Pepper Moth Virtual Lab Student Sheet

*Click on the following link*: <http://www.techapps.net/interactives/pepperMoths.swf>

*Part 1: Life Cycle of the Peppered Moth*.

1. Why do they call this insect a Peppered Moth? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. How do Peppered Moths avoid predators? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What do the larva look like? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What do they do during the winter? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Why do you think that the Black and Darker Pepper Moths were relatively rare? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Part 2: Pollution and Peppered Moths*

1. What was the change to the Peppered Moth population that began appearing in 1848? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What event coincided with the increase in Pepper Moth population? \_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What caused the dark color in the moths? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Explain how the Dark Pepper Moth population increased? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Part 3: Dr. Kettlewell Tests Natural Selection*

1. What was Dr. Kettlewell’s Job? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Where were dark moths most common? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What did Dr. Kettlewell experiments prove? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Part 4: Birds Eye View*

1. What is your role in the simulation? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Which forest do you choose? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What percentage of light and dark moths were you left with
   1. Light:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Dark:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Try the experiment again in the opposite forest. What percentage of light and dark moths were you left with
   1. Light:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Dark:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Part 5: Analysis – Take what you have learned about Pepper Moths an apply it.*

1. How can mutations be helpful? What do you think would have happened to the Pepper Moth population if the color change Mutations did not occur?
2. What do you think would happen to a pepper moth that had a mutation that turned it bright pink? Would it thrive or not, explain your reasoning.
3. What are some traits other than color that could mutate to help the Pepper Moth survive?

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*Part 1: Life Cycle of the Peppered Moth*.

1. Why do they call this insect a Peppered Moth? It’s wings have dark spots
2. How do Peppered Moths avoid predators? By flying at night and camouflage
3. What do the larva look like? A stick
4. What do they do during the winter? Turn into a cocoon
5. Why do you think that the Black and Darker Pepper Moths were relatively rare? They did not camouflage themselves well, easy to see by predators.

*Part 2: Pollution and Peppered Moths*

1. What was the change to the Peppered Moth population that began appearing in 1848? More dark moths started appearing
2. What event coincided with the increase in Pepper Moth population? The Industrial Revolution
3. What caused the dark color in the moths? A Mutation
4. Explain how the Dark Pepper Moth population increased? Dark moths had better camouflage which allowed them to live longer and produce more offspring.

*Part 3: Dr. Kettlewell Tests Natural Selection*

1. What was Dr. Kettlewell’s Job? Entomologist
2. Where were dark moths most common? In forests by industrial cities
3. What did Dr. Kettlewell experiments prove? That if a moths color matched it’s environment it had a better chance at survival.

*Part 4: Birds Eye View*

1. What is your role in the simulation? Predator
2. Which forest do you choose? Light or dark
3. What percentage of light and dark moths were you left with
   1. Light:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Dark:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Try the experiment again in the opposite forest. What percentage of light and dark moths were you left with
   1. Light:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Dark:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Part 5: Analysis – Take what you have learned about Pepper Moths an apply it.*

1. How can mutations be helpful? What do you think would have happened to the Pepper Moth population if Mutations did not occur?
2. What do you think would happen to a pepper moth that had a mutation that turned it bright pink?
3. What are some traits other than color that could mutate to help the Pepper Moth survive?