

Are Aquatic Organism Happy & Healthy Lab Report



Photographed by George May

Student: George May

Advisor: Mauricio Gonzalez

Class: Marine Biology Research Program

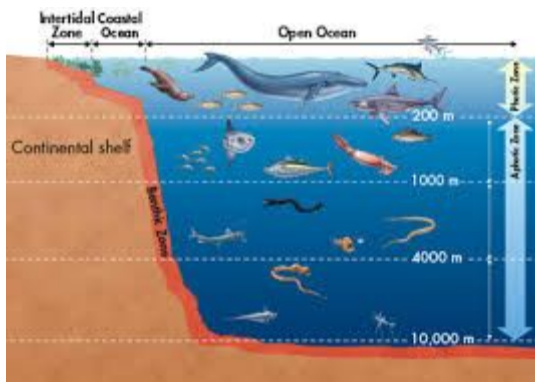
Location: New York Harbor School, Governor's Island

Date: May 23, 2017

Introduction: The question I have is a Neon Tetra fish and Blue Velvet shrimp in my AEM comfortable and healthy. The question is can a Neon Tetra fish and Blue Velvet shrimp in my AEM comfortable and healthy? By monitoring the A.E.M both organisms lived peacefully with each other with no aggressive interaction. The A.E.M had a pH level around 6.0-6.6 (mostly around 6.5). It also had a Ammonia level 0 sometimes reaching 0.5. The amount of nitrites was 5 and the nitrates were 80 while the Alkalinity was at 0. Aquatic organisms are therefore somewhat buffered against massive, rapid changes in temperature. However, the Neon Tetra survived because it able to adapt and have a regular pattern of eating. The Blue Velvet Shrimp died due to health issues.



The two living organisms in my AEM A Blue Velvet Shrimp(*Neocaridina Heteropoda* Var.) & Neon Tetra Fish(*Paracheirodon innesi*).Photograph by George May.



Background Information

An ecosystem is a natural unit of living and nonliving parts that interact to produce a stable system. Ecology is the study of ecosystems, or how living things relate to the environment and to one another. Understanding this relationship is important because living things and non-living things depend upon and impact each other. Ecosystems operate from day to day by exchanging energy. The energy exchanged within an ecosystem is recycled between the physical and biological components. In this way, each element within the ecosystem depends on the others for survival. Aquatic ecosystems perform many important environmental functions. The health of an aquatic ecosystem is degraded when the ecosystem's ability to absorb a stress has been exceeded. A stress on an aquatic ecosystem can be a result of physical, chemical or biological alterations of the environment. Physical alterations include changes in water temperature, water flow and light availability.



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Basil Summary

Basil is a common aromatic herb in the mint family, the same plant family as other nutrient-dense, beneficial herbs, including mint, oregano and rosemary. But what may surprise you is the many benefits of basil that make it well-known for its immunity-enhancing properties. Basil extract, or basil essential oil, is proven to help prevent a wide range of health conditions, which makes it one of the most important medical herbs known today. Basil contains antioxidant-rich volatile essential oils, which are considered hydrophobic. This means they don't dissolve in water and are light and small enough to travel through the air and the pores within our skin. Basil's volatile essential oils are what give the herb its distinct smell and taste, but they're also responsible for the healing benefits of basil. Herbs like basil contain essential oil compounds because these help the plant defend itself from predators like bugs, rodents and strains of bacteria in the soil.

2/20/17	Temp Celsius°	E.C uS/cm 3	pH° Units	<u>pH</u> <u>Unit</u>	B.C ppm	NO2 ppm	NO3 ppm	NH3 ppm	PO3 ppm	Plant 1 cm	Hard ppm	Alk ppm	Sal ppt	D.O %
Initials	63			GM						CS		GM		
Date Mar 2	GM			6.0						5		0		
Initials	GM			GM						CS		GM		
Date Mar 10	69			6.5						7		0		
Initials	CS			GM						GM		CS		
Date Mar 16	64			6.6						8.5		0		
Initials	GM			GM						CS		CS		
Date 3/20	71			6.32						9.5		0		

