

Nature Aquarium information magazine

AQUAJOURNAL

ADA
aqua design amano

DEC.
2011

Special Feature

Studying the color of Nature Aquarium



CUBE GARDEN SERIES

NATURE AQUARIUM HIGH QUALITY TANK

An Ideal Tank for Nature Aquarium

The sophisticated style of the Cube Garden is created using the minimal amount of silicon (while maintaining the best strength and stability of the aquarium) and high transparency glass. It is a piece of art produced by a collaboration of skilled craftsmen. Through the CUBE GARDEN, we are able to blend beauty into our daily lives.



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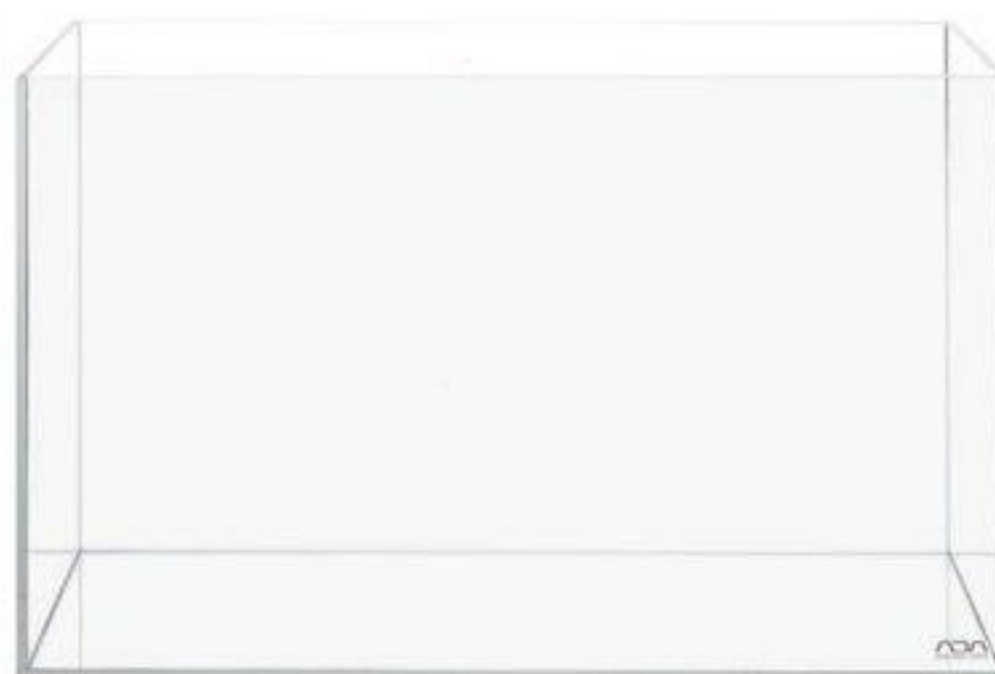
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Happy Holidays

An Aquarium that Enhances the Beauty of an Aquascape

The aquarium is always a necessary component, but for Nature Aquarium we found that the conventional aquarium was not idealistic. Plastic or metal frames around the aquarium blocks the view, and becomes an eye sore when enjoying an aquarium. As the total beauty of an aquarium is an important factor, we've worked hard to design equipment that is as minimal as possible in appearance. No other piece of equipment we design embodies this more than the Cube Garden. With no frames, minimal silicon and high clarity glass, there is nothing blocking the aquascape. It is our answer to fulfilling the idea of an ideal aquarium. Each aquarium is hand made by skilled craftsmen and is constructed using only the most premium materials. As a result the Cube Garden is the frameless glass aquarium that leads the world in quality standard in transparency and safety.



Standard Type:
CUBE GARDEN

Cube Garden is the new standard aquarium for Nature Aquarium.

size: w30-w180(cm) 12 width - 72 width (inches)

Lighting & Filtration system optimized for Nature Aquarium



GRAND SOLAR I

This is the flagship model equipped with a 150W metal halide lamp and two 36W twin fluorescent lamps. This makes it possible to control light intensity and lighting hours

made in japan



SUPER JET FILTER

High durability filter crafted with professional quality. Consists of 3 series and 9 products.

made in japan

The clear mystical water, in sparkling blue.





©Takashi Amano

The crystal clear waters of Jiuzhaigou come in mystical colors with deeply transmitted blue light.
Wu Hua Hai, Jiuzhaigou, Sichuan Province, China

ADA's original oil film remover with superior effects



NEW

Water surface extractor

VUPPA-I

A D A N A T U R E A Q U A R I U M N E W G O O D S

Simple and compact design

Original water volume adjustment function

Robust stainless body with high durability

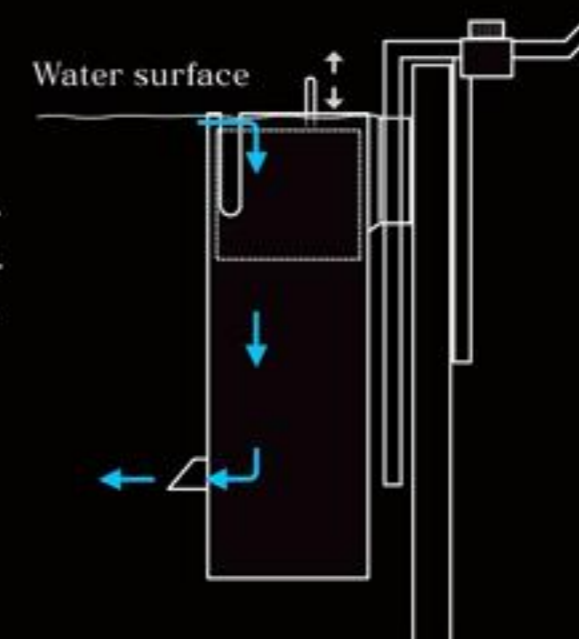
Removes contamination on the water surface such as oil film effectively

Having oil film on the water surface spoils the allure of an aquascape. VUPPA-I developed with ADA's original structure eliminates such film effectively. And all hand-crafted stainless body does not spoil the appearance of the aquarium.

SIZE : Ø38×H110mm ※Excluding the projection parts.

※The picture only shows the image of the product.

Actual product has the electric cord from the top of the main body.





The Clear Blue Wu Hua Hai (Jiuzhaigou, Sichuan Province, China)

One of the best known landscapes of the UNESCO World Heritage-listed Jiuzhaigou is Wu Hua Hai or Five-Flower Lake with its countless fallen tree trunks lying on a bed of crystal clear blue water. It was a beautiful sunny day. The rays of the early morning sun penetrated the water and clearly outlined the fallen tree trunks in the lake as if they were not surrounded by water. The calcified fallen trunks make this lake setting truly unique and special.

Shooting data / Ebony 617 (custom made), Super Angulon 90mmXL, 1/4 sec at f22, PL filter used, Velvia 100F
Text and photographs by Takashi Amano

AQUA JOURNAL

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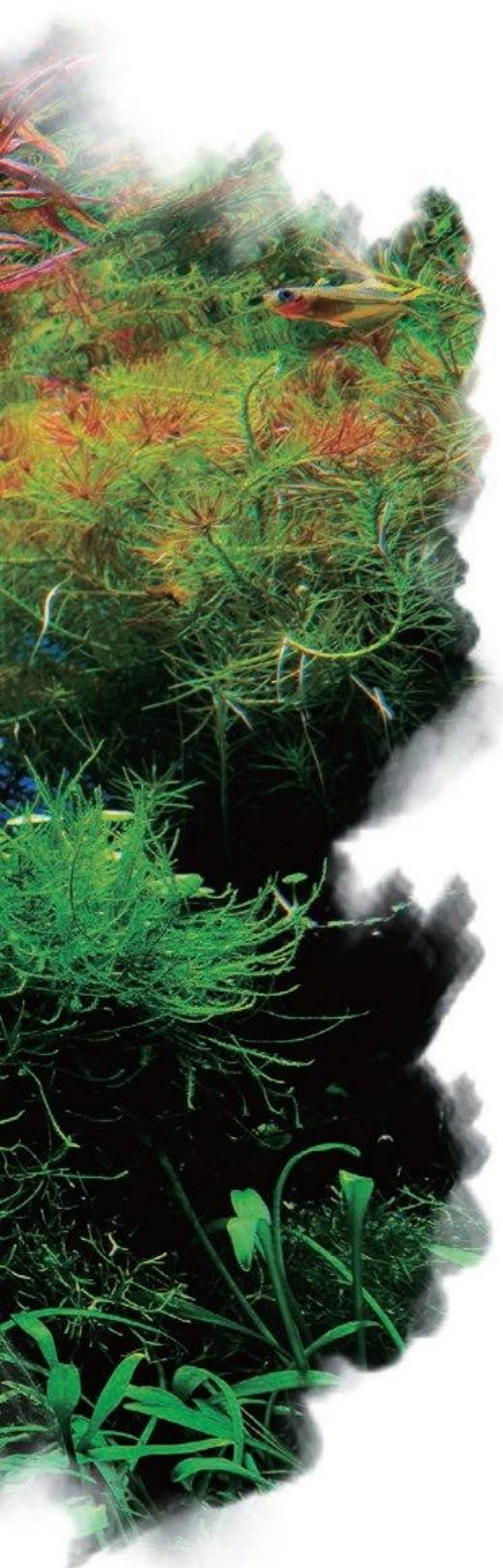
赤
RED

黄
YELLOW

滲
NIJI-IRO

陽
LIGHT
陰
SHADE

綠
GREEN



Special Feature

RED

GREEN

YELLOW

Studying the Colors of Nature Aquarium

Nature Aquarium is greatly influenced by color. The overall impression of the aquascape varies with the colors of the aquatic plants and swimming fish. How to use reddish colors amid mostly green aquatic plants is of particular importance, among other topics. It is possible to say that the layout is an expression of diverse colors. The Special Feature of this issue discusses color.



赤
RED

Rotala macrandra v. 'narrow leaf'



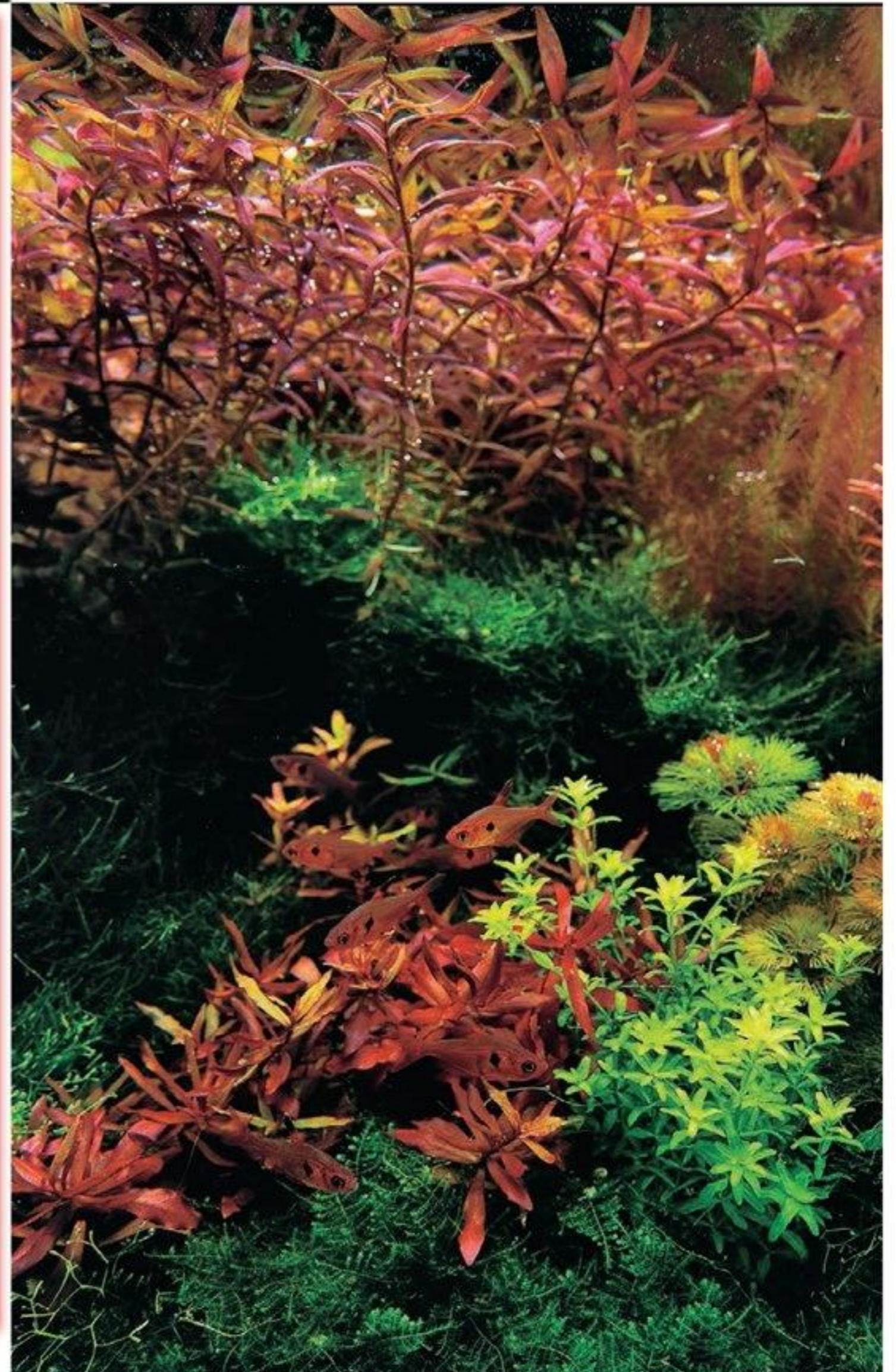
Analyzing the Optimal Use of Red from Aquascape

Arranging Red Color according to the Focal Point

The most impactful color among aquatic plants is red. It is a strong color that has the effect of attracting the focal point of the layout to its side. For this reason, red aquatic plants should basically be planted exactly at or according to the focal point determined by the composition using driftwood. Among the red aquatic plants in different hues of red and various leaf sizes, the ones with larger leaves of deeper red have a greater impact in terms of color.

Red Color Serves as a Flower in the Water

Since red is a complementary color to green, red aquatic plant stands out in the planted aquarium which has an abundance of green plants. The red will look more brilliant if the red colored plant is used as an accent among the green plants. In addition, the red aquatic plant gives the impression to the viewer that it is a flower. Such a layout is an excellent expression of the effective use of red aquatic plants.



Warm Colors Add Warmth to Aquascape

赤
RED

The layout featuring red aquatic plants is best enjoyed for its warm color from autumn to winter. In this season, we usually feel like planting warm-colored aquatic plants since psychologically we seek warmth. However, you should remember to avoid the excessive use of red aquatic plants since it may easily give the layout a scattered look.



