SETTING UP AN ECOSYSTEM

COLÉGIO PLANALTO

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Nº 1700

GROUP III

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BACKGROUND

DATA COLLECTION

When analysing an ecosystem we have two parts that are

1st part: describing an ecosystem.

2ndpart: System approach. This part it won't be done, because we still are not as familiarised as we should be with the ecosystem.

1st part: describing an ecosystem.

A. Abiotic features that are:

a. Climatic factors:

i. Water pH,

ii. Temperature;

iii. turbidity,

iv. water hardness;

v. light intensity,

vi. photoperiod,

vii. Nitrogen components (NH_3,NO_2^-, NO_3^-)(0-0,20),

viii. turbulence,

ix. [O_2];[CO_2] ([]means concentration.)

b. Edaphic factors:

i. Soil (silica gravel),

ii. Rocks 3, woods 3, ceramics 3(vase).

c. Aquarium:

i. size(volume) 112096centimetres^3 more or less 112 litres.

ii. shape :rectangular

d. Equipment: filter: biological, physical and chemical filtration.

   i. Filter Carmster 230v/50Hz/8 Watt

   ii. A fluorescent lamp with 70 cm with 230v-50hz

For each of these parameters consider:

1. What it measure?

   i. pH:7.4/7.6 water acidity less than this is alkaline

   ii. T°:24°C the heat that water needs to be for the survival of the Animalia.

   iii. Turbidity: it's not turbid the view and visibility inside the aquarium.

   iv. Water hardness: moderate (15drops)

   v. Light intensity230v-50Hz

   vi. Photoperiod: 10h/16h

   vii. Nitrogen compounds(ammonia): 0–0.20

   viii. Turbulence there is the flow that comes from the filter

   ix. $[O_2]$; $[CO_2]$ at this moment is unavailable due to the lack of the equipment.

2. Why it's important for living organisms (ecosystems equilibrium)?

   i. It's needed because some fish cannot sustain an acid pH or a really basic pH.

   ii. It's important because some species cant' sustain 0° or 40° and so they need a environment appropriate or adapt to the one they are although that takes hundreds of years

   iii. If the water has got particles going around the water and allows, if there aren't, the fish to see well and to "breath" and eat.

   iv.

   v. According to the photoperiod of plants and animalia marks the hours for the photosynthesis and the hour of eating

vi. It's the time of light allowed in the ecosystem.

vii. Measures the nitrogen compounds, ammonia, which is connected to the acidity.

viii. Measures the flow inside the ecosystem, renews the oxygen in the water.

ix. [O_2]; [CO_2] it's important for the plants and for the animalia breathing.

3. Values in ours ecosystem?(make a table)

Components	Values
pH	7.4/7.6
T°	24°
turbidity	Not turbid
Water hardness	moderate
Light intensity	230v-50Hz
Photoperiod	10h-16h
ammonia	0-0.20mg
turbulence	Near the filter
[O_2];[CO_2]	The equipment wasn't available

B. Biotic Factors

1. Animalia (fish, snails)niche
2. Plants (Aquatic)
3. Protoctista (Algae, protozoa)
4. Bacteria (Nitrogen bacteria (nitrogen cycle))
5. Fungi(decomposers)

For each Biotic factor consider (plants, animals) (snails too)

1. Species characteristics (tolerance level for important abiotic factors, behaviour, reproduction pattern).

Answer in Animalia description pg 9 to 14. In this work

2. Algae: good or bad? Why they've developed

There are two categories of algae of concern to aquarists: "good" and "bad". Good algae is present in small quantities, is indicative of good water quality and is easily kept in check by algae eating fish or simple removal during routine maintenance. This algae is a natural consequence of having a container of water with nutrients and a light source.

