New Approaches To Marine Aquarium Systems

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Abstract

Marine aquarium systems are limited environments that include many marine plants and animals. This habitat also has very interesting marine species, living rocks, wrecks and the other objects. The chemical indicators of water quality such as salinity, specific gravity, Ph, ammonia, Nitrite, Nitrate, Phosphate, Alkalinity, Copper, Calcium, and Magnesium are vital for the marine organisms. Further, the essential components are an aquarium made from acrylic, special heating systems , the consideration of overall lighting, metal halide, higher output fluorescent, standard fluorescent, incandescent, natural sunlight, filtration and live rocks.

Marine aquarium systems can range in volume from less than 80 liters (approximately 20 US gallons) to over 1.300 liters (400 gallons). The biggest marine aquariums in the world are; Georgia Aquarium (6.3 million gallons), Okinowa churaumi Aquarium (1.98 million gallons), L'oceanografic (1.85 million gallons), Turkuazzo (1.32 million gallons), Monterey Bay Aquarium (1.2 million gallons), uShaka Marine World (1 million gallons), Shaghai Ocean Aquarium (approxiamately 1 million gallons), and Shanghai Ocean Aquarium (approx. 1 million gallons), and Aquarium of Genova (approx. 1 million gallons).

Turkuazoo Marine Aquarium which is the first biggest aquarium of Turkey was opened in 2009 in İstanbul. It is located in Bayrampasa region. This marine aquarium is one of Europe's largest aquariums and includes many shopping malls as well. Marinescope Sea Tube is 90 meters in length and this makes it one of the World's longest underwater tunnels, offering visitors an outstanding marine life. The water in the Turkuazoo comes from the Sea of Marmara, the Black Sea and the Aegean Seas.

Istanbul Marine Aquarium, located around Florya region, was opened on 25th.June, 2011 in Istanbul. This marine aquarium has a capacity of 6.8 million liters of seawater, and includes a variety of living organisms from East Atlantic, West Atlantic, Middle Atlantic, Panama Channel, Pacific Ocean, the Red Sea, the Mediterranean, the Aegean Sea, the Marmara Sea, the Bosporus, the Dardanelles and also from one rain forest.

Beyond these, the main aim is to set up marine aquariums to be able to explore the underwater life. In addition, protecting marine organisms such as sea plants and sea animals is our priority which will also reinforce tourism activities, education and economy.

Finally, marine aquarium systems can also be used as a therapeutical tool for the patients with psychological disorders as this aquatic world creates a very positive and relaxing mood.

1.INTRODUCTION

According to research conducted recently, many people who are fond of marine creatures tank hobby are the ones who are single in developing countries. This implies that people use this activity as a means of overcoming boredom and loneliness. If these people do not keep fish as a hobby, they would probably have a pet instead.A method of escaping from monotony of life. Marine Aquariums are said to be an ideal way to relax and this is the reason why the term "Marine Animals and Plants" are coined. This is a reality, though. Looking at this flora and fauna strutting wares in the fish tank will completely give us great relaxation. The small and big fish like Sparus Aurata will move in unison form one place to another and you would love to see them in a feeding system.Marine Aquarium brings out the creativity in our world. Many people love this hobby and can breed these creatures for making money and the others for fun. These living organisms can be collected from the natural environment or purchased from other places. At the same time , these systems have functions in the fields of education and tourism, beside its economic benefits.1

2.New Aquarium Planning

Put the stand into an ideal place and level it, make sure that you leave clearance for electrical systems of connections and equipment.

Clean the tank with freshwater and a soft sterile cloth or sponge.

Place the tank on the stand, using an under-pad for cushioning underneath if needed, and check to see that the tank is level.

Install power strip/light timer.

3.Filtration / Aquarium Filters

Aquarium filtration is very important for anoptimum aquarium. Biological filtration is the term used to describe beneficial bacteria, which are established during the initial cycling of the aquarium. Protein skimmer and biological filtration are vital in Marine Aquarium systems.

Chemical filtration is for dissolved wastes (amino acids, proteins, phenols, creasols, terpenoid, fats, plant hormonos, vitamins, carotenoids, glycolic and citric..). Mechanical aquarium filtration is for solid particles within the water tank. This helps to remove floating waste materials.3This type of filtering actually is a way of removing free-floating waste beforehand.

