

FCAT Lesson on Natural Selection

This lesson will focus on the principles of natural selection as described by Darwin. We will concentrate on one of the best-studied cases dealing with industrial melanism, which is the change of color of the peppered moth in the vicinity of Manchester, England.

The **evolution of the peppered moth**, *Biston betularia*, over the last two hundred years has been studied in detail. Originally, the vast majority of peppered moths had light coloration, which effectively camouflaged them against the light-colored trees and lichens which they rested upon. The peppered moth resembled a white moth that had been sprinkled with pepper and it blended in almost perfectly with the lichens on the trees. However, because of widespread coal-burning during the **Industrial Revolution** in England, many of the lichens died out, and the tree trunks that peppered moths rested on became blackened by soot. Under these conditions, the black moths were able to flourish and eventually 98% of the moths in the area were black.

Since then, with improved environmental standards, light-colored peppered moths have again become common, but the dramatic change in the peppered moth's population has remained a subject of much interest and study, and has led to the coining of the term **industrial melanism** to refer to the genetic darkening of species in response to pollutants.

TASKS FOR THIS UNIT:

- Study vocabulary words
- Use online **GIZMO** game to find the moths!!!! **FUN! FUN! FUN! See if you can beat the teachers' scores!**
- Do the review questions for this Unit. Only 3 questions
- Read the following questions and try and answer them using your knowledge
 1. What happened during the Industrial Revolution that caused the color change of tree bark?
 2. Which color of peppered moth was most prevalent and least prevalent at the beginning of the Industrial Revolution?
 3. How did differences in color dominance change over time?
 4. How did the Industrial Revolution cause the population of peppered moths to change?

Vocabulary Words

Population

Mutation

Lichen

Natural Selection

Adaptation

Capture Path

Variation

Species Biodiversity

GIZMO Access:

www.explorellearning.com

Log in: DAJ974 Password: sit993

You will see various gizmos that you may launch. Click on the Natural Selection one with the picture of the moth. Click on the Exploration Guide read and print this page. Follow the directions and see if you can beat Mrs. Sample's and the other teachers' scores. **HAVE FUN!!! Try the quiz at the end and see how you do!**

Student Copy

Natural Selection Test

Science FCAT Review for Grade 11, February-March 2008

- 1. In the African savannah, cheetahs prey on antelope, a deer like animal. The cheetah is able to catch the slower antelope while the faster antelope escape. Over time, how would you predict the antelope herd will change?**

 - A. An increase its average speed**
 - B. Camouflaged to avoid the cheetah**
 - C. Migrate out of the cheetah's range**
 - D. Modify their behavior to protect the slower antelope**
- 2. We know from the fossil record that species of animals have changed over time. This survival of the fittest is referred to as natural selection. Choose the best example of how natural selection works from the choices below.**

 - A. change in population location**
 - B. change in population numbers**
 - C. change in niches of populations**
 - D. change in inherited characteristics**
- 3. Use of antibiotics and hand sanitizer has increased dramatically in recent years. Alarmingly, bacteria that are resist to antibiotics, such as MRSA, have begun to appear. Why have resistant bacteria become more common?**

 - A. Resistant bacteria multiply faster than non resistant bacteria**
 - B. Resistant bacteria multiply slower than non resistant bacteria**
 - C. Mutations in the DNA of the bacteria make them less resistant**
 - D. Mutations in the DNA of the bacteria make them more resistant**