Well, Isn't that Just Ducky?!

Name_____ Date_____ Prd_____

Background: Common duckweed is a very small light green free-floating, seed bearing plant. Duckweed has 1 to 3 leaves, or fronds, of 1/16 to 1/8 inch in length. A single root (or root-hair) protrudes from each frond. Duckweeds tend to grow in dense colonies in quiet water, undisturbed by wave action. Often more than one species of duckweed will be associated together in these colonies. Duckweeds can be aggressive invaders of ponds. If colonies cover the surface of the water, then oxygen depletions and fish kills can occur. Duckweed colonies provide a habitat for micro-invertebrates; but if duckweed completely covers the surface of a pond for an extended period it will cause oxygen depletions. These colonies will also eliminate submerged plants by blocking sunlight penetration. Many kinds of ducks consume duckweed and often inadvertently transport it to other bodies of water as it sticks to their legs and bodies.

Objective: Students will grow a mini environment of duckweed with a partner and expose it to one variable change with another team. Students will notice the impact of the growth on the carrying capacity of their environment and how a change in that environment can affect the duckweed growth.

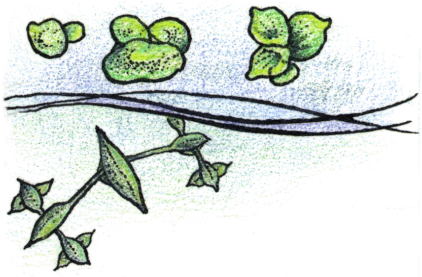
Hypothesis: _____

_____

_____

Materials:

small plastic container
inoculating loop
pond water
duckweed plant
variable



duckweed

Procedure:

Part 1:

1. Obtain a duckweed plant in a container with pond water. These plants may contain 1-7 leaves.
2. ***Caution:*** Only use the inoculating loop to handle the plants. They are fragile and the pond water may contain bacteria or other microscopic life. Wash thoroughly after handling your plants.
3. Each leaf can break off to become its own plant. Count and record the population growth of your leaves throughout this experiment. Count them at least 2 days a week.
4. Construct a simple graph. Be sure to title it, label the axes, and place the proper variables on the X (independent) and Y (dependent) axes.
5. Replace the water as it evaporates with the water provided by your teacher and place your environment in a light source (window or plant grow stand).

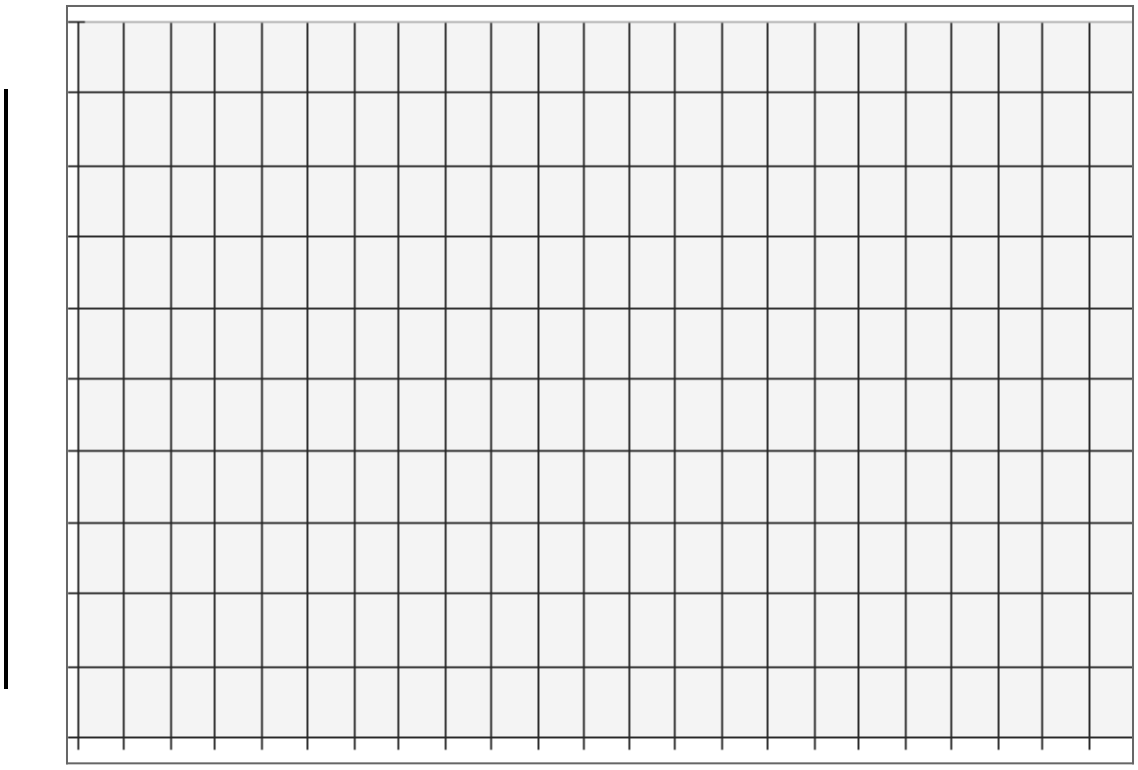
Part 2:

1. Pair up with another team.
2. Use one of your populations as the control and the other as the variable or experimental factor.
3. Possible variables might include: light source, temperature, fertilizer, pH difference, or one you come up with. (5 bonus points for coming up with an acceptable, original variable.)
4. Get your variable approved by your teacher before beginning as we will want to observe a variety of variables per class.

Data and Observations: Fill in the following table as you count plants.

Day #	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
# of leaves										
Obser-vations										

Graph your above results and the results of your partners. Include a key to distinguish the control plant and the plant with the variable. Include a title and axes' labels:



Key

control

variable

Analysis:

1. Why did you need to label one of your partners' cups as a control? _____

   _____

2. What effect did the variable have on your population? Is this what you expected? _____

   _____

   _____

   _____

3. What were some possible limiting factors for your population? _____

   _____

   _____

4. Do you think the duckweed is an r or K strategist? Why do you think that? _____

   _____

   _____

Conclusions: Be sure to relate to the carrying capacity of your environment and include a discussion of your density-dependent and density-independent limiting factors :

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Works Cited:

1. http://aquaplant.tamu.edu/plant-identification/alphabetical-index/common-duckweed/
2. http://www.accessexcellence.org/AE/ATG/data/released/0515-TrumanHoltzclaw/index.php