarium Notes of this issue discuss how to control water quality using additives.

● Water Quality of Nature Aquarium

Photographs of Nature Aquarium aquascapes in the Aqua Journal are accompanied by the data on that aquascape. This data contains water temperature, pH and TH values as the basic information on water quality together with other data including tank size, equipment used, aquatic plants and fish species. These water quality variables have a significant impact on the growth of aquatic plants as well as the health condition of fish, and therefore should ideally be maintained at a certain level as far as possible. This is why healthy Nature Aquariums often have similar water quality values even though they are made in different tanks. For example, the standard water quality for Nature Aquarium is approximately 25°C, pH 6.8 and TH20mg/ℓ. The water temperature can be kept constant by installing an aquarium heater or room air conditioners; however, on the other hand, pH and TH level is significantly influenced by many factors such as the quality of tap water that is used for water changes, substrate materials and layout materials. The tap water used for water changes at the Nature Aquarium Gallery has a PH and TH of approximately 7.0 and 20mg/ℓ, respectively. This water is suitable for the growth of aquatic plants even without any adjustment (pH can be lowered by way of CO₂ injection). Tap water quality varies depending on the location and season, and thus the same quality cannot be expected across the nation. The water in some regions may show higher pH and TH levels, which can affect the growth of aquatic plants. The pH and TH levels of water may also increase because of the effect of the layout materials used. On the other hand, there are some aquatic plants that do not grow well with low levels of pH or TH caused by the use of Aqua Soil for the substrate. Where the water quality is a concern, the effective solution is to use water additives to control the water quality.

● Cause of Rise in pH and Countermeasures

The pH level of tap water may vary greatly depending on the location and season. It is usually neutral at pH7.0, but it can become more acidic (approximately pH6.0) or alkaline (approximately pH8.0). Most of the aquatic plants used in the basic types of layout grow well in neutral to slightly acidic water and tend to show difficulties when growing in alkaline water. This is because carbonic acid present in water is converted into another form according to pH. In alkaline water, carbonate ion is dominant and only limited species of aquatic plants can perform photosynthesis in this environment; whereas in acidic water, free carbon dioxide becomes dominant and provides the environment that is ideal for most aquatic plants to perform photosynthesis in. This carbonate ion is also the main contributing factor in the rise in pH of tap water. Carbonate ion is contained in lime stone and other rocks/stone in the form of carbonate (or calcium carbonate) and it, together with calcium ion, dissolves in rainwater on and under the ground. Calcium ion causes the total hardness (TH) of water to rise while carbonate ion raises the carbonate hardness (KH); and based on this fact, it can be said that the tap water having a higher pH level (around pH 8.0) tends to contain a higher level of TH and KH. Some stones used as a layout material contain calcium carbonate and can contribute to the rise in pH level of tank water. When there is a problem of high pH level of tap water or increased pH level of tank water, the application of the additive "be Soft" can be an effective solution. By simply adding to the tap water in a pail, the acidic additive "be Soft" lowers the pH of tap water and also decreases the KH by the reaction of acid and carbonate ion. This additive is safe for aquatic plants and fish, since carbonate ion will be converted to free carbon dioxide (CO₂) by reaction with acid and the additive "be Soft" will eventually be broken down into water and carbon dioxide. How much the pH level can be

lowered by the use of "be Soft" varies depending on the tap water quality, so it is advised to add "be Soft" slowly while measuring the pH level of the water using the pH Kit. Please note that TH does not decrease by adding "be Soft" to the water. An effective way to decrease TH level is to use a water purifier with a demineralizing function (for tap water having a high TH level) and to install a Softener in the tank (when TH rises due to the stone used in the aquarium).