Arrangement of Red Aquatic Plants in Concave Composition

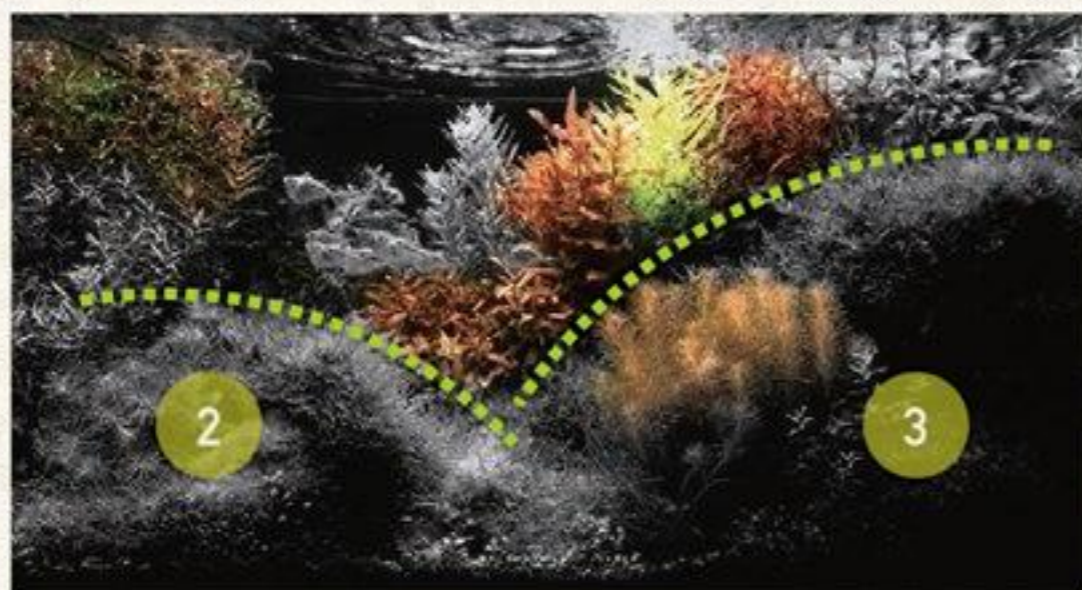
This concave composition has clumps of aquatic plants on both sides and the focal point of the layout leans towards the side with a larger amount of clumps. The focal point of the layout below is on the right side viewed from the front and therefore deep red plants should be arranged on the right side of the layout. The aquascape looks too heavy if only red aquatic plants and dark-green willow moss are planted, so the bright-colored *Eusteralis stellata* is arranged to achieve good color balance in this work.





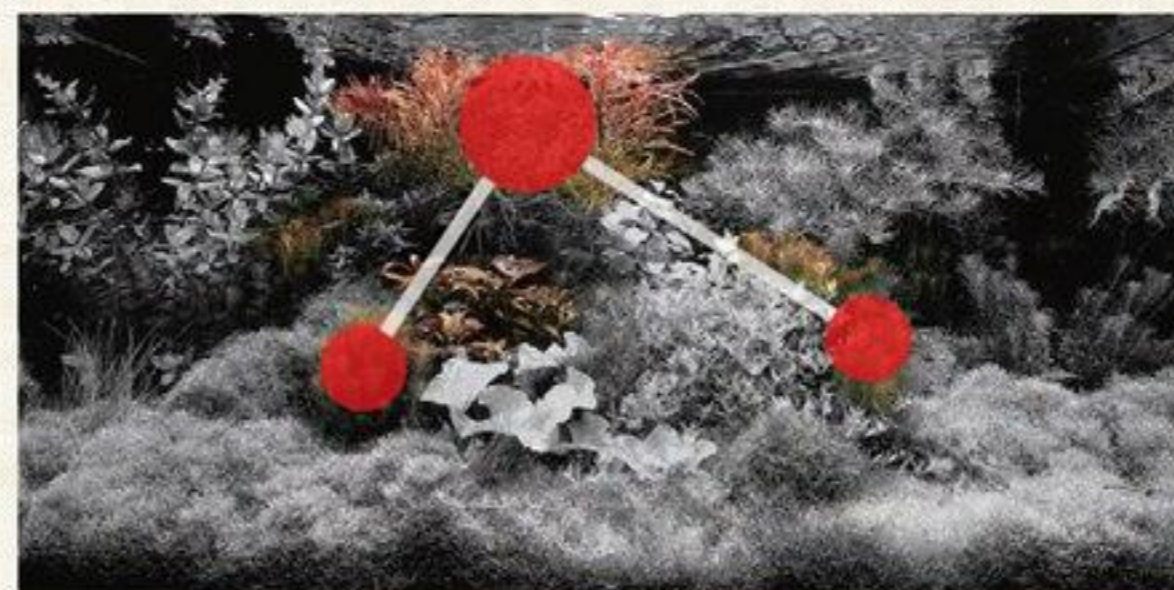
Building an Explicit Composition with Red Aquatic Plants

The layout composition is not always determined just by the framework of the driftwood. Ultimately, the composition and focal point of the layout will depend on how the aquatic plants are planted. The composition of the above work is made as a convex composition by planting the red *Eusteralis stellata*. To soften the strong impact of the vivid red at the center top, plants in darker red are planted below it and additionally, plants in soft red are arranged to form a scalene triangle.



Planting taking right/left balance into consideration

For this aquascape, more red-color stem plants are planted on the right side while those on the left are fewer, in line with the balance of the composition framework formed by driftwood.



Planting in the form of a scalene triangle

The ability to plant to form a scalene triangle is also effective for the aquascape accented with red stem plants. This planting method provides stability to the layout.

Learning Layout Color Coordination from Nature

When autumn arrives, the foliage of deciduous trees turns to shades of red and yellow.

These colors stand out and look striking in contrast to the surrounding green. Meanwhile the leaves wither without turning to vivid colors and the brown tree trunks add firmness and tranquility to the landscape.

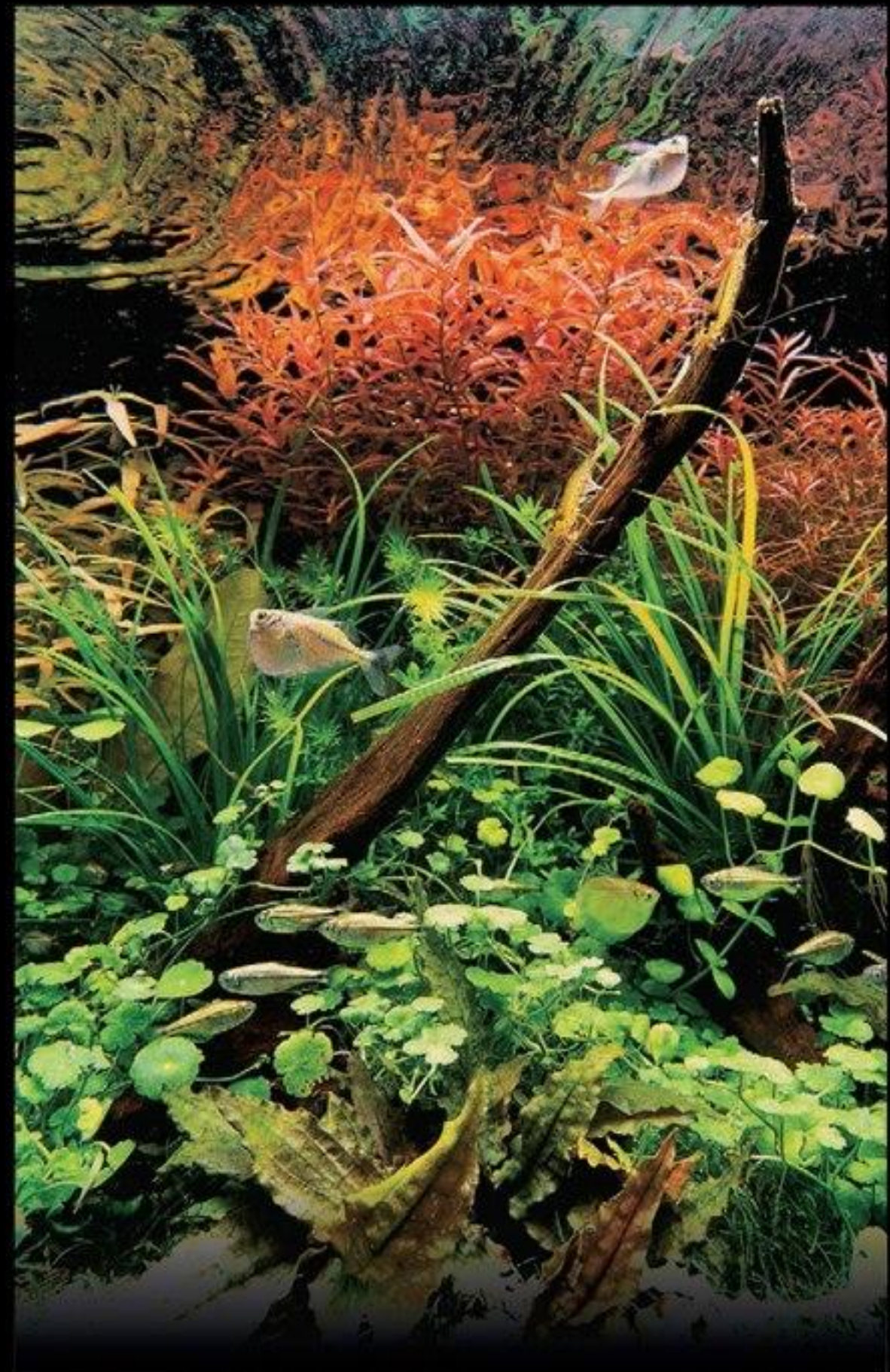
How we see red, yellow, green and brown colors in nature can be applied to the color coordination for the layout.



Location: Sugi Ike, Sado Shi, Niigata, Japan



Tank size: W60×D30×H36 (cm)



A profound natural feel is expressed by the color scheme using red, yellow, green and brown.



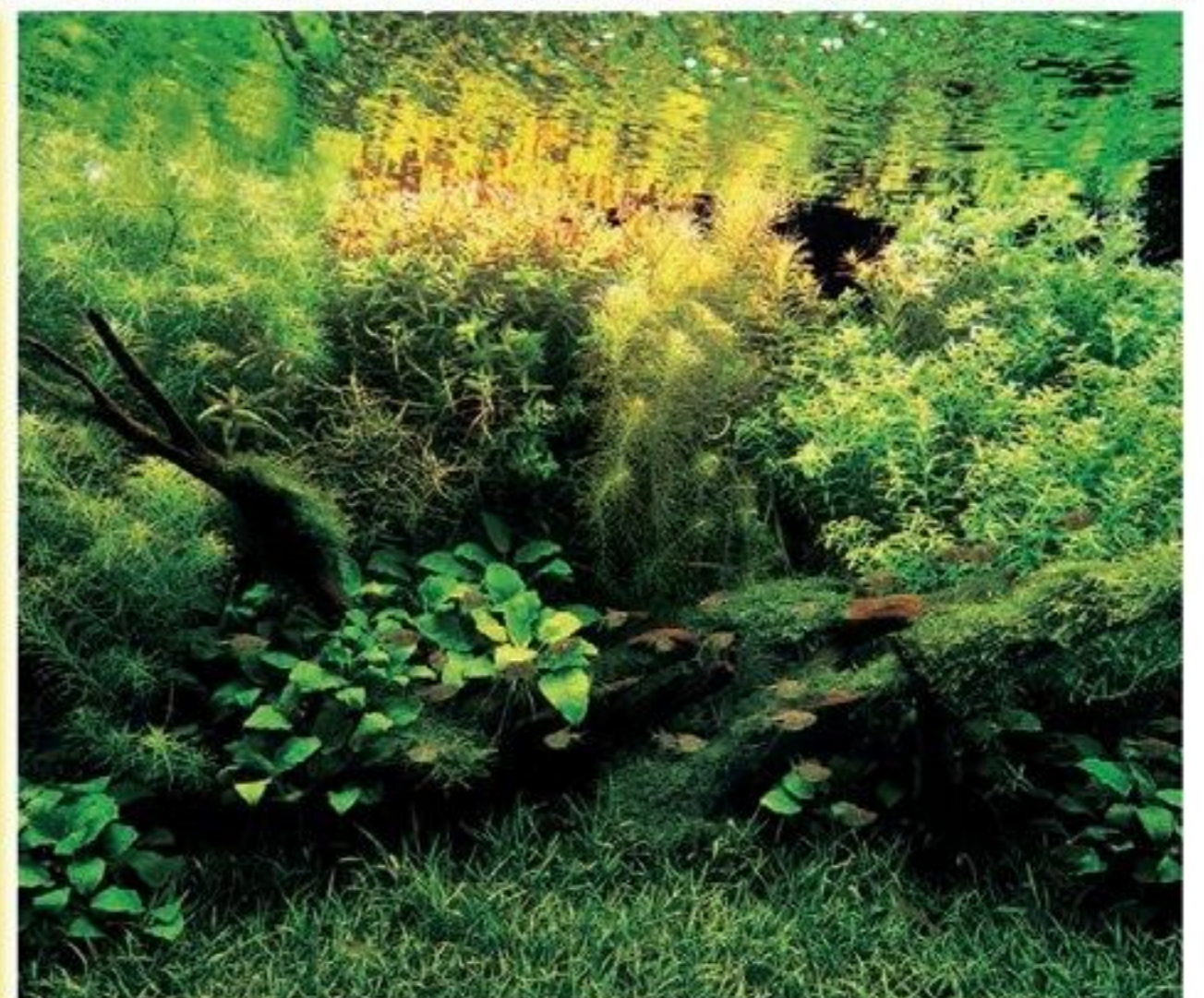
黄
YELLOW



Analyzing the Effects of Yellow from Aquascape

Yellow Leaves and Plant Body Produce Brightness

The colors of dark green aquatic plants such as Anubias, Microsorium and Willow moss as well as deep red aquatic plants produce a heavy impression on the aquascape. The color that can soften this heavy impression is yellow. This change is seen just by planting a few yellow aquatic plants among the dark green and red plants. Yellow hues can often be seen on modified species of fish. Adding fish with yellow bodies can brighten the aquascape and create a pop and fancy look.



Yellow and Green Produce a Moderately Complementary Color Effect

If you do not need strong color contrast by combining green and red, you may consider the combination of green and yellow aquatic plants. Yellow, which is a color between green and red, produces a soft impression on the aquascape.



Peculiar Yellow Combination

This work was released in 1994 and drew much attention to the aquarists of the day. This cluster of *Eusteralis stellata*, which was considered hard to grow, takes one by surprise and its gorgeous appearance captivates our senses. The combination of *Eusteralis stellata*'s beautiful leaves and *Pseudomugil furcatus* with yellow fins is striking.

Yellow Elements



Eusteralis stellata

The leaves were originally yellow, but they turn reddish and give a different impression if nutrients rich in iron are added. (Refer to page 36)



Pseudomugil furcatus

Its yellow-edged fins and blue eyes give it a brisk look. Its unique color not found in other species is most attractive.



Golden ramirezi

Small Cichlid is a perfect choice for those who want more than Characin and Rasbora. The pop color of this species produces a delightful look.



黄 YELLOW

Bright Yellow Expresses Joy and Tenderness

The yellow color of aquatic plants and fish does not have the boldness of a primary color but rather gives a soft, gentle touch. Yellow aquatic plants brighten up the aquascape and fish with yellow bodies have the effect of adding a light and joyful ambience to the layout. Often found in modified species, the yellow fish are appreciated for their role in adding color to a mixed fish aquarium.

Yellow of Golden Ramirezi Adds Color to Aquascape

The aquarium using various types of aquatic plants is a good environment for mixing different species of fish. This layout might look sober if it has only Yellow phantom tetra in their austere yellow. Mixing Golden ramirezi with Yellow phantom tetra gives extra color and plays with the happy look of the aquascape.





緑
GREEN

Hygrophila guianensis



Gradations of Green Provide Comfort

Green, naturally being the main color of the planted aquarium, has many different tones ranging from the yellow green of stem plants to the dark green of willow moss. The diverse tones of green in aquatic plants are one of the reasons why we feel comfortable and relaxed when we see a planted aquarium.

Green Makes the Key Color Look Attractive

There are broadly two ways of selecting fish to add to the richly green aquascape. One is to select fish with red bodies to add color to the layout, and the other is to select metallic-colored fish to freshen up the aquascape. Either way, the green color of the aquatic plants is the ideal background color for appreciating the fish.

