

Caves--Echolocation

Now that you know how caves are formed and some of the creatures that call them home, we can study this a little further. Caves are fascinating environments and there are many types of animals that have adapted to living within those dark walls. We will be taking a closer look at bats, some of the most fascinating creatures found in caves.

Bats are mammals. Like all mammals, they give birth to live young, nurse their young, and have hair. These are some of the common characteristics of mammals. Bats are the only mammal that flies. Some bats are carnivores, meaning they eat only meat, other bats are herbivores, meaning they eat only plants. These herbivore bats are excellent pollinators; they pollinate many plant species. Without bats we would not have some of our favorite flowering species. Carnivore bats do good work too. Did you know an adult bat can eat almost 1200 mosquito-size insects in an hour? That's 1200 less mosquito bites for you. Even though bats have pretty good eyesight, they can't see too well in the dark. So, how do they catch all that prey? They use a process called echolocation. Echolocation is when sound waves or echoes are emitted from a source, whether it is a bat, dolphin, or submarine, and then these sound waves hit a object and bounce back to the source that emitted them. We are going to take a more intimate look at the process of echolocation and demonstrate how it works.*

WHAT MAKES ECHOES?

Materials: 20-inch length of aluminum foil**

Water
Stick of modeling clay
A lamp

** Or you can use a 9x13 or 8x8 baking pan.

Objective:

The objective of this activity is to use water waves as an analogy to sound waves to understand how they travel and produce echoes.

- Instructions: 1.) Use your sheet of foil to make a tray. Fold the edges of the foil up and over to make the sides of your tray. 2.) Use your modeling clay to make a wall with flat sides about five inches long. Place the wall in the tray about four inches from an edge.
- 3.) Place your tray on a smooth, flat surface with your lamp shining light into it from the far end. Put the light source near the water surface, but higher than the wall. Fill your tray two inches deep with water.
 - 4.) With your fingertip touch the surface of the water at the near end of your tray. Then lift your finger and watch the ripples flow away in all directions and then return.

In conclusion, by using the water to emulate sound waves you have just witnessed how the echolocation process works. This is how bats are able to "see" their prey with such accuracy.

* This activity was adapted from Project Underground and is used with their permission.