Initials	GM			GM						GM		CS		
Date 3/21	70			6.35						11		0		
Initials	GM			CS						GM		GM		
Date 3/22	70			6.4						12.5		0		
Initials	GM			GM							CS	GM		
Date 3/24	75			6.34						13		0		
Initials	CS			GM						CS	CS	CS		
Date 4/19	67			6.41						17		0		
Initials	CS			CS						GM	GM	GM		
Date 4/25	66			6.33						18.5		0		
Initials	GM			CS						GM	GM	CS		

Safety procedures

When using chemicals or interacting with certain materials wear gloves. Clean up your workspace after your done. Place the materials back in their proper order. Don't leave any chemical bottles open for long. If something spills clean it up. Rinse Probe. After your done wash your hand and gloves with water and soap.



Photographed by George May

Materials

Gloves
Paper Towels
Hanna combo meter
A.E.M
Graduate Cylinder
Water Buffer
Hardness Tester
Microscopes
Tweezers

Hypothesis

A fish is happy and healthy when these action occur

1. Swims actively throughout the entire tank, not just hanging out or laying at the bottom, floating near the top or hiding behind plants and ornaments.
2. Eats regularly and swims to the surface quickly at feeding time.
3. Do not have white spots or blemishes on their body; do not have fins that are torn or ragged, and do not eyes that are bulging
4. Are expanding their gills regularly -- but not rapidly -- to take in water and oxygen
5. Are brightly colored with vibrant scales
6. Swims in clear, clean, odorless water

Common Name: Blue Velvet Shrimp(Neocaridina Heteropoda Var)

Origin: Taiwan

Maximum Size: 2 – 2.5 cm or 0.8 – 1 inch

Tank Parameters Required:

pH – 6.4-7.5

gH –5-12

TDS – 100-300

Temperature – 18-26C or 64 – 80F

Temperament: Omnivore/Non aggressive

Breeding: Easy

Blue Velvet Shrimp Facts

- 1. Dwarf shrimp love the cover that plants provide them
- 2. They love to graze on the plants for algae
- 3. Plants help keep the water clean for the shrimp

Neon Tetra Fish(*Paracheirodon innesi*)

- Temperature: 68° - 80° F (20° - 27° C)
- pH: 5.0 - 7.0
- KH: 4 - 10 dKH
- Minimum tank size: 10 gallons
- Diet: Omnivorous. Will readily accept most fish flakes and pellets, as well as most small foods, including brine shrimp, daphnia, freeze-dried bloodworms, and tubifex.
- Social behavior: Peaceful, schooling/shoaling.
- Origin: Tank-raised, but indigenous to streams in southeastern Colombia, eastern Peru, and western Brazil.
- Average adult size: 1.5 - 2 inches (3.8 - 5 cm)
- Iridescent blue and red stripes that add bright bursts of color to any aquarium set-up
- Its small size makes it an ideal candidate for the nano aquarium
- Safe with plants
- Completely peaceful

One day the Blue Velvet Shrimp died but its body was not found, it can be assumed the Neon Tetra fish fed on its remains. This shows the feeding behavior of the Neon Tetra, if any smaller organism dies. The Blue Velvet Shrimp died due to malnutrition, it did not receive food because there was no algae in its environment and Blue Velvets need algae for a food source. Another reason is when it was being fed the Neon Tetra ate most of its food. The Blue Velvet Shrimp is a scavenger, meaning it will feed on leftover that other larger organisms eat. This ultimately led to the death of the Blue Velvet Shrimp. The Neon Tetra is a larger organism than the Blue Velvet Shrimp and it being an omnivore helped it eat anything in its environment.

Conclusion:

The AEM water levels seem to be normal enough to for the Neon Tetra fish and Blue Velvet shrimp to be happy and healthy. Plus their eating pattern and appearance are not different than usual. However the Neon Tetra fish was able to adapt to its environment and it most of the food in its environment due to it being a larger organism. The Blue Velvet Shrimp was unable to survive due to it being a scavenger and receiving little to no food. Plus there was no Algae for it to feed on making it more harder for it to live in its environment. The Neon Tetra was more happier and healthier and is still doing reasonably well. The Basil plants also helped keep the A.E.M clean and removed growing bacteria inside.

Bibliography



- Earth's Biomes: Oceans, Seas, and Reefs; Barbara A. Somerville; 2004
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