Analyzing the Benefits of Green from Aquascape



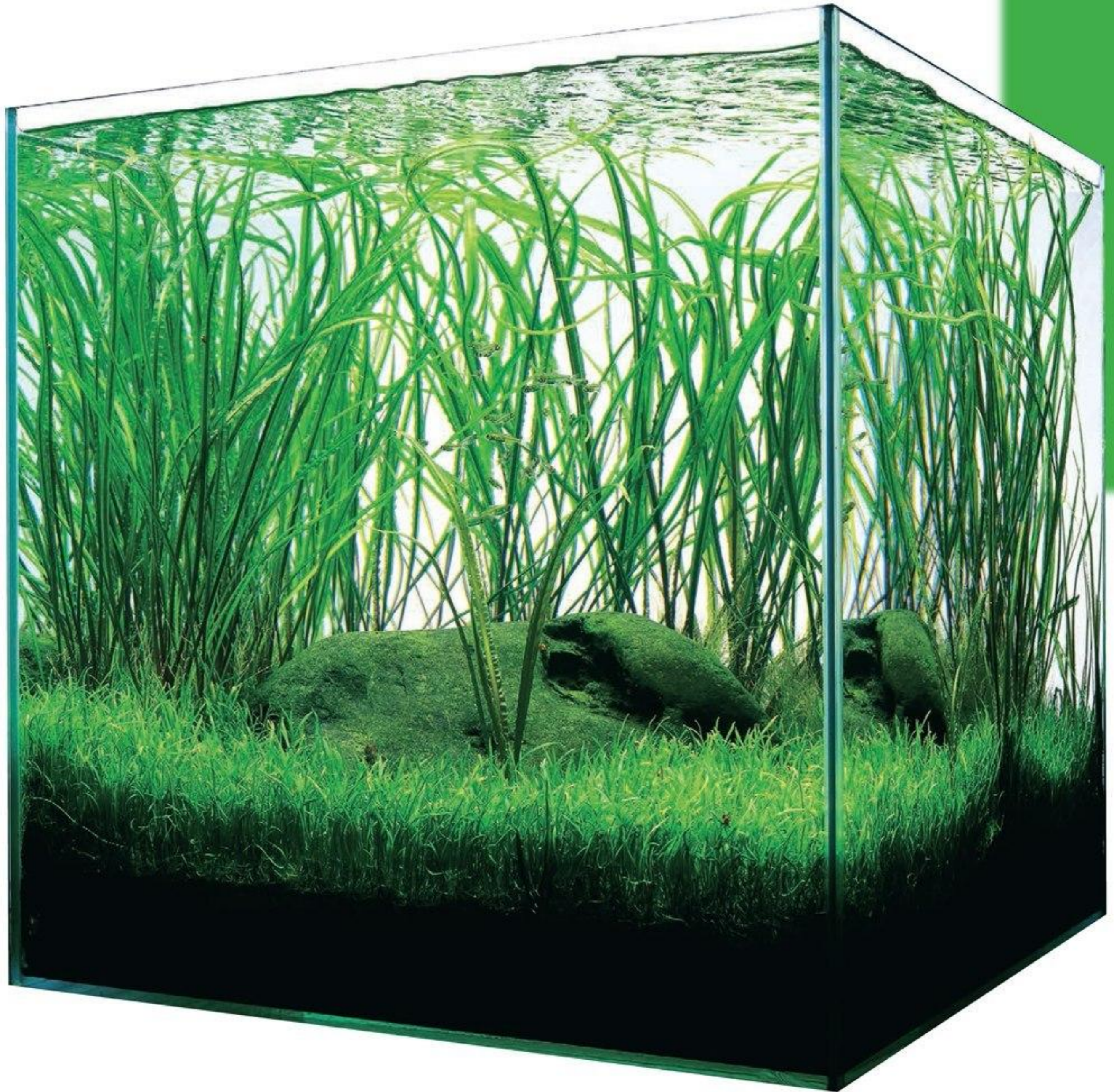
All-Green Environment Produces Freshness

It is a good idea to use only green aquatic plants to produce the refreshing layout ideal for summer. In this case, planting aquatic plants with tape-like or linear leaves swaying in the water enhances the cool, soothing ambience of the aquascape. These plants have moderate spacing between their leaves which brings such a refreshing effect to this type of monochromatic layout.

Making Composition with Green Horizontal Lines

The aquarium using various types of aquatic plants is a good environment for mixing different species of fish. This layout might look sober if it has only Yellow phantom tetra in their austere elegant yellow. Mixing Golden ramirezi with Yellow phantom tetra gives extra color and increases the happy look of the aquascape.





Space of Green that Features the Presence of Water

The tape-like leaves of *Cryptocoryne retrospiralis* overhanging the water surface make us conscious of the presence of water. In combination with the clear water, the simple layout using only green gives a refreshing impression. *Microdevario kubotai* was selected for this layout as this species has a body color that blends with the green space.



Viewing from Various Angles

Despite its simplicity, this layout is produced in such a way that it can be appreciated from two different sides making use of the features of the Cube tank. When seeing it as an open aquarium, the green space in the clear water can be enjoyed even from the top.

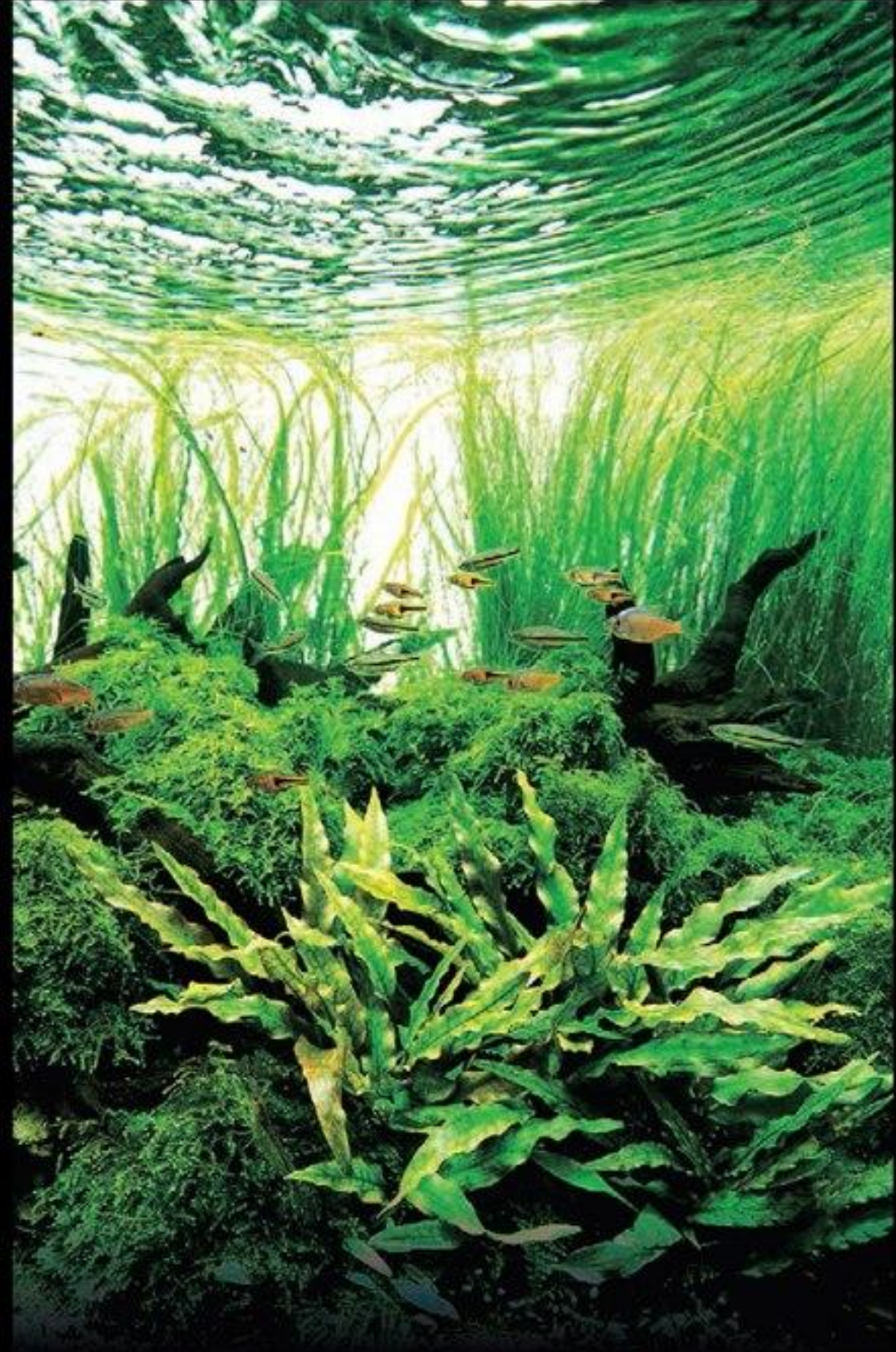


Natural Feel of Forest Floor Expressed by Different Shades of Green

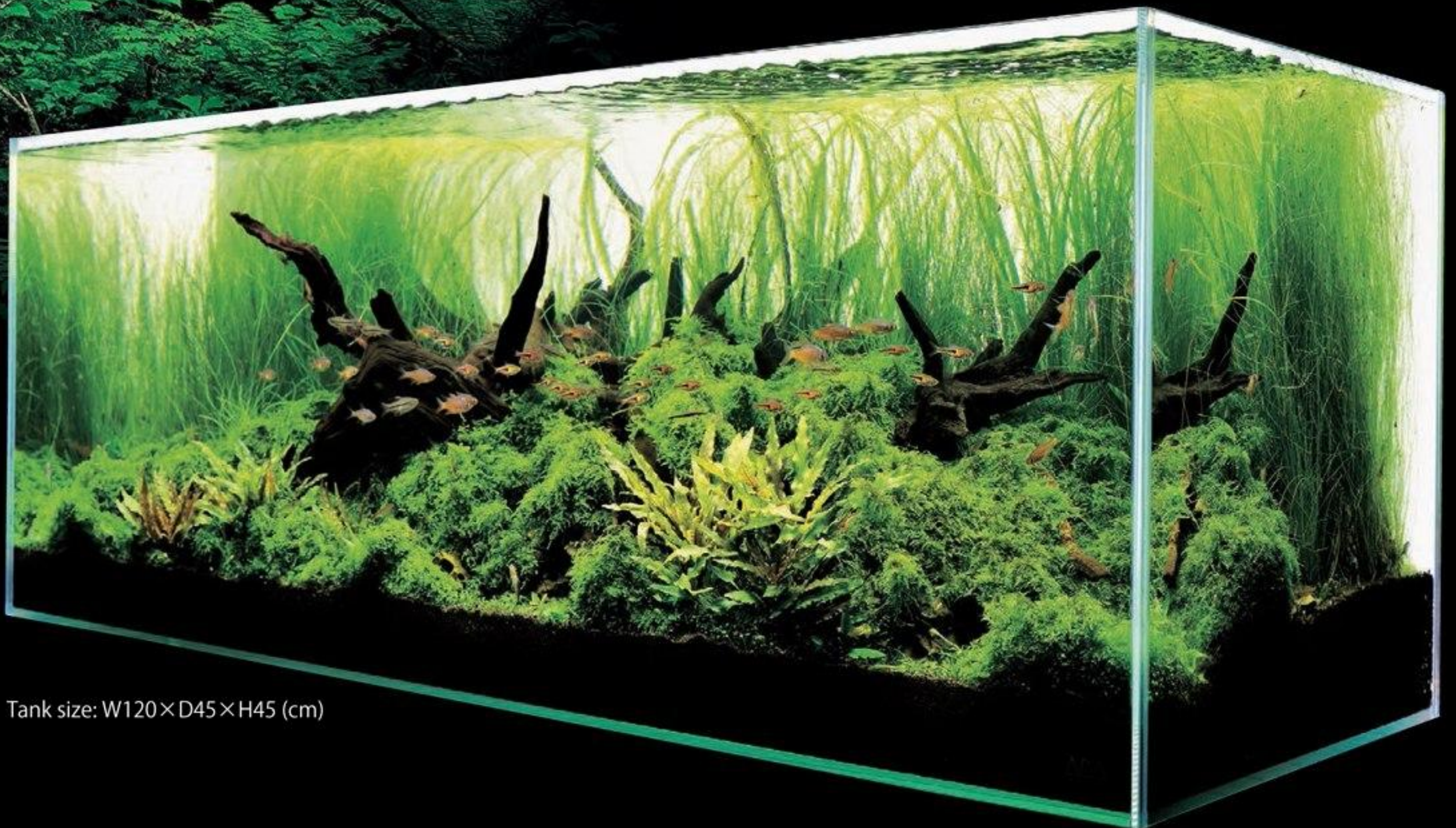
The forests are filled with various shades of green during spring and summer. The fresh new tree leaves over our head eventually deepen in color as time passes, and the forest floor is covered with the lush leaves of ferns and shade-loving trees. Mosses and lichens attach themselves to the tree trunks to form unique patterns. Although not colorful, the forest floor reveals its distinctive beauty in various tones of green.

Location: Oirase Stream, Towada, Aomori, Japan

ネイチャー
アクアリウムの色を考える RED
GREEN
YELLOW



The natural feel is expressed by various species of green aquatic plants.



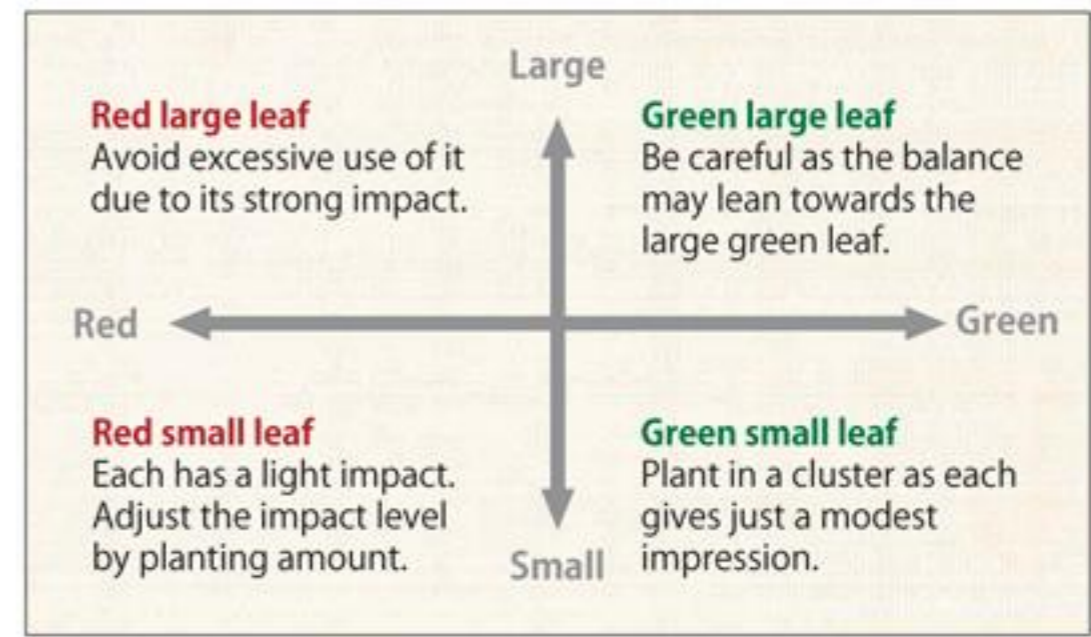
Tank size: W120×D45×H45 (cm)

Aquatic Plant Color Chart

The colors of aquatic plants are amazingly diverse. A key to the successful planted aquarium is how to use these colors effectively. If the plants are in the same color range, those with larger leaves have a greater impact in terms of color than the ones with smaller or finer leaves.

Standard planting position

- Front** Aquatic plants primarily suitable for foreground
- Middle** Aquatic plants primarily suitable for mid-ground
- Back** Aquatic plants primarily suitable for background



Back Polygonum sp. 'PINK'



Back Limnophila sp



Back Rotala macrandra sp.



