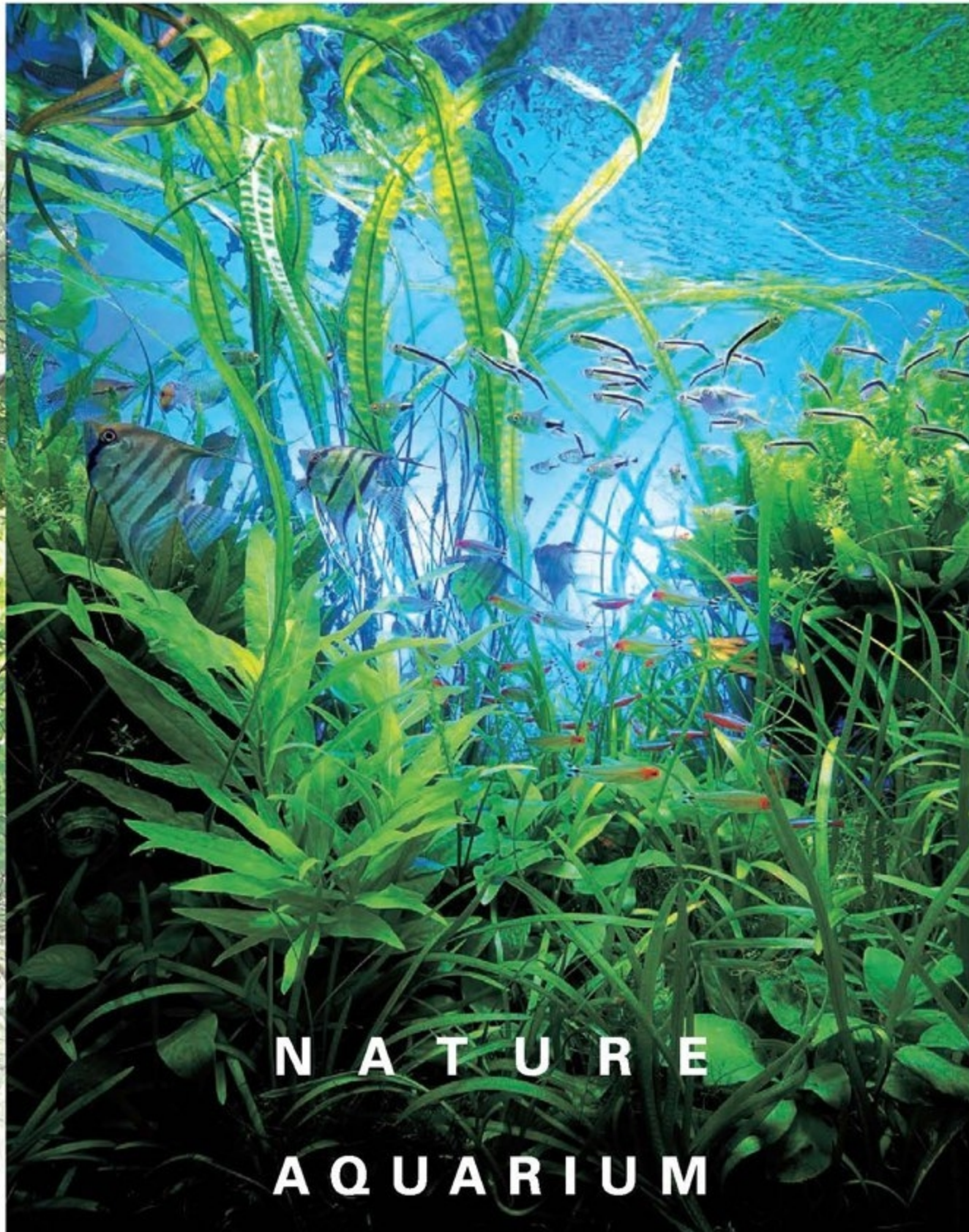


# AQUA JOURNAL

Nature Aquarium information magazine

特 Special Feature 集



水草のゆらぎ、こころの和み。

N A T U R E  
A Q U A R I U M

T H E R A P Y

ネイチャーアクアリウムセラピー





Message from

# TAKASHI AMANO

Dear Nature Aquarium fans and hobbyists

Since the 2011 Tohoku Earthquake and tsunami hit northeast part of Japan on 3/11, I have received many condolences. We have been operating normal operation, and the qualities of all of our products including AQUA SOILs remain assured, no effect of radiation. Rather, now it is the time we should stand up and give the healing power of Nature Aquarium to the people who have been hurt and depressed! Nature Aquarium is not only beautiful and enjoyable, but also brings numerous benefits such as healing, learning, motivation, communication, etc. The gift of nature is concentrated in this glass-made world, and its potencies are receiving continuous interests from all around the world. The International Aquatic Plants Layout Contest is taking place as usual, and Nature Aquarium party will be organized on September 17th at TOKYO INTERNATIONAL FORUM. And we are working on numbers of plans to give people a chance to appreciate Nature Aquarium including a big urban-style aquarium gallery, which is expected to open in spring, 2012 in a multi-function complex in Tokyo. Please look forward to our latest activities!

**ADA**  
aqua design amano













©Takashi Amano

Vista of Boundless Creation





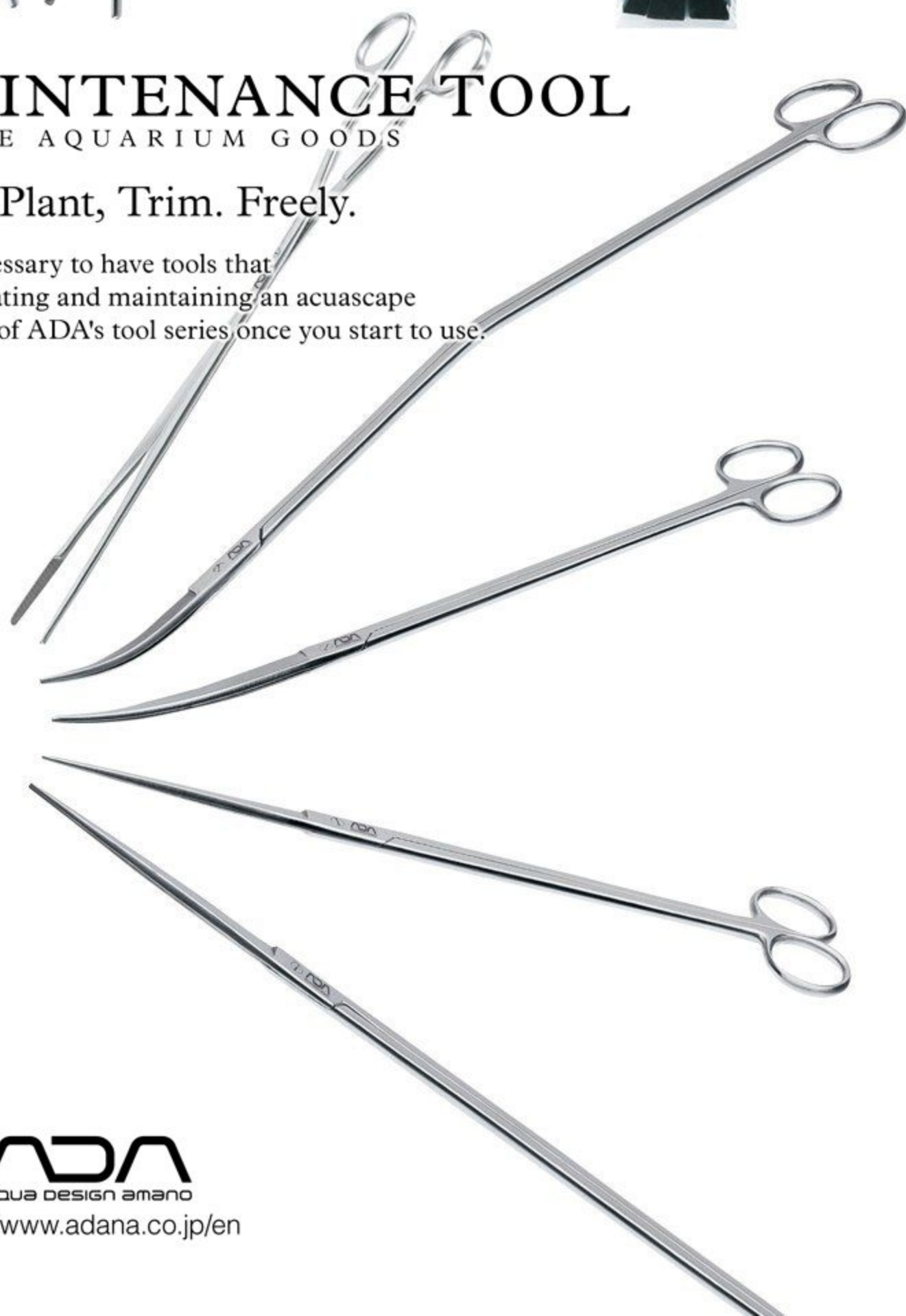


# LAYOUT & MAINTENANCE TOOL

ADA NATURE AQUARIUM GOODS

Tie, Hold, Plant, Trim. Freely.

It is necessary to have tools that  
is easy to use for creating and maintaining an acuascape  
You can feel the difference of ADA's tool series once you start to use.



**ADA**  
aqua design amano

<http://www.adana.co.jp/en>





### The Creation (Tasmania, Commonwealth of Australia)

The Eucalyptus tree, one of the most common trees in Tasmania, has a unique strategy for survival. With its volatile and highly combustible oil contained in its leaves, eucalyptus trees ignite spontaneously by the friction of branches rubbing against each other, which is the cause of forest fires. Then, after the other trees have burned out, the eucalyptus tree becomes the dominant species. But recently, something extraordinary happened to this sturdy tree. Many of them are dying - inexplicably. Some say it might be due to soil bacteria, but the cause is still unknown. A brief flash of light breaks through the clouds and lights up the dead eucalyptus trees – a truly dynamic sight reminiscent of “the Creation”!

Shooting data / Linhof Technorama 612, Super Angulon XL 58mm (Center Filter)

1/2 sec at f32 (Push-processed +1EV), Velvia 100F

Text and photographs by Takashi Amano

# AQUA JOURNAL

AUGUST. 2011

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特

Special Feature

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NATURE  
AQUARIUM  
THERAPY

ネイチャーアクアリウムセラピー

Photographs by Takashi Amano

Text by Masatoshi Abe/Tsuyoshi Oiwa/Miyuki Yano





Vital energy imparted by sparking ripples and crystal clear bubbles.

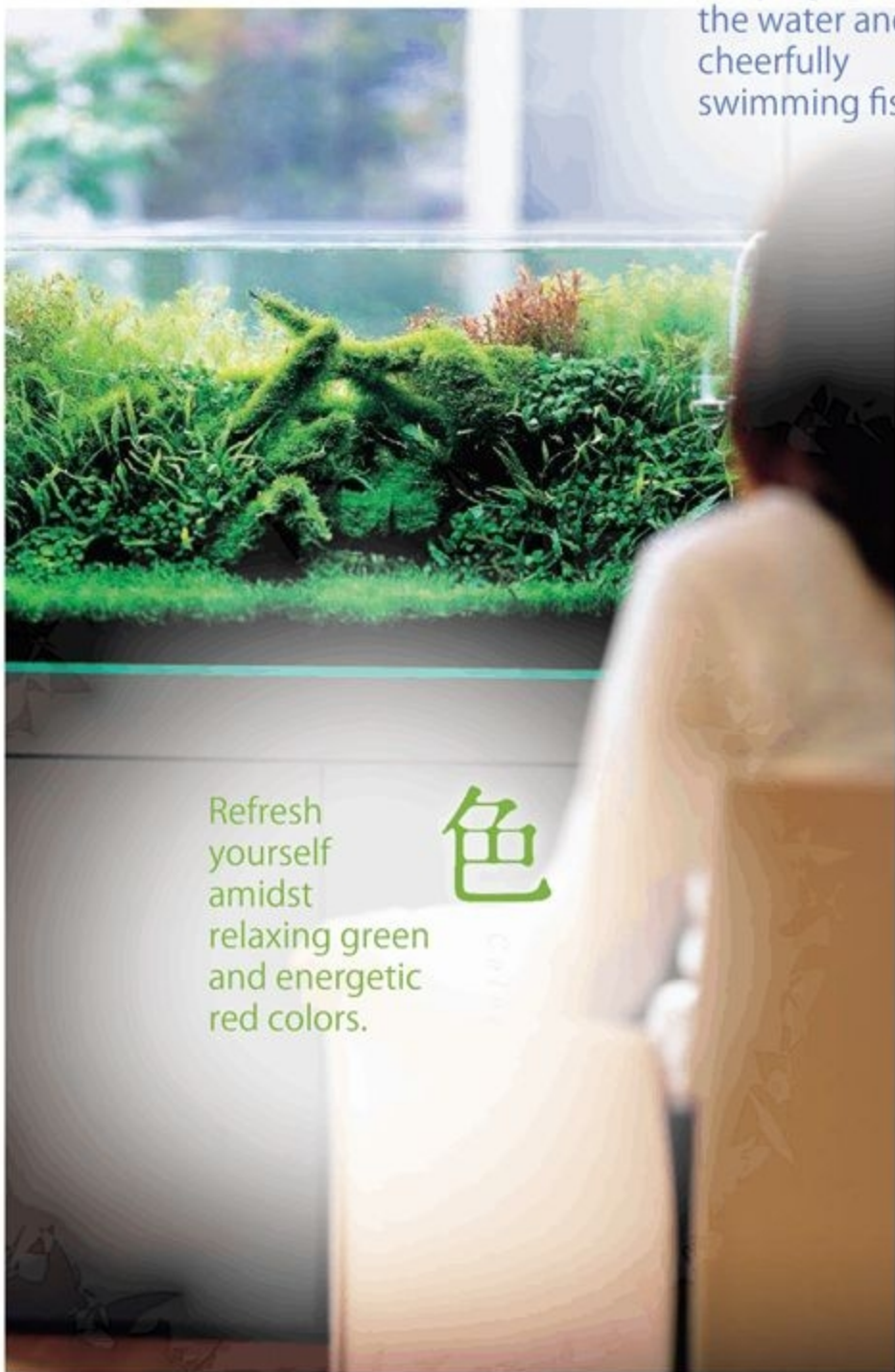
光  
Light

Soothing sound of flowing water. Such an enchanting sound produces a sense of peace.