● Additives for Removing Water Contaminants

The water in the aquarium gets dirty over time, because of fish waste and unconsumed food. These contaminants are usually broken down and eliminated by the filter installed for the tank, but they may not be broken down at an adequate rate if the biological filtration capacity is insufficient or an excessive number of fish are kept in the tank. Organic matters and ammonium, which are the major contributing factor to contaminated water, are broken down into phosphate (PO₄) and nitrite (NO₃). These elements are usually absorbed by aquatic plants; however, if the supply of these elements in the water exceeds the amount that can be absorbed by the plants, they are deposited in the water and cause algae bloom. An effective way to get rid of contaminants deposited in the tank is to change the tank water. The frequency of this water change can be reduced by using additives that are effective in the removal of water contaminants. The primary cause of water contamination is organic matters derived from fish feces and unconsumed fish foods. If the water contains a large amount of organic matter, the water becomes cloudy as a result of the deterioration in water clarity and the increase of free-floating bacteria in the water. Clear Dash is an additive specifically developed for the removal of water cloudiness. With its polymer absorber, this additive clumps organic matters and other sources of contamination in the aquarium

water so that they can be easily removed by the filter. It also clumps the fine particles released from Aqua Soil, and therefore is very useful for removal of water cloudiness in the initial stage after the setup of the aquarium. You do not have to worry even if the water becomes very cloudy immediately after Clear Dash is added to the tank water. It is caused by the reaction of Clear Dash and the contaminants in the water; the water will become clear after this cloudiness is eliminated by the filter. Meanwhile, the accumulation of phosphate and nitrite in the water accelerates the growth of algae that feed on these elements. In this regard, phosphate has a greater impact than nitrite. The phosphate concentration can be measured with Pack Checker PO₄. In fact, phosphate is usually seldom detected in an aquarium using Aqua Soil for the substrate as long as the number of fish and the volume of aquatic plants are balanced, since phosphate is absorbed by aquatic plants and the soil contained in Aqua Soil. If phosphate is accumulated to a detectable level, it can trigger the increased growth of algae, in particular green algae such as spirogyra. This means that the algal growth can be controlled by lowering phosphate concentration in the water. Taking advantage of the fact that phosphate can be easily absorbed by soil, the additive "be Clear" absorbs and eliminates phosphate with its special fine particles. To ensure that the fine particles are mixed well with liquid, hold the bottle upside down and shake well before adding the

liquid to the aquarium water. The fine particles will stick to phosphate while being drawn into the filter or falling onto the substrate. This additive should basically be applied to the aquarium water once to twice a week if spirogyra or other green algae is growing fast. In other cases, "be Clear" should be used according to the rate of phosphate accumulation.

● Additives to be Used for Water Change

Performing a water change is a good way to remove the contaminants deposited in the tank and adjust the water quality. However, this method is effective only when there is no problem with the pH and TH levels of the tap water. If there is any concern about the tap water quality, the water should be adjusted using a water purifier or an additive like "be Soft". Even when there is no problem in the basic water quality, the tap water contains undesirable substances such as residual chlorine and metal ions. The residual chlorine level tends to be higher particularly in winter as less chlorine evaporates due to colder weather. This harmful residual chlorine can be neutralized by adding Chlor-Off to the tap water. Make sure to get rid of residual chlorine while checking the chlorine level using Pack Checker CIO. Excessively cold tap water is usually made warmer by adding hot water before pouring into the aquarium tank. At this time, the tap water sometimes appears cloudy because the increase of water temperature causes tiny bubbles of residual chlorine to be

visible. If the water is poured into the tank without any treatment, the chlorine contained in the water is absorbed by the filter and this has a negative impact on the filter bacteria. It can also stick to the gills or bodies of the fish in the tank and have a detrimental affect on their health. To avoid these problems, it is advised to keep tap water in a pail for a while after increasing its temperature, to add Chlor-Off to remove residual chlorine, and then to wait until the chlorine gas has had time to evaporate before pouring the tap water into the tank. The safety of the tap water is further improved by adding Rio Base, an additive that is effective in the removal of heavy metal contained in tap water and is also good for protecting fish mucus. Rio Base also contains humic acid and various vitamins, making the composition of tap water closer to that of natural river water. If you wish to remove residual chlorine and detoxify metal ions more easily, the use of "be Fine" is a convenient solution. Although its effect is not as powerful as the combined use of Chlor-Off and Rio Base, this additive can still be used for the removal of a minimum necessary level of residual chlorine and detoxification of heavy metal. It is recommended to use "be Fine" for strong fish that will not be effected much by water changes. For sensitive fish that are easily affected by water changes, the combined use of Chlor-Off and Rio Base is recommended.