Middle Cryptocoryne wendtii Brown



Middle Cryptocoryne Petchii



Middle Ludwigia perennis



Back Rotala indica



Back Proserpinaca palustris



Back Rotala macrandra Green

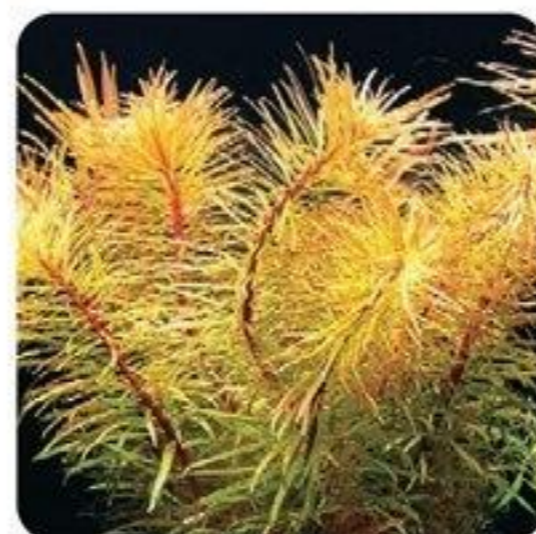


Back Rotala sp Cylon

RED YELLOW



Back Ludwigia arcuata



Back Ludwigia inclinata Cuba



Back Pogostemon sp dassen



Back Bacopa caroliniana



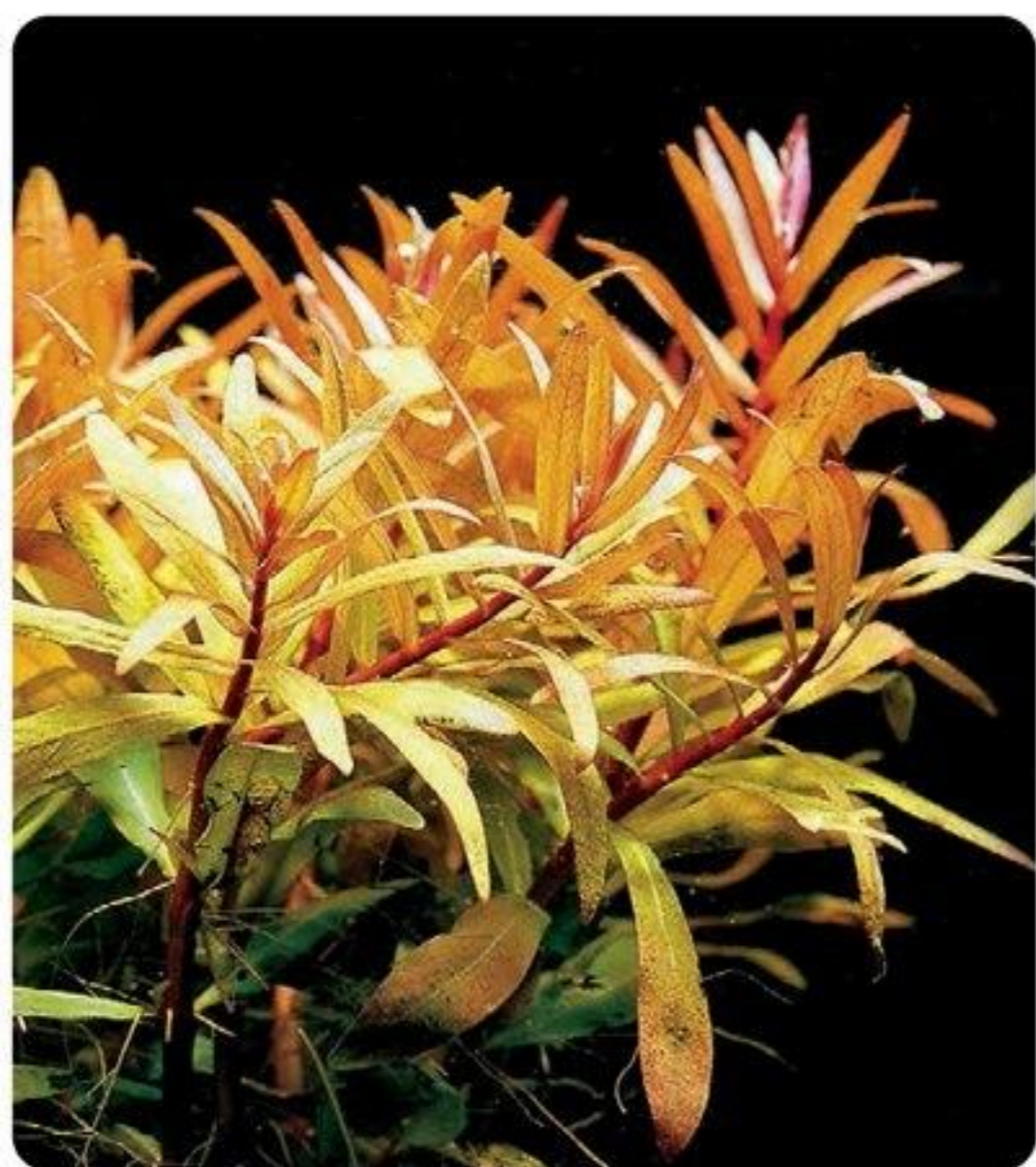
Back Rotala wallichii



Back Rotala nanjean



Back Mayaca sellowiana



(Back) *Ammania latifolia*



(Middle) *Cryptocoryne wendtii* (Real Green)



(Middle) *Microsorium Narrow*



(Middle) *Bolbitis heudelotti*



(Middle) *Cryptocoryne willisii*



(Back) *Echinodorus Veronica*



(Back) *Echinodorus amazonicus*



(Back) *Eusteralis stellata*



(Back) *Ludwigia palustris*



(Back) *Cryptocoryne retrospiralis*

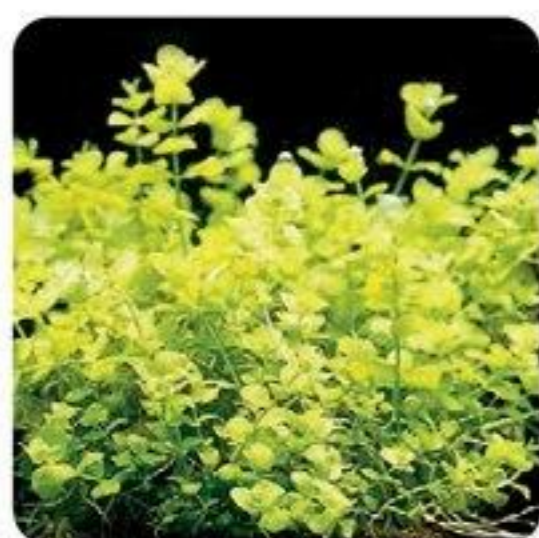


(Middle) *Cryptocoryne albida*



(Middle) *Anubias barteri* var. *nana*

GREEN



(Back) *Micranthemum unbrosium*



(Back) *Rotala rotundifolia* 'Green'



(Front) *Echinodorus tenellus*



(Back) *Miriophyllum matogrossense*



(Front) *Eleocharis acicularis*



(Front) *Hydrocotyle* sp.



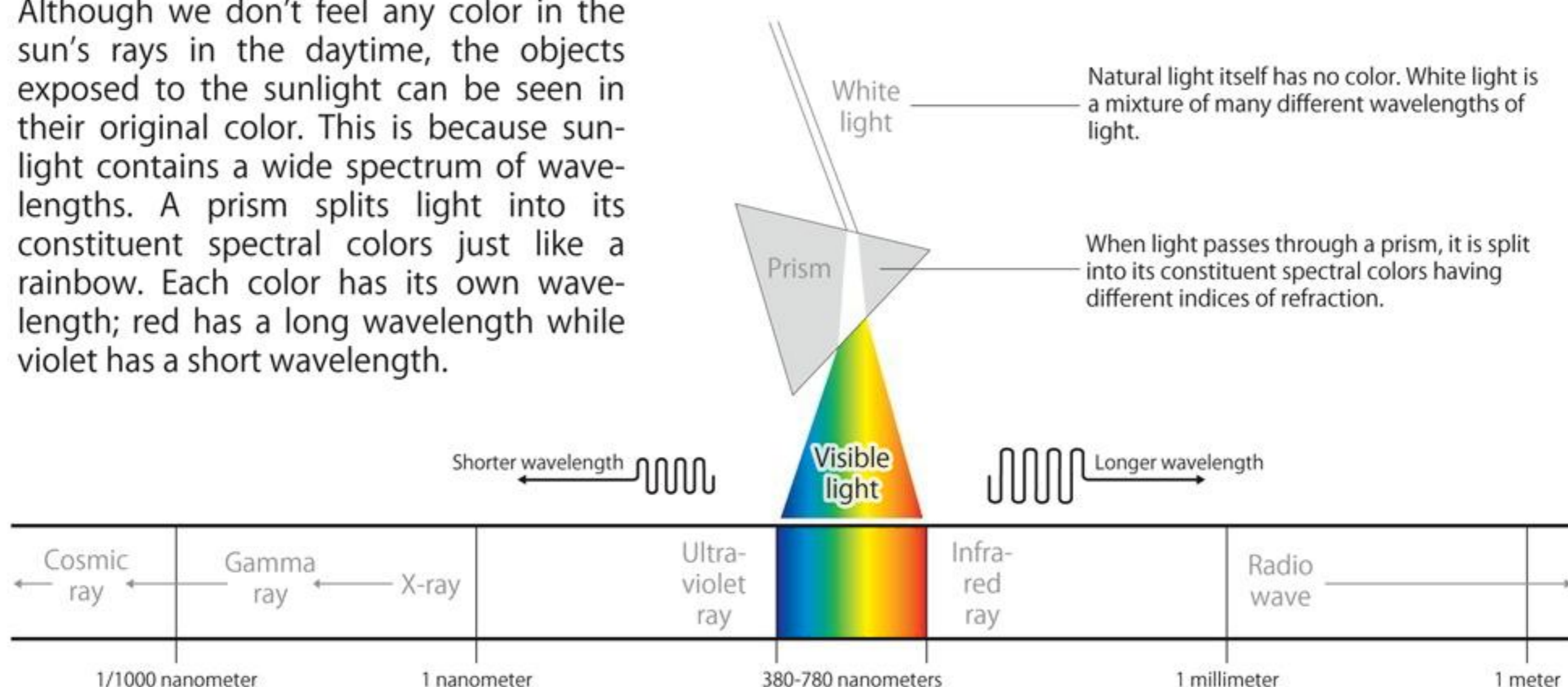
(Front) (Middle) *Fantinalis antipyretica*

Useful Basic Knowledge of Colors

Apart from the color coordination for Nature Aquarium, this section introduces us to the fundamental structure of colors in answer to the question: "What's 'color' in the first place?"

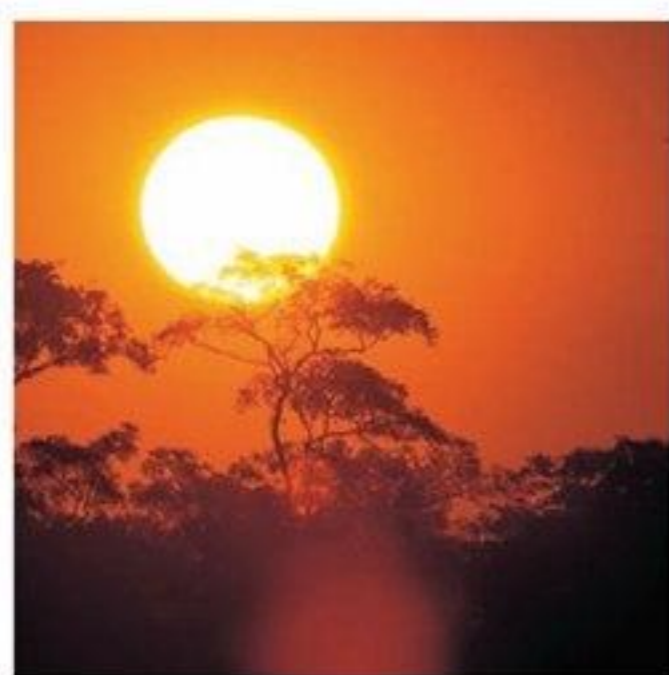
Relationship between Light and Color

Although we don't feel any color in the sun's rays in the daytime, the objects exposed to the sunlight can be seen in their original color. This is because sunlight contains a wide spectrum of wavelengths. A prism splits light into its constituent spectral colors just like a rainbow. Each color has its own wavelength; red has a long wavelength while violet has a short wavelength.

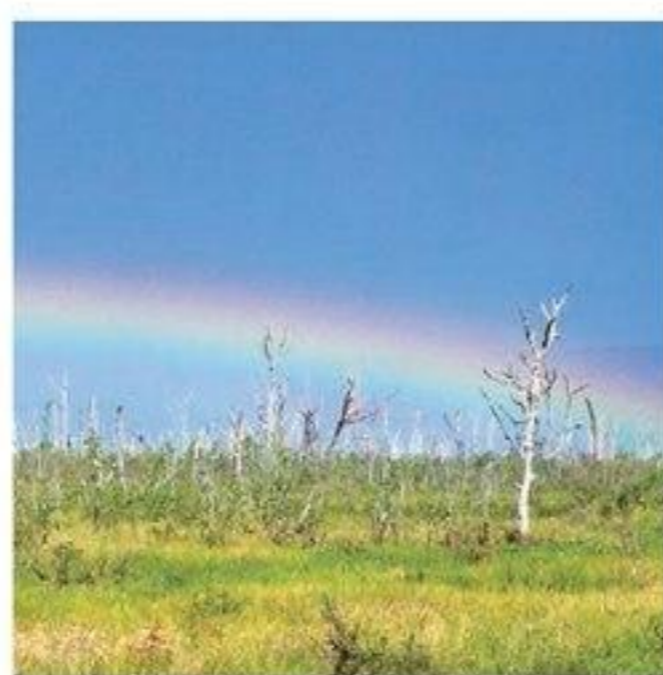


What is Color?

Color is the light reflected from an object and visually captured by our vision. This means in order for us to perceive color, whether natural or artificial, we need a "light source" such as the sun and lamp, an "object" which reflects or refracts the light and "vision" to perceive the reflected/refracted light.



Red light with a longer wavelength contained in sunlight is scattered by the vapor and dust in the air as it travels through a thicker layer of atmosphere. This is why sunsets are red.