音  
Sound

Comfort found in aquatic plants swaying in the water and cheerfully swimming fish.

動き  
Movement



Refresh yourself amidst relaxing green and energetic red colors.

色  
Color

Swaying  
Aquatic  
Plants  
Promote  
Peace  
of Mind.



The desire for closeness with plants and water – this may be the natural desire of every human being. Unconscious of the passage of time while looking at the aquarium in our room, our heart returns to nature even though all we see is the swaying aquatic plants in clear water. In this issue, we look into the healing effects of the aquarium.



# Three Combined Healing Effects

## What is Nature Aquarium Therapy?

Vivid green aquatic plants swaying in clear water; and colorful tropical fish briskly swimming around them. Nature Aquarium provides you with unique healing effects.

Nature Aquarium where aquatic plants and tropical fish co-exist in harmony has a combined healing effect derived from "Aquatherapy" and "Green Therapy". Added to this, is the "Animal Therapy" effect since the Nature Aquarium is closely associated with the process of "taking care of living things". The most distinctive feature of Nature Aquarium is

that the aquascape of water plants makes us feel settled and serene as if we were looking at a beautiful natural landscape. This is why Nature Aquarium takes you into a deep mental tranquility which no other therapy offers. The source of this combined healing effect – Nature Aquarium Therapy.

### 1. Green Therapy (Plants)



Relax your mind and body with green aquatic plants. The combination of various types of aquatic plants creating different tones of green, provides visual comfort.



### Nature Aquarium Therapy

With its combined therapeutic effect, Nature Aquarium also offers a richly satisfying hobby in which we can enjoy a natural aquascape within our own room.







## 2. Aquatherapy (Water)

Our mind and body are made to relax with the flowing, rippling water which makes you visually feel the 'water' with the tactile sense of its soothing effect as when you soak your hand in water.



In general, animal therapy is an approach that provides mental stability through interaction with animals. A similar effect can be expected through feeding or rearing fish.

## 3. Animal Therapy (Animals)





## Why Not Try the Relaxation Approach Unique to ADA?

ADA has been administering the healing effects of Nature Aquarium for over 30 years.



In fact, the examples of the Nature Aquarium introduced in this issue include some cases dating back more than 30 years, a foretaste of aquatic plant layout in Japan when people just started paying attention to it. Even back then, ADA was already focusing on the relaxing effects of the aquatic plant layout and had installed Nature Aquariums in the waiting rooms of hospitals and clinics, F&B outlets and hot spring spas. Nature Aquarium received positive feedback including the eradication of anxiety among patients and the formation of a relaxing space in F&B outlets and hot spring spas. It was also reported that Nature Aquarium has the effect of drawing in repeat customers as it forms a deep impression on the customers viewing the display. Through these installation examples, ADA firmly believed that the attractive hitherto-never-seen aquascape comprising aquatic plants and tropical fish



Audio system incorporated in the stand for Nature Aquarium. Music with superior healing effect from the system creates a comforting environment.

has the effect of making the viewers feel relaxed, whatever their age. This is exactly what is now called the healing or therapeutic effect. ADA also had the idea that more profound relaxation could be achieved by viewing a Nature Aquarium within a space in which music is played, and he proposed the fusion of Nature Aquarium with music to attain an enhanced relaxation effect. To verify the effect, ADA conducted an experiment installing a Nature Aquarium on a

stand with built-in audio system and speakers (see above picture), which led to ADA's release of products such as "Aqua Chair" and "CD: Water - A Return to Nature" based on the Aqua Music concept of enjoying Nature Aquarium while listening to music. ADA has been introducing Nature Aquarium's relaxation effect ahead of the times up to the present. And in today's stress-ridden society, helping alleviate stress will be added to Nature Aquarium's social roles.



This is the full view of the installation example on the left page. This arrangement provides a more relaxing ambience compared to installing an impersonal TV monitor.



The green of the Nature Aquarium looks really sharp even in a shop dimly-lit with just downward slanting lights. Have a blissful moment with your favorite drink as you gaze at the aquarium.



Installing Nature Aquarium in a hot springs or spa facility provides the customers with a comfortable, cozy space. Its positive impression draws in repeat customers.



An aquarium is installed in a consultation room of a pediatric clinic to allay patient anxiety. This shows the doctor's caring attitude towards the children.

Besides its therapeutic effect, Nature Aquarium also contributes to enhancing the shop's ambience to form an excellent piece of interior décor.



The relaxing effect of Nature Aquarium has now become well known. One of the places where its benefits are being proactively adopted is hospitals. Patients usually feel uneasy due to pretreatment anxiety, but such anxiety lifts and the patients achieve a relaxed state of mind through appreciation of the aquarium. Meanwhile hospitalized patients who lead monotonous lives enjoy the daily observation of the changes in the growing aquatic plants. In this hospital in Niigata, Japan, a 240cm aquarium is installed at the reception hall by hospital staff, who recognize the effects of Nature Aquarium. As a nursing-care and welfare institution for the elderly, this hospital also has many elderly people together with their care givers, who enjoy the enchanting view of the aquarium. The sight of the fish clustering by a wheel chair patient whose hand is placed over the aquarium and the soft hues of the flourishing aquatic plants add comfort and relaxation to

the hospital. In fact, a survey on Nature Aquarium conducted by this hospital showed positive feedback of such outcomes as "Became more compassionate", "Communication has increased" as well as "Having a healing, relaxing and de-stressing effect". Besides these therapeutic effects, Nature Aquarium is expected to reduce the noise within the hospital as children are likely to observe the aquarium quietly. This can be said to be the ideal scenario where Nature Aquarium becomes a factor contributing to a more conducive hospital environment.

CONTROL DATA

Shooting date	/	October 2009
Aquarium size	/	W240×D60×H60 (cm)
Lighting system	/	NAG-150W-Green/NA Lamp Twin 36W (2 units) (Grand Solar I); 4 units; Lighting for 10 hours a day
Filtration system	/	Super Jet Filter ES2400; Bio Rio
Substrate system	/	Aqua Soil-Amazonia, Power Sand Special L, Bacter 100, Clear Super, Tourmaline BC, PENAC W for Aquarium and Panac P
CO <sub>2</sub> system	/	Pollen Glass Beetle 500 – 8 bubbles per second with CO <sub>2</sub> ; Beetle Counter
Air	/	Aeration with Pollen Glass Beetle 500 for Air – For 14 hours while the lighting is OFF during night
Additives	/	Brighty K, Green Brighty STEP 2, ECA and Green Gain
Water change	/	Once a week – 1/4
Water quality	/	Water temperature: 25°C; pH: 6.6; TH: 10mg/ℓ



## Roles and Effects of Nature Aquarium Found in Installation Cases

The relaxation effect of aquariums has high prospects in various fields, especially medical institutions.



Aquarium installed in the hospital's reception hall provides a relaxing ambience.



RELAXATION  
POINT



**Creates a bright and cheerful ambience**

Lots of gorgeous stem plants and matching tropical fish are used so that the person looking at this aquarium feels happy.



BIOLOGICAL DATA

Aquatic Plants

*Hygrophila polysperma*  
*Hygrophila stricta*  
*Rotala indica*  
*Pogostemon* sp. "Dassen"  
*Alternanthera reineckii* "Lilacina"  
*Myriophyllum matogrossense*  
*Ludwigia arcuata*  
*Ammannia latifolia*  
*Ammannia gracilis*  
*Rotala rotundifolia* (Green)  
*Rotala rotundifolia*  
*Blyxa novoguineensis*  
*Fantinalis antipyretica*

*Bolbitis heudelotii*  
*Microsorium* sp.  
*Eleocharis acicularis*  
*Echinodorus latifolius*  
*Glossostigma elatinoides*  
*Anubias barteri* var. *nana*  
*Anubias barteri* var. *nana* "Yellow Herat"  
*Cryptocoryne wendtii* (MiOya)  
*Cryptocoryne petchii*  
*Cryptocoryne wendtii* (Green)

Fish Species

*Trigonostigma heteromorpha*  
*Paracheirodon axelrodi*  
*Hyphessobrycon sweglesi*  
*Hemigrammus erythrozonus*  
*Mikrogeophagus ramirezi*  
*Inpaichthys kerri*  
*Hemigrammus armstrongi*  
*Hyphessobrycon herbertaxelrodi*  
*Aphyocharax rathbuni*  
*Hyphessobrycon rosaceus* var.  
*Hemigrammus pulcher*  
*Colisa sota* var.  
*Caridina japonica*  
*Otocinclus* sp.



Shining  
Lights and  
Swaying  
Green  
Grasses







Colorful underwater world with multicolored aquatic plants

The layout, which optimizes complementary colors of red and green, skillfully draws out the beauty of each plant.

Soft colors unique to aquatic plants sparkle as water ripples — this enchanting view soothes the heart.

Aquarium size: W180 x D60 x H60 (cm)





# 1

case  
Shinkocho  
Nursery

The children are drawn into the world of aquariums and stop crying for a moment.

**I**ggh expectations of Nature Aquarium as in our enrichment program for children. In our nursery which just opened this April, we installed at the main entrance a 2.4m aquarium low enough for the children to see. I really see the effectiveness of Nature Aquarium everyday. When the two to three year olds pass by the aquarium sitting on their favorite toy buggies, they enjoy watching it as it is placed right at eye level.

In April when the new academic year began, small children just joining the nursery often cried for their mothers. But when these children had a glimpse of the aquarium and the staff gently said to them, "Wow, look at this!" the children were drawn into the aquarium world and stopped their crying for a while.

We are all living in stressful times but I can forget time whenever I get in touch with nature. I think children, too, feel relaxed when they see Nature Aquarium as it showcases a slice of beautiful nature. Nature Aquarium also

helps new children get familiar with the nursery. To the newly-enrolled children, we usually use the phrase "Shrimps are waiting for you!" or "The fish are waiting and wanna play with you", instead of "Teacher is waiting". And the children viewing the aquarium often say, "I feel like swimming!" "It's fun watching the aquarium!" or "It must be cool inside". The children like shrimps quite a lot and make careful and detailed observations of them. They even notice various changes like, "The shrimp eggs have hatched!" and "The shrimp I usually see is not around today".

There is not much greenery around this nursery, but I am sure our children will be drawn to nature by their daily encounter with gentle nature from young, even though it's just the little world of the aquarium.

Even without visiting an aquarium building, the children have the opportunity to see many aquatic plants and fish in the Nature Aquarium. To optimize this advantage, we are now thinking of displaying pictures of the fish and aquatic plants we can find in the Nature

Aquarium together with their details, so that the children will remember their names. And the parents who come to pick up their children after work, also feel as if they are in the forest of another world the moment they look at the aquarium while hugging their beloved tots. While mentioning that it is impossible to have that big aquarium in the house, one mother said she thought her child would feel relaxed when watching the fish swimming in the natural aquascape and this would help her child adjust to the nursery faster. Some parents even said they had chosen this nursery because of the vivid impression of Nature Aquarium. Fish in the Nature Aquarium are swimming among aquatic plants, unlike ordinary aquariums where fish are just swimming in the water. I think such a Nature Aquarium is not only beautiful as a work of art but it also has the positive effect of soothing and lifting the hearts of both adults and children.

We feel we're in another world the moment we see the world of the aquarium.



Ms. Sachiko Horikoshi  
Director



The aquarium installed at a level as low as the child's eye is very popular among children. Curious children have fun watching the fish everyday.





case  
Kaoru-En  
a nursing-care and  
welfare institution for  
the elderly

Both the persons with cognitive impairment and the staff feel relaxed when looking at the aquarium.

Institution, we installed a Nature Aquarium to provide relaxation to visitors and enhance the appearance of the interior. The Nature Aquarium is installed at the entrance so that it can be seen by anyone who visits the institution. We have many types of users, some who come to this institution once a week while others come several times a week. I hope all of them look forward to seeing the aquarium here. Many guests, visitors and their family very often comment that the aquarium is awesome and it is great to have this beautiful aquarium. Some of our users are cognitively impaired and they don't realize there is an aquarium even if they are looking at it. So, our staff members try to speak to them when they pass by the aquarium, saying, "Look, there is an aquarium!", "Can you see the fish swimming?", "Here come the fish!" and "It's beautiful, isn't it?" Many cognitively impaired persons do not recognize the existence of the aquarium or forget about it pretty quickly, but some of them express interest in it and ask the

staff questions. Some of them enjoy looking at the aquarium when the staff bring them along. I think such persons have their own way of appreciating the aquarium and getting relaxation from it. Although many of them do not change their facial expression much, when they are invited by the staff to view the aquarium, their faces become more expressive.