☐ Water Quality Check



pH Kit



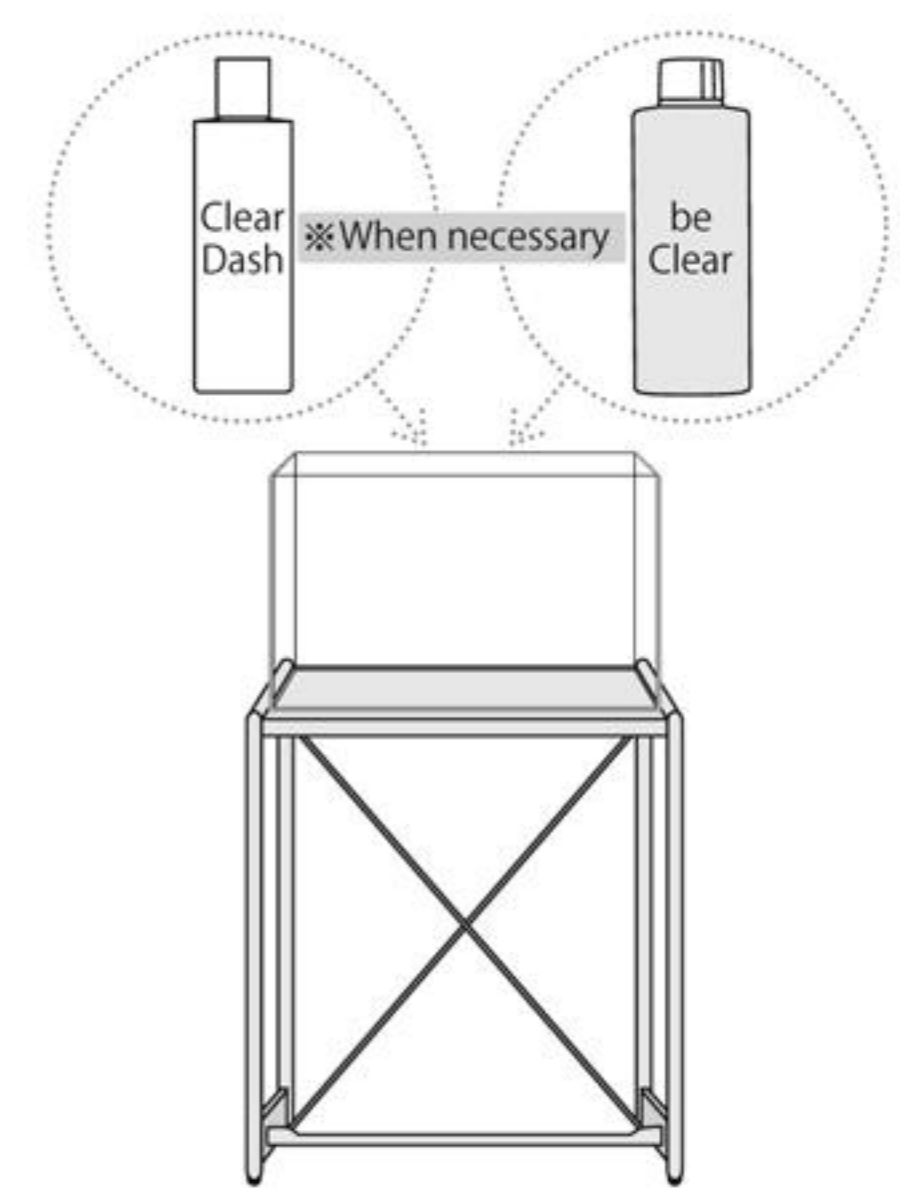