Protein skimmer essentially removes the biological waste. This filtration type is suitable for reef tanks. A sponge filter has a tube with a sponge like material inside. These sponges also serve as a mechanical filter, removing larger particles from the water. The ideal sponge filter system use two sponges, making it easier to preserve bacteria by checking sponges.

4.Heating systems

A quality aquarium water heater is necessary for ideal aquarium systems. A thermometer and a temperature controller are very necessary to prevent the stress of marine organisms in the tanks. Large marine tanks need more than one heater system.

5.Overall lightening System

For photosynthetic plants, living rocks, algae and animals in water deeper than 24"/60cm, metal halides may be necessary. For larger marine aquaria systems that are long but shallow, modern efficient fluorescentlighting will work as optimal like T 5 technology. T5 lighting is a relatively new light system in the United States that was originally developed as a light source in combination with specialized reflectors for marine aquarium lighting. Traditional fluorescent T8 & T12 bulbs are simply not powerful enough to light an area more than 8-10" below the bulb. However, with the recent introduction of T5 technology, researchers can now reap many benefits of using Fluorescent Grow Lighting. A typical 54 Watt T5 HO (High Output) bulb produces 5000 lumens which is equivalent to 92.6 lumens per watt.

6.Acrylic Glass System

Most marine aquarium systems are made of either glass or acrylic. Both glass and acrylic tanks have their benefits and drawbacks. Colours are not quite true, position is not quite accurate, size can be distorted slightly in glass system. Acrylic has nearly the same index of refraction as seawater, size and colour are true. Glass tanks are less expensive than acrylic tanks. Tempered glass can not be drilled, but acrylic tank can be drilled to accommodate an overflow system.7

Home aquarium tank is generally 29 or 30 gallon, however some people have constructed aquariums of many thousands of gallons. Public aquariums are naturally larger than any of the home aquariums.There are many huge marine aquariums in different countries:10

Aquarium of Western Australia (0,8 million gallons), AUSTRALIA

This marine aquarium is Australia's largest aquarium tank. The main tank is approximately 40 meters (130 ft) long and 20 meters (66 ft) wide and holds 3,000,000 liters (793,000 gallons) of seawater. It has a 98 meter (322 ft) underwater tunnel. There are 400 different species in this marine aquarium.

Aquarium of Genoa (< 1 million gallons) ,ITALY

This aquarium which was built for Expo 92 is one of the largest aquariums in Europe. The aquarium's 70 tanks reproduce marine and terrestrial habitats from throughout different places and provide a home for more than 6000 animals. Some tanks reproduce natural environments from different areas as the Mediterranean, the Red Sea and the Indian Ocean. The sharks, the dolphins and the seals are very important animals for this marine.

Shanghai Ocean Aquarium (< 1 million gallons) ,CHINA

The Shanghai Ocean Aquarium is one of the largest aquariums in Asia. It is composed of 9 exhibition zones all over the world, including the China Zone, the Antarctic Zone and the Australia Zone. The China Zone is home to several endangered Chinese aquatic species, including rare and precious species from the Yangtze River. The biggest attraction of the aquarium is the underwater tunnel. It is the longest underwater tunnel in the world (155 meter (509 ft) .

uShaka Marine World (< 1 million gallons) ,SOUTH AFRICA

The uShaka Marine World is an International aquapark and it is located in Urban, South Africa. It contains the largest aquarium in Africa boasting 32 tanks. The sea creatures found in the aquarium range from small sea horses to sharks and dolphins. The Aquarium is built to look like an old wreck and contains a number of restaurants and cafes. The most interesting of these restaurants is "The Cargo Hold" restaurant which contains a full wall sized aquarium containing a number of sharks which are visible from most of the dining area.