Unlike ordinary aquariums, Nature Aquarium depicts a very natural aquascape where aquatic plants sway in the water and live fish swim among them. This is why I think Nature Aquarium offers better relaxation and healing effects compared to other aquariums which have just pebbles and fish together with potted foliage plants placed beside them. Besides, the shrimps in the aquarium serve as an effective communication tool which promotes conversation between users and staff through an activity like looking for shrimps and finding newly-hatched shrimps. The live fish and aquatic plants in Nature Aquarium truly rejuvenate. Not only the

users, but also the staff of this institute, experience its healing effects. Not to mention feeding time when the fish come up to us as we just pass by the aquarium. This is why even people who have no experience at all in rearing pets also feel affection for the fish and enjoy feeding them.

The Nature Aquarium also contributes to promoting communication among the staff. They take care of the fish wholeheartedly and ask each other "Have you fed the fish?" Currently the aquarium is installed at a relatively high level. I now feel it would be better to install it at a level at which our users can see the aquarium while sitting. I think this arrangement makes our users feel more at ease with the Nature Aquarium. I think we will keep on caring about interaction with living nature.

I really feel Nature Aquarium's effects of promoting relaxation and communication.



Ms. Shuko Takagi  
Director



A lively and friendly conversation about fish and aquatic plants goes on while an elderly person looks at the aquarium together with the care giver. The Nature Aquarium puts a smile on their faces.



Indulge  
yourself in the  
tranquility of  
this relaxation  
space.





We can find a lot of interesting things while looking at the aquatic plants and tropical fish embellishing the aquarium. Large wide leaves, long thin and wavy leaves, tape-like leaves, fish with long pelvic fins, triangular-shaped fish bodies and vividly colored fish ... We forget the passage of time as we look at these enchanting creatures.

Aquarium size: W90×D45×H60 (cm)





# 3

case  
Akiha Spa Casui

Unlike repeated projected images, Nature Aquarium keeps on showing us different aspects. This is the fantastic part of Nature Aquarium.

**O**ral hot spring spa has introduced many aspects of European spas which we learned about when we visited them. We have a healing room to provide relaxation to our customers and a Nature Aquarium is installed in this room. The healing room is a spacious, cozy room with high ceiling, reclining chairs, pleasant aroma, healing music and soft, tranquil warm lights where the customers can enjoy relaxation through the five senses. At the entrance of the room, we display some information on how to enjoy such relaxation effects. We use warm lights throughout our facility, but the lighting of the healing room is dimmed to enhance tranquility. Under this lighting, the vivid colors of the aquatic plants stand out.

This healing room is very after popular not just among the young ladies who are our main customers, but among all types of customers as a place to relax and cool down after a hot spring bath. As we limit the number of chairs in the healing room, some customers have commented that the room is always fully

occupied and they have little chance to enjoy it. In fact, some customers are still sound asleep even when it's closing time; they are sleeping so comfortably that the staff feel bad about waking them up.

In addition to the healing room, we provide fully-fledged relaxation to our customers through various body care and spa treatments as well as healing yoga and "Rusie Dutton" classes offered on weekdays. I think our overall relaxation and healing effects including Nature Aquarium draw many repeat customers. About 10 years have passed since we installed the Nature Aquarium, but it has always been in tip-top condition as experts from ADA come for maintenance periodically. I know this work is hard as the ADA staff have to complete the maintenance of such a large aquarium within a limited time before we start our operation in the morning. But thanks to their efforts, we receive positive feedback on Nature Aquarium, like, "It's as if we were really looking at the natural underwater world" and "My children always have fun watching the small fish swim". There are customers who

come to our facility to see the big aquariums which is difficult to have at home due to their overwhelming size. I'm sure those customers cherish their childhood memories of playing in a stream or are rejuvenated by the green in the water while looking at the Nature Aquarium. Besides the aquarium, we also have many shrubs and flowering plants in our compound which relax the mind. We can see the daily changes in these plants as they grow and blossom.

Aquatic plants gracefully swaying in the water and tropical fish swimming in the Nature Aquarium are all alive and keep on showing us different scenes unlike repeated projected images. This is the fantastic part of Nature Aquarium. I feel this wonderful natural feel of Nature Aquarium has a deep effect on the persons viewing it. On top of it, our staff in charge of the aquarium also enjoy taking care of it, and the aquascape and fish look even more stunning after the plants have been trimmed and the fish well fed.

There are customers who come to our facility to see the Nature Aquarium.



Mr. Masato Kazama  
Front Manager



The European style building has a pleasant atmosphere especially for ladies with its lush greenery and flowers of both indoor and outdoor types. It is a popular spot where users can come and relax.





case  
Tanaka Psychosomatic  
Medicine Clinic

Nature Aquarium plays a major role in creating a more conducive in-clinic environment.

**B** specialist in psychosomatic medicine, clinic has many patients suffering from depression, anxiety and dysphoria. We have been thinking about how best to provide a more pleasant and comfortable place for these patients. What made us decide to install a Nature Aquarium was the desire to establish a “natural” environment with the theme “Clean and Natural”. We knew about Nature Aquarium all along and thought it must produce a deep relaxation effect as the aquascape comprising aquatic plants is exactly like a natural landscape. We believe that Nature Aquarium installed in our clinic helps the patient to have a more relaxed mind. We installed the aquarium beside the reception in the waiting room so that everybody who comes to our clinic can see it. Since the installation of Nature Aquarium, many patients have commented that they feel relaxed when they see the aquarium and some even asked the name of the managing company of the aquarium.

Unlike foliage plants, Nature Aquarium shows us swaying aquatic plants and swimming fish. This is why our patients, particularly children, enthusiastically gaze at the aquarium for a long time. In this sense, too, Nature Aquarium is very helpful since the children wait quietly to be attended to in the waiting room. In addition to the mental effect, I expect Nature Aquarium will also have positive effects on the physical aspect of our patients, such as their bodily condition. And also under the theme “Natural”, we have introduced many leafy plants and installed mineral water servers in the clinic. I really feel “green” and “water” are a key to relaxation. From the viewpoint of “Clean” - the other theme of our efforts - we have come up with various ideas to maintain a clean environment. A clean environment is essential for us because patients with depression or dysphoria tend to dislike unhygienic conditions. So we pay constant attention to cleanliness by way of a 24-hour operation of an air purifier and disinfection of used slippers. On top of it, we provide a space

where “Clean” and “Natural” aspects are well blended by increasing the illumination level to produce a brighter atmosphere and providing more healing effects through paintings, aroma therapy and classical music. We try to create an environment in which our patients and the persons accompanying them can relax while they are waiting to be attended. It is important to let patients with depression or dysphoria do the things they are interested in as much as possible, and minimize the things they are forced to do. Keeping this in mind, I believe that watching the swaying aquatic plants and swimming fish in Nature Aquarium can help alleviate the patients’ symptoms. We will try our best to further provide a more conducive environment for our patients, and Nature Aquarium will surely play a great role in achieving it.

I expect Nature Aquarium will also have positive effects on the physical condition of our patients.



Mr. Toshitsune Tanaka  
■ Doctor



The appearance of the clinic has a soft and familiar design in pastel colors. The clinic has a conducive in-house environment with the theme “Clean and Natural”.



Get  
fascinated  
and dance  
in the  
water.







Nature Aquarium is truly a paradise in water. This is why we naturally feel relaxed when we appreciate it. And when we realize it, we tune our mind in with the fish and feel as if we were swimming in this enchanting underwater world. Have you ever experienced anything like this?

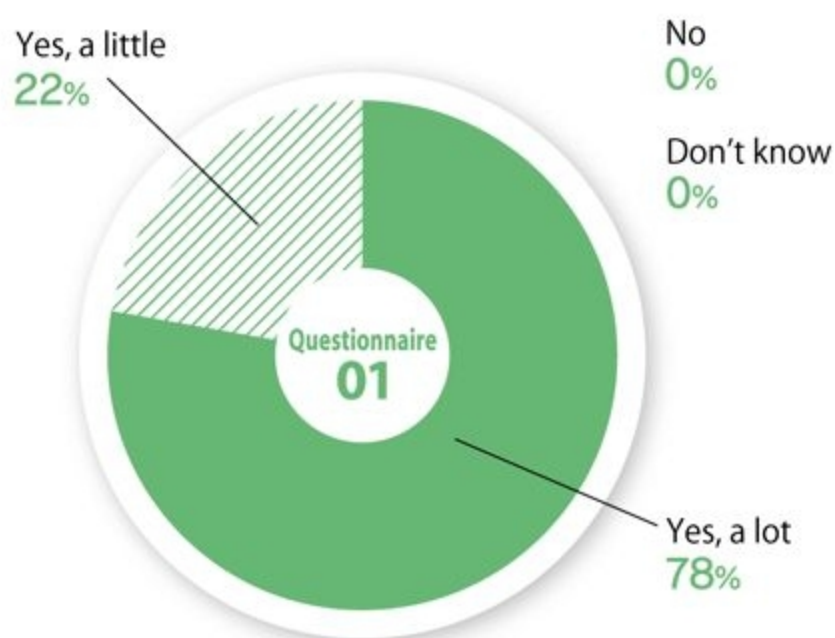
Aquarium size: W180×D160×H90 (cm)



Questionnaire 01

## Do you feel relaxed and tranquil when you look at Nature Aquarium?

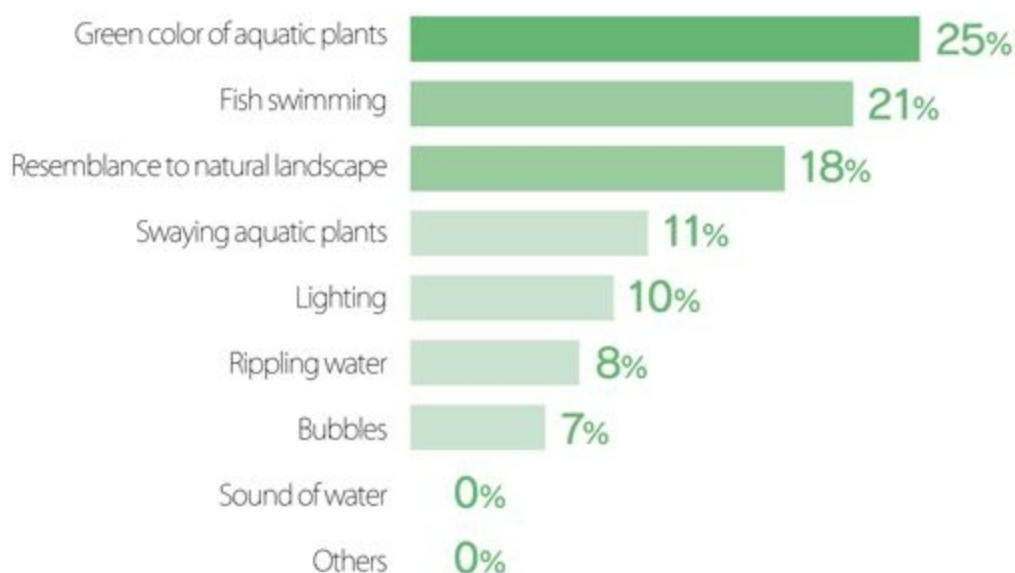
Even though the respondents are Nature Aquarium owners and visitors of NA Gallery, the results of this questionnaire showed that all the respondents experienced relaxation and tranquility in varying degrees. It may be said that the healing/relaxation effect of Nature Aquarium is closely associated with a primeval human response.



Questionnaire 02

## Which aspect of Nature Aquarium do you think produces a healing effect?

We experience the relaxing effect of Nature Aquarium when we see the entire aquascape. Nevertheless we still asked the question which particular aspect of the aquascape causes the respondents to feel the most relaxed. A quarter of the respondents answered, "The green color of aquatic plants". Another point worth noting is that many people feel relaxation from "Resemblance to natural landscape". Some people who saw Nature Aquarium for the first time were astonished at the remarkable resemblance to the natural landscape in water.



### Results of Questionnaire on NA Therapy

## Questionnaire on Healing Effects of Nature Aquarium



This section features the results of the questionnaire on the healing effects of Nature Aquarium conducted at facilities having a Nature Aquarium installed and NA Gallery visitors.