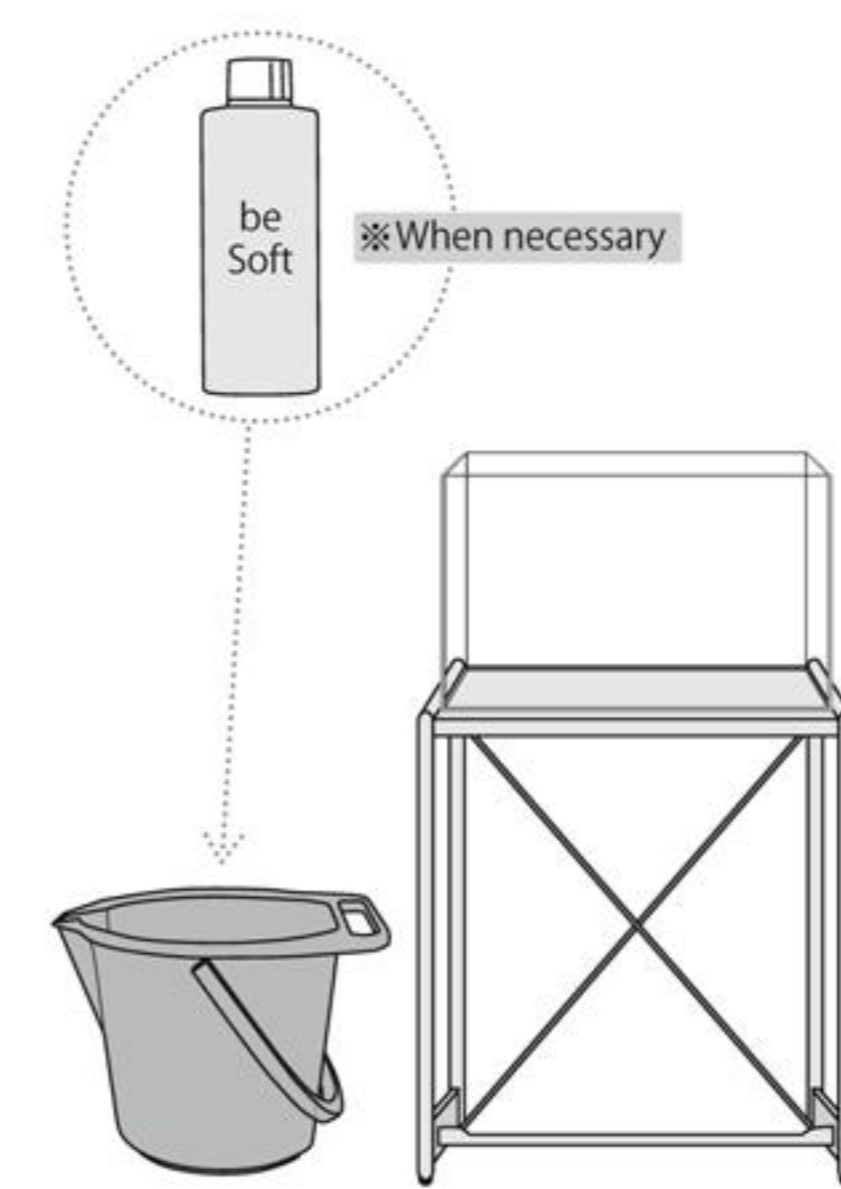
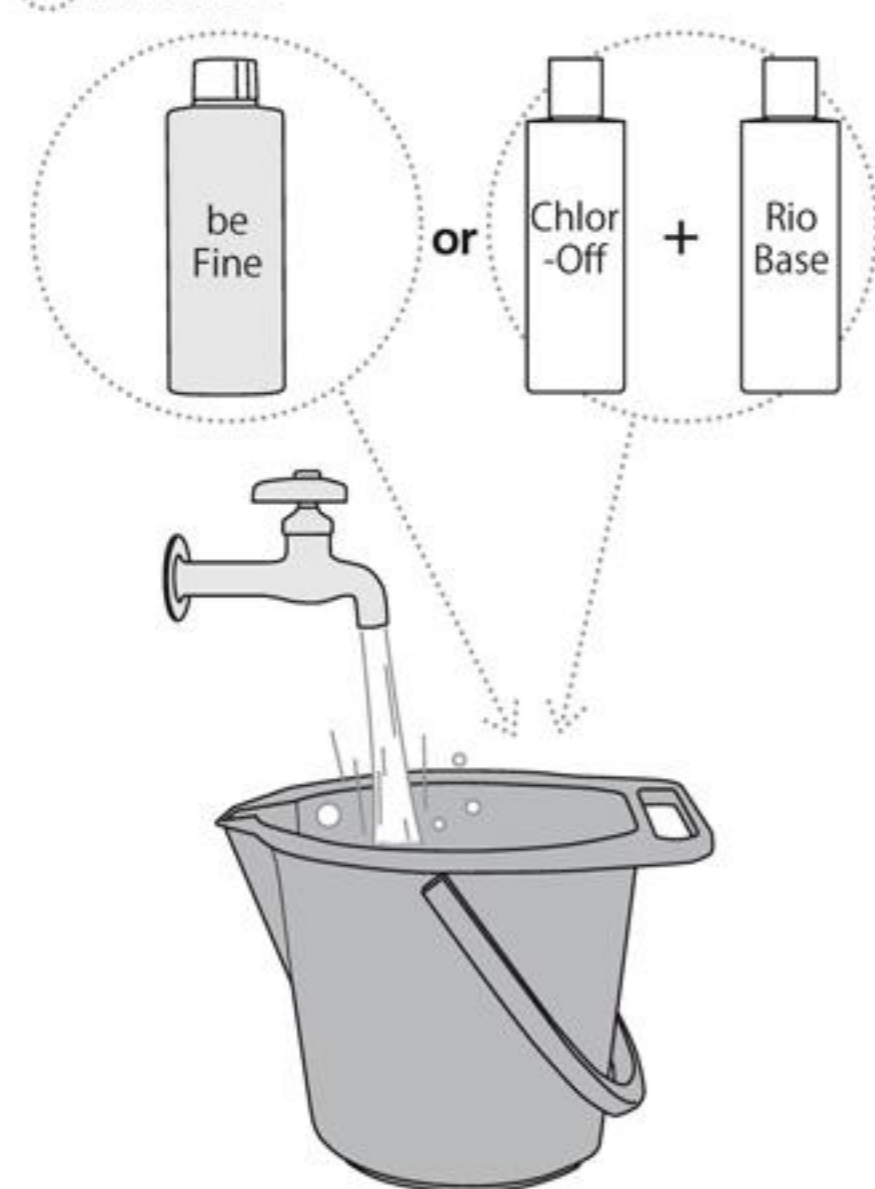
Pack Checker TH