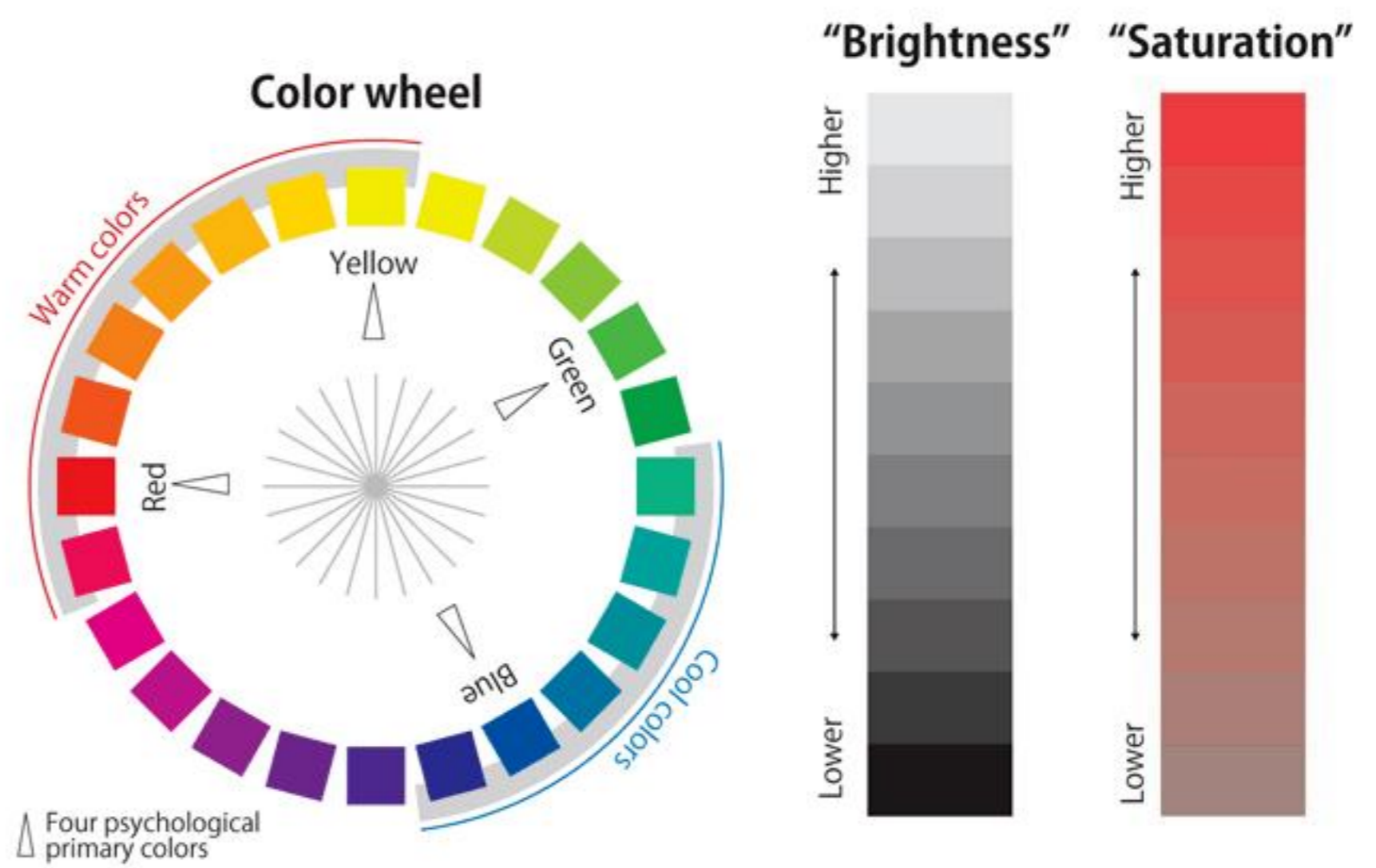
A blue sky is caused by the scattering of blue light with a short wavelength from the molecules in the atmosphere. Rainbows are formed by raindrops acting like prisms.

Colors in Nature

On a sunny day, the sky is blue and the sun looks white. However, both appear red in the evening. This phenomenon relates to the wavelengths contained in sunlight and the layer of atmosphere. Blue light having a short wavelength bounces off the molecules in the atmosphere and is scattered to create the blue sky we perceive during the day. Meanwhile when the sun sets, the light has to pass through a much thicker layer of atmosphere. At this time, the red light with a longer wavelength is left and scattered by the vapor and dust in the atmosphere. This is why the sky is red at sunset.

Hue, Brightness and Saturation

Hue refers to a specific color tone such as red and blue, and a circular arrangement of hues is known as the color wheel. On the color circle, complementary colors are opposite each other. Red, blue, yellow and green are called the four psychological primary colors. Brightness and saturation are a value to express the lightness and colorfulness of the color respectively (0% saturated color is perceived as colorless). Hue, brightness and saturation are called three attributes of color.



Strong complementary color effect



Wide distance apart on color wheel

Moderate complementary color effect



Narrow distance apart on color wheel

Complementary Color Effect

The combination of complementary colors that are opposite each other on the color wheel has a strong complementary effect. One such example is the combination of red and green which gives a very strong impression. A strong complementary color effect is represented by a wide distance apart on the color wheel. As this distance is narrowed, the complementary color effect becomes more moderate. The combination of moderate complementary colors is not as visually stimulating, so we can gaze at them continuously for a long time.

Emotional Impact of Color

Colors can produce various feelings in the viewer depending on how the color is used. For instance, warm and cool colors convey the different color temperatures, expanding and contracting colors make us feel the difference in size, and we can also find different degrees of heaviness in color. These psychological effects help us produce a proper right/left balance (heaviness) and express perspective in a planted aquarium.

"Warm and Cool Colors"



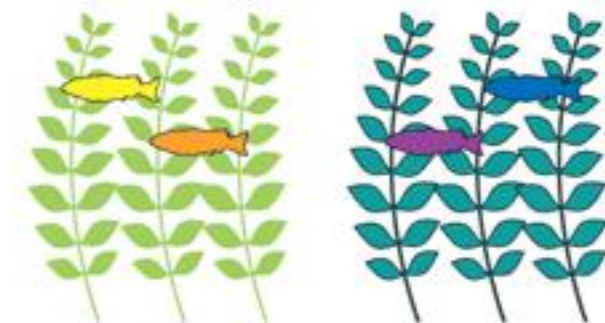
There are warm and cool colors depending on color temperature, and also neutral colors that do not belong to either one of them.

"Advancing and Receding Colors"



Warm colors and the colors with high brightness appear nearer, while cool colors and those with low brightness appear farther away.

"Expanding and Contracting Colors"



Although the area occupied is actually the same, expanding colors look bigger while contracting colors look smaller.

"Heavy and Light Colors"

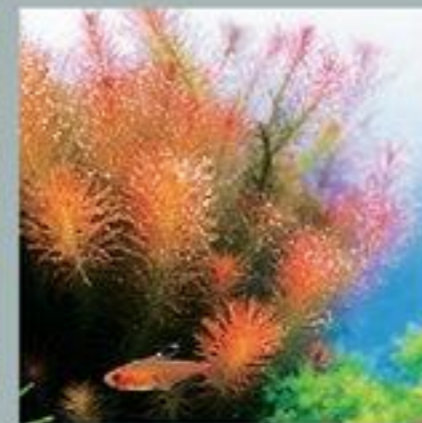
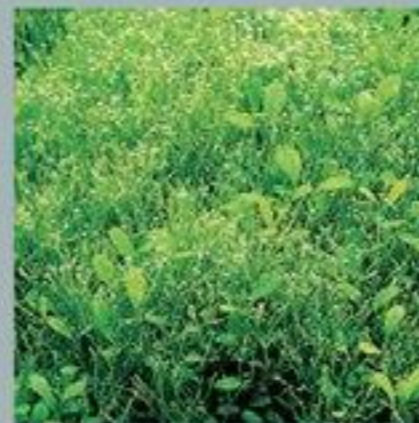


Colors with low brightness (dark colors) appear heavy while colors with high brightness (bright colors) appear light.



Making a Colorful Layout using Sun Aquatic Plants

The most fascinating attraction of sun aquatic plants such as stem plants and Riccia is their beautiful colors. These soft and vivid colors unique to sun aquatic plants have adapted to the bright underwater environment and cannot be found among terrestrial plants. A beautiful aquascape can be reproduced in the aquarium by using sun aquatic plants.



Light Color

Bright colors of sun plants uplift our spirits and revitalize our minds. Fish in bright, vivid colors match the sun plants.

Perceived
image

Bright

Delightful

Pastel

Colorful



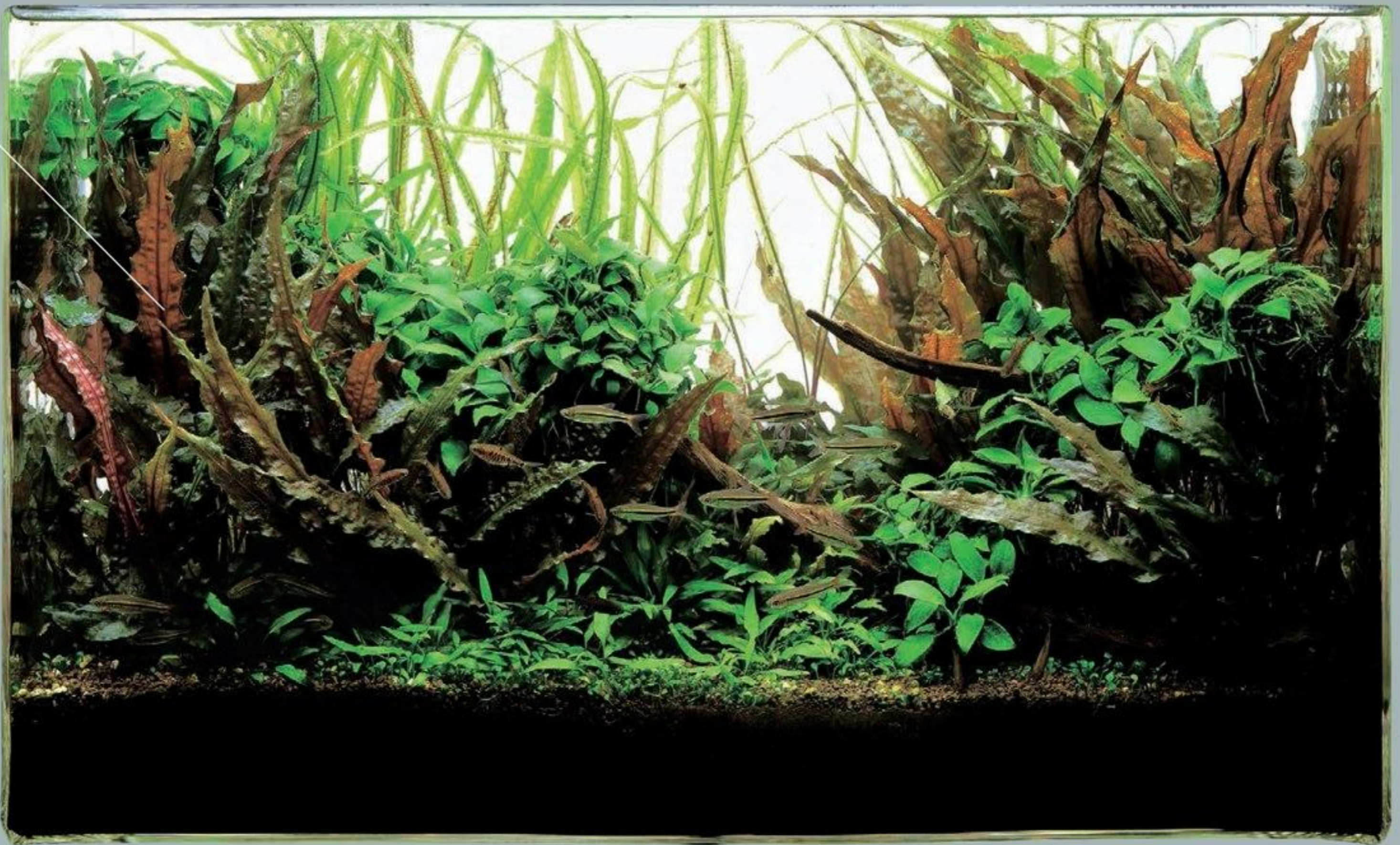
Making a Tranquil Layout using Shade Aquatic Plants

The shade plants that grow in a relatively dim environment feature calm colors such as dark and dusky green and brown. These subdued colors have something in common with the Japanese "wabi-sabi" spirit and add a profound natural feel to the layout.

Dark Color

The subdued colors of shade plants have a calming and relaxing effect on our bodies and souls. Fish in soft, quiet colors match the shade plants.

陰
SHADE





Blue tetra

Its light blue color which changes as the light strikes the fish is most attractive. Enjoying this splendid color in a planted aquarium opens up the world of your hobby.


Lazuline
RURI



Vermillion
GIN-SYU

Rummynose Tetra

This fish's head turning reddish is a sign of the water becoming "mature". This color has served as an indicator of water quality from long ago.



Scarlet
BENI-HI

Rasbora espei

Among the Rasbora species that match the planted aquarium well, Rasbora espei has a superior copper color. This species adds a tranquil mood to the aquascape.



Pale Blue
MIZU-ASAGI

Rasbora axelrodi

Its fuzzy, complex body color fades into the bright background. Enjoy its delicate color in a dim setting.



Dark Lilac
FUJI-MURASAKI

Inpaichthys kerri

Its lilac color exudes a gracious look. Despite its unique color, this fish surprisingly matches other species well.



NIJI-IRO

Body color demonstrates the condition


The original body color of the fish appears only when an environment resembling nature is reproduced in an aquarium. Such a body color is complex as if it is exuded from within the fish, one that is totally different from artificial colors. Only aquarists who keep fish can enjoy their innate body colors that change subtly according to water quality and exposure to light.

Tropical Fish Color Chart

Fish, the main figure of the aquascape, add color to the layout. Red fish stand out among the green aquatic plants while silver fish have a refreshing effect. When creating a mixed fish aquarium, consider the balance of color along with levels at which the fish swim.

Standard planting position

- Top Swims mainly near the "water surface".
- Middle Swims mainly near the "middle level".
- Bottom Swims mainly near the "bottom level".



- Red and blue fish among the green plants give a colorful look.
- The yellow and orange often seen on a modified species give a pop image.
- Fuzzy and pale neutral colors give a fantastic image.
- Fish in light ash color give a refreshing image.



Middle *Symphysodon aequifasciatus* var.



Middle *Hemigrammus bleheri*



Middle *Centropyge aurantia*



Bottom *Mikrogeophagus ramirezi*



Top *Trichogaster leeri*



Middle *Hyphessobrycon sweglesii*



Middle *Hyphessobrycon rosaceus* var.



Top *Pseudomugil urcatus*



Middle *Nematobrycon lacortei*



Bottom *Apistogramma bitaeniata*

COLORFUL



Top *Xiphophorus maculatus* var.



Top *Guppy*



Middle *Paracheirodon axelrodi*



Middle *Inpaichtys Kerri*



Top *Colisa sota* var.



Middle *Paracheirodon innesi*



Middle *Paracheirodon simulans*



Middle Puntius sp. Cf. denisoni



Middle Pterophyllum scalare



Middle Iguanodectes spilurus



Middle Hyphessobrycon megalapterus



Middle Thayeria oblique



Middle Sawbwa resplendens



Top Gasteropelecus sternicla



Middle Phenacogrammus interruptus



Middle Trigonostigma heteromorpha



Middle Moenkhausia pittieri



Middle Hemigrammus ocellifer



Middle Rasbora bankanensis

SUBTLE COLOR

ASHY



Middle Rasboroides vaterifloris



Middle Microrasbora kubotai



Middle Hemigrammus pulcher



Top Poropanchax normani



Middle Ladigesia roloffii



Middle Puntius sp.



Top Sphaerichthys osphromenoides

Nature Aquarium Goods

Brings out the Color

The colors of the aquatic plants, fish and cosmetic sand constitute the overall color of the planted aquarium. How the colors look is also influenced by light as well as the colors of the aquarium tank surroundings.

Color of aquatic plants drawn out by nutrients

Aquatic plants grow by means of photosynthesis. However, the colors of aquatic colors will not be enhanced just by this process. This is because nutrients such as nitrogen, iron and magnesium, in addition to carbohydrate produced through photosynthesis, are necessary for the plants to develop pigments. Nitrogen is essential for the healthy growth of aquatic plants, but it can easily become excessive in the aquarium due to oversupply from fish and shrimp excrement. Supplementing with potassium and trace elements which are prone to shortfalls can promote absorption of nitrogen by the aquatic plants.



When iron is insufficient

The leaves of the Eusteralis stellata turn yellowish in an environment containing insufficient amounts of iron which promotes the synthesis of pigments.



When adequate iron is supplied

The Eusteralis stellata turns reddish when iron is supplied to the environment together with bright light and an adequate level of nitrogen.