### Feedback on aquascape displayed at NA Gallery

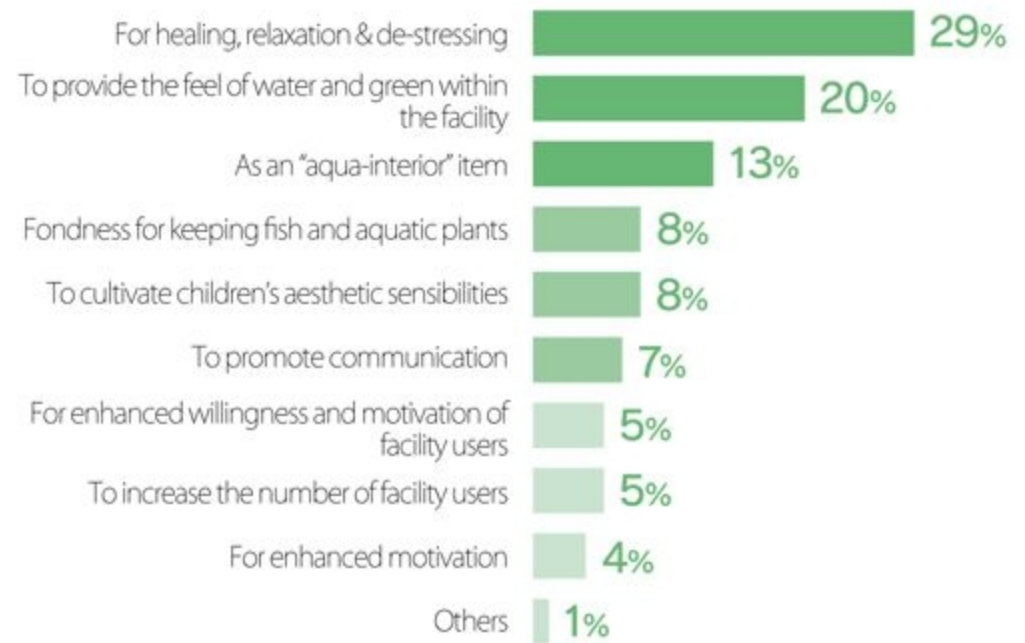
- The gallery was very silent and the only thing I heard was the sound of water. This is why I felt very relaxed here. The bubbles from the pollen glass were pretty. (34 year-old female)
- I lost track of time in the peace of the aquascape. It is good my mind became empty. I never feel bored looking at the aquascape because it looks slightly different every time I see it. (29 year-old male)
- I felt the same excitement I had in the school science lab in my childhood. (38 year-old male)
- I think I had some inspiration for my next underwater photographs. (28 year-old female)
- I enjoy a can of beer while looking at the aquarium in my house for two hours every day. (46 year-old male)
- It seems that the aquarium is a miniature of a great natural landscape. I feel the dynamism of nature. (28 year-old male)
- I enjoyed the aquarium very much. The aquascape with aquatic plants and fish was just like a beautiful piece of painting. (39 year-old male)
- The bubbles released from the aquatic plants were very beautiful. (12 year-old male)
- The aquarium which is exactly like a slice of nature made me feel relaxed (21 year-old male)
- I wish I could live in this wonderful aquarium. (42 year-old male)
- I can fall into a peaceful sleep just looking at the aquarium even when I started out too jittery to sleep. (39 year-old male)
- The relaxation effects of light, water and green are fantastic. As the owner of an acupuncture clinic, I am certain the healing effect of the aquarium has a positive effect on our treatment. (37 year-old male)



Questionnaire 03

## What is your purpose of installing a Nature Aquarium? What effects do you expect from it?

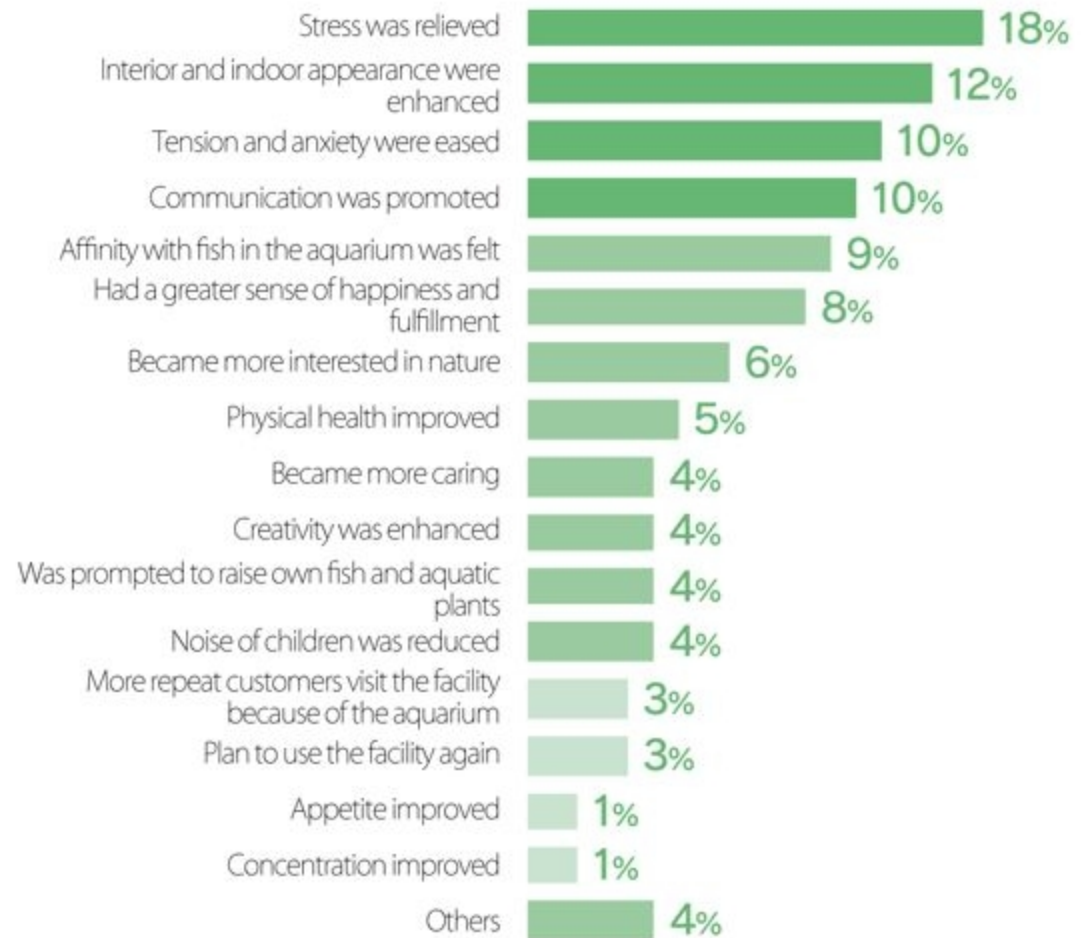
As expected, the main answer was "Healing and relaxation effect" which accounted for about 30%. People instinctively recognized "water" and "green" as key points to relaxation and Nature Aquarium possesses both. On top of it, this questionnaire shows that high expectation is placed on Nature Aquarium as an "aqua-interior" item having high ornamental value.



Questionnaire 04

## What response have you received from your users since the installation of the aquarium?

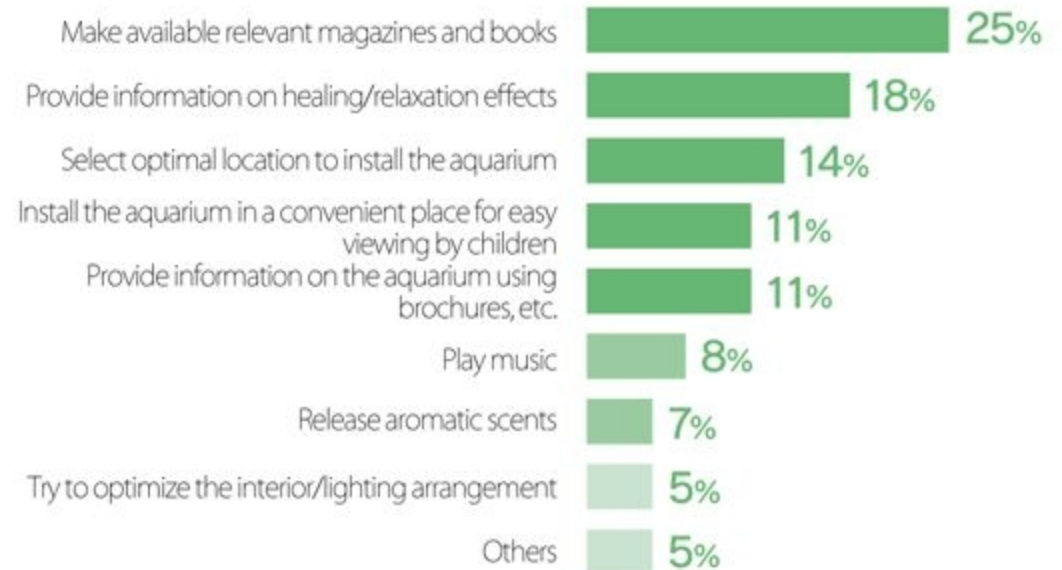
The effects of Nature Aquarium mentioned were wide-ranging in keeping with the various backgrounds of the respondents, from medical, nursing care and nursery, to hotels, inns and other public facilities. Besides the predictable answers "Stress was relieved" and "Interior was enhanced" based on the results of Q3, "Communication was promoted" was one of the consistent responses from every field of respondents. The Aquarium which can stimulate conversation must have a significant role in this modern society which is full of interpersonal stress.



Questionnaire 05

## Do you use any ideas / innovations in the display of the aquarium for your users?

The top answer was "Relevant magazines and books are made available" and some facilities have Aqua Journal for their users. All the respondents use their own ideas to cater to the needs of their users, including choosing a low aquarium stand for children, playing soft music in the clinic and releasing aromatic scents in spas.





## Ideas on Constant Relaxation Effect and their Maintenance

Aquariums installed in hospitals, clinics and other facilities cannot offer healing and relaxation unless they are beautifully maintained and in a condition worthy of the viewers' appreciation at all times. To achieve this, a stable composition and careful layout of the middle ground are important.

Stem plants that provide the aquascape with color and brightness are crucial.



Hygrophila polysperma



Ludwigia arcuata

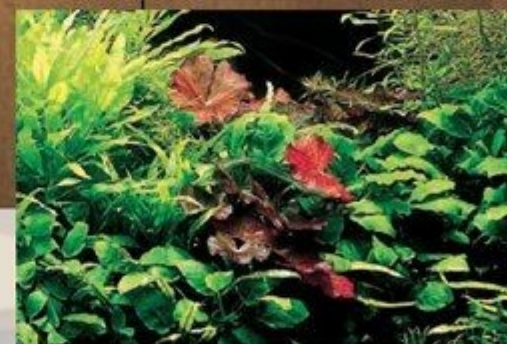


Rotala rotundifolia (Green)

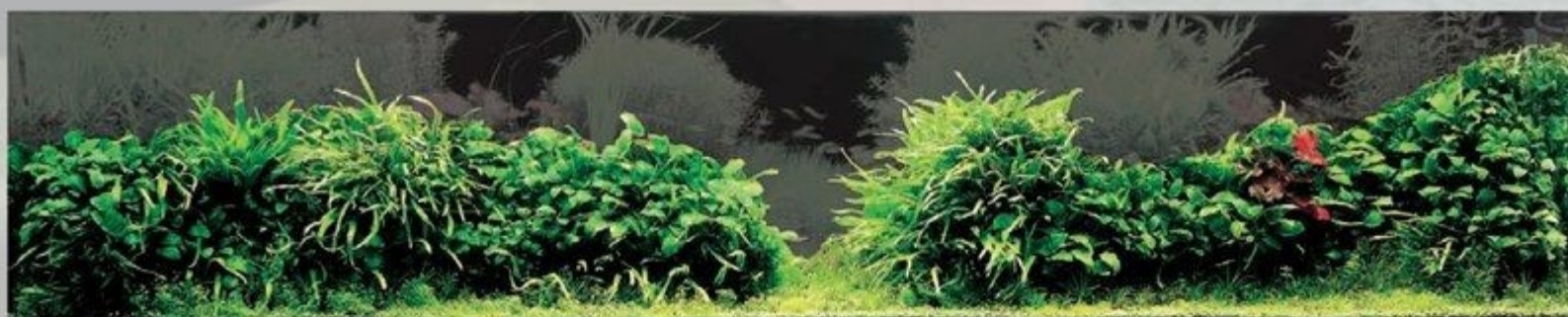
A rich range of green gradations provides relaxation to viewers.



Red aquatic plants serve as a key color to attract the viewers' attention.



Established layout composition even after trimming of background stem plants.



The middle ground where lots of epiphytic aquatic plants are used is the trimming line for stem plants. (The above is a processed image showing the aquascape after trimming the stem plants.)



## Creating a space to ensure relaxation



The appearance of an aquarium installed for general viewing might be too plain if you just have ferns and *Cryptocoryne* as the main plants simply because they are easy to maintain. To most people, aquatic plants are synonymous with vivid or soft-colored stem plants. Particularly when an aquarium is installed in a clinic, it should have a lively and vivid aquascape to cheer up the patients. Nevertheless, an aquascape using a lot of stem plants often looks unattractive after these plants are trimmed and is unable to produce a relaxing effect. It is therefore crucial to plan the layout of the middle ground carefully using lots of

epiphytic aquatic plants. The aquascape needs to be done in such a manner that the middle ground hides the unsightly lower stems of the trimmed plants and it looks attractive enough with just the middle ground and foreground (undergrowth plants). To achieve this, it is important to produce a stable layout. Attention to this point helps the aquascape to be well maintained and to produce constant healing and relaxation effects. The know-how introduced here can be applied to any aquarium installed at home. We hope you find these tips informative.



# 14

Fluctuation

## Colors and Ripples, the Source of Relaxation

Nature Aquarium is said to have a wonderful healing effect.

The combination of aquatic plants, fish and water affect us in much the same way as a natural landscape does.

This section analyzes the healing effects of Nature Aquarium from the viewpoint of the rippling water and the colors of aquatic plants.