Pack Checker PO₄
Pack Checker COD



○ Additives



① Measure the residual chlorine in tap water with Pack Checker CIO. Add "be Fine" or Chlor-Off & Rio Base to the water to eliminate residual chlorine and detoxify heavy metal.

② Measure the pH level and total hardness of the water with pH Kit and Pack Checker TH, respectively. Adjust the water quality using "be Soft" when necessary. After "be Soft" is added, measure the pH level again.

③ Measure the organic matter and phosphate in the water with Pack Checker COD and Pack Checker PO₄, respectively. Clear Dash is effective for the removal of organic matter. For eliminating phosphate, the use of "be Clear" is recommended.

NATURE AQUARIUM

Q&A

Spring has come in the northern hemisphere, and the deadline of International Aquatic Plants Layout Contest 2012 is approaching near. It is the time for many aquarists to make a final layout check for photography shooting. We are waiting for many applications again this year!

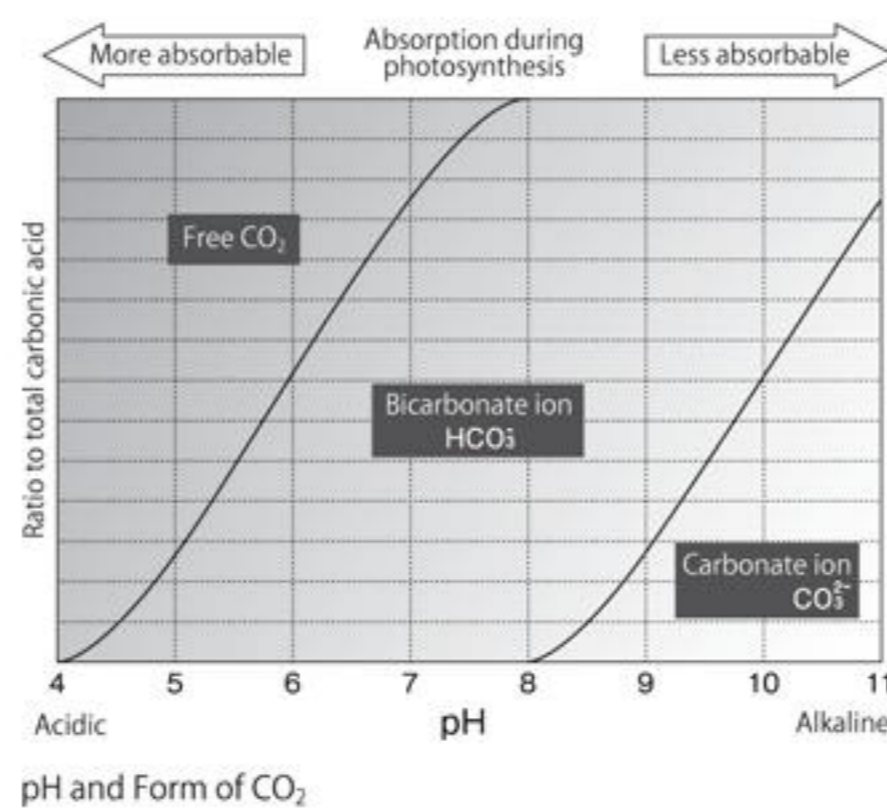
Q I wanted to try to make a planted aquarium and purchased Aqua Soil-Amazonia the other day. Is this soil enough to make a substrate for growing aquatic plants?