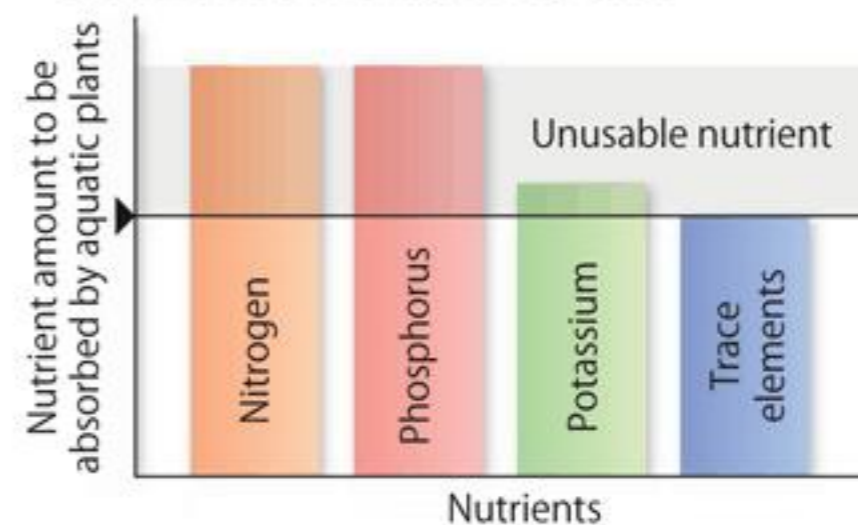
Nutrients to be supplied

To supplement with potassium and trace elements which tend to be in short supply in the tank, add Brightly K (left) and Green Brightly STEP series (right) daily.



ECA

Supplementing with nutrients that bring out the colors of aquatic plants



According to Liebig's Law of the Minimum, absorption of excessive nutrients is facilitated by supplementing with nutrients in short supply such as potassium and iron. This helps to enhance the colors of aquatic plants.



Warm-colored cosmetic sand

Left: Sarawak Sand Right: Mekong Sand



Cool-colored cosmetic sand

Left: Nile Sand Right: Congo Sand

Impression of cosmetic sand

The impression of the aquascape can be changed by the use of cosmetic sand. Cosmetic sand in a layout with dark-colored aquatic plants can help avoid a layout with too heavy an impression. There are two types of cosmetic sand: warm-colored and cool-colored sand.

Fish foods that bring out fish color

The health of the fish is influenced by what type of food is given daily, which is reflected in their body color. Among the various types of fish food, AP Gold rich in nutrients is recommended for bringing out the original body color of the wild hard-to-feed species. To enhance the red color of the fish, Spirulina containing rich natural beta-carotene is an effective nutrient.



AP-GOLD



Spirulina

In addition to the fish food, the water quality also has a great impact on the body color of the fish. Achieving a water quality similar to the fish's native habitat can also bring out the fish's original color.

Metal halide lamp
NAMH



Precisely reproduces aquatic plant colors

NAMH, a highly color-rendering metal halide lamp, promotes photosynthesis and reproduces the colors of aquatic plants precisely. Its strong light brings out the red color of aquatic plants.

Metal halide lamp
NAG

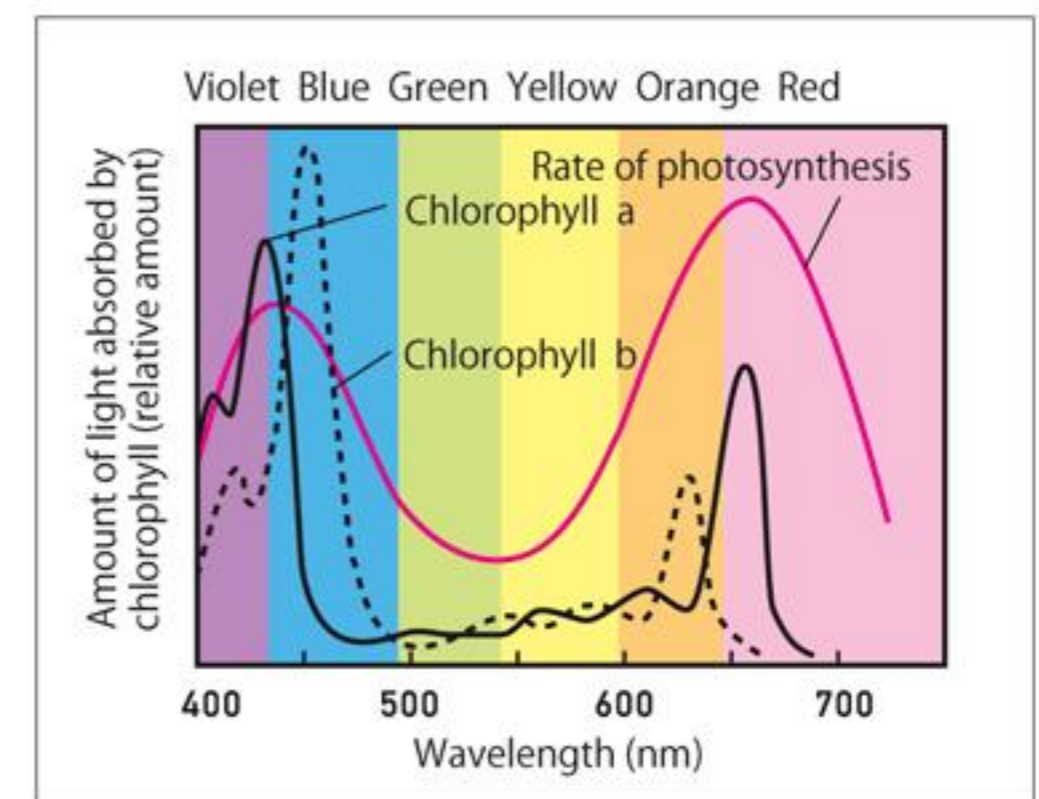


Enhances the green color of aquatic plants

With its enhanced green spectrum in addition to blue spectrum, the metal halide lamp NAG enhances the green color of aquatic plants and adds a refreshing touch to the aquascape.

Colors drawn out by lighting

Aquatic plants that have adapted to living in aquatic environments have evolved in a totally different way from terrestrial plants. From the fact that red light is rapidly attenuated in water while blue light can reach deep water, it is believed that aquatic plants which perform photosynthesis in water have evolved to being able to use blue light effectively. Taking this into consideration, NA Lamp (fluorescent lamp) and NAMH (metal halide lamp) have an enhanced blue spectrum. NAG, an upgraded version of metal halide lamp, brings out the green colors.



Light absorbed by chlorophyll

Chlorophyll, a photosynthetic pigment contained in chloroplast, has absorption peaks in the red and blue regions of the spectrum. Since red light is hardly transmitted through water, chlorophyll uses blue light to conduct photosynthesis.

Effects of Aqua Screen and Cabinets

The colors around the tank as well as the background color also influence the appearance of the layout. For example, stem plants in bright red or green look crisp and gorgeous against a black background. On the other hand, aquatic plants with a refreshing look go well with a clear blue background. In addition, the color of the cabinet determines the overall impression of the aquarium system.



Normal Type



Clear Type



Aqua Screen

Aqua Screen is available from non-translucent Normal type (3 colors) and translucent Clear type (2 colors).

Wood Cabinet

A wooden cabinet which can be used for a long time should be carefully selected according to the layout and harmonize with the image of the room.





Color Coordination using the Green of Plants and Earth Colors

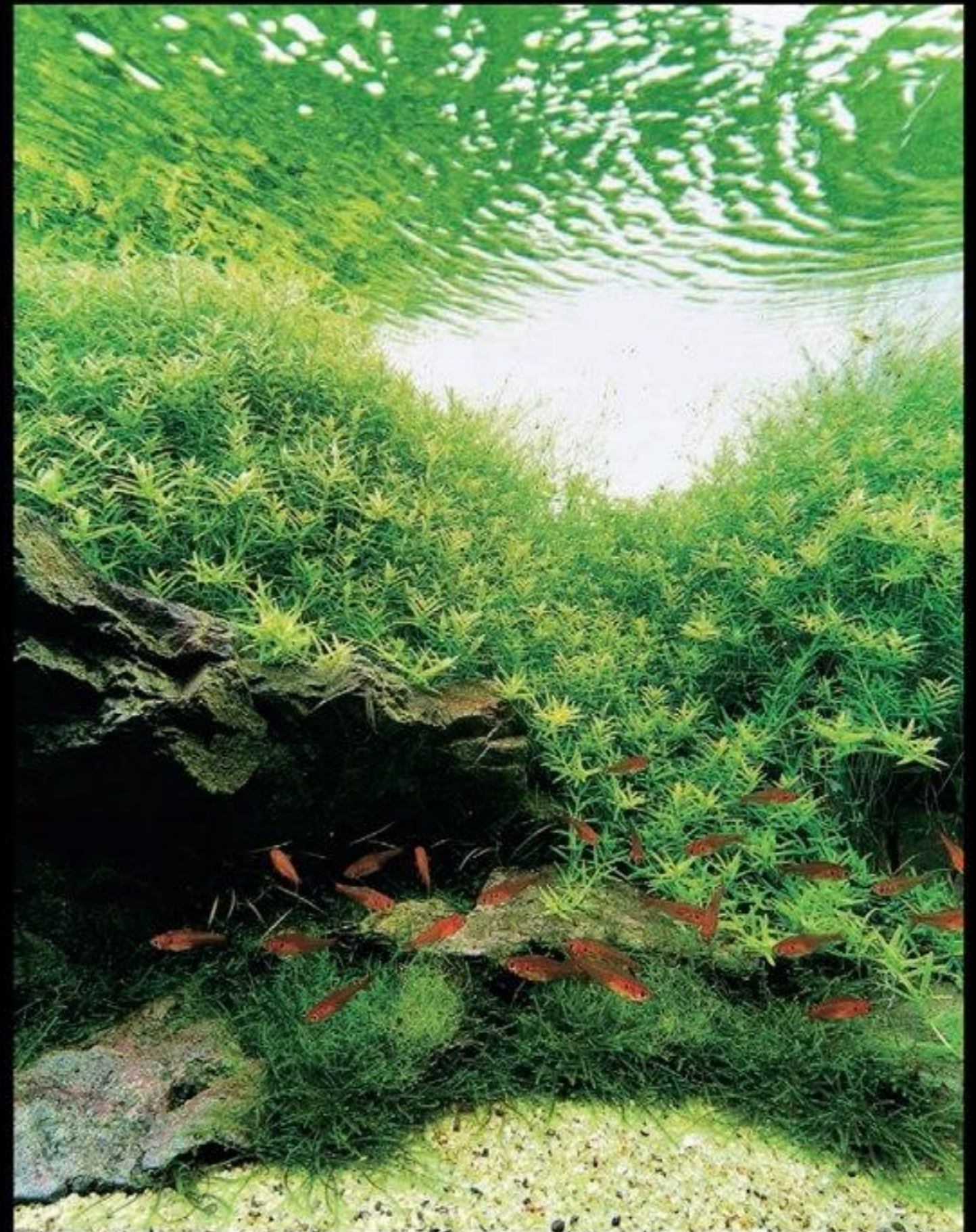
Natural colors include earth colors along with plant colors.

The colors of sand, stones and earth covering the ground surface represent earth colors.

These colors, which are not generally observed among plants, add firmness to the landscape.

This effect can also be obtained in the layout by using stones and cosmetic sand as composition materials.

When using these materials, it is essential to select the colors that match the tones of the aquatic plants.



The bright green of stem plants matches the Manten stone and cosmetic sand in warm colors.



Tank size: W90×D45×H45 (cm)



Water surface extractor

VUPPA-I

The Reason for Overwhelming Effect of VUPPA-I

ADA's new product "VUPPA-I" is a water surface extractor that displays the overwhelming effect in solving oil-film problems in Nature Aquarium. Its stainless-steel body incorporates various innovative features.

(Utility model pending)

A D A N A T U R E A Q U A R I U M N E W G O O D S

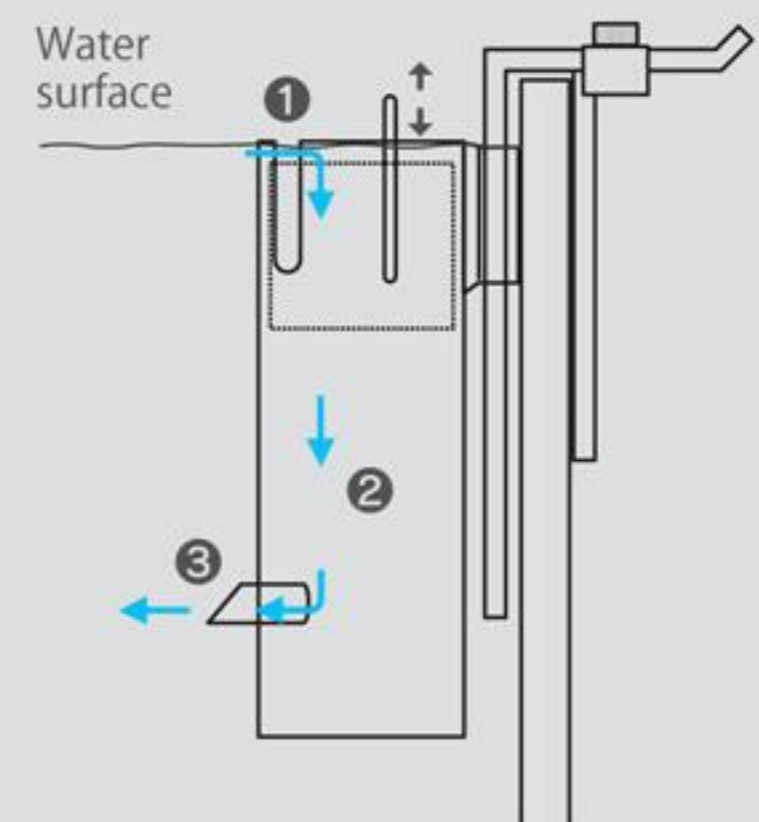
Appearance-spoiling oil film on water surface

The appearance of the rich, lush aquatic plants in Nature Aquarium is ruined if an oil film is formed on the water surface. A major factor contributing to the oil film in the aquarium is bacteria in the filter that die from lack of oxygen. This causes relatively light oil and organic matter derived from such dead bacteria to collect and form an oil film on the water surface. A minor oil film only poses a problem of higher surface viscosity of the water which makes it difficult for the air bubbles to dissolve. However, if this oil film is left untreated, it eventually hardens into an unsightly thick whitish

film. Conventionally, the oil film is removed by stirring the water near the water surface using the outflow water from Lily Pipe (this is also done for aeration purposes) or by floating Clear Float to absorb organic matter on the water surface. However, these methods create extra work for the user as Lily Pipe needs to be moved to different positions each time the light is turned off and the organic matter absorbed by Clear Float must be removed with a net. VUPPA-I has been developed as a water surface extractor that removes oil film effectively without hassle.

[How VUPPA-I removes oil film]

Mechanism



- ① Water near the water surface flows into VUPPA-I through the top slits.
- ② Oil film is removed by the filter media (BIO CUBE).
- ③ Cleaned water is circulated back to the tank by the submersible pump.

VUPPA-I Features

A. Double slits effectively letting water near the water surface into the unit

In order to remove oil film effectively, it is necessary to let the water with the oil film into the unit. If the slits are too narrow, the oil film does not flow into the unit due to the surface tension of the water. On the other hand, if the slits are too wide, too much water runs into the unit affecting the optimal filtering function. VUPPA-I, which is provided with two slits having an appropriate width, powerfully brings the water near the water surface together with the oil film into the unit.

B. Unique mechanism for easy flow regulation

If the inlet flow rate is too low, the submersible pump is exposed to the air. And if the rate is too high, the submersible pump is unable to discharge the water adequately, which eventually hinders the water near the water surface from being taken into the unit. VUPPA-I features a unique mechanism to achieve easy inlet flow regulation. Appropriate inlet flow can easily be attained corresponding to the change in tank water level or pump flow rate just by moving the flow adjustment ring up or down.

C. Compact stainless-steel body

VUPPA-I features a simple compact body for installation convenience and effectiveness in keeping the water surface clean. It is made of durable stainless steel and has a built-in submersible pump. An AC adaptor is used for this pump to remain compact in size. A jack is provided on the AC adaptor side for wiring convenience.