The comfort registered in our

## brain

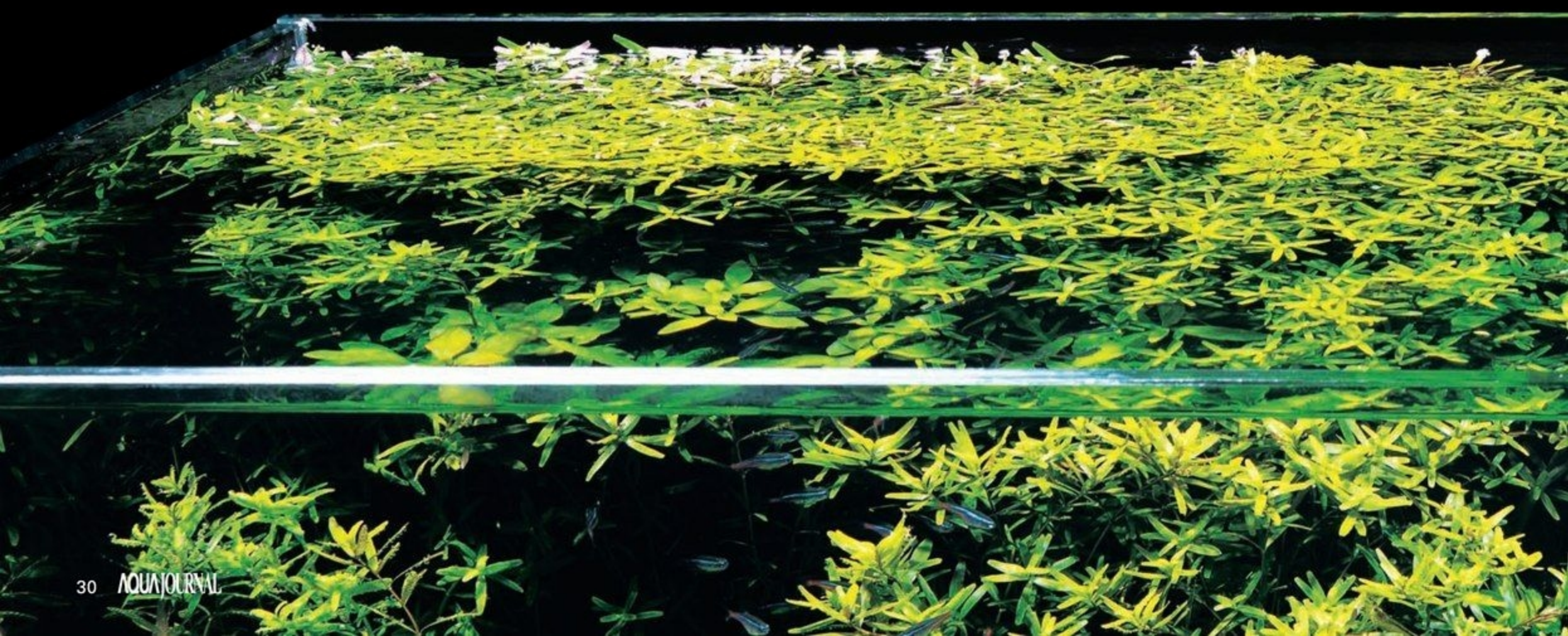
We live our daily lives relying on our five senses, namely, sight, hearing, smell, taste and touch. The stimuli received by our five senses are all communicated to our brain where they are processed. These stimuli are broadly divided into pleasant and unpleasant things. If we receive stimuli that our brain feels are pleasant, we gain a sense of happiness and are mentally and physically relaxed. On the other hand, when we receive unpleasant stimuli, we feel anxious or mentally and physically stressed. These positive and negative effects usually counteract one another. When we receive unpleasant stimuli, we often, consciously or subconsciously, engage in a behavior to seek a pleasant stimulus to offset it. Some examples of this type of behavior are stretching and rolling over in bed. If we are unable to initiate such a behavior at once, it may surface to our conscious mind in the form of a desire or aspiration or it may be build up unconsciously. Like the saying, "As many people, as many minds," the criterion for determining pleasant or unpleasant stimuli is not absolute but varies among individuals. This is because our responses differ according to conditioning and stored experiences, such as upbringing and regional social customs. At root all the same, there seems to be another set of criteria at the visceral, genetic level. If there should be certain stimuli that everyone in the world - newborn babies to senior citizens alike - feel are pleasant, they must exist in the same natural forms in which we humans have evolved over a long period of time. The

pursuit of beauty in the natural landscape and experiences must be our common primeval desire. And the rich beauty of nature incorporated in various works of art can be at once relaxing and rejuvenating.

The comfort we find in natural

## colors

Our surroundings are filled with color in all its diversity. Fresh green forest, mountain slopes in the fall covered with blazing red and yellow leaves, shining golden rice field, green grassland, deep blue ocean, pure blue sky and crystal clear stream - these are the rays of the sun reflected or transmitted through a medium and recognized by us as a particular color. The colors in nature are not flat and monochromatic like painted colors. For example, green, the symbolic color of plants, has various tones ranging from reddish, yellowish and purplish to bluish greens. There is an indefinitely wide range of hues among them. The green color of plants comes from the photosynthetic pigments in leaf tissue. These pigments contain not only green and blue but also cover red and yellow in order to promote photosynthesis.





This is why plants display green and many other colors depending on species, environment and season. The green we see in nature is comprised of complex color variations in plants. The colors of the ocean and sky also keep on changing according to season, time and weather. In the evening on a sunny day, the sky sometimes shows us a seamlessly-changing gradation of beautiful red, purple and blue. We feel comfort in these subtly-shifting natural colors and it cannot be explained by reason. The same applies to the colors found in Nature Aquarium. The colors of aquatic plants and fish are not stereotyped but are true natural colors that have subtle variations between each and every piece of aquatic plant leaf and fish scale. For this reason, we can derive exactly the same healing effect from Nature Aquarium as the natural landscape. And the presence of water causes the effect of Nature Aquarium to be more intense compared to a terrestrial landscape. The healing effect of water is well known and it is further enhanced by the combination of aquatic plants, fish and clear water.

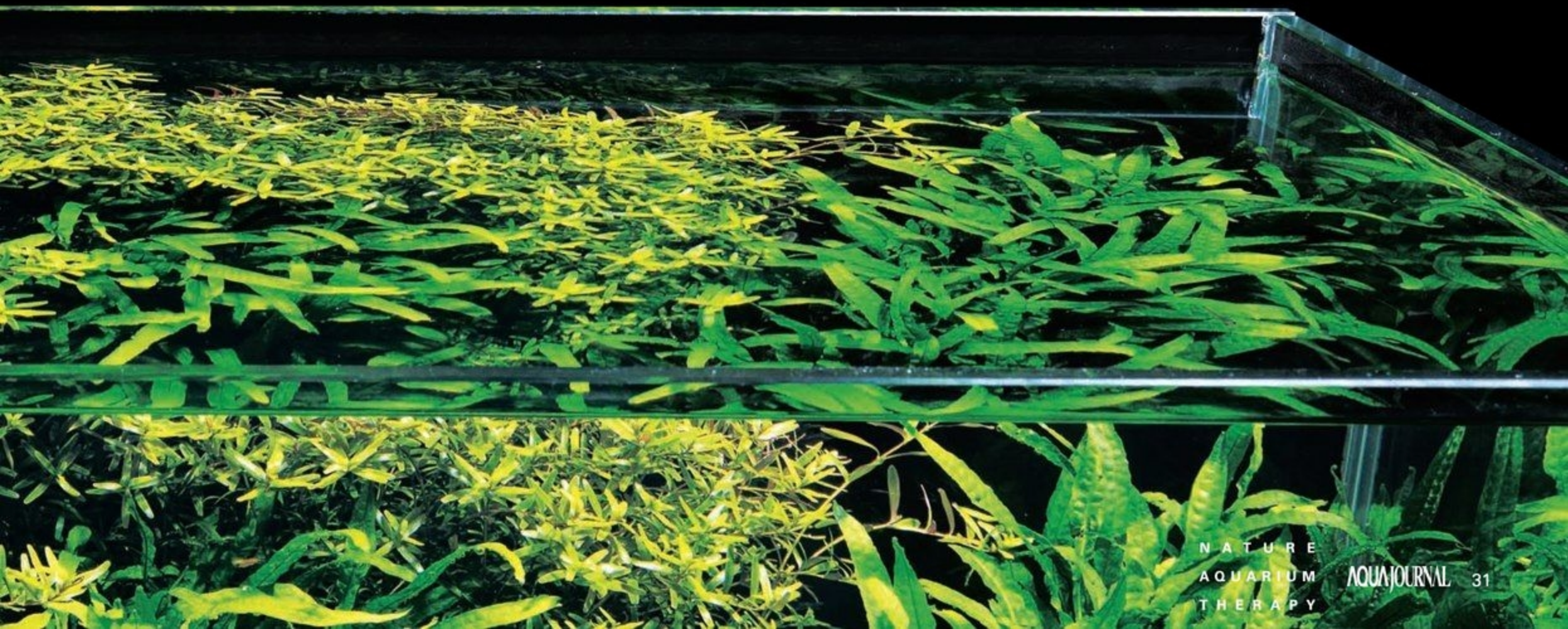
The comfort we receive from rippling

**water** Water keeps on moving in Nature Aquarium with water flow generated by the filter. As the water ripples, the aquatic plants sway and the fish swim among them. And at the bottom of the aquarium, we can see the light shimmering through the water surface. The rippling water is an aspect from which we feel comfort. In nature, water flow is generated by the difference in level; waves as well as water circulation are induced by the wind sweeping



across the water surface. The water flow and waves generated by the movement of water seem to follow a regular pattern but they actually include some irregularities. This natural irregularity within regularity is called "1/f fluctuation" after its characteristics, and it can be found in various natural phenomena including breezes and the sound of streams. We can also find "1/f fluctuation" in the bowing branches of a tree and the swaying of leaves as the wind blows. This is why we feel natural comfort from the dappled sunlight breaking through the shade of trees and also from the rustle of trees which likewise contain "1/f fluctuation". At the water's edge, we can see the water surface rippled by the wind and water flow, along with shining reflected light on the surface and wavering light at the

bottom of the water. And in river streams, aquatic plants sway gently with fish swimming along or sometimes against, the current. Similarly, the aquarium also has natural fluctuations such as swaying aquatic plants, swimming fish and wavering light. This probably is why our brains register it as pleasant and we receive a deep healing effect. It is known that "1/f fluctuation" can be found even in our heartbeat and brain waves when in a relaxed state. From the above descriptions, we may believe that when our brain derives comfort from rippling water, we become mentally and physically relaxed. It can be said that we feel deeply relaxed when we see Nature Aquarium because the natural fluctuation added to the natural colors of aquatic plants brings a greater degree of comfort.





Fresh  
greenery  
purifying  
our soul





The sight of pleasantly fresh soothing greenery flushes out physical and mental fatigue.





## Easing of pretreatment anxiety and tension can be expected.

At medical institutions

The aquarium with its aquatic plant layout can provide mental and physical relaxation and allay patient anxiety. It is reported that the aquarium with its aquatic plant layout installed in the waiting room for the patients about to undergo surgery has the effect of lowering pulse and blood pressure, raising skin temperature and easing muscular tension. This means that viewing an aquarium with aquatic plant layout supplies the brain with visual and olfactory stimuli which alleviate stress and anxiety. Pregnant women, too, relax when they look at this type of aquarium since hormonal secretion is reduced and blood pressure stabilized. From these reports and experiences, it can be said that having an aquarium at a medical institution has a positive effect on patients and staff.

## Nature Aquarium promotes communication and develops the sense of togetherness.

At nursing-care institutions for the elderly

Not to mention that appreciation of the aquarium with its aquatic plant layout soothes our mind and increases our sense of well being. Senior citizens will have a renewed sense of purpose and responsibility through feeding the fish and going about the simple tasks involved in maintaining the aquarium. This will promote communication with other people and develop a sense of togetherness. It is also said that the aquarium with its aquatic plant layout will improve concentration, appetite and short-term memory.



## The pleasure of relaxing times enriches our lives.

At ordinary homes

Having an aquarium with its aquatic plant layout around you will soothe your mind and body. Cultivating aquatic plants and tropical fish as well as daily appreciation of the aquarium will help strengthen your resolve, activity level and mature self concept (that is, the sense of self to make sober judgments). This activity will also allow you to increase your motivation to work, to deal with personal issues and to direct your own life. A rise in your brain's alpha waves - registering pleasant things - is released and, in such a relaxed state, your concentration will improve. In this state, too, you will feel you are healed. Have you had the experience of emptying your mind as you gaze at the aquarium? This is a good example of a healing moment. The time spent on a hobby helps you switch to private mode after work and enriches your life.

# Effects Expected in Various Fields

Nature Aquarium where aquatic plants and fish co-exist in harmony is known to have healing and multiple effects on viewers. For this reason, more hospitals, clinics and public facilities are now installing Nature Aquarium.

## Taking care of living things cultivates the children's aesthetic sensibility.

At the homes of families with children and institutions for children

The aquarium with its aquatic plant layout helps children develop a sense of responsibility as they take care of it, and it also serves as a wonderful educational tool for studying nature's systems. Children who take care of living things are reported to show higher academic grades compared to other children. As a tool to cultivate the children's aesthetic sensibility, the aquarium teaches children the challenges of keeping and growing living things.





