Ectothermic Experiment

Audience
Activity designed for ages 8 years old and up.

Goal
Students will understand how reptiles are able to raise or lower their internal body temperature.

Objective
- To understand what ectothermic (cold-blooded) means.
- To learn how ectothermic species gain or disperse body heat.
- To learn how color of an animal affects heat absorption.

Conservation Message
There are over 10,000 different species of reptiles across the world. Reptiles are found on every continent except for Antarctica. They play many important roles in the habitats where they live. Reptiles can be top predators, prey species and even play the role of pollinators. There are numerous reptile species that are endangered or threatened because of human activities interrupting their habitats. It is important that we practice recycling and energy saving activities to protect the fragile habitats where reptiles can be found.

Background Information
Reptiles are ectothermic or "cold blooded" which means they cannot produce their own body heat; they depend on heat sources outside of their body, like the sun. Reptiles are known for basking on rocks or logs in the sun to warm their bodies. Mammals and birds are endothermic or "warm blooded." This means they can produce their own body heat and do not have to rely on the environment.

Since reptiles rely on the environment for their body temperature it has affects how they digest food, most reptiles do not have to eat every day because their metabolism is slower if their body temperature is cooler. They do not have to burn food energy to produce their body heat since they use outside heat sources. Some large reptiles like the green anaconda only need a large meal about every 3-4 weeks.

Have you ever worn a dark colored shirt on a warm sunny day? If you have, then you probably felt how a darker shirt makes you feel warmer than a lighter shirt. The darker color allows for more heat to be absorbed. Reptiles like Chuckwallas and American Alligators use their dark scales to warm up faster in the sun.

Materials Needed

- Observations Sheet
- Two pieces of paper, one black one white
- 1-2 Lamps with an incandescent light bulb
- Ice cubes
- Timer or stopwatch
- Thermometer (optional)

Length of Activity

20-30 minutes

Procedure

- Set up lamp(s).
- Place your pieces of paper under the lamp(s), one black piece and white piece.
- If available, place thermometer on each piece of paper.
- Make a hypothesis as to what you think will happen to an ice cube if placed on each of the colored pieces of paper.
- Before beginning your experiment, make a hypothesis or educated guess about what will happen with the ice on each piece of paper. Write your hypothesis on the Observations sheet.
- To start the experiment, place an ice cube, roughly the same size, on each piece of paper.
- Turn on your lamp and start your timer/stopwatch.
- Observe your experiment after 3 minutes. Write down your observations.
- Observe your experiment after 5 minutes. Write down your observations.
- Observe your experiment after 10 minutes. Write down your observations.
- Determine if your hypothesis what correct.

Observations

Hypothesis:

Observations after 3 minutes:

Observations after 5 minutes:

Observations after 10 minutes:

Was my hypothesis correct? (Circle one)

Yes No