A It is possible to grow aquatic plants in a substrate made up of only Aqua Soil Amazonia if you plan to do a makeover of the aquascape within a year, or if you are not planning on maintaining the aquascape for a long time. If, however, if you intend to maintain the aquascape for a long period of time or if you wish to have lush rosette-type aquatic plants in the aquarium, you must use Power Sand as well as Aqua Soil. Power Sand contains slow release nutrients in addition to rich nutritional elements derived from fertile peat. It is made from volcanic stones and has a wide variety of benefits that help with the maintenance of your aquascape, including promoting good water circulation within the substrate where it is usually prone to water stagnation. In addition to that, the use of additives such as Bacter 100 and Clear Super is recommended. These additives can be applied only during the initial stage of aquarium. If you wish to have a better and more perfect substrate system for your aquarium, it is advisable to use the substrate additives whether the aquascape will be maintained for a long time or not.

Q How can I lower the carbonate hardness of my aquarium water? Which is more effective for the growth of aquatic plants, lower carbonate hardness or lower total hardness?

A In the aquarium industry, carbonate hardness (KH) refers to the level of bicarbonate ions (HCO_3^-) in the water; while total hardness (TH) and general hardness (GH) refer to the level of calcium ions and magnesium ions contained in the water,

respectively. The additive called "be Soft" from the Do!aqua series is effective to lower the carbonate hardness, making it easier to control the water quality. If the pH and KH of the water decrease, more carbon dioxide, which is dissolved in the water through CO_2 injection, takes the form of free CO_2 . In view of the fact that free CO_2 is more easily absorbed by most aquatic plants, it will be easier to grow aquatic plants in water that has a lower KH concentration. For total hardness (TH), most aquatic plants do not grow well in hard water containing high calcium and magnesium ion concentrations, and therefore it is better to maintain soft water at a lower total hardness in the aquarium for healthy growth of aquatic plants. By using Aqua Soil as a substrate material, you can lower the carbonate hardness and total hardness in the water and obtain water quality that is most conducive to the growth of aquatic plants.



Q My Rotala Indica does not turn red. What can I do?

A The main cause of red aquatic plants not turning red is insufficient light intensity. For a 60cm tank, a light intensity of about 70-80W should be used. As a matter of course, adequate CO_2 injection for that light intensity is also required. Most red

aquatic plants will turn red in such high light, but if you feel the plant is not red enough, then supply additional iron by using ECA. If your Rotala indica does not turn red even when Aqua Soil-Amazonia is used for substrate and the water is kept neutral to slightly acidic, it may be that your plant is not Rotala indica but Rotala rotundifolia. The scientific name of the plant we commonly call "Rotala indica" is Rotala rotundifolia var.; and the scientific name "Rotala indica" originally refers to Rotala indica var. uliginosa which is a therophyte. For this reason, there are cases where Rotala indica and Rotala rotundifolia are mixed up. The plant we commonly call Rotala rotundifolia has yellow-green submerged leaves that are a little more roundish than Rotala indica leaves. Its leaves do not turn bright red like Rotala indica even if it is grown in high light and iron is supplied. Rotala is an easy-to-use plant for the planted aquarium and thus it is very popular among hobbyists. Various Rotala species are sold in shops, so it is advisable to confirm with the shop staff if the plant you are about to purchase is your desired species.



