What is attractive about Nature Aquarium?

We feel beautiful when we see healthy, growing aquatic plants producing many air bubbles during photosynthesis. It is also fun to see fish swimming merrily in an aquascape with lush aquatic plants. Not only the aesthetic appeal that attracts those who see it at a glance, Nature Aquarium also has various invisible attractions. The special feature of this issue discusses in-depth about the attractiveness of Nature Aquarium and know-how on creation of beautiful aquascape in a Q&A style.
What are the differences between Nature Aquarium and other layout styles?

Nature Aquarium has the fundamental concept of "Emulating Nature." It means the incorporation of a natural ecosystem and beautiful landscape into an aquarium. As can be seen from this, Nature Aquarium intentionally creates a conducive environment for fish as an "aquascape" and this is something different from other layout styles. Nature Aquarium is a world within an aquarium where fish, aquatic plants, and microorganisms interact and coexist in mutual prosperity. This is an aquarium hobby which connects people and natural environment.
Nature Aquarium has philosophy and its expression reflects our sensitivity.

1. What does “Learn from Nature” specifically mean?
From natural landscapes, we can get various information including fallen leaves and how plants grow.

2. Is a realistic view of natural landscape recreated in Nature Aquarium?
Unlike diorama-like layout, Nature Aquarium is not a hobby to express a miniature of actual natural landscape. The most important thing is to create an aquascape layout which perfectly harmonizes with swimming fish and provides a conducive habitat environment for fish.

3. Do we have to change aquarium water and clean the aquarium?
Aquarium water is purified by leaves and roots of aquatic plants. In this way, a healthy environment is created in the aquarium. Dense aquatic plants serve as a filter.

Through the observation of real nature, we input the information about the environment, biological diversity and aesthetic factors of landscapes. Then, we holistically combine these information and output it as a layout expression. From ecosystem and biological system supporting the natural environment to the stones we observe on rivers and sea shores, plant distribution including hierarchy in the forest, and rustic and profound landscape, every information and feeling we get when we place ourselves in nature will become a source of our creativity. We can feel Amano Takashi’s own view on nature from his Nature Aquarium. It is absolutely because Amano has been observing nature more than anyone else through photographing of natural landscapes.

This is an open-type Nature Aquarium for the better habitat environment for fish. A waterfront environment with a seamless line of emerged and submerged aquatic plants is recreated in this layout.

The aquarium environment is kept stable by the effect of ecosystem. Yet, periodic water change and cleaning of aquarium is essential to deal with dirt/slime buildup and growing aquatic plants. Aquarium with fish aquatic plants has self-purification feature by various functions of aquatic plants, such as supply of oxygen by photosynthesis, water purification and inhibition of fish diseases, to name a few. Furthermore, the roots of aquatic plants, together with microbiorganisms, enhance and stabilize the substrate environment.
“Aquarium ecosystem” means that aquatic plants, fish and microorganisms interact with each other and maintain a favorable environment. Aquatic plants perform photosynthesis and produce oxygen, and fish and microorganisms take in this oxygen as they breathe. Aquatic plants use CO₂ released by these living organisms and produce oxygen again. On the other hand, fish and shrimp waste accumulated on the substrate are decomposed by bacterial and will eventually be absorbed by aquatic plants as nutrients. In an aquatic ecosystem, the balance of environment is maintained by these various biological effects.

1. What is “aquarium ecosystem”?

Aquatic plants perform photosynthesis to produce substances necessary for growth on their own. Oxygen is produced as a byproduct of photosynthesis.

Aquatic plants grow vigorously in an environment with well-balanced ecosystem. Thinning aquatic plants contribute to better water purification.

Bacterio and Bacterio tell contain bacteria in a dormant state, and they quickly become active once the aquarium is filled with water.

