

Bat and Moth

First Grade

Science: 2.a., 2.b., 2.c.

Objective:

Students learn about bats and echolocation.

Method:

The class plays a game similar to Marco Polo.

Materials:

A flat grassy area free of holes or stickers. Optional: old clothes, panty hose, coat hangers, toilet paper rolls, staplers, glue, tape, glitter, and colored crepe paper.

Background information:

Bats are unique mammals that are distantly related to mice and other rodents. They are the only mammals that can truly fly, not just glide, and they make up $\frac{1}{4}$ of all mammal species. Over time, bats adapted their bodies so that they could fly. Their wings actually used to be their front paws. Their finger bones stretched out very thin, and a skin membrane grew between them.

One species of bat that we can find in the San Joaquin Valley and Sierra Nevada mountains is the little brown bat—*myotis lucifugus*. It is called myotis lucifugus by scientists because “myotis” means “mouse ears” and “lucifugus” means “flees light” in Greek. The little brown bat can eat up to 1,200 insects in a single hour—half of its body weight. The bats can live 20 – 30 years, making them great, long-term assets to farmers and people who wish to avoid pests and mosquitoes. They can live in old barns, buildings, hollow trees, and abandoned mine shafts near cities or in the wild.

Some bats, including the little brown bat, developed the ability to use echolocation, where they let out high pitched screams and listen for the echo of it bouncing off the bodies of their prey. Bats basically see through echolocations. Their eyesight is very poor, but they can use sound to know exactly what their surroundings are. Each time a sound bounces back to them, they get a new picture of where they are and where their prey is.

Other bats, such as the long eared bat, do not use echolocation. The long eared bat has such huge ears, many times the size of its head, that it can follow the quiet buzzing of insects and catch them. It can hear a spider creeping across a leaf, know where it is, and catch it precisely with its claws.

Procedure:

1. Talk about bats with your students.
 - a. Explain that they have wings that allow them to fly and catch bugs, their food of choice.
 - b. Talk about the bat's use of echolocation to find its prey and survive.
2. Explain the rules: they are going to pretend that one person is a little brown bat and the rest are moths. The bat is going to be blind and can only use echolocation to find his or her prey. When the bat lets out a squeak, the sound bounces off the moths, so the moths have to squeak back. The moths must 'fly' around to avoid getting tagged by the bat, who will be chasing them while blindfolded, using the sounds of them squeaking back at him/her to find them. If a moth gets tagged by the bat, they are out. The moths are free to fly around and avoid the bat.
3. Set boundaries so that your class doesn't scatter everywhere.
4. Go outside and play the game.

Arts & Crafts Extension:

1. Have your class make their own bat and moth costumes! You can use old clothes, panty hose, coat hangers, toilet paper rolls, and colored crepe paper to make the costumes.

Language Arts Extensions:

1. Ask your class to relate their experiences playing Bat and Moth. Was it difficult for the bats to find their prey? Was it hard or easy for the moths to escape them?

Life Sciences Extensions:

1. Bat anatomy
 - a. Project a picture of a bat onto the wall. You can find pictures at <http://calphotos.berkeley.edu/>.
 - b. Ask your class to point out its wings, head, face, tail, feet, etc.
2. Ask your class to write a sentence about playing Bat and Moth.