



Museum of Natural History & Science Gallery Guide for *Pathways to Change*

Pathways to Change focuses upon the symbiotic relationship that we share with the environment around us. Journey through time, beginning in the year 1670, with the Fort Ancient people to explore their way of life. Proceed nearer to the present as you examine the culture and environment at century intervals up until the year 1990. Through each of these time periods, discuss with your students the adaptations that have been made and the relationships between cultural and environmental factors. This exhibit allows students a glimpse into the past to discover the influence that cultures have had upon the environment, and allows for comparison to our own society and treatment of the environment today.

Concepts: adaptation, camouflage, concealing coloration, disguise, disruptive coloration, mimicry, symbiotic relationship

Background Information:

Adaptation is the key to survival of any society. Through *Pathways to Change*, investigate the ways in which **adaptation** influences both animals and the environment in which they live. Adaptation can take many forms, whether in physical change—such as **camouflage**, or in societal change that has taken place over centuries.

Camouflage is simply an animal's ability to hide itself from predator and prey. There are four ways in which an animal can camouflage itself: **concealing coloration**, **disguise**, **disruptive coloration** and **mimicry**. Animals, both past and present, have employed methods of camouflage in order to survive. The adaptations can change over time to help survival of species and in some instances form **symbiotic relationships**, which allow both species to survive. An example of this camouflage fluctuation is the story of the peppered moth as the species changed color in order to best camouflage in the environment in which it lived. During the time of non-polluted environments, specifically pre-industrial times, the moth was best colored as a gray moth. However, with the advent of industrialization and pollution, the gray moth was easily spotted and fell victim to its predators. Adaptational responses soon ensued with what began as a mutation. The mutation led to black moths, which increased their survival in a polluted environment.

Vocabulary:

Adaptation – adjustment to environmental conditions and/or modification of an organism that makes it more fit for existence in its environment

Camouflage – concealment by means of disguise

Concealing coloration – a type of camouflage in which the animal will color itself in a similar fashion as its background

Disguise – occurs if an animal is not what it appears to be

Disruptive coloration – when an animal’s coloration, such as spots and stripes, distort their outline so they don’t stick out against their background

Mimicry – when an animal takes on the characteristics, or mimics, their unappetizing cousins.

Symbiotic relationship – the intimate living together of two dissimilar organisms in a mutually beneficial relationship; also referred to as mutualism.

Focus Questions:

1. Examine the tool technology used in each time period and discuss the manufacturing of the tools as well as their cultural and environmental implications.
2. What environmental factors influenced the population of Cincinnati in each time period?
3. In each time period, have your students discuss which aspects of daily life they would like and dislike. If forced to choose one time period in which to live, what would it be and why?