Peppered Moth Game

Name:



Objective: Simulate changes in moth population due to pollution and predation, and observe how species can change over time.

Go to: <https://askabiologist.asu.edu/peppered-moths-game/play.html>and read each section before you play the game, answer the questions as you go.



# Peppered Moth

1. Where do peppered moths live? Light and Dark mothes.
2. How do the moth larvae survive predators? By looking like branches
3. What do the moths do during the winter? They turn into pupae
4. What color is the "typica" version of the moths? White

What color is the "carbonaria" version? Black

1. How do adult moths survive predation? Sleeping during the day and hunt at night.

# Natural Selection

1. What was the industrial revolution? It was a time where many fractories were being built and much coal was being burnt.
2. What was causing the change in the color of the moths? As the forest became darker the eggs changed to blend in, this caused the a adults to became darker.
3. What is natural selection? Every species have small differences if a difference makes a species live longer
4. Why would dark moths have an advantage? Because as trees became darker eggs did as well to blend in.

# Dr. Kettlewell

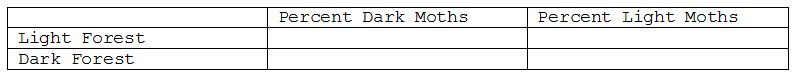
1. What is an entomologist? A scientist that studies insects.
2. How do scientists test theories? By making predications then testing the predication to see if what they observed matches what they thought.
3. Dr. Kettlewelll predicted that clean forests would have Lighter months colored moths, and polluted forests would have

 darker colored moths.

1. How did Kettlewell test his hypothesis? He mapped the locations of light and dark moths, and find out that darker moths were closer to places causing pollution.
2. How did Kettlewell determine if moths lived longer than others? By placing the moths on trees where he could observe them, and kept track on what color moths got it on what color tree trunk,

# Play the Game

1. Complete the data table for the light forest and the dark forest.



Light forest: Dark moths 9% Light moths: 91%

Dark forest: Light moths: 11% Dark moths 89%

# Final Analysis

1. Explain how the color of the moths increases or decreases their chances of survival.

The color that blends in with the tree the higher chance of survivals.

1. Explain the concept of **natural selection** using your moths as an example.

The longer the moths live the better the chance of survival for them and there offspring.

1. Predict what would happen if there were no predators in the forest. Would the moth colors have changed? Why or why not?

No, since there is nothing to drive natural selection.

1. Efforts to reduce pollution began occurring later in the century. If pollution near factories was reduced, what would happen to the color of the moths? Explain your answer.

The color would probably be more light, since the darker screen was a result of the pollution.

1. Kettlewell's experiment is included in most biology texts as an example of **evolution** occuring. How do we know that the moths evolved?  
     
   By the fact that there was a change in DNA that spread through out the moths.