

Natural Selection and the Peppered Moth

Natural Selection is one of the ideas suggested by Charles Darwin to explain **evolution**. All living things “**inherit**” traits from their parents. In humans, a **trait** can be hair color and how tall we are (height), just to name a couple. In birds it can be the color of its feathers, the shape of its beak or the strength of its song. In insects it can be body color or wing shape.

If one (or many) of these traits, which they inherit from their parents, helps them survive longer, so that they can have more offspring of their own, with those same traits – they are selected. This means that over many generations, there will be more and more individuals like them in their **population**.

Here is a simple example of this from real life. In the early 1900s coal-burning was common in London, the air was thick with pollution. Coal smoke blackened the trees until their bark was dark brown. The peppered moth was a speckled brown moth that blended into the dark English tree bark perfectly. Then in 1956, London passed a clean air act and coal was banned in the city. Smokestacks were made taller to get pollutants further out into the atmosphere. Within ten years the trees, once brown from coal smoke, began to take on their natural light-colored bark. As the trees got lighter, the brown peppered moths stood out against the bark and were easy targets for hungry birds. Lighter moths, however, blended in and survived to lay eggs. Over many generations, which for insects can be just a couple of years, all the peppered moths were lighter in color.

This is how **natural selection** works, though in mammals and other vertebrates it takes much longer for traits to spread throughout a populations. This physical change is also called **adaptation** or structure and function.

*Peppered moths on a coal smoke blackened tree.
The lighter moth stands out as easy prey.*



*Peppered moths on a natural colored tree.
The darker moth now stands out as easy prey.*



Natural Selection and the Peppered Moth Activity

Age: any age

Materials:

Scissors

2 big sheets of newspaper

pink, orange or red construction paper

Life Science Standards

K-4 Characteristics of organisms, life cycles of organisms, organisms and environments.

5-8 Structure and function in living systems, reproduction and heredity, regulation and behavior, populations and ecosystems, diversity and adaptations of organisms.

Procedures:

Cut out small butterfly-like shapes from both the newspaper and the colored construction paper (any shape will work, as long as they are all about the same size and shape).

Lay out the newspaper on a table. Make sure it covers at least two square feet.

Sprinkle the newspaper and the colored construction paper butterflies across it.

Line up students in single file.

Tell students to pretend they are a flock of birds and to walk quickly by the table and grab up the first butterfly they see and keep moving.

After all the students have “grabbed breakfast” ask them to lay them all down on an empty desk.

Count the number of colored butterflies compared to the newspaper butterflies.

Discussion:

How many colored butterflies did they pick up compared to the newspaper ones?

Why would more people pick up colored butterflies compared to the newspaper butterflies?

Do you think birds moving quickly pick prey they can see more easily?

Does this help prey that blends in survive better?