2. What should we do to make an ecosystem in an aquarium?

Ecosystem usually comprises five elements: sunlight, water, air, soil and living organisms. For aquarium, they are light, water, CO₂ and oxygen, substrate and aquatic plant; fish and shrimp; and it is impossible to form a well-balanced ecosystem if even one of them is lacking. To make an ecosystem in an aquarium, it is crucial to prepare proper lighting, filter, CO₂ and substrate systems. On top of it, the aquarium needs to be maintained in a state where bacteria grow and are active in the substrate and filter.

Power Sand displays its beneficial effects as a substrate additive when there is a symbiotic relationship between aquatic plant roots and bacteria.

3. How can we effectively express an “aquascape” in a layout?

Natural underwater aquascape is created by making an aquascape according to the growth of aquatic plants without taxing too much on the aesthetic expression.

It is important to be conscious of the flow of water and make a stable composition, the natural flow and orientation of the driftwood branches.

4. At what timing should we plant aquatic plants?

The first important thing to do is to maximize the functions of microorganisms and aquatic plants.

In natural underwater environment, aquascape is formed by driftwood, stones and aquatic plants exposed to a flow of water. In view of this, we should be conscious of water flow when making driftwood/stone arrangement and keep a good balance between the portion with dense aquatic plants and open space. Tape-like aquatic plants which overhang along water surface are useful to express the flow of water. It is a good idea to use these plants to create an aquascape.

For dense planting of aquatic plants, pour some water into the tank to have a shallow layer of water and Crowley plant with Pinettes.

Once the substrate has been set and stones and driftwood have been placed, it is time for planting aquatic plants. Planting must take place before pouring water into the aquarium tank. Planting work will be easier and more comfortable if the water is poured to the level at which the substrate is barely covered with water. Doing this prevents aquatic plants from being buoyant and hands from getting wet. It is advisable to plant aquatic plants as dense as possible from the beginning to have better water purification effect of aquatic plants and facilitate the establishment of aquarium with minimal failure. ADA's Pinettes are useful for dense planting of aquatic plants.
What types of aquascapes can be created in Nature Aquarium to express nature?

Expresses the brightness using white cosmetic sand in the foreground.
W120xH60xW40 (cm)
Photographed in 1999

Cosmetic sand leading towards the center background adds depth to the layout.
W180xH60xW60 (cm)
Photographed in 2013

Bright and colorful stem plants add a joyful touch to the layout.
W300x80xH130 (cm)
Photographed in 2001

Dynamic Iwagumi using Ryuoht stones is enhanced by the arrangement of aquatic plants.
W90xH60xW40 (cm)
Photographed in 2007

Simple Iwagumi layout using Manton stones
W80xH45xW45 (cm)
Photographed in 2003

Powerful driftwood layout uses ferns and mosses to produce a natural feel.
W90xH60xW40 (cm)
Photographed in 2007

Nature Aquarium started with an Iwagumi layout, which used river stones to express an aquascape. After that, a rich variety of aquascapes have been created using various types of stones and driftwood for layout materials and more species of aquatic plants. The recent global trend of cosmetic sand also originated from Nature Aquarium, Open-aquarium, which expresses not only underwater aquascape but also waterfront landscape, has been established as one of the unique layout styles of Nature Aquarium.
Choosing an Aquarium Tank

When choosing an aquarium tank, consider the difference in aspect ratio and glass used in addition to the size.

1. What size of aquarium is good for layout making?

- Aquarium tank with W600xD300xH136 (cm) is ideal for Nature Aquarium beginners. 60cm aquarium tank has been the most standard size and is compatible with a wide range of equipment. This handy size of aquarium also has the advantage of the availability of layout materials in appropriate size. Meanwhile, aquarium tanks with W900xD450xH455 (cm) or larger are often used to create a full-scale layout. For upgrading from 60cm tank, it is recommended to use a 90cm tank which has a good balance and is useful for layout making.

- Aquarium tank with W600xD300xH136 (cm) Photographed in 2005

- The use of 60cm aquarium tank with more depth gives greater latitude for layout expressions such as perspective.