## More repeat customers visit the facility for its healing space in the aquarium.

At hot springs, spas and hotels

The aquarium with its aquatic plant layout with its healing effects will attract greater attention in businesses that provide healing and relaxation such as hot springs, spas and hotels. With more concern about the environment in recent years, Nature Aquarium, which reproduces the ecosystem, can be an outstanding contributor. So great is its relaxation effect that it may be worth changing the currently displayed paintings and art works to aquariums with aquatic plant layout. At the same time, the aquarium can be an excellent piece of interior décor to enhance the appearance of the facility. It also lowers the noise level of young children visitors as the aquarium holds their attention. You can expect the aquarium due to its strong visual image to bring in repeat visitors through the unique and distinctive impression it has formed in their minds. It is commonly said that the person who has taken a look at an aquarium will come back just to see it again.



## The aquarium serves as an effective educational tool to instill a sense of responsibility.

At schools and public facilities

Nowadays, children spend less time with nature and have less opportunity to interact with living things. Among aquariums with aquatic plant layout, Nature Aquarium can be regarded as an effective educational tool to learn about the natural ecosystem and develop a sense of responsibility from taking care of it. It is known that Nature Aquarium has positive effects on autistic children, to mention a few, since it promotes relaxation, allays stress, and improves learning and listening ability. With Nature Aquarium children with learning disabilities are reported to show an improvement in symptoms. Given such facts, a healthy physical and mental development can be also expected of children without any disability.



## Effects of enhancing motivation, creativity and production efficiency can be expected.

At companies and businesses

A survey conducted by the American Pet Products Association reported that employees feel relaxed with an aquarium with aquatic plant layout in the office. It is reported that installation of such an aquarium in the working place has various benefits including a decrease in blood pressure, reduced level of stress, improved physical and mental health, enhanced creativity and higher production efficiency.

Furthermore, the blue and green colors of the water and aquatic plants have a soothing effect, which improve work flow and concentration during meetings. It is also commonly felt that the aquarium with aquatic plant layout contributes to projecting a strong positive corporate image on visitors. Some other benefits of the aquarium include enhancing company appearance, providing topics for communication with customers and staff and demonstrating the company's awareness and commitment towards the environment.







Effect  
**2**  
Select and combine  
colorful fish.

The aquatic plant layout to create an exotic tropical mood is refreshing and visually striking. What adds a lively, inspiring touch to this atmosphere are the colorful red and yellow tropical fish. Having several species of fish together will make your aquarium more interesting.



Effect  
**3**  
Use Air Sweeper for  
aeration.

The Air Sweeper filled with Clean Beads provides fragrance, deodorizing and sterilizing effects during night-time aeration. This little tip helps reduce unfavorable odors from the aquarium and creates a more conducive space.



Effect  
**4**  
Produce an image of a rainforest  
with Tropical Forest.

Why don't you select Tropical Forest at the next periodic replacement of your CO<sub>2</sub> small cartridge? Wild fragrances inspired by the world's three major tropical rainforests lure you to a tropical jungle paradise.



Effect  
**1**  
Enjoy the scent of trimmed  
aquatic plants.

You may enjoy the scent of aquatic plants. Scent enhances the relaxation effect. Have a whiff of the cut side of Cardamine and Echinodorus uruguayensis, and you will be fascinated by its fresh soothing fragrance.



Effect  
**5**  
Enjoy the rippling water  
surface with Lily Pipe.

Crystal clear water gives us comfort and peace of mind. The gentle water flow and rippling surface especially produce a pleasurable relaxation. The Lily pipe made of clear water-like glass helps produce an ideal setting for optimal relaxation.





One of the attractions unique to aquatic plants, not to be found in terrestrial plants, is to visibly see oxygen generated through photosynthesis. If you show this wonderful scene to your children, they will surely be in awe! Of course, share this precious moment with your friends and special ones.

Effect  
10

Be impressed by the oxygen bubbles generated during photosynthesis.



The shadows of ripples on the water surface are seen at the bottom of the aquarium with the metal halide lamp radiating direct light. If you build the substrate using cosmetic sand, you can enjoy the shadows of the ripples gracefully dancing on the white sand. By setting the room light dimmer, you will enjoy rippling effects even on the ceiling which extends the comfortable space of the aquarium in your room.

Effect  
9

Enjoy ripples with cosmetic sand and metal halide lamp.



Feeding the fish is a most enjoyable pastime. With AP Glass, everyone can feed the fish the right amount of food in a simple and hygienic manner. Watching the fish happily eating their food is a rejuvenating experience.

Effect  
8

Communicate with fish with AP Glass.

## 10 Keys to Enhancing Healing Effects

It's cool to know !!

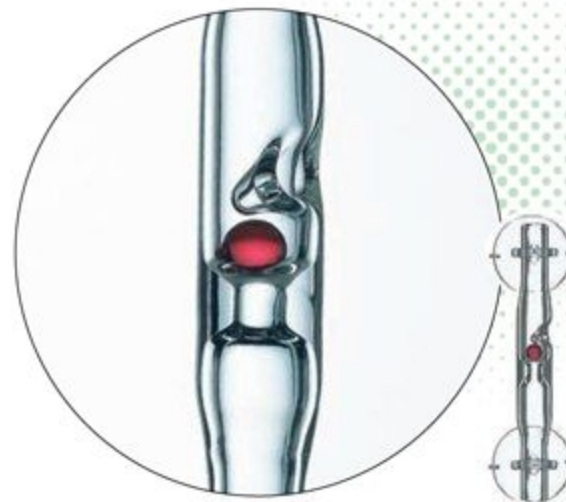
The aquarium with its beautifully flourishing aquatic plants offers fantastic healing effects. The effect is further enhanced if you carefully select the products to use. This will please the whole family!



Excitement and fun is the source of mental relaxation. You will be entertained just by watching the CO<sub>2</sub> bubbles and measuring the CO<sub>2</sub> supply as it spirals upwards. Why don't you have fun with the Beetle Counter today?

Effect  
6

Produce a delightful aquarium with Beetle Counter.



Featuring a ruby-like stone, this non-returnable glass valve gives an elegant touch to your aquarium. Cabochon Ruby makes your aquarium look lovelier. Let's have one in this recent 'kawaii (cuteness)' boom!

Effect  
7

Natural elegance with Cabochon Ruby.

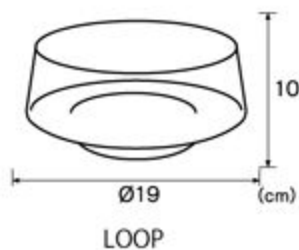


# Wabi-kusa season has come ! Enjoy Wabi-kusa with Brand-New Plant Glasses

The hottest Wabi-kusa season will soon be with us. Now you can enjoy an array of emerged (or above-water) Wabi-kusa. We are introducing you to our four brand-new designs of Plant Glasses. Care to have one?

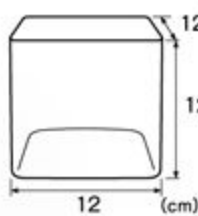
Wabi-kusa fits perfectly into the center pocket. You may enjoy lovely flowers of *Rotala* sp. "Ceylon".

**combination** .....  
Wabi-kusa /Stem plant MIX 1 pc  
Plant Glass LOOP (NEW)



Abundance with Ludwigia, the CUBE 12 is the perfect size for Wabi-kusa Karen.

**combination** .....  
Wabi-kusa Karen 1 pc  
Plant Glass CUBE 12 (NEW)





## Blooming Aquatic Plant Flowers and Fresh Green Leaves

The warm season is the most suitable time to enjoy Wabi-kusa in the form of emerged leaves in a Plant Glass. How about enjoying aquatic plants by combining your favorite design of Plant Glass and Wabi-kusa? Emerged aquatic plants bloom in their flowering season and add a lovely touch to your Plant Glass.

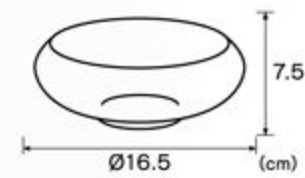
※ For more details, please refer to Q&A regarding some tips on how to maintain emerged leaves.



Decorate the Glass Plant with its gentle lotus-like curves with Wabi-kusa mixed with Echinodorus.

combination .....

Wabi-kusa Echino MIX 1 pc  
Plant Glass LOTUS (NEW)



LOTUS



Wabi-kusa looks gorgeous as if it is floating in the air. With refreshing glass, it graces the window sill in the hot summer season.

combination .....

Wabi-kusa Moss-Base 1pc  
Plant Glass OASIS (NEW)



OASIS





Spectacular view of Cradle Mountain from the shores of Dove Lake. The lake surface is choppy due to strong winds most of the time. This picture was taken at the awaited moment of brief calm. The rocks jutting out on to the water surface exhibit the great beauty of nature.



Pristine primeval forests dating back to more than 20 million years spread out around Cradle Mountain. At this relatively high latitude, these humid, mossy forests resemble the forests of Japan.

Tasmania in southern Australia, an island where the rich, unique natural environment remains preserved, is a place I've always wanted to visit. Taking advantage of the opportunity to visit Australia this March, I made a trip to Tasmania from Melbourne for 4 nights and 5 days. Though located in different hemispheres, Tasmania and Hokkaido, Japan,

are in almost the same latitude and both of them boast a wide land area. Area wise, Tasmania is slightly smaller than Hokkaido Island. During my short stay there, I requested my Japanese local guide to take me to the spots where I could photograph rare animal species, plants, scenery and other stuff. The guide was surprised at my request but kind

enough to cooperate.

First, our group headed for Cradle Mountain, a World Heritage site, via Launceston Airport. Unfortunately, the weather on the first day was rainy, so I just took some pictures of mossy forest and animals. According to the guide, the pristine virgin forests spread out in the surrounding area of Cradle Mountain and rare animals, which have already become extinct in mainland Australia, can still be found in these forests. One of the rare species unique to Tasmania is the Pademelon, a small marsupial similar to the wallaby. I got to see it eating in a forest. When I took a picture of it, I thought it would be boring if I took a picture top-down, so I lay on the ground on my elbows and in that posture slowly approached the Pademelon. The moment it noticed me and turned its face to the lens, I clicked the shutter button and took a picture of this lovable creature. Right after that, however, it rushed into the bush and disappeared. Besides Pademelon, I encountered other rare creatures like echidnas and wombats. They were not afraid of us because we might have been the first humans they'd ever seen. The next day, we climbed a mountain and shot magnificent views of the mountain range and Dove Lake with my panoramic camera.



Tasmania, a land where the vastness of nature remains untouched. About 1/3 of the total area, which is as large as Hokkaido, is designated a National Park. First, we headed for the famous Cradle Mountain.



The plateau spreads out around the 1,545m high Cradle Mountain. A vast landscape unfolds before us on this sunny day. The air in Tasmania is said to be the clearest in the Southern Hemisphere.



Echidnas

This rare egg-laying mammal is not really afraid of humans.



Wombat

A mammal living on land. The small something hiding at the back is its young.



Pademelon

A precious marsupial that has become extinct in mainland Australia.

### Destruction of Nature, a Threat to Wild Animals

On the way to Cradle Mountain, I often saw rare wild animals such as the wallaby and Tasmanian devil run over by cars and killed. Tasmania, is in fact, rich in wildlife, but its aerial view shows extensive farming on this land. If the forestland is cleared for farming, the wild animals lose their habitat and start migrating to new places. As they migrate, these animals cross the road and are run over by cars. I heard these animals are hit by cars mostly at night and early morning. This is really a sad, heart-breaking story.



Aerial view shows a number of extensive farms set up on cleared forest land.



A farm road along which vehicles drive at a high speed. The most prominent victim is the wallaby.





Russell Falls, a scenic multi-tiered waterfall, splashing down in the primeval forest. Lush primitive ferns grow by the waterfall. This magnificent scenery is just like "Jurassic Park".



Tree ferns with widely-spreading leaves. This ancient plant has been in existence since the time of Gondwanaland dating back to more than 100 million years. The lower parts of the ferns are covered with moss.



Due to weather conditions, our crew moved from Cradle Mountain National Park to Mt. Field National Park to find the most suitable spots for shooting.



On the way back to Hobart, a vast plain stretches before you as far as eye can see. The climate is just like Hokkaido and a lot of wallabies live here.



Richmond Bridge is the oldest bridge in Australia. Amnesty to return to his home country was granted to the British prisoner who supervised the building of this bridge which is renowned for its overwhelming magnificence.



Pondering the optimal composition of this primeval forest with panoramic camera.



Explaining the points of shooting to the local guide.



Taking a long-exposure photo in a dark forest while checking the time.

### Close and Personal Encounter with Sea Shepherd

Sea Shepherd, a marine wildlife conservation organization, is known for its radical protest activities such as throwing warning flames into a Japanese whaling fleet and intentional collision between their "protest fleet" and the whaling fleet. According to the news, the Sea Shepherd fleet docked at Hobart, one of the ports of call for their fleet bound for Antarctica, two days before I arrived there and a "victory party" was held. People in Tasmania seem to regard Sea Shepherd as a hero, but the impression I had after I saw their fleet full of skull paintings and striking yellow letters on black background was just like looking at a performance organized by naughty children

who simply want to attract media attention. According to a woman Sea Shepherd member whom I talked to and got permission to photograph, the group has a total membership of about 50, half of whom are women of many different nationalities including two Japanese. As a whale eater, I personally do not give my thumbs-up to their activities, but still can share with them the same passion for conservation of the natural environment. I hope Sea Shepherd will be engaged in activities that can garner worldwide sympathy instead of performance-like protest activities that may stir up opposition.