Monterey Bay Aquarium (1,2 million gallons) ,USA

This marine aquarium is located in Monterey, California. Among the aquarium's numerous marine creatures are two gigantic tanks. The centerpiece of the Ocean's Edge Wing is a 10 meter (33 foot) high 1,3 million liter (0,33 million gallon) tank for viewing California coastal marine life. The part one is a 4,5 million liter (1,2 million gallon) tank in the Outer Bay Wing which features one of the world's largest single-paned windows. Sealife on exhibit includes stingrays, jellyfish, sea otters, and numerous other native marine species, which can be viewed above and below the waterline

Turkuazoo (1,32 million gallons) ,TURKEY

This marine aquarium opened in 2009, and Turkuazoo is Turkey's first giant aquarium which consistsof a rainforest, flooded forest and tropical seas zones. The aquarium is located inside the Forum Istanbul Shopping Mall and contains approximately 80 meter long underwater tunnel. This aquarium holds about 10,000 sea creatures including tiger sharks, giant stingrays and piranhas in 29 different exhibits where the largest holds 5 million liters (1,32 million gallons) of water.

Istanbul Aquarium, (1.79 million gallons)TURKEY

The Istanbul aquarium opened its doors in Istanbul on the 25th of June, 2011.There is a lot of confusion at the moment about Istanbul's aquariums. The simple reason for this is that Istanbul is the proud owner of two massive aquariums. The first one is located in Forum Istanbul, which has been around for a few years and where sharks are the main attraction. Istanbul Aquarium Florya, which is a member of World Association of Zoos (WAZA), is a

two story building of no less than 22.000 m². There are 64 tanks with 6.800 m³ water, displaying 15.000 land and sea creatures of over 1.500 species. The samples are from:

Black Sea

Istanbul Strait

The Dardanelles

Aegean Sea

Suez Canal

Red Sea

Global Warming

Mediterranean

Straits of Gibraltar

East Atlantic (Liberty, the sunken ship)

Mid-Atlantic

Western Atlantic

Panama Canal

Pacific Ocean

Nautilus (Submarine)

Rain Forest 9

L'Oceanogràfic (1,85 million gallons) ,SPAIN

L'Oceanogràfic is a marine world where different marine habitats are represented. It is integrated inside a complex known as the City of Arts and Sciences inside Valencia,Spain. The Oceanogràfic features the largest aquarium tank in Europe and houses more than 45,000 marine creatures. They have nine under water towers, structured on two levels that represent several marine ecosystems. Two underwater towers are joined by a 35 meter underwater tunnel and essentially sharks, rays living in 7 million liters (1,85 million gallon) of seawater.

Okinawa Churaumi Aquarium (1,98 million gallons) JAPAN

The Okinawa Churaumi Aquarium located within the Ocean Expo Park in Japan opened in 2002. The main tank of the aquarium, called the Kuroshio Sea, the largest panel in the world on its opening, holds 7,5 million liters (1,981,000 gallons) of water and features an acrylic glass panel measuring 8.2 by 22.5 meters (27 by 74 feet) with a thickness of 60 centimeters (24 inches) Whale sharks and manta rays are kept alongside many other fish species in Kuroshio Sea. As of July 2010, four manta rays were born in the aquarium.

Dubai Mall Aquarium (2,64 million gallons), Dubai, UNITED ARAB EMIRATES, The Dubai Mall, one of the world's largest shopping malls in the world, is a part of the 20-billion-dollar Burj Dubai complex . The centerpiece of the mall is the gigantic aquarium tank, with a capacity of 10 million liters (2,64 million gallons) of water. The aquarium has more than 33,000 living animals including over 400 sharks and rays. Acrylic Panel measures 8.3 by 32.88 meter (27 by 108 feet) and is 75 centimeters (30 inches) .

Georgia Aquarium (6,3 million gallons) Atlanta ,USA

This aquarium system is the largest aquarium in the world housing more than 100,000 sea creatures. The aquarium was opened in November 2005. The Georgia Aquarium is the only institution outside of Asia to house whale sharks. The sharks are kept in a gigantic 24 million liter (6.3 million gallon) tank in the Ocean Voyager exhibition. There has been controversy on the decision of the Georgia Aquarium to house whale sharks.

