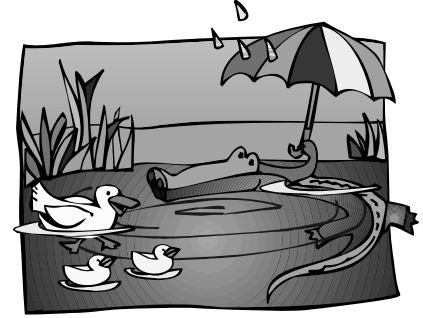




Name _____

Mini-ecosystems 1



Mini – Ponds

Problem: To investigate diversity in a pond water ecosystem.

Background Information: Ecosystems are sets of living organisms (plants, animals and microorganisms) all interacting among themselves and with the environment in which they live (soil, climate, water and light). They vary in size. They can be as small as a puddle or as large as the Earth itself. Any group of living and nonliving things interacting with each other can be considered as an ecosystem.

A pond is one type of ecosystem. It is a body of water shallow enough to support rooted plants. Many times plants grow all the way across a shallow pond. Water temperature in a pond is pretty much the same from top to bottom and changes when the air temperature changes. There is little wave action and the bottom is usually covered with mud. Plants can grow along the pond edge.

The living parts of an ecosystem can be divided into three categories:

1. **Producers:** Plants have chlorophyll and can produce their own energy in the form of carbohydrates (simple sugars) through photosynthesis.
2. **Consumers:** Animals must consume something else, either plants or other animals, to get their energy.
3. **Decomposers:** Many insects, microscopic animals, fungi, and bacteria get their energy by decomposing dead organic matter enriching the soil with nutrients.

Energy comes from the sun in the form of sunlight. Plants can take the sunlight and turn it into food in the form of glucose. When animals produce waste and eventually die, other, mostly microscopic, organisms may use the energy in the waste and dead bodies. This matter is reduced by decomposers and returned to the soil, where it may be used again by plants.

Energy is lost as it flows through an ecosystem. For example, not all the sun-light energy a plant receives is converted to chemical energy (i.e., carbohydrates). Some of it is wasted. Likewise, when mammals digest food they convert some of it to heat, which is lost to the air around the animal.

Materials:

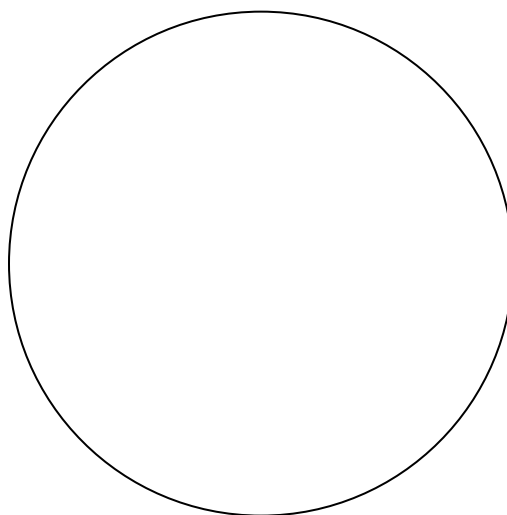
Wide mouth jar with lid	Pond water	Pond plants
Mud from the bottom of a pond	Microscope & slides	Eye dropper

Procedure:**Day 1 ---**

1. Build a mini-pond ecosystem in a wide mouth jar:
 - a. Put one or two spoonfuls of soil from the bottom of the pond in the jar
 - b. Add enough water to fill the jar near the top.
 - c. Add enough plant life to cover the surface of the water.
 - d. Put the lid on the jar and tighten.
2. Put your mini-ecosystem on your team tray by the window.

Day 2 ---

3. Use the eye dropper to put one drop of water from your jar in the well of the slide. If you do not see anything, keep trying until you do.
4. Observe the sample on low and high power.
5. Draw your observations in the data section.
6. Use the Pond Water Microorganisms sheet to identify what you see in the water.
7. Classify the organisms you observe as consumers or producers.

Data:

Producers	Consumers

Conclusion:

1. Define BIODIVERSITY:

2. How much biodiversity was in your ecosystem? Explain your answer.

3. Did you have more consumers or more producers in your ecosystem?

4. What is a possible reason for this?

5. In any ecosystem, what is the relationship between:

a. Producers and consumers?

b. Photosynthesis and consumers?

6. What is a possible food chain in the pond ecosystem?

7. List 2 abiotic factors in the pond ecosystem:

- a. _____
- b. _____

8. Describe each of the following in terms of your mini-ecosystem:

a. Population -

b. Community -

c. Habitat -