In front of a Sea Shepherd's protest fleet together with a woman member with a charming smile.



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# VIDA CAFÉ

*Takashi Amano's way of living*

## Pirarucu (Arapaima gigas) Story

Pirarucu - the largest freshwater fish in the world. I'm sure some readers are enthusiastic Pirarucu fans. This fish is, in fact, Takashi Amano's most favorite species (for your information, the first runner-up is wrasse, followed by the roundtail paradise fish). Up to now, Takashi Amano always goes straight to see the pirarucu almost every time he visits a public aquarium.

In this issue, we will introduce you to some episodes about Takashi Amano and the pirarucu.

*vol. 14*

### Encounter with Pirarucu

The "FISH MAGAZINE" is the magazine Takashi Amano had been reading since its inception. In those days, it was the only aquarium magazine available. One day in his junior high school days, Amano was reading this magazine and saw an advertisement for the book entitled "Sakana Shinshi-Roku" (written by Shigeru Kimura). It was an illustration of an Indio wearing an Indian hat and sitting on a pirarucu. The very moment he got a view of the pirarucu he was shocked to know that there is such a great fish. Fascinated by the world's largest fish with scales, Amano could not resist the urge to see the real pirarucu. He would not have been the real Amano if he did not want to see the real fish he had fallen in love with. However, there was no pirarucu in Japan at the time, and Amano, being a junior high school student, did not have enough money to visit the Amazon. While contemplating how to get a chance to see the pirarucu, a newspaper article caught Amano's eye. The Ueno Zoo in Tokyo, believed to be the largest zoo in the East, had started to rear a pirarucu! Blessed with this unexpected opportunity, Amano soon decided to go all the way to Ueno, Tokyo, to fulfill his long-held dream. Amano said, "I really wanted to see the

pirarucu. But I didn't have enough money, so I cycled right up to Ueno. The pirarucu I saw in the aquarium was about 20cm in length, not as large as in the illustration. But still I was really impressed by the majestic look of the king."

### Raising Pirarucu

After fulfilling his desire to see the pirarucu, Amano started to want to raise his own pirarucu. Back then, the pirarucu were still very rare with only seven in Japan. The price was also as high as JPY30,000, something a 14-year old boy could hardly afford. To earn enough money, Amano took a part time job at a construction site throughout the summer holiday. He worked very hard, sometimes even overtime, and finally saved the target amount. When Amano ordered a pirarucu at a nearby shop dealing with tropical fish, the shop assistant could not help showing his surprise. Amano said, "When a pirarucu arrived at my house, my parents were really surprised. They must have been imagining the fish I'd been longing for was a beautiful one because they knew how hard I had worked all summer just to buy it. But in fact, the fish looked exactly like a snakehead. One week later, my father came to my room and asked me why the fish was not around. No wonder! The fish had grown to double its size! Initially I had prepared a 60cm tank to keep my pirarucu, but later as it

grew bigger I needed to change the tank to larger ones, 120cm and then 180cm in width. So I had to do more part-time to get new tanks. After 3 months when the fish was about 60cm, my classmates visited me to see my pirarucu. They were all excited to see it and we decided to show it to the others in school. To make this idea happen, we carried the pirarucu to the school in a two-wheeled cart and exhibited it at the school festival. For the pirarucu's food, I went to a nearby river and caught fish. After I enrolled in high school, I joined the school bicycle racing team and sometimes had to go to school at 5 am for the team activity. At that time, I woke up as early as 3 am to catch fish before I went to school. My father used to tell me I could do whatever I was interested in but I had to handle everything on my own without getting help from others. But even this strict father was worried that I might fall sick if this hectic life went on, so he went to the river to catch the fish for me and for my pirarucu. This was the only time he ever gave me a helping hand. The pirarucu continued to grow to the extent that it damaged the 180cm tank. I couldn't find any tank larger than that, so I had no choice but to keep it in the bathtub. But that turned out to be a disaster. My grandma heated up the water in the bath tub without knowing there was a fish inside, and my poor pirarucu died in the hot water.



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



Interviewer/Editor: Miyuki Yano (International Marketing Department, ADA)

### History of Amano's Pirarucu Rearing

Even after his first unsuccessful attempt, Amano had three more trials of raising pirarucu. When he was in his second year of high school, he bought one at the price of 7 – 8 thousand yen from Matsukawaya, a shop famous for its discus. This pirarucu grew very big and was kept in a pond he dug in the ground, but it jumped out of the pond and died. Next, when Amano was 25 years old, he got news that a shop in Tokyo had a pirarucu and went all the way to Tokyo to buy it (by Shinkansen bullet train, not cycling this time). And finally when Amano was running an aquarium shop, he had another pirarucu. He kept it in a big pond based on his past experience and the knowledge that wild pirarucus have a habit of jumping to catch fish and insects. However, this effort also ended in failure as one of his staff accidentally poured hot water into the pond. After hearing the news that his carefully raised pirarucu had died, Amano was so shocked he could not get out of bed. In spite of being a tropical fish, pirarucu is surprisingly vulnerable to heat.

### Experience of Eating Pirarucu

At last, Amano's dream to see pirarucu in the Amazon came true! Since the illustration of an Indio holding a harpoon and sitting on a pirarucu, he had been wishing to see the moment an Indio harpooned a pirarucu. So Amano went to Araguaia, spending a week there with local Indios, and finally caught a view of harpooning a two-meter pirarucu. Amano, as always bringing his soya sauce and wasabi wherever he goes

around the world, tried the fresh catch as sashimi (raw fish) and commented, "I have eaten raw black arowana, eye-spot cichlid as well as piranha and crocodile, and really wanted to try fresh raw pirarucu at that time. It didn't really go well with wasabi, but it was perfect with ginger and soya sauce."

### Never Ending Dream for Pirarucu

To the question, "Which is the fish you wish to rear the most?" Amano answered, "Oh, it's

pirarucu." He said he always had the desire of having a pirarucu in a layout using breathtaking driftwoods together with cardinal tetras. We might be able to see gracefully swimming pirarucu in one of Amano's future works. Amano's never ending dream for pirarucu will last a lifetime. Some of the readers may have seen Amano in Amazonian gear wearing an Indio hat, a style inspired by the picture of an "Indio wearing an Indio hat and sitting on a pirarucu" as illustrated on the cover of "Sakana Shinshi-Roku".



Amano in his young days when he had a pirarucu in an aquarium in his home. He now wishes to keep a pirarucu in a magnificent layout using driftwoods.



Cover page of "Sakana Shinshi-Roku" (written by Shigeru Kimura)

This is the illustration that had a great impact on Amano when he was a junior high school student. It is rare to find huge pirarucu now, but there were pirarucus as big as 4m in those days.



## Making Aquatic Plant Colors More Attractive

Besides the importance of composition and balance, beautifully-grown aquatic plants are of major importance for the beauty of Nature Aquarium. The conditions for attractive aquatic plants include dense leaves of the right shape just as much as a healthy, vivid and beautiful appearance. In this issue, we focus on how to grow healthy aquatic plants with brightly colored foliage.

### ● What is needed for the growth of aquatic plants?

The attraction of the aquatic plants in Nature Aquarium is their continuous growth in addition to the soft and gentle shapes and colors of submersed plants. To achieve this, the installation of aquarium lighting and CO<sub>2</sub> system as well as the supply of nutrients and additives through the substrate is vital. Aquatic plants obtain the organic matter essential for their growth by means of photosynthesis, which requires light, CO<sub>2</sub> and water. While an adequate amount of water is assured in the aquarium, light and CO<sub>2</sub> may become insufficient. In nature, sunlight is the energy source of photosynthesis, and for aquariums, the lighting has the same function as the sun. Aquatic sun plants, in particular, require lighting that can provide a sufficient level of brightness.

ADA's current line-up of Solar Series can provide the illumination sufficient for most species of aquatic plants by installing the appropriate types and number of units for the tank size. When aquatic plants vigorously photosynthesize under bright light, CO<sub>2</sub> in the water is rapidly absorbed by the plants and eventually becomes depleted if no CO<sub>2</sub> is supplied to the aquarium. In this circumstance, plants are unable to undergo photosynthesis. This problem can be avoided by installing an appropriate CO<sub>2</sub> system. For the standard 60cm tank, the amount of CO<sub>2</sub> sufficient for facilitating photosynthesis can be supplied with CO<sub>2</sub> Advanced System or CO<sub>2</sub> Starter Kit. On the other hand, a CO<sub>2</sub> system that provides a greater amount of CO<sub>2</sub> is needed for tanks of larger size. CO<sub>2</sub> systems for large-sized aquari-

ums include Tower, CO<sub>2</sub> Regulator and CO<sub>2</sub> Beetle Counter as well as appropriate sizes of Pollen Glass Large and Pollen Glass Beetle. The photosynthesis of aquatic plants becomes more active with a sufficient level of illumination and adequate CO<sub>2</sub> supply. However, a healthy growth of aquatic plants cannot be achieved just with this. Nutrient salts, including nitrogen and phosphorus, are crucial to synthesize essential protein from the organic matter attained during photosynthesis. At the stage where the aquarium has just been set up, these nutrient salts are supplied from the substrate built with Power Sand or Aqua Soil Amazonia. The use of a substrate system rich in nutrients promotes the rapid and healthy growth of aquatic plants.

### ● How aquatic plants develop colors

One of the attractions of aquatic plants is leaves of many different colors ranging from bright and dark green to red, pink and orange. Some plants have dark colors such as olive green or brown cryptocoryne. The leaf color varies with the type of plants, that is, sun or shade plants, and the environment in which the plant has grown. As a general trend, the species that fall into the category of sun plants have leaves of bright green or vivid red, while those classified as shade plants have dark-colored leaves. Even among the aquatic plants in the same category, the plants in a bright environment are of lighter colors, while the leaves in a dimmer environment become darker. From these facts, it is believed that leaf color is determined by the speed of photosynthesis and intensity of light. Differences in leaf color are particularly promi-

nent with red stem plants. If a red stem plant grows deep underwater where only low-intensity light can be obtained, its color would be dark green without turning red; but as the stem of this plant grows upward towards the water surface, the submersed leaves near the surface turn red under higher-intensity light. The change of leaf color is caused by one of the characteristics of plants – regulating the speed of photosynthesis by way of the combination and density of various pigments in the leaves. The pigment that is vital for photosynthesis is chlorophyll. Chlorophyll is a green-colored pigment which means that it reflects green light without absorbing it. In fact, among the three primary colors, chlorophyll absorbs only blue and red light. As can be seen from this fact, plants on land use red and blue light to perform photosynthesis. However, aquatic plants that undergo photosynthesis in the water are different. Aquatic plants are thought to use mainly blue light for photosynthesis as red light is rapidly attenuated in water. This is all the more remarkable in aquatic plants that grow naturally in deep water. At the same time, the plants can achieve a higher efficiency for photosynthesis if they have leaves containing a higher density of chlorophyll. These are the reasons that aquatic shade plants form dark-colored leaves and even aquatic sun plants also have dark green leaves under low-intensity light. If the plant is exposed to strong light, its leaves turn bright green or red as photosynthesis can take place even with a low level of chlorophyll. Red pigment functions as a filter and softens excessively strong light.



● How to grow healthy aquatic plants

The leaf colors of aquatic plants vary with the intensity of light. To grow healthy aquatic plants, you need to have an appropriate lighting environment for the aquarium. Something we often overlook is the aging of lamps. It is incorrect to think that lamps installed for the purpose of growing aquatic plants are working well as long as they light up. As the accumulated lighting time increases, fluorescent and metal halide lamps start having problems like decrease of illuminance level and imbalance of the three primary colors. These changes are hard to notice since they develop slowly. For the metal halide lamp, a decreased illuminance level is not very noticeable due to its originally high light intensity, but it often poses the problem of lost color balance due to deterioration with age. NA Lamp, a fluorescent lamp developed specifically for the growth of aquatic plants, and NAMH metal halide lamp have the feature of a higher blue spectrum that provides better underwater light transmission. This feature is gradually lost as it ages and its light eventually turns reddish as a result of a weakened blue or green spectrum. Red light is attenuated rapidly in water and this causes a decrease in the intensity of underwater illumination, which results in a dimmer environment within the aquarium. This takes a severe toll particularly on sun plants, and may cause unwanted elongation of stems and deteriorated leaf color. Not only is it important to select a lamp specifically developed for the growth of aquatic plants, periodical replacement of the lamp is also crucial to avoid the effects of deterioration. Ideally, fluorescent lamps should be replaced every 6 months to a year and metal halide lamps once a year. The lamp can last longer than this, but it is recommended that they are replaced with new ones at the earliest opportunity.

Once the lighting problems have been solved, you should check the amount of CO<sub>2</sub> supply. Insufficient CO<sub>2</sub> supply under high intensity light can cause a number of problems, including inactivation of photosynthesis among aquatic plants, and the alkalization of water, which may result in damage to aquatic plants such as the curled apical leaf of *Eusteralis stellata*. CO<sub>2</sub> level of aquarium can be checked with Drop Checker. If the aquarium water is on the alkaline side due to insufficient CO<sub>2</sub> supply, the reagent in the Drop Checker turns blue. In this case, adjust the amount of CO<sub>2</sub> supply so that the reagent turns green when photosynthesis is actively taking place, that is, 4 to 5 hours after the lamp is turned on. Careful regulation of the CO<sub>2</sub> amount is also one of the key points of healthy aquatic plants.

