

## Peppered Moth: An Activity on Evolution and Natural Selection

1. Go to <http://www.biologycorner.com/worksheets/pepperedmoth.html>
2. In order to do this activity, you are the blue jay who is trying to catch moths and eat them. Therefore, it is okay to practice first before actually doing the activity.
3. On the left hand side of the page, scroll down and click on the “Run Lichen Forest”
4. In the graphic that appears, you will see a bluebird. During the activity, you need to move this blue bird around using your mouse and allow it to catch and eat the moths. In order to eat the moths, you must place the bluebird on the moth and click. You will see across the bottom how many moths are present in the population as well as the “health” of your bluebird. The more it eats, the healthier your blue bird is.
5. To start the timer, click start at the top in order to begin the countdown. Allow this to run for 5 minutes.
6. When 5 minutes are up, record your data in the data table.
7. Now, Click on “Run Soot Forest” and follow the same instructions.
8. When finished, complete the following:

1. Data Table (answers will vary based on the activity)

	Percent Dark Moths	Percent Light Moths
Lichen Forest		
Sooty Forest		

2. Explain how the color of moths increases or decreases their chances of survival depending on the environment. The dark color moths will survive best in the dark environments (are hard to see up against the backdrop) and will be eaten quickly in the light colored environment (and vice-versa for the light colored moths) The color of the moth allows them to blend into the bark, thus making them harder to be seen and eaten.
3. 500 light colored moths and 500 dark colored moths are released into a polluted forest. After 2 days the moths were recaptured, make a prediction about the number of each type of moth that would be captured. The dark colored moths will have an easier time blending in with the soot colored bark. Thus, after two days, you will see a drop in the number of light colored moths due to predators. The dark color number may drop

a bit due to deaths, but it will not be anywhere close to the drop in light color moths.

4. How has the striking change in coloration come about? (Include an explanation of how the dark moth appeared and how the proportion of dark moths changed from 0.0005% to more than 90% in polluted forests.) Need to discuss possible mutations and natural selection. Dark moths were probably the mutant type and were found in low numbers. However, with the soot covering the trees, not the light moths were not able to be hidden through camouflage so easily. Thus the birds began to eat the light colored moths. So, the dark moths were able to rapidly reproduce, increasing their percentage.

5. What underlying law of nature has produced this change? (Use Darwin's theory of evolution and apply it to what you have learned in this investigation.) Answers will vary...need to mention natural selection, mutations and define evolution.

6. Imagine that a green colored moss started to grow on all the trees in both forest situations. What do you think would happen to the moth populations then? Neither the dark moths nor the light moths will blend in against the green moss. So, we would start to see them declining and reproducing in about the same amounts.