Sealife Aquarium, Helsinki, FINLAND

This aquapark has a nearly 33 foot long (10m) R-Cast™ acrylic tunnel that visitors walk through a 66,000 gallon (250,000 liter) ocean tank where they can view sharks and other marine life that live in tropical and reef environments. SeaLife Helsinki will journey from tropical seas to the depths of the Baltic, encountering hundreds of astonishing creatures along the way. Among these: 10 different shark species, colourful fish of coral reefs, rays, jelly fish, sea horses and many others.Even students of elementary school study with applied education in this aquarium system .Microorganisms in terms of phyto and zooplakton are exhibited with tables.12

The National Aquarium ,Baltimor,MD,USA

The National Aquarium is a non-profit aquatic education and conservation organization with two locations and one mission: to inspire conservation of the world's aquatic treasures.

In 2003, separate aquariums in Baltimore, MD, and Washington, DC, joined as one "National Aquarium." The National Aquarium venues together hold living collections that include more than 16,000 animals from more than 660 species of fish, birds, amphibians, reptiles, and mammals living in award-winning, naturalistic habitats.

Educators reach thousands of students each year with activities in schools and in the field; conservation crews and volunteers restore habitats and preserve species around the Chesapeake Bay and around the world; and the National Aquarium venues continue to boost the econoym in the city of Baltimore and as a unique tourist attraction in Washington, DC. Through all of its work, the National Aquarium maintains its long-time commitment to serving the communities around.Children and visitors can easily touch to some marine organisms like horseshoe crab (Limulus polyphemus).11

7.CONCLUSION

The first public aquarium was opened in London Zoo in May 1853,green house as it came to be known, Barnum's American Museum was the first marine aquarium in the USA, which was located in Broadway, New York before it burned down in 1856. ThenHYPERLINK \l "cite_note-Brunner-1"a number of aquariums opened in Europe, such asThe Jardin d'Acclimatation in Paris and the Viennese Aquarium Salon (both founded in 1860),the Marine Aquarium Temple as part of the Zoological Garden in Hamburg (1864),as well as aquariums in Berlin (1864) and Brighton (1872)6.

A marine aquarium is an aquarium that keeps marine plants and animals in a contained environment. Marine fishkeeping is different from its freshwater counterpart because of the fundamental differences in the constitution of saltwater and the resulting differences in the adaptation of its inhabitants. A stable marine aquarium requires more equipment than freshwater systems, and generally requires more stringent water quality monitoring. The inhabitants of a marine aquarium are often difficult to acquire and are usually more expensive than freshwater aquarium inhabitants. However, the inhabitants of saltwater aquariums are usually much more spectacular than freshwater aquarium fish.

Marine aquarium components: The major and important components are an aquarium, usually made from acrylic or glass, filtration equipment, lighting, and an aquarium heater. Marine aquariums can range in volume from less than 80 liters (< 20 US gal) to over 1,200 litres (300 US gal). Small volumes are more difficult to maintain due to the more rapid changes in water chemistry. The majority of saltwater aquariums are between 160 and 400 litres (40 and 100 US gal).

Most common size for a home aquarium tank is probably 29 or 30 gallon, though some aquarists have constructed aquariums of many thousands of gallons. Public aquariums can be larger than any of the home aquariums. Only a few are big enough to make it to the list of largest aquariums in the world. The kind of aquarium that can keep whale sharks and manta rays. It takes a very large tank to hold these kind of marine creatures. These marine aquariums are :the Aquarium of Western Australia, the Aquarium od Genoa, The uShaka Marine World, The Monterey Bay Aquarium, Turkuazoo, Istanbul Aquarium, L'Oceanografic, The Okinawa Churaumi Aquarium, The Dubai Mall Aquarium, The Georgia Aquarium.

Marine aquarium and aquapark systems are very interesting and exciting for disabled children and adult. In this connection ,positive discrimination can be shown for disabled , poor people and students in the meaning of admission prices and suitable paths which are inside the marine aquariums.International Disability Action Plan can be aimed at improving the quality of life of disabled people in each ages.

Generally marine aquarium and freshwater aquarium systems can efficiently be evaluated in every phase of education and scientific area including medical marine biology in terms of neurological problems, cancer and aizheimer.These marine aquariums are very important segment of modern life and they aretotally education centers.

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