

Mystery Moths



In Manchester, England in the 1800's, a population of moths occupied the trees. The Peppered moth is typically a white moth covered with black spots. This coloration provided an effective **camouflage** for the moths as they rested on birch trees which are a white color. Like humans, these moths can be found in a range of colors from very black to very white and all shades in between.

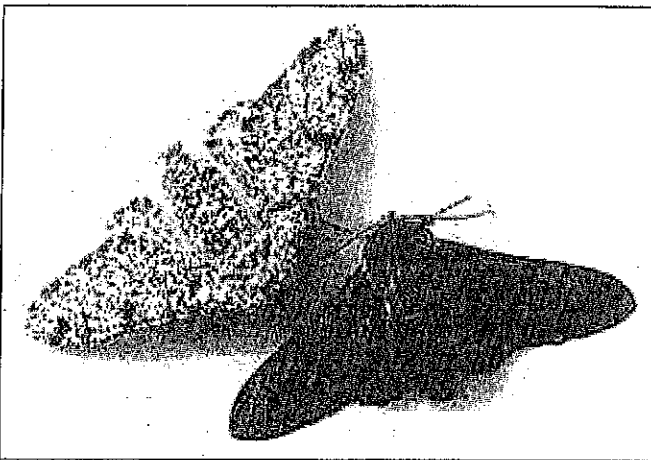
This range of color in the moths is a genetic **variation**. Variations are the differences in a trait. Genes control them. Organisms that survive will pass their genes on to their offspring. This is how a trait accumulates in a population. If an organism is born with a variation (mutation) that harms it, most likely the organism will NOT survive and the trait (mutation) will NOT get passed on.

Main Idea?

Important vocabulary: **camouflage**

Main Idea?

Important vocabulary: **variation**



Light and dark forms of the peppered moth.

During the Industrial Revolution (1850's), sooty smoke from coal burning furnaces darkened the bark of the birch trees. When moths landed on these trees, the light colored moths were more visible to **predators**. Over generations, the environment continued to favor the darker moths and because the darker moths were camouflaged, they more often lived long enough to reproduce. By 1900, 98% of the moths in the vicinity of cities like Manchester were showing the darker variation, black.

Important vocabulary: **predator**

Main Idea?

To really understand **natural selection**, you must realize that natural selection can only occur when a genetic variation is already present in a population before the environmental change. Since there were already some dark moths in the population in Manchester, natural selection could happen.

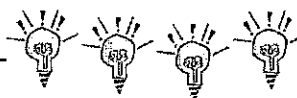
What might have happened to the moth population during the Industrial Revolution if there were no variations and all the moths were white? Explain.



In the 1950's, air pollution controls significantly reduced the amount of **pollutants** reaching the trees. As a result the trees became lighter in color.

What do you think happened to the moth population? Why?

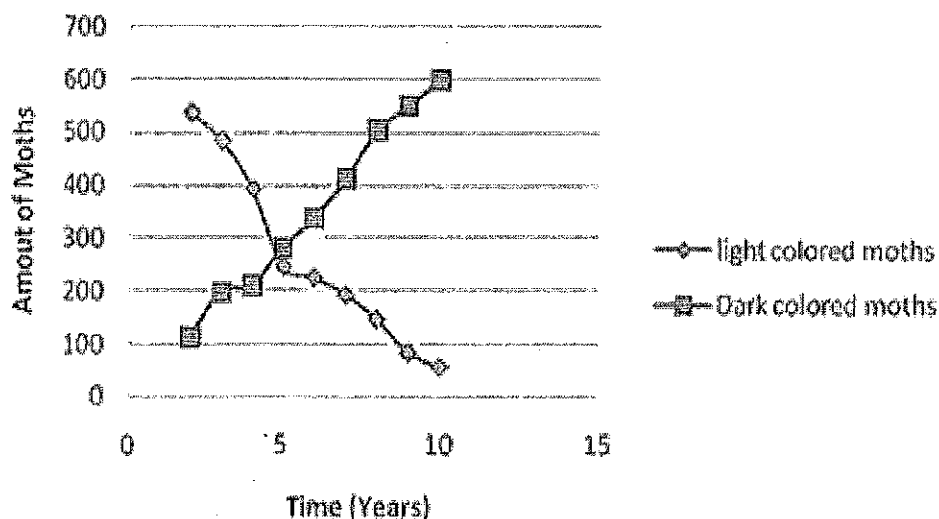
Important vocabulary: **pollutant**



Can you do this?

Look around the classroom. Observe the variations you see in your classmate's clothing, hair color, footwear, method to carry books, gender, or other trait. Select one trait that has several variations. Be prepared to share!

Change of Pepper Moths over Time



Reading Graphs:

1. How many light moths were there in year 2? _____
2. How many dark moths were there in year 2? _____
3. How many light moths were there in year 10? _____
4. How many dark moths were there in year 10? _____
5. What caused this change?