● How can we make the plant colors more attractive?

An appropriately built substrate and daily supply of liquid nutrients are crucial to make the colors of aquatic plant more attractive. The factor that determines the leaf color of aquatic plants is pigment such as chlorophyll, and these pigments cannot be synthesized without the help of nitrogen and trace elements. For example, chlorophyll synthesis requires carbon, hydrogen, oxygen, nitrogen and magnesium. Among these elements, carbon, hydrogen and oxygen are attained during photosynthesis. For nitrogen and magnesium, however, aquatic plants need to absorb them as nutrients from their surrounding environment. An important source of these nutrients is the substrate built on Power Sand or Aqua Soil Amazonia. These substrate materials are rich in ammonia and other organic matters that are a good source of nitrogen. Among aquatic plants which absorb nutrients through roots and leaves, stem plants take in the nutrients mainly through their leaves. Nitrogen in the substrate is dissolved in water and provides nutrients to be absorbed by aquatic plants, though it also has a downside to it such as contamination of the aquarium water.

When a certain time has elapsed since the initial set-up of the aquarium and the substrate is covered by aquatic plants, the amount of nitrogen released from the

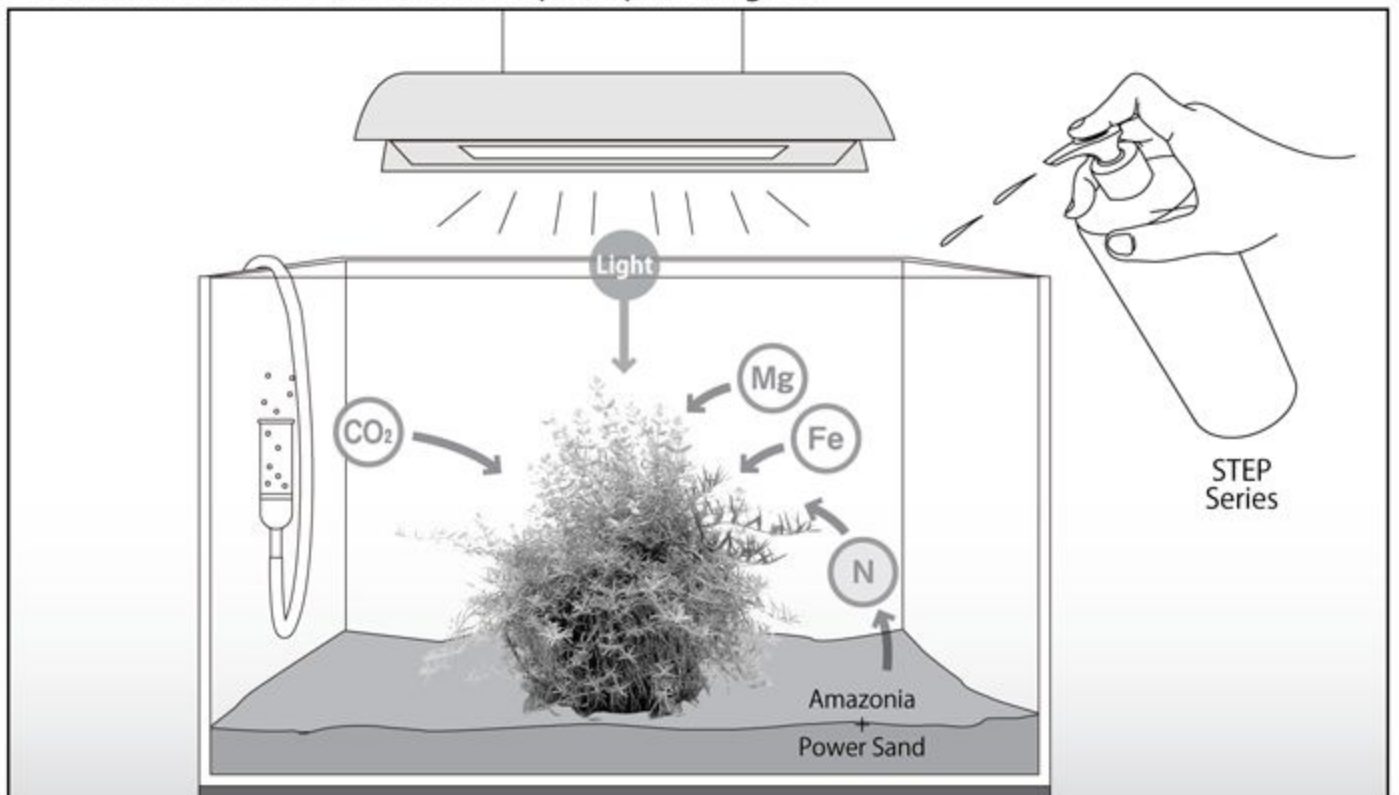
substrate is much less but it is also supplemented by the excrement of the fish in the aquarium, which is another source of nitrogen. Green aquatic plants turn slightly whitish due to lack of nitrogen if no fish are kept in an aquarium with dense aquatic plants actively absorbing nutrients, such as Riccia or stem plants, or if the number of fish is inadequate. Even in this case, the bright green color of aquatic plants can be recovered if nitrogen is supplied using Green Brighty Special LIGHTS, a liquid fertilizer. Meanwhile magnesium can be supplied to the aquarium together with iron and other trace elements with the Green Brighty STEP series. An aquarium with aquatic plants, in general, runs short of potassium and trace elements easily, so these elements should be supplied every day with Brighty K and Green Brighty STEP series. For the Green Brighty STEP series, there are three types of fertilizer available according to the growth stage of aquatic plants. Start with STEP 1 which is for the initial set-up period of the aquarium; then switch it to STEP 2 in three months and then to STEP 3 in a year's time. To have aquatic plants with a vivid red color, iron should be supplied to help the synthesis of red pigments. As an iron supplement, the use of Green Brighty STEP 2 or ECA (additive) rich in iron is ideal. Daily supply of these fertilizers/additives will help aquatic plants have healthier, more charming colors and enhance the healing effects of Nature Aquarium.

■ Relationship between Solar Series and tank size

Tank size	Recommended number of units to be installed					
	Solar Mini	Solar I	Solar II	Grand Solar I	Grand Solar II	Grand Solar 250
Mini S/M	1	-	-	-	-	-
60cm	-	1	1	-	-	-
90cm	-	1~2	-	1	1	1
120cm	-	2	-	2	2	2
180cm	-	3~4	-	3	3	2~3

\* Distance from the water surface: Solar II/Grand Solar II: 10-15cm; Solar I/Grand Solar/Grand Solar 250: 30-40cm

■ Conditions to make the colors of aquatic plant brighter





## Q&A

**Speaking of saving electricity, we aquarists can do our part by slightly shortening the lighting time and avoiding lighting during peak hours by changing the timer setting. In the summer, a high likelihood of power failure is anticipated in Japan. Review the location of your aquarium at the earliest opportunity so that the possible troubles during power failure will be minimized.**

**Q I am installing an aquarium for the first time. What location should I select?**

**A** Install your aquarium on a surface having sufficient strength and stability. Ensure adequate levelness with a leveling instrument. Avoid any place with the risk of the furniture overturning in the event of an earthquake, and also avoid a room exposed to the afternoon sun to prevent a significant temperature rise. The aquarium should preferably be installed in a room facing the North with good ventilation as much as possible to reduce water temperature rise during the summer, the severest time for the aquatic plant layout. Be sure to install the aquarium on top of a cabinet designed specifically for an aquarium, and place a Garden Mat under the tank. Decide on the location to install your aquarium only after prudent consideration as the future maintenance of aquarium can be greatly influenced by its location.



Garden Mat

**Q I am wondering if I should get Power Sand or Power Sand Special. Are all the benefits of Power Sand covered by Power Sand Special? Do I still need to use Bacter 100 even if I use Power Sand Special?**

**A** Power Sand Special is the substrate material based on Power Sand with additional organic nutrients. It is excellent for plants actively absorbing nutrients from the roots, such as Echinodorus and Cryptocoryne,

and Bacter 100 and Clear Super are blended for promoting the growth of bacteria. Therefore, the benefits of Power Sand are all covered by Power Sand Special and you do not need to use additives such as Bacter 100 and Clear Super if you wish to set up an aquarium in the easiest way possible. However, substrate additives such as Bacter 100, Clear Super, Tourmaline BC, PENAC W and PENAC P can be added only during the initial set-up of the substrate. If you wish to create the best substrate environment possible, these additives are highly recommended. Bacter 100 and Clear Super will not affect the aquarium condition even if an excessive amount is supplied. Rather, higher effects can be expected if extra additive is added. For your information, Power Sand Special is remarkably rich in nutrients and it may easily cause the eutrophication of aquarium water during the initial set-up. In view of this, such substrate material is suitable for experienced aquarists who can ensure the proper management of water quality including water change. Your capability in water quality management also should be taken into account when you select the best substrate material for your purposes.



Power Sand Special

**Q I read the article on how to enjoy emersed Wabi-kusa in a Plant Glass. It is written that this is the simplest way to enjoy Wabi-kusa, but I cannot maintain it properly. Could you please share some tips?**

**A** On the assumption that the conditions such as light intensity and temperature are satisfied, the most common cause of unsuccessful maintenance of Wabi-kusa is harmful insects. Particularly in the case where aquatic plants suddenly became weak, damage by harmful insects can be highly suspect. Some common symptoms, like spots and deformation or curling of leaves, are caused by aphids. If the number of aphids found is still small, then they can be removed by soaking the Wabi-kusa in water for a while. However if the symptom is severe, spray the commercially-available insecticide "Mosupiran" diluted about 1,000 times using an atomizer (for detailed instructions for use, follow the descriptions on the product label). If you have Wabi-kusa in an emersed form in a Plant Glass, you should soak the Wabi-kusa in a bucket of water for a while before placing it in the Plant Glass in order to prevent the risk of pests. Filling up the Plant Glass with water up to its highest level during regular water change can also be an efficient way to get rid of harmful insects and help your Wabi-kusa remain in a well-maintained condition. ADA's "be Bright", a solution developed specifically for the healthy growth of Wabi-kusa, is meant to be used only for the enhancement of the leaf color and will not be able to promote the recovery of a Wabi-kusa weakened due to pests. If you wish to have brighter and lustrous Wabi-kusa leaves, dilute a capful of be Bright with 500ml of water and spray it on the leaves, or add a capful of be Bright to the water on the Plant Glass.



### Send us your questions!

We welcome your questions and enquiries on Nature Aquarium. Please feel free to send your questions to ADA to our email address (ada@adana.co.jp).



Soaking Wabi-kusa in water helps get rid of pests.

**Q There is a wide variety of trimming scissors and I don't know which to buy. Which one should I choose for my first trimming scissors?**

**A** It may not be the best match for your tank size and your preference, but we recommend the Trimming Scissors (Curve Type) for the first pair of scissors. In fact, the straight-type scissors is more effective for trimming stem plants, but the curved-type is much more efficient and also more versatile for trimming undergrowth plants. You may buy additional types of scissors including the short-type and spring-type later on for more accurate trimming.



ADA recommends the Trimming Scissors (Curve Type).

**Q I have seen spherical mosses on driftwood in one of the works in the past International Aquatic Plants Layout Contest. Is spherical moss epiphytic?**

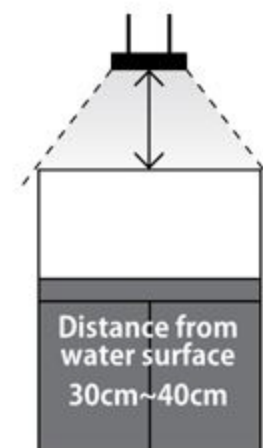
**A** The spherical moss actually looks as if it grows on driftwood, but this type of moss is not epiphytic. Then, how was the layout produced? Most likely, the spherical moss was torn into several pieces and each piece was fixed on to the driftwood using Riccia Line. Once the small piece of spherical moss has grown big again, the Riccia Line is barely noticeable and so the spherical moss looks like it has grown on the driftwood. Recently a wide variety of moss has become available in the market, but some of them are not really epiphytic. For this type of moss, the insoluble Riccia Line is recommended rather than the soluble Moss Cotton so that you can maintain the moss's beautiful appearance. Select the appropriate type of layout goods carefully.



A work using spherical moss

**Q I am enjoying Nature Aquarium using a 60cm tank and Solar I. Cryptocoryne is the main plant and Lilaeopsis novae-zelandiae is used as the undergrowth plant. How much distance should I keep between the lighting and water surface?**

**A** The standard distance from the water surface is 30cm for Solar I. If the main plant is a shade plant like Cryptocoryne, the distance between the lamp and water surface may be widened up to 40-50cm. This arrangement will not affect the growth of the main plant. However, we recommend installing the lighting more or less 30-40cm away from the water surface for the sake of the healthy growth of undergrowth plants. Some people may be worried that too much algae may grow under high-intensity light if a metal halide lamp is installed close to the water surface. But this lamp is of the hanging type from which it is easy to control the light intensity. The aquatic plant layout using various types of plants requires a high light intensity level. The metal halide lamp can therefore be said to be a very effective lighting system.





# Changes for the New Creation



<http://www.adana.co.jp/en>

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