2. How does the aspect ratio of aquarium tank relate to the layout?

- Panoramic aquarium tank is also suitable for wide layout evoking an image of extensive grassland.

- Panoramic aquarium tank is also suitable for wide layout evoking an image of extensive grassland. Photographed in 2006

- A layout with hard sand of substrate and tall standing driftwood in a tall "tank-type" aquarium tank.

3. What are the difference between Cube Garden and Cube Glass?

- Cube Glass and Cube Garden have different shades of color. Cube Glass is made of ordinary plate glass with a shade of turguise while Cube Garden uses clear glass with almost no color. This color difference has an impact on how the aquascape looks, and Cube Garden makes aquascape appears sharper and clearer. Cube Glass is with practically invisible silicon work was born out of the pursuit of lowal aquarium tank for Nature Aquarium.
Choosing Aquarium Equipments

1. Which of the following lamps is suitable for aquarium lighting: metal halide lamp, fluorescent lamp or LED lamp?

- Na using metal halide lamp brings out vivid green color of aquatic plants. On the other hand, red color may look a little dull.
- Na Lamp Twin, a twin fluorescent lamp, features excellent color rendering properties and offers the natural red and green colors of aquatic plants.
- LED lamps on AQUASKY are yellowish in color. They provide sufficient light intensity for healthy growth of aquatic plants.

2. What is the best combination of filter media?

- Carbon, Antrachite, Rio Cube
- Set NA Carbon on top of Rio Cube to improve yellow water caused by driftwood.
- Bamboo Charcoal also has the effect of creating uniform water flow within the filter.

3. What are the differences between CO₂ Advanced System and CO₂ Starter Kit?

- CO₂ Advanced System comes with standard Floten Glass and CO₂ Bubble Counter.
- CO₂ Starter Kit comes with a CO₂ diffuser having a built-in counter.

A Combination of filter media varies depending on the condition of aquarium and elapsed time since the initial setup. Aquarium water easily becomes dirty particularly in the initial stage of the aquarium. In this period, filter media which physically and chemically remove contaminants should be used. This is why Super Jer Filter ES-150, ES-360 and ES-600, the popular filters among aquarium beginners, come with antrachite and Bio Cube. However, antrachite will eventually cause clogging as they are used for a long period of time. To avoid this problem, it is advised to replace antrachite with Bio Rio approximately one month after the setup of aquarium when Bio Cube has been colonized with beneficial bacteria and biological filtration starts to fully function.

When another one month has passed and Bio Rio has already been colonized with bacteria, Bio Cube should be replaced with Bio Rio so that Bio Rio will be the only filter medium used. Doing this prevents clogging problem and leads to long-term stable filtration.

Besides the glassware used, the differences between CO₂ Advanced System and CO₂ Starter Kit include expandability and the compatible CO₂ cartridge. CO₂ Advanced System uses Tropical Forest containing 75g of CO₂. Tropical Forest has three additional features of deoxygenation, fragrance and sterilization to reduce the color of aquarium. CO₂ Advanced System can also be connected to CO₂ Tower (CO₂ system for large aquarium tank) by adding a CO₂ Adapter. On the other hand, CO₂ Starter Kit is compatible only with CO₂ Bottle containing 35g of CO₂. CO₂ Starter Kit is recommended to those who seek a simple CO₂ system for a small aquarium while CO₂ Advanced System is recommended to the hobbyists who are going to make a full-scale planted aquarium in a 60cm tank,
Nature Aquarium expresses beauty of nature in the form of aquascapes. Some Iwagumi layouts depict magnificent terrestrial landscapes, such as mountain range and scenery of many odd-shaped rocks, and they blend well with aquascapes by the presence of stone arrangement, soil mound and aquatic plants which create a flow of water. Sanou stone is the layout material which evokes both aquascape and terrestrial landscape.