VUPPA-I Installation Procedures

- 

① VUPPA-I is shipped ready to install. Hang the mounting brackets on the glass plate of the tank and adjust the gap between the brackets to fit the glass thickness.
- 

② Slide the unit upward/downward to the position at which the top rim of the unit is almost at the same level as the water surface. Be careful not to position the top rim of the unit below the water surface.
- 

③ After making sure that the water flows into the unit through the slits, plug the AC adaptor to the electrical outlet. The submersible pump starts working and the water inside the unit is discharged into the tank water.
- 

④ Move the flow adjustment ring up/down to regulate the inflow rate. The inflow rate is appropriate if there is no water above the strainer and no air is discharged with the outflow water.

VUPPA-I Maintenance

- 

① Disconnect the AC adaptor from the outlet. Once the submersible pump comes to a stop, remove VUPPA-I from the aquarium tank. (Be sure to unplug before removing the unit)
- 

② Remove the flow adjustment ring and then remove the strainer and filter media. The strainer and filter media can easily be removed with a pair of tweezers.
- 

③ Fill a plastic or other type of container with breeding water from the tank. Rinse the filter media to remove dirt. Reinstall the removed parts on the unit.
- 

POINT
If the flow rate decreases due to a clogged submersible pump, clean the pump following the instructions in the user manual.

Infinitely Clear Water Sparkling Blue Mystical Jiuzhaigou

Jiuzhaigou is a nature reserve located in the north of Sichuan Province, China. It is a world-famous scenic spot which is also listed as a UNESCO World Heritage site. The valley surrounded by deep primeval forests is dotted with numerous waterfalls and lakes of different sizes and the water of its rivers and lakes is amazingly crystal clear. Among the various landscapes in the wide Jiuzhaigou valley, the most popular one is the scenic Wu Hua Hai or Five Flower Lake with many fallen tree trunks lying on the bed of crystal clear blue water. The combination of its unique water color and calcified fallen trunks imprints the beauty of Jiuzhaigou in our minds. In August this year, I visited this place that has been on my wish list for scenery shooting.

Jiuzhaigou is a nature reserve and entry of private vehicles is prohibited. Tourists must take an exclusive green bus to travel around the area, but the management office made a special arrangement for us to take a ride in their car since we were carrying a lot of shooting materials and the purpose of our visit was more than sightseeing. And our tour guide

who had been arranged by the management office was kind enough to get us permission to enter the park as early as 6:00 am in spite of the official opening time of 7:30 am for tourists. Thanks to these thoughtful arrangements, we were able to take pictures of places that have hardly been caught on camera at such an extraordinary time, and to capture the deep charms of Jiuzhaigou. For instance, we took the shots of landscapes that can only be seen very early in the morning. That included the especially clear Wu Hua Hai whose clarity was enhanced by

(To be continued on page 45)



Point a camera at Jiuzhaigou's mystical deep green landscape.



Rivers flowing through reed fields. The river bottom is covered by white sand and the river water looks clear blue.

Jiuzhaigou - A land of mystical landscapes made up of crystal clear water and a rich natural environment.
In August this year, Takashi Amano visited this UNESCO World Heritage site.



The profound nature of China can be felt from the unique color of Wu Hua Hai's water that is different from the blue of the southern ocean.



Enchanting view with fallen trees spread in the upper reaches. This is a little-known landscape.



We moved around the area in a vehicle belonging to the management office with a panda logo on the hood.



Bus station for green bus was crowded with a number of tourists.

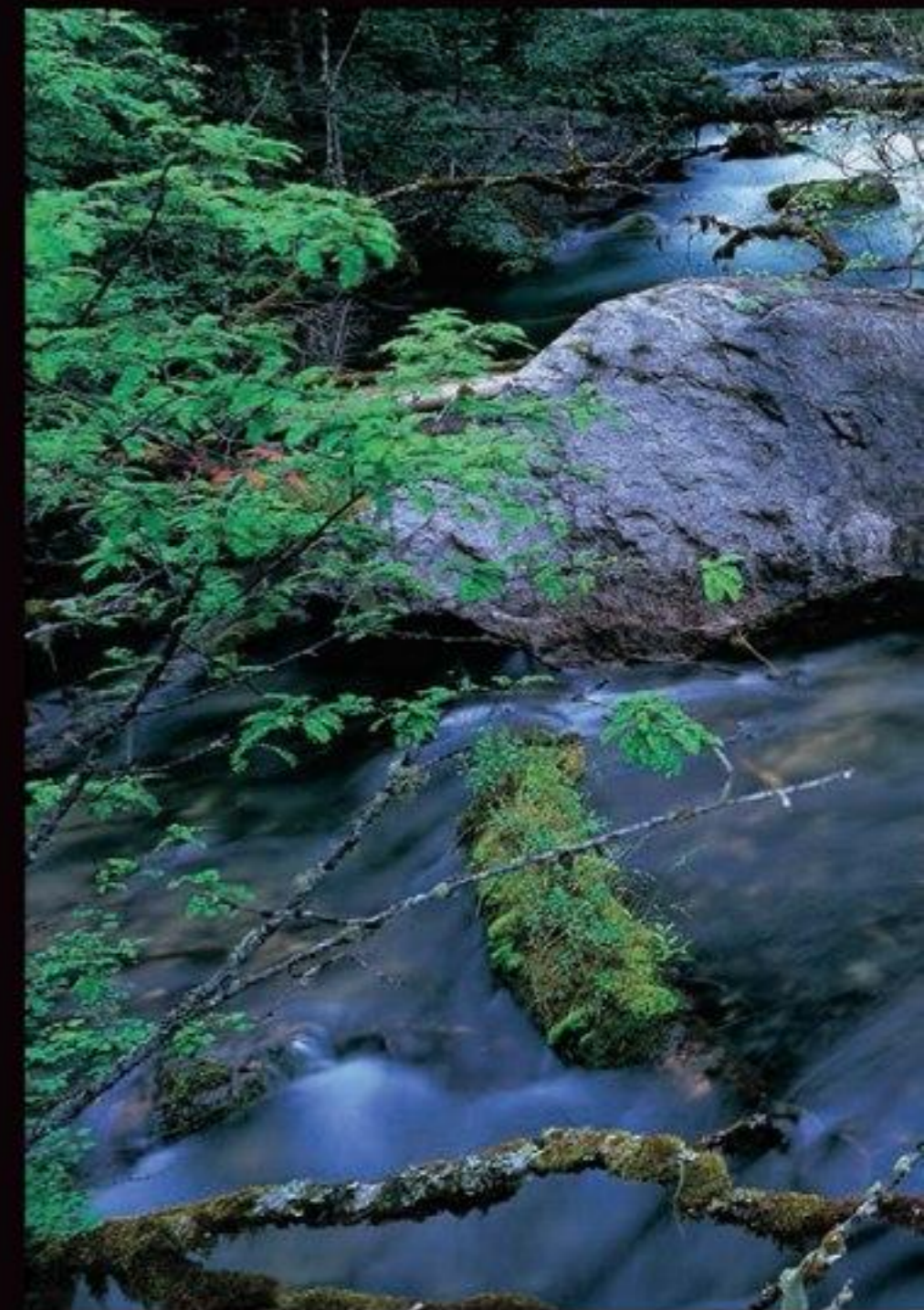
Profound Nature in China Undiscovered Jiuzhaigou captured.



It is not easy to get a shot of a waterfall with a panoramic camera. However, this landscape of Pearl Shoal Waterfall was captured in the most dynamic angle ever.



Rich nature with flowers in bloom. This area is also the habitat of the giant panda.



Tibetan women in traditional costume.



Jiuzhaigou was originally a place where Tibetans lived.

(Continued from page 42)



the rays of the early morning sun penetrating the water and also changing its color from dark blue to splendid bright blue. At the bottom of the water of Wu Hua Hai in the very early morning, the fallen tree trunks in the lake were very clearly seen as if they were not covered by water. Meanwhile I took a lot of pictures of undiscovered Jiuzhaigou such as blue rivers flowing through reeds, fallen trees in the upper reaches and fields of flowers in full bloom in the richness of nature. My curiosity to find untapped locations along with the great mobility



Took a picture with a management office staff. He is also a photographer.

of transportation made these precious opportunities possible.

I used a custom-made 6x17cm panoramic camera and tried my best to make full use of its features for this shoot. This camera covers a wide horizontal range and came in very handy for taking pictures of Wu Hua Hai and other lakes, but it was quite hard to use it to shoot the landscapes with waterfalls that drop vertically. Nevertheless, I managed to capture the famous Pearl Shoal Waterfall in a totally new, exclusive angle with this camera. We can take fascinating pictures with a panoramic camera once we get familiar with it.

Meanwhile, the location for shooting is influenced by weather. In Jiuzhaigou, I took pictures of the lakes on a sunny day while I captured river landscapes dotted with waterfalls and wabi-kusa on a cloudy or rainy day. It was a short stay of just a few days, but it was a satisfying photo tour with such flexible mobility that I really enjoyed the profound natural beauty of China while shooting the varied landscapes of Jiuzhaigou.



Combination of countless wabi-kusa-like mosses and trees in a river. This is a landscape unique to Jiuzhaigou.

VIDA CAFÉ

Takashi Amano's way of living

"Spirit of Fun"

Takashi Amano has been interested in planted aquarium since childhood and established the style "Nature Aquarium". He has also learned photography on his own after he bought his very first camera and now he is an active landscape photographer in Japan and abroad. These are the fruitful results of his enthusiasm for aquatic plants and camera as well as his quest for fun. In VIDA CAFÉ for this issue, we unlock the keys of Takashi Amano's idea of "fun" under the keywords "Having fun".

vol. 07

Source of Vigor

In the midst of a busy schedule with activities such as shooting in the early morning or challenging conditions, speeches and lectures at home and abroad as well as interviews and media appearances, Takashi Amano really takes care of his health and he even refers to himself as a health freak. Besides walking and cycling, he has tried all sorts of health supplements including earthworm powder, snake powder, liquid calcium and enzymes. Looking at Amano taking all these supplements, a doctor warned Amano that he has become unhealthy due to oversupply of nutrients to his healthy body. Supplements should be "something working behind the scenes", but it had come to the front stage and disturbed the main cast due to excess supply. Amano said, "I like to think how to modify and improve fish food and nutrients for the aquarium and I enjoy trying out many different types and combinations. I have caused aquariums to become full of moss several times as a result of unsuccessful trials. On my body, too, I like to try various supplements while monitoring their effectiveness." For Amano who feels stressful when he is too busy to do exercise, the source of vigor is good exercise, supplements and, most of all, the "spirit of enjoying everything".

Good Medicine Tastes Bitter to the Mouth

Amano is a health freak, but at the same time, he likes to drink very much and moreover his way of having fun can very often be "unhealthy". "I also do some things which are very bad for my health, so I try to keep myself in balance by doing exercise and taking supplements. I sometimes study how to avoid having a hang-over (laughs)." He quit smoking when he retired from bicycle racing and started his own business, but before that he had been a heavy smoker who emptied three packs a day. Even from this fact, we can understand Amano's style of working and playing vigorously to the limit.

There is an episode about his dynamic way of having fun. More than 35 years ago when Amano was still a professional bicycle racer, he reserved a whole exclusive club one whole night using the prize money he had won. The money Amano spent at that time was worth a few months' salary of a company employee fresh from university. Amano spent all his prize money on a spree and the very next day, he was penniless and bitterly regretted it. But Amano said he has come to think after 10 to 20 years since that the experience had not been a waste as he would not be able to live it again. Over the years, Amano has changed his regret over

that night into the positive notion that he could do everything, so he would work harder.

Great Hospitality

Generally, playing smart means knowing how to play, having a spirit of fun and using money wisely. Amano said that in order to play smart at a geisha teahouse in Kyoto which usually turns first-time guests away, we should not take their good services for granted but need to have such a generous mind that we learn from the geishas how to play smart. This also means service providers can come across good customers with a great spirit of fun and build good relationships with them only if they provide the best service. This hospitality is in keeping with the "Ichigo Ichie" philosophy of the Japanese tea ceremony, which means "treasure every meeting, for it will never happen again" and has been passed down in Japanese culture through the ages.

Meanwhile the Nature Aquarium Party, an annual event which brings in planted aquarium hobbyists from all over the world, will be held again this year. The layouts displayed in Nature Aquarium Gallery have been well prepared from a few months back so that the participants coming from far and wide can enjoy them in their peak condition. All the staff at

"VIDA" is a Portuguese word for "life". This corner introduces you to Takashi Amano's way of life through topics around us.



Interviewer/Editor: Miyuki Yano (Overseas Trade Department, ADA)

ADA will keep the spirit of "Ichigo Ichie" in mind and work hard to provide the most pleasant experience to all the guests. Says Amano about hospitality, "The pleasure of our guests is also our pleasure. So, in order to provide our guests with fun, it's important for us to have fun. I believe if we have fun, the guests will catch the spirit and have a great time."

Value Every Moment

The "Ichigo Ichie" philosophy which treasures every moment can also be observed in Amano's activities and work. Amano said that when he takes landscape photographs, he talks to nature and clicks the shutter with his whole heart while treasuring that very moment. Nature consists of various factors and thus puts on a different look every moment. If we miss a landscape at a certain moment, we may never be able to see it again. There was a case where a beautiful landscape captured on film had changed drastically due to environmental destruction. This scenery can never be seen again even if we visited the place again. Amano somehow seems to be energetic and in good spirits even when he is heading for a place in an extreme environment for shooting. It must be because Amano knows that the landscape he wishes to capture exists only in a certain moment of time and there will be no second chance to see it again. Amano treasures the value of every moment. This is why we feel the sparkle of life in Amano's works.

Ultimate Fun

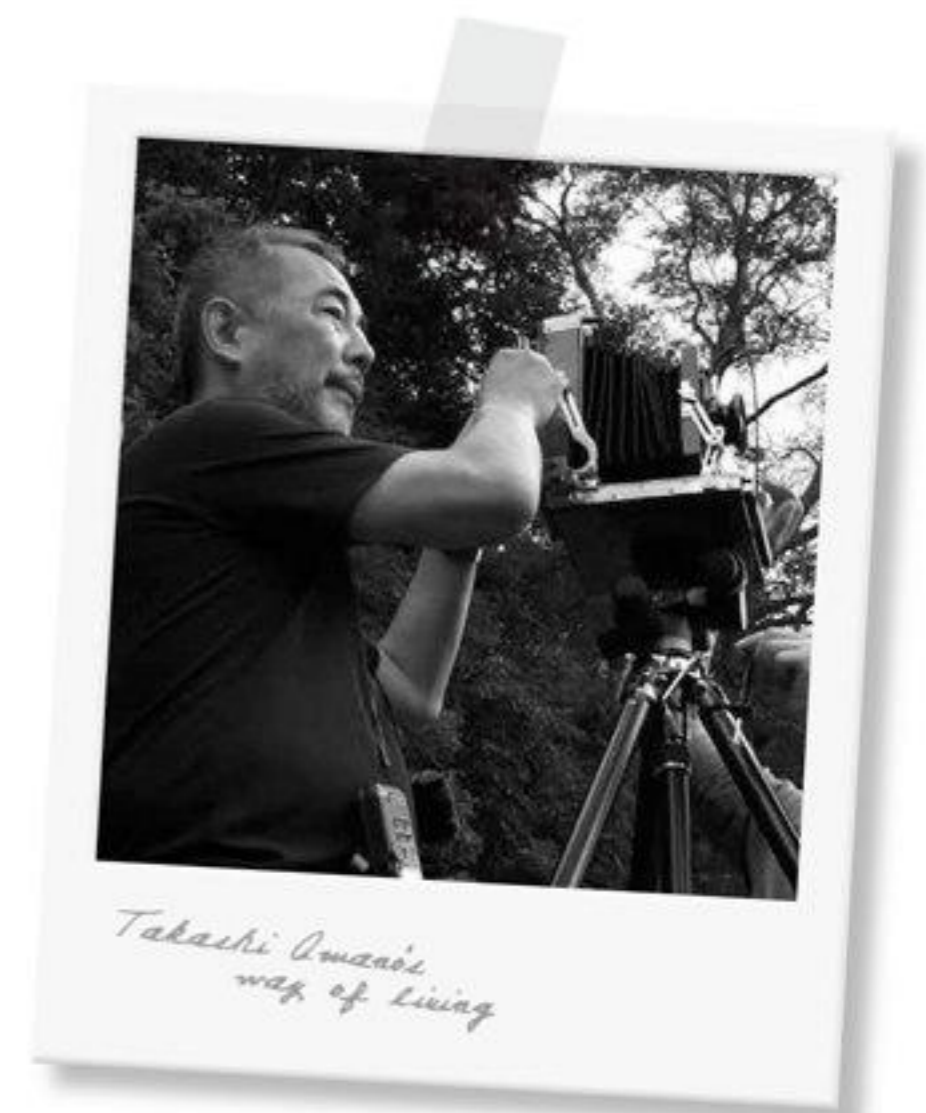
Amano said that the ultimate fun is to "succeed in challenges" and it is therefore his hobby to enjoy pursuing challenges. While his partners

who started the aquarium business together quit one after another as problems with aquariums occurred, Amano still continued thorough research by way of trial and error and finally established Nature Aquarium. The pursuit and passion for something he likes is in common with Nature Aquarium and photography. Because Amano enjoys these activities, he makes a total commitment to them and, at the same time, finds joy in them. Amano often urges us to make a serious commitment to everything to the extent that, if you don't, you'll regret it later. He says, "The harder we try, the more we will regret it if we release something we are not 100% satisfied with. We, as artists,

must be conscious that releasing such work is shameful. So, it is important to do everything very hard and seriously and pursue what we can do at the moment." The "spirit of fun" must mean approaching what we are fond of sincerely and enjoying it instead of regarding such a thing as a mere favorite. Nature Aquarium in which this spirit is alive is now spreading all over the world as a "universal hobby" regardless of culture and national boundaries, and many aquarists who have rich creativity and a sense of fun are born rapidly.



