

# Experiment # *Lemna minor* (Duckweed) Population Growth

**Introduction** – Students will grow duckweed (*Lemna minor*) over a two to three week period to observe what happens to a population of organisms when allowed to grow without predation or competition.

**Objectives-** Understand some of the factors that affect population growth, like method of reproduction (asexual or sexual), length of life cycles, exponential growth, carrying capacity, and competition .

**Hypothesis** – As a group decide on the shape of the graph of duckweed growth you will see over the next two weeks. In your lab book draw the shape of the graph and explain your reasoning.

## Materials For each group:

- 10-oz paper cup
- Plastic bottle or beaker
- Forceps
- Light source (fluorescent light, greenhouse light, or window)
- 2-3 healthy duckweed plants
- Magnifying glasses
- Miracle Grow Solution

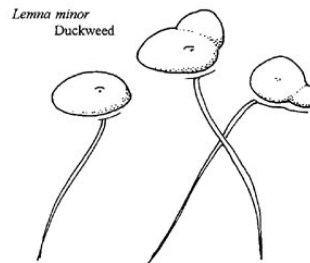


illustration provided by:  
IFAS, Center for Aquatic Plants  
University of Florida, Gainesville, 1990



**Background:** Duckweed is an aquatic plant of the genus *Lemna*. It can be seen floating on top of the water in rivers, ponds, and lakes. A thick growth of duckweed looks like bright green "scum" on the surface of the water. Closer observation reveals that the scum is actually made up of tiny, individual plants. Duckweed plants can reproduce by seeds but seldom do. More commonly, they reproduce asexually by producing a new plant that grows off of the old one. When the new plant grows its own roots, it breaks off from the old plant. The growth of a population of duckweed can be determined by simply counting the number of thalli that appear over a period of time.

## Procedure:

- Obtain a container and fill with about 250 mL of pond water
- Decide on how much Miracle Grow solution you would like to add. Be sure to record this in the data.
- Take a pair of forceps and obtain two or three duckweed plants and transfer them to your container of pond water.
- Look at the duckweed plants using the magnifying lens and sketch them in their lab book. Label the parts of the duckweed.
- Write your names on the container and place the container under a light source.
- Over the next 8-10 class periods count the number of plants observed in the container and record observations. Make a data table in which to record the date and the number of plants in the container.
- After 8-10 days plot the data on a graph, with the x-axis representing time and the y-axis representing the number of plants.

## Data Table

## **Graph**

**Results** – What were the results of the experiment?

**Conclusion** – Your conclusion should: 1. State your hypothesis again. 2. Explain why your hypothesis was supported or not supported using the data generated from the experiment.

**Experimental Error** – Identify and describe the possible effects of any experimental errors during this investigation.

Questions:

1. Describe what happens to the population of duckweed over time. Do you see a pattern in the graph? Can you identify different phases in the population growth?
2. Which region of the graph represents the fastest population growth? The slowest?
3. Are there regions on the graph that represent no population growth at all? Where are they located?
4. What can you conclude about a population of plants when it is allowed to grow in the absence of any predators or competition of any kind?
5. Compare the growth of the brown tree snake population in Guam to the growth of the duckweed population in this experiment. How are these two situations alike? How are they different?