Tank size: Width: 1800 mm Height: 900 mm
©Takashi Amano
Stone Arrangement Shows Water Flow while Making the Best Use of Sansui Stone’s Features

Sansui stone, with timber-like layered cross sections, has unique features which cannot be found on other stones. As its name suggests, Sansui stone is reminiscent of rocky hill in Sansui painting. The impression is further enhanced by using different sizes of these stones in combination. In this layout, mosses are wrapped around and attached to the sharp edges of the stone to show a water flow from left to right.

A large Sansui stone used as the main stone (Oiyosh) is tilted to express the flow of water. Its presence stands out with the help of the stones around it.

Echinodorus tenellus is planted between the stones to add a natural feel to the layout. A moderate amount of moss attached to Sansui stones produces Web-taxa sonsenn.

You can find the video of this aquascape on AQUA view: http://www.aqua-video.com/

Aquascape Photo by: 0300311

tank:
- Lake Barden 1074x766x450 (cm)
- 360-kilo Tech 120 x 60 x 30
- Lighting
  - 10 hours a day
- Substrate: Gravel 2-3 mm, plant soil 1/3, 1/3, 1/3
- Plants: Anubias nana, Cryptocoryne wendtii (Formosa)
- Light: LED T8 30W, 2 x 15W

Aquatic Plants
- Echinodorus tenellus
- Cryptocoryne wendtii
- Acropora sp.
- Chamaedorea elegans
- Cryptocoryne wendtii
- Nepenthes sp.
- Cryptocoryne sieboldii
Why is CO₂ supply necessary for Nature Aquarium?

Aquatic plants grow faster under the condition in the aquarium becomes better. Aquatic plants take in CO₂ and in turn produce a lot of oxygen through photosynthesis. Since oxygen is used by fish, shrimp and microorganisms for breathing, the environment with more oxygen is better for living organisms and the water quality will be stable as filter bacteria become active. Appropriate amount of CO₂ supply is effective to maintain the ecosystem in the aquarium in good condition.
[Plant Growth] Growing Aquatic Plants

Healthy growing aquatic plants are beautiful. Appropriate planting and trimming are important for plants’ healthy growth.

1. What are the minimum necessary things to grow healthy aquatic plants?

A substrate where aquatic plants spread their roots and lighting which supplies light to plants are crucial. Substrate built with Aqua Soil-Amazonia and Power Sand is the best for optimum growth of plants and also suitable for long-term maintenance of the aquarium. For lighting system, AQUASKY and the Solar series offer adequate light intensity. In addition to this, install a filter system for maintenance of good water quality and supply CO₂ and liquid fertilizer to grow lush aquatic plants in good condition.

2. What type of tweezers is suitable to plant aquatic plants?

ADA Pinsettes with an easy-to-handle length are suitable for planting aquatic plants. The Pinsettes provide stress-free planting experience even in long hours. Pinsettes K are recommended as your first tweezers. Pro-Pinsettes Grip type is ideal for planting of clump-type aquatic plants which are hard to hold such as Cryptocoryne. These are similar non-genuine tweezers in market. However, you may not be able to hold aquatic plants properly with these tweezers due to their tips not matching perfectly or excessively hard spring, which can result in damage to stem or roots of aquatic plants.

With Pinsettes having perfect matching tips, you can easily hold the long/short plants and do the precise planting.

3. What is an effective way of applying liquid fertilizers?

It is effective to add liquid fertilizers, such as Brighty K and Green Brighty STEP 1, to the aquarium when turning on the aquarium light in the morning. When the light is turned on, aquatic plants start their photosynthesis and actively absorb nutrients. Adding liquid fertilizers for a few days’ dosage in one shot is not effective because nutrients may be oxidized or absorbed onto the filter media. Make it a habit to apply liquid fertilizer every morning for the good health of aquatic plants.