The first camera Amano purchased marks the start of his career as a photographer. It is Amano's style to go after things with enjoyment.



The saying "Ichigo Ichie" is the perfect phrase to describe the encounter with the landscape that can be seen only in that very time and place. Amano treasures the value of the moment in everything.

Water Purification System of Nature Aquarium

Aquatic plants and fish cannot have brilliant colors unless the water is of good quality. Their beautiful color is also an indicator of health. In order to maintain good water quality, Nature Aquarium incorporates various innovations that have been learnt from nature. The Nature Aquarium Notes of this issue discusses the water purification system of Nature Aquarium.

● Why does the water in the aquarium get dirty?

We need to feed the fish to keep them in an aquarium. The fish absorb a part of the consumed food for growth and respiration, and excrete the remainder as feces. From fish feces and leftover fish food, substances such as organic matter, ammonium and phosphoric acid are released and dissolved in the water. In addition, ammonia produced through the metabolism of the fish is directly excreted via the gills and then converted into ammonium in the water. The accumulation of these substances within the tank contaminates the aquarium water gradually. Some instances of visible contamination include decline in water clarity and algae growth on the glass surface and substrate. This decline is caused by an increase in free-floating bacteria feeding on organic matter in the water and also by the growth of free-floating algae absorbing nutrients from phosphoric acid and nitrogen content such as ammonium. Algae on the glass surface also grow by absorbing nutrients from nitrogen content and phosphoric acid. This is why periodic water changes are needed for the aquarium with fish. Meanwhile the factors contributing to the deterioration of water quality can also be seen in aquariums in which aquatic plants grow. Particularly during the initial stage of the aquarium, water contamination is caused by nutrients released from the substrate.

In Nature Aquarium, Power Sand and Aqua Soil-Amazonia are usually used as substrate materials for the healthy growth of aquatic plants. Power Sand and Aqua Soil-Amazonia contain organic nutrients and nitrogen content, which will be dissolved in the water and converted into organic matter and ammonium. These substances cause even aquariums with only aquatic plants to face problems of cloudy water and algae growth the same way as aquariums with fish. The issue of nutrients released from the substrate will eventually be resolved once an adequate

amount of aquatic plants have been planted and the substrate surface has been covered by the grown plants. In Nature Aquarium, the first month after setup when the aquatic plants are still in the growing stage is the period in which aquarium water contamination is most serious. During this period, organic matter and ammonium should be eliminated by way of frequent water change.

● Water purification mechanism in nature

When only fish are kept in the aquarium, the water continues to get contaminated unless water change is performed. By contrast, natural aquatic environments originally have their own water purification mechanism involving diverse living organisms. In fact, fish are a contributing factor to water contamination even in natural aquatic environments. However, water purification takes place at all times there by way of decomposition of organic matter and ammonium released from the fish feces by countless decomposers present at the bottom of water and other locations. Besides microorganisms, including bacteria and protozoa which are well-known decomposers, crustaceans such as *Cardina* as well as shellfish such as mud snail also help in water purification as decomposers in a natural environment. What is important in the natural ecosystem is biodiversity. Swift decomposition of water-contaminating organic matter is made possible by the presence of diverse species of decomposers other than microorganisms. For instance, the mud snail filters the water through its gill, and it also hardens algae, bacteria and organic matters with its mucus. A part of the hardened materials is consumed by the mud snail as food and the remainder is deposited at the bottom of the water. The deposited organic matter will eventually be eaten by crustaceans such as *Cardina* and refined through this process, allowing easy decomposition by microorganisms. *Cardina* and mud snails also feed on

algae grown on emergent plants. After the algae on the plants have been eaten by these species, the algae start to grow again and absorb nitrogen and phosphorus in the water as nutrients.

In this way, water is further purified via repeated elimination and re-growth of the algae on plants. In addition, it is widely known that emergent plants such as reeds help to promote water purification by absorbing nitrogen and phosphorus in the water through their roots. This process is applied to ADA's product "First Planted Aquarium Tank Set". In this set, wabi-kusa plays the role of plant filter just like emergent plants, and mud snail and *Cardina japonica* (Yamato Numa Ebi) support the water purification process.

● Filtration system of Nature Aquarium

The basic concept of Nature Aquarium, that is, making use of diverse living organisms including aquatic plants, mud snail and *Cardina japonica* for water purification, is condensed in this "First Planted Aquarium Tank Set". Although it is impossible to reproduce the natural ecosystem exactly as it within the limited space of a tank, the essence of the ecosystem can be extracted and rebuilt in an aquarium. Biological filtration, which is regarded as the most important process in the filtration system of Nature Aquarium, is a method of filtering water with the help of microorganisms, a representative decomposer in the ecosystem.

In a natural aquatic environment, microorganisms such as bacteria and protozoa are present on the mud and sand at the bottom of the water as well as on stone surfaces. In the aquarium tank, too, they are found on the surface of the substrate and stones, but their water filtration function is not powerful enough since the tank area to microorganisms can attach themselves is very restricted. To solve this problem, an independent external filter is used for the aquarium to produce more

bacteria so as to achieve a high filtration capacity. The external filter contains filter media such as Bio Rio to which microorganisms such as bacteria and protozoa adhere. Since more bacteria can adhere to a larger surface area, materials with large surfaces and good water permeability are ideal for biological filtration. The filtration capacity of microorganisms declines if the filter media are too fine or stuffed too much to the extent that water permeability is affected. To perform biological filtration, it is necessary to ensure good water permeability so that the filter media surface is exposed to the water containing rich oxygen in order to optimize the important functions of microorganisms that need oxygen such as aerobic bacteria and protozoa. In nature, too, water quality can easily deteriorate in the aquatic environment with stagnant water where oxygen is lacking. To keep the water in a good condition, it is crucial that the water contains adequate amounts of oxygen and is kept in motion.

● Water purification capacity of aquatic plants

In Nature Aquarium, aquatic plants grow in a tank and play a role in water purification. Beneficial microorganisms such as aerobic bacteria and protozoa in the external filter require oxygen in the water for their activity. It can therefore be said that microorganisms are more active or propagate at a higher rate with a higher concentration of oxygen. The external filter containing a lot of filter media has a powerful filtration capacity but, at the same time, it consumes a large amount of oxygen for microbial activity. Oxygen is always supplied to the water through the water surface, and on top of that, a greater amount of oxygen is generated through photosynthesis of the aquatic plants. This means the aquarium in which lush aquatic plants grow and vigorously perform photosynthesis is favorable to the activity and propagation of aerobic bacteria. In such an environment, organic matter causing water contamination can be captured and consumed by protozoa and they are further decomposed and oxidized by aerobic bacteria. The role of the aquatic plants in water purification is not only to supply oxygen to the water. Aquatic plants grow by obtaining carbohydrates and energy through photosynthesis but are unable to perform adequate synthesis of amino acids and pigments essential for their growth just by this process. For this reason, the aquatic plants need to get their nutrients from the water. Nitrogen content and phosphoric acid cause water contamination but at the same time they are also nutrients to be absorbed by aquatic plants. Once the aquatic plants start growing vigorously, a large amount of nutrients are absorbed by the plants, by which the water in

the tank is purified. Aquatic plants absorb nutrients not only via their roots but also through their leaf surface. Therefore the environment with a large amount of stem plants with submerged leaves has a high water purification capacity via both the supply of oxygen and absorption of nutrients. Nitrogen content and phosphoric acid are often not detected in the aquarium under such a condition. Growing aquatic plants healthily can lead to water purification.

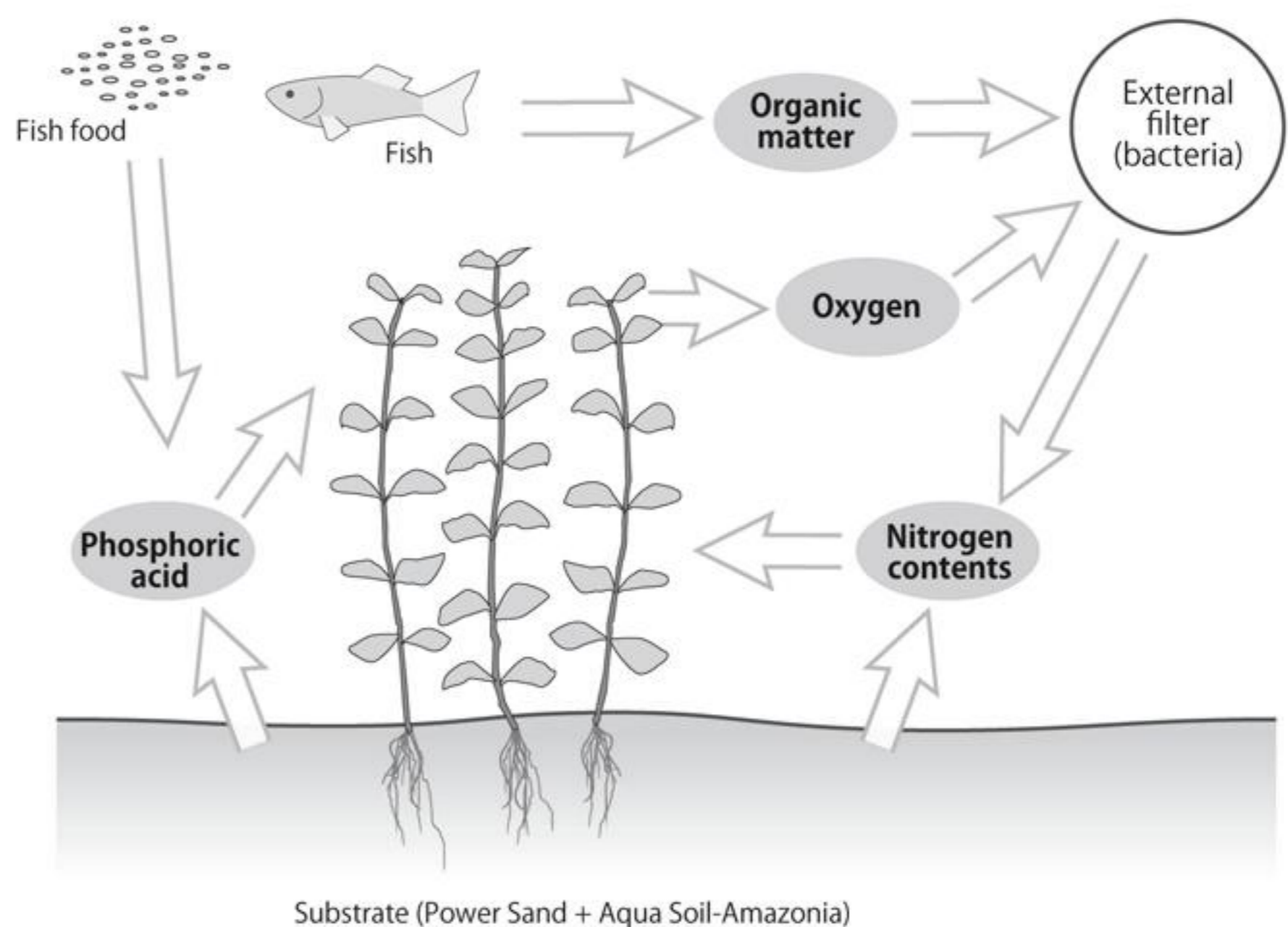
● For the healthy growth of aquatic plants

To ensure that aquatic plants are in good condition, it is necessary to grow them healthily in an environment suitable for each plant species. The key factors for the growth of aquatic plants in an aquarium include light, CO₂, substrate and nutrients. Aquatic plants are of two different types: sun plants that perform photosynthesis vigorously and grow faster, and shade plants that are not engaged in vigorous photosynthesis and thus grow slowly.

As a matter of course, sun plants require a higher degree of environmental factors compared to shade plants and thus the level of each factor should be suited to sun plants in an aquarium which has both sun and shade plants. Among these environmental factors, light and CO₂ are essential for the photosynthesis of aquatic plants. However, light is easily attenuated in water while CO₂ in the aquarium easily becomes insufficient after the photosynthesis of aquatic plants has taken place. In view of these facts, bright lighting and an

adequate amount of CO₂ injection are crucial for Nature Aquarium. Intense light and a large amount of CO₂ corresponding to the light luminance level are required particularly for the purpose of enhancing the colors of red stem plants. Vivid red color is produced by red pigment, and nitrogen as well as iron is required for the synthesis of this pigment. These nutrients are supplied by using Power Sand and Aqua Soil-Amazonia for the substrate and also by adding liquid fertilizer to the aquarium. Among these nutrients, nitrogen content and phosphoric acid tend to be excessive in the aquarium with fish as they are also generated from fish feces and leftover fish food. To address this issue, aquarists may promote the absorption of nitrogen content and phosphoric acid by supplying potassium and trace elements using liquid fertilizer. Potassium can be supplied by adding Brighty K, while trace elements can be supplemented by adding Green Brighty STEP 1-3 to the aquarium. Green Brighty STEP 2 featuring rich iron content is highly effective for the enhancement of aquatic plant colors. Adding Brighty STEP 2 together with Brighty K to the aquarium daily is a basic nutrient supplement method.

■ Nature Aquarium's Concept of Water Purification System



ADA view
NA latest info from Aqua Design Amano

TAP INTO THE KNOWLEDGE OF ADA

NEWS, KNOW-HOW, TIPS, AND MORE!

Seminars on making a Nature Aquarium Layout
Information on Nature Aquarium Goods
and ADA organized events are now available online!

Nature Aquarium status updates, [ADA view], allow you to see the latest status of the NA Gallery straight from Niigata, Japan. ADA view videos are available on **You Tube**, however, upcoming on **USTREAM** is a presentation by Takashi Amano himself, creating a fresh Nature Aquarium layout in real time. Be sure not to miss it.

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