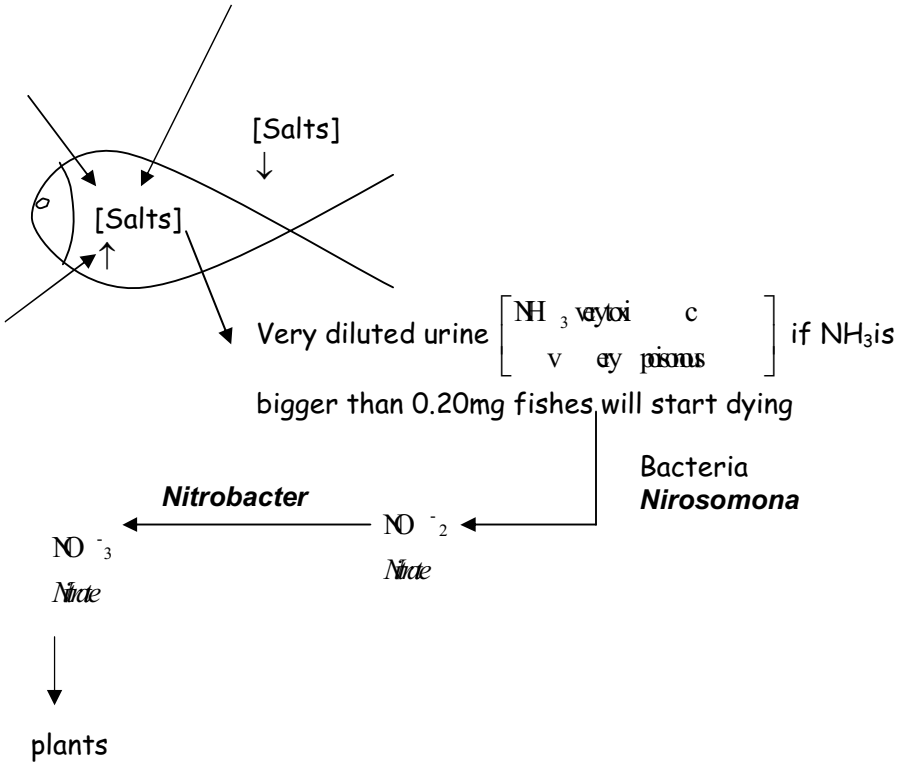
Bad algae is either an indicator of bad water quality or is a type of algae that tends to overtake the tank and ruin the aesthetics the aquarist is trying to achieve. The label of "bad" is entirely subjective. For example, one type of green, hair-like algae is considered a plague by some American aquarists, yet is cultivated by European aquarists as a valuable addition to most tanks, serving as a dietary supplement for the fish.

Algae releases oxygen into the water as it manufactures it food. Algae forms the broad base on which the food pyramids in ponds and lakes is built. In manufacturing food, algae release oxygen, increasing the amount dissolved in the water.

However, when algae become overabundant the decaying algae deplete oxygen levels. So during the summer, when conditions for growing algae are ripe, oxygen levels may decrease, causing "summerkill" for aquatic plants and animals.

3. Nitrogen cycle bacteria?(conditions names)

As The salts in the Aquarium are bigger than inside the fish, then the fish will make a very diluted urine called ammonia, if it's bigger than 0.20mg they will die, very diluted due to what I had just referred then helped by ***Nirosomonas*** it will be transformed into nitrite and then with the ***Nitrobacter*** into Nitrate that will be used by the plants.



4. Bacteria and fungi: decomposers (role), causing diseases.

Decomposers as the name says "decompose" things into nutrients or nothing, this can be good because it fertilizes the soil and give nutrients to the water.

Bacteria make the hard work because some of them sustain the Ecosystem equilibrium and other try to make the opposite which will be causing a disease; also if decomposers don't make their job bodies will stay so they'll make the water have more nutrients. This can be good in short period; in a long period if they keep there the water will be so overnutried that fish will start dying.

That's why the roles of these tiny little friends just as the bacteria are essential for life

Biotic factors

Description animalia

N°	Name(animalia)	Male/female number
1	Pteraflyllum Scalare(escalar)	?
4	HYPHESSOBRYCON INNESI (NEON) **Néon -**	?
3	Poeclia Reticulate(guppies)	2 male/ 1 female
2	Gpriniacheilus aymomeri (Algae eaters)	?
?	Snails	

N°	Name (plants)
1	Elodea (***Egeria densa***)
1	Lugwigia Repens
1	Feto java (Microgorum pterfus)
1	Aracena

ANIMALIA DESCRIPTION

PTEROPHYLLUM ANGEL FISH

Freshwater angelfish are cichlids that originate around the Amazon River basin with a striking, compressed body shape and long extended dorsal and anal fins. The fish are often taller than they are long. There are three recognized species, all belonging to the genus *P*terophyllum.

For aquarium breeding, the angelfish is a bad parent compared to many other cichlids, and quite often eats its young. The eggs are deposited on a bare rock, root or large leaf of some water plant, and the young are cared for by both parents.

However, when the breeding attempt is successful the parents keep close watch on the eggs until they become free swimming. Once they begin swimming the parents will clean them by sucking them into their mouths and spitting them out. Fry can be fed baby brine shrimp; frozen or fresh.