4. Can we maintain aquatic plants just by trimming them?

Stem plants and foreground plants can be maintained for a certain period of time by repeated trimming (see the photos). However, the plant stem and roots get thick in the course of repeated trimming and this slows the formation of new buds. For this reason, it is necessary to pull the plants from the substrate and replant the young and healthy part of aquatic plants (i.e., upper part of the stem of stem plants). After the plants are removed from the substrate, add some new Aqua Soil. For shade plants such as Javaum and Cryptocoryne, strip off the large old leaves to maintain them.
**Fish Care** Keeping Fish in Aquarium

**1. What fish can be added to an aquarium?**

*Trigonostigma espei* (Lambchop fish)

*Fistulina hepatica* (Koiki)

A large aquarium with a water depth of at least 30cm is required to keep angelfish. Angelfish cannot be kept together with shrimps as the fish attack shrimp.

**2. What should we keep in mind when introducing new fish into an aquarium?**

Before introducing purchased fish into an aquarium, soak the plastic bag holding the fish in the aquarium for a while.

**3. What fish food should we use and how do we feed them?**

*SUKEI FOOD* is a flake-type fish food for a versatile range of fish species. For fish that eat only finely-granule food or avoid eating food floating on the water surface, *Fish Food AP series* and *AP Gloss series* can be an option. Feed the fish only an amount that they can consume in a few minutes while observing how they eat. Ideal feeding of granule-type *AP series* is made easy with *AP Glass*.

**4. Is aeration necessary even for aquarium with fish?**

Aeration is not necessary during the daytime when aquatic plants perform photosynthesis and produce a lot of oxygen. On the other hand, it is safer to do the aeration after the lighting is turned off at night because aquatic plants respire but do not perform photosynthesis during night time. When the dissolved oxygen level decreases, the activities of filter bacteria slow down and it can lead to an offertion on the water surface and cloudy aquarium water.
Nature Aquarium created based on the concept of long-term maintenance can be maintained for years or even more than a decade. To maintain Nature Aquarium for a long period of time, appropriate maintenance work is crucial. The layout is maintained as well as trimming and replanting. As a part of Aqua Soil, it is replaced with new ones during this trimming and replanting process. Healthy growth of aquatical plants can be maintained. Other effective approaches to achieve long-term maintenance of layout include making use of slow-growing shade plants such as ferns and Anubias and the use of cosmetic sand or Aqua Gravel as the substrate material for the foreground portion of the aquarium. It is also important to install a filter with a capacity slightly more than the adequate capacity.
Maintenace of Aquarium

Appropriate maintenance work is necessary for long-term maintenance of aquarium. Remove algae to keep the aquascape attractive.

1. What should we do to maintain the substrate for a long time?

An excessive amount of sludge buildup on the substrate will lead to unhealthy plant roots and growth of blue-green algae. An effective way to avoid these problems is to suction out sludge on the substrate during water change. Brown sludge can be suctioned out by bringing the tip of the water draining hose close to the substrate. Sludge can easily build up at the substrate areas covered with dense foreground plants. Focus on this area for sludge removal.

2. What should we do to keep the aquarium glass surface clean?

If sludge buildup on the substrate surface is left untreated, it may cause poor permeability of the substrate and increased growth of blue-green algae. Sludge easily builds up between dense foreground plants. Suction out the sludge with a hose during water change.

3. How do we remove black beard algae?

If algae on Anubias leaves are hard, even Cabomba japonica do not feed on them. Check water from aquarium and apply Phyton Gel diluted with the same amount of water directly to the leaves with a brush. Algae will then be removed.

4. How do we remove filamentous algae?

Remove algae on stones and driftwood by scraping them off with Pro Razer. This is the most secure way to remove algae on glass surface. You may observe white marks on the top portion and outer glass surface of aquarium after water is dried. This mark is caused by calcium carbonate accumulated on the glass surface and can be removed by dissolving with acid. Wipe off the mark slowly with a cloth or tissue paper dampened well with ‘be Soft’.

These algae can grow with aquatic plants and can also be removed by twisting them around a stick for removal.