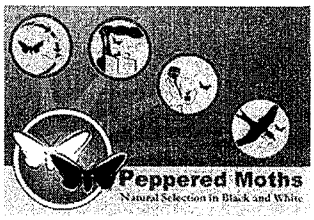
Natural Selection at Work: The Peppered Moth



*Please go to the link on Google Classroom entitled "The Peppered Moth"

Background:

Life cycle (Click on the "Peppered Moth" tab and scroll down to find the answers to the questions below)-

1. Where are peppered moths commonly found?
2. Describe the typical appearance of peppered moths.
3. Describe the adaptations of the peppered moth larvae.
4. Identify common predators of peppered moths.
5. Why do these moths fly at night?
6. What other adaptations do these moths have besides flying at night?
7. What variations of color have been identified for these moths?
8. Hypothesize as to why the frequency of dark moths changed around 150 years ago.

Impact of pollution (Click on the "Natural Selection" tab and scroll down to answer the questions)-

1. What were Edleston's observations? Explain their significance.
2. What shift occurred over the next 50 years in this moth population?
3. Identify the environmental change that occurred around this time.
4. State the two main hypotheses for the shift in moth color.
5. What evidence indicated this shift was genetic.
6. Define industrial melanism and explain the role of natural selection.

Evidence of Natural Selection: Kettlewell's Experiments (Click on Dr. Kettlewell Experiments and scroll down to find the information requested below)-

1. If natural selection was responsible for the changes observed in the moth populations, what did Dr. Kettlewell expect to find?

2. How did the findings of amateur entomologists support Dr. Kettlewell's hypotheses (Provide specific findings in different environments)?

3. Summarize Dr. Kettlewell's experimental design, data and conclusions.

Testing Validity:

- ❑ Prior to collecting your own data formulate a hypothesis as to which moth variation is best adapted in a dark, polluted forest and in a clean forest.

- ❑ Justify your hypothesis with previous research.

- ❑ *Click on "Play Game"*
- ❑ *Use the simulator to conduct three trials in the light forest and three trials in the dark forest.*
- ❑ *Record your data for each trial in each forest in the appropriate data tables below.*
- ❑ *Calculate the average for each color in each forest (convert percentages to decimals to get an average, then change back to the nearest whole percent for the average).*
- ❑ *Create one bar graph showing the average percentage of each color moth in each type of forest.*

Results-

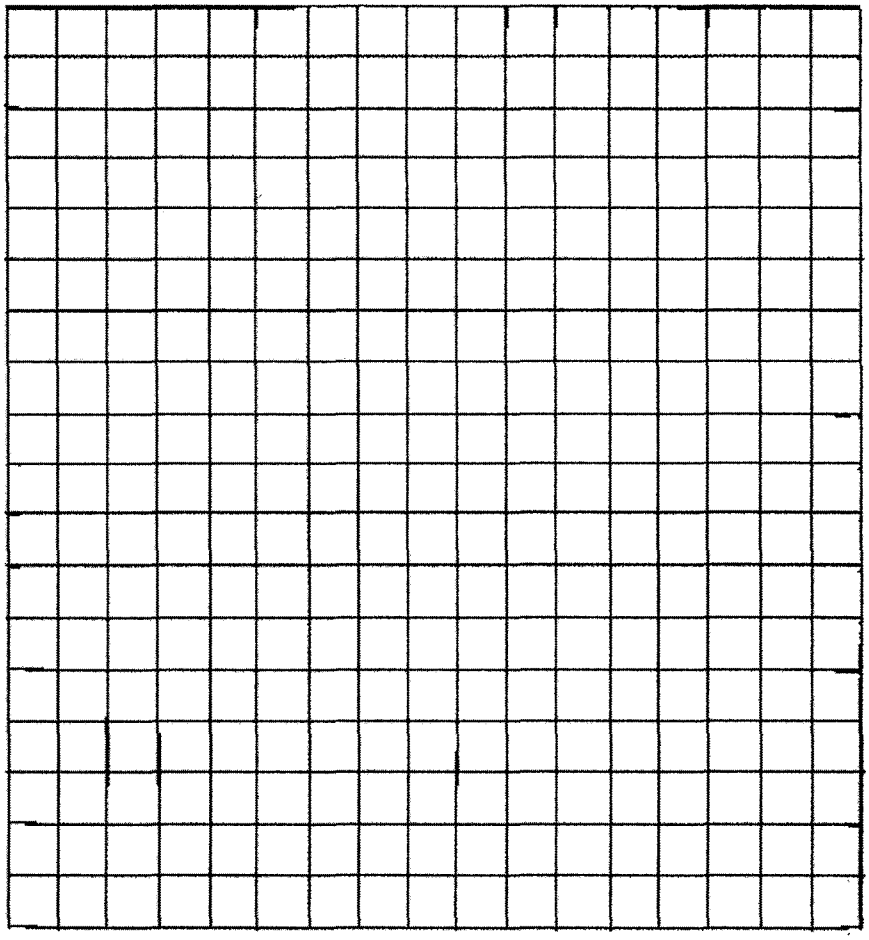
Percent of Light and Dark Colored Moths in the Light Forest

	Trial 1	Trial 2	Trial 3	Average
Light moths				
Dark moths				

Percent of Light and Dark Colored Moths in the Dark Forest

	Trial 1	Trial 2	Trial 3	Average
Light moths				
Dark moths				

Title:_____



Analysis-

1. Which moth type was more prominent in the light forest? The dark forest?

2. Were there any trials that did not fit this pattern? Explain.

Conclusions-

1. Was your hypothesis supported? Provide evidence.

2. How is the adaptation of the peppered moth larvae different from that seen in the adult moths with regards to color?