Angelfish inhabit slow waters in the Amazon region. Its shape allows it good protection among roots and plants, often on a vertical surface. It eats small invertebrates and is no danger to most other fish in an aquarium, however if a tankmate will fit into its mouth there is a good chance the angelfish will try to eat it.

PARACHEIRODAN INNESI (NEON)

The neon tetra is by far one of the best community fish there is on the market. Kept in a school of 6 or more these little guys are an awesome spectacle swimming around the aquarium and chasing each other back and forth. Neons are extremely peaceful and rather small, therefore shouldn't be kept with very large fish which might find it an appetizing meal. In my experience with neons they tend to be an adaptable fish which can tolerate a pH of 5.0 but it is best to have pH of about 7.0. Also, they feed on the basic flake food but should also get occasional feedings of tubifex worms and frozen brine shrimp. A feeding of live foods once in a while is also suggested but not neccessary. When kept under good conditions the neon tetra is a beautiful and awesome addition to any community aquarium.

POECILIA RETICULATA

Common name Guppy

Scientific name Poecilia reticulata

Synonyms Millions fish

Size 2.5" (6cm), males smaller

Origin: Central America to Brazil, although wild populations have established elsewhere.

Compatibility: Peaceful, community - do not mix with fin-nippers

Temperature 18-27°C (64-81°F)

Water chemistry Medium hard to very hard, and alkaline - pH 7.0-8.5

Feeding: Omnivorous, small live and frozen foods flake.

Sexing Males have longer, more colourful finnage and are smaller than females, which tend to be dull coloured. However, the most definitive feature in males is the gonopodium - a stick-like modified anal fin (used in breeding), instead of the normal rounded anal fin in females.

Breeding: an easily bred and prolific fish. It is advisable to keep 2-3 females per male to reduce stress on specific females from the male. Around 30 young are normally produced.

Gyrinocheilys aymonieri the ever-popular guppy is generally a hardy fish which will tolerate a wide range of conditions. However, many fish found for sale these days are not as hardy as they once were. The guppy has been bred to produce longer fins and numerous colour varieties.

ALGAE EATER

Common name Algae eater / Sucking loach

Scientific name *Gyrinocheilus aymonieri*

Synonyms Chinese algae eater, Indian algae eate

Size Up to 10" (25cm), but often smaller.

Origin India and Thailand

Compatibility May become aggressive, particularly when older

Temperature 23-28°C (73-82°F)

Water chemistry Fairly soft, slightly acidic (pH 6-7) ideally, but not critical.

Feeding Omnivorous - will eat most aquarium foods, good algae eater when young

Breeding No detailed reports, have been bred commercially

Comments This fish is often purchased as an algae eater for smaller community tanks, for which it is not really suitable. Firstly, it grows larger than many realise, and secondly, it has a tendency to become aggressive when older. In the limited confines of a small tank, it may terrorise other aquarium inhabitants. In addition, they often become less inclined to eat algae as they grow, particularly if other food sources are available.

ELÓDEA

Common name:

Scientifical name (***Egeria densa***)

Foto: www.liveaquaria.com

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origin	Central and South Ame rica
high:	90 cm.
growth:	fast.
Tº	20 - 25 º C
PH:	5 - 10
Light needs:	medium.

LUDWIGIA REPENS

Family	**Onagraceae**
Continent	**North America**
Region	**North America**
Country of origin	
Height	**30-50 cm**
Width	**5-8 cm**
Light requirements	**medium-very high**
Temperature	**15-26 °C**
Hardness tolerance	**very soft-hard**
pH tolerance	**5,5-8**
Growth	**fast**
Demands	**easy**

Ludwigia repens is a familiar and very beautiful aquarium plant. It generally makes few demands and grows fast, but the red colour is more intense if the light is good. When pruned it develops countless side shoots and becomes more bushy. Suitable as an intermediate or background plant, and most effective when planted in groups

MICROSORUM PTEROPUS

No. 008

Family	**Polypodiaceae**
Continent	**Asia**
Region	
Country of origin	
Height	**15-30 cm**
Width	**12-20+ cm**
Light requirements	**very low-high**
Temperature	**18-30 °C**
Hardness tolerance	**very soft-hard**
pH tolerance	**5-8**
Growth	**slow**
Demands	**very easy**

Microsorum pteropus is a water fern which should be grown on a root or stone, attached with fishing line until it has gained a hold. If it is planted in the bottom, do not cover the rhizome because it will rot. Easy to propagate by splitting the horizontal rhizome. A hardy plant which grows in all conditions. The black spots under the leaves are sporangia (reproductive organs), not signs of disease as many believe.

EVALUATION

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