Rotala rotundifolia leaf



Rotala indica leaf

Q I am thinking of covering driftwood with Riccia for my layout. Is there any way to stop Riccia from floating off the driftwood?

A If you simply wrap the driftwood with Riccia, the only way to stop the Riccia from floating out of the driftwood is to tie the Riccia using Riccia Line. However, this might be a little tough to do on a completed layout. A potential solution is to place willow moss thinly on the driftwood to

Send us your questions!

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form a base layer and tie it with Riccia Line during layout work. Once this willow moss takes roots in the driftwood, it tangles with the Riccia and thereby helps prevent the Riccia from floating out of it. Even if Riccia floats up, the driftwood will not appear bare with the willow moss layer remaining on it and this helps maintain the natural ambience of the aquascape.



Example of Riccia attached on top of willow moss layer

Q I purchased filter media to set up a new aquarium. The shop staff explained to me that NA Carbon should be washed before use while Bio Rio is to be used without washing. Why are these two items handled in different ways?

A NA Carbon is a filter media that eliminates contaminants via the absorption effect of tiny holes on its surface; and its absorption capacity works faster if the air trapped in these tiny holes is removed. The reason why NA Carbon is washed before use is to cleanse the black powder on the media and also to remove the air trapped in the holes. In contrast, Bio Rio for biological filtration is not washed before use because it is pre-mixed with beneficial bacteria so that these bacteria will colonize the filter media as quickly as possible. Unwashed Bio Rio causes the aquarium water to become cloudy immediately after letting the water run through Bio Rio for the first time, but this problem will

gradually disappear after a period of time. These two types of filter media are handled in different ways during their set up so as to bring out the best of their features.

Q I have purchased Cuba Pearl Grass in a pot and planted it in my aquarium, but it decayed and floated after a few days. What should I do about it?

A It is relatively hard to plant Cuba Pearl Grass and it takes a longer time for it to take root because of its short roots. Cuba Pearl Grass, a plant that prefers slightly alkaline, medium-hard water, is often found decayed just a few days after it is planted in an aquarium using Aqua Soil, which makes the aquarium water soft and acidic. The decay is caused by such a water quality problem, combined with the damage caused to the plant during the planting process. You have to be prepared, to a certain extent, for the loss of plants after the initial planting work. To minimize this, you can try the following planting method designed for reducing the damage caused to the plants and therefore minimizing the loss of plants. Firstly, Aqua Soil Powder Type as the smaller granules of the Powder Type hold the thin, short roots of Pearl Grass more tightly and effectively. The Powder Type can be used on its own or it can be placed as a layer over the top of the Aqua Soil. Secondly, plant Cuba Pearl Grass a little deeper until its leaves can barely be seen. This planting method can help Cuba Pearl Grass to take root easily and develop more new leaves. The critical period for the planting of Cuba Pearl Grass lasts until it takes root. If the leaves fade or decay, it is advisable to trim off the affected part of the plant immediately and replant only the healthy, dark-colored part around the terminal bud in the substrate. In contrast, Wabi-Kusa Pearl Grass seldom faces the problem of decay even under the same growing conditions. This is because the roots of Wabi-Kusa

Pearl Grass have considerably spread and this makes the plant free from the damage during the planting process. Wabi-Kusa Pearl Grass is recommended for those who experience problems growing Cuba Pearl Grass.

Q How many Green neon tetra or Cardinal tetra can I add to a W90×D45×H45 (cm) tank with an Iwagumi layout? I am not going to mix them with other species of fishes.

A If you wish to take photographs of the layout to keep as a record of your work, it is advisable for you to put about one hundred Green neon tetra or Cardinal tetra into an aquarium to have an attractive aquascape. This number can be changed depending on the size of the fish. These fish go very well with an Iwagumi layout and a school of these fish can make the viewers feel the natural flow and movement in the aquascape. To achieve this effect, a relatively large number of fish need to be added to the aquarium because they do not swim in unison if only a small number of them are put in the aquarium. Small-sized fish that usually swim in a school or shoal in nature appear to be more stable if many of them swim together in an adequately sized tank, rather than having only a small number of them.



Cardinal tetra swimming in a school is very attractive.

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