



## They See With Their Ears

**Cross-Curricular Focus: Life Science**



Bats have an interesting way of looking at their world. Bats are nocturnal, which means they are most active at night. They don't use their eyes to find their way around in the dark. They use their ears instead!

Bats are among a very select group of animals. The animals in this group also include whales, porpoises and dolphins. They all use **ultrasound**, which is a special noise, to do what other animals do with their eyes. This skill is known as **echolocation**. Echolocation allows bats to hunt for food. It also helps them avoid obstacles in their path as they fly in the dark. It even lets them communicate with other bats.

So how does echolocation work? It's just like echoes in a large, empty room or at the edge of a canyon. Bats move air across their vocal chords just like people do when they speak or yell. Some bats make the sound come out of their mouths. Others make the sound come out of their noses. The sound they make has a very high pitch. This means the sound waves move very quickly. The energy from the sound waves goes out in front of the bat and bounces off any objects there. It creates an echo that returns back to the bat.

A bat's ears often appear quite large compared to the size of its head. Depending on where the sound hits on the folds of the bat's ear, the bat can tell very precisely where an object is. The strength of the echo can even tell the bat how large the object is. The echo from a moving object has a different sound than one that is still. It is either softer or louder. The sound is louder if the object is coming closer and softer if it's going away. This is important because it helps the bat find insects to eat.

The process of echolocation is very natural for the bat. The bat does not have to think about listening, or what to do next. It works so well that the bat doesn't care that he is "as blind as a bat." He can see with his ears!

Name: \_\_\_\_\_

Answer the following questions based on the reading passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.

1) What kind of sound does a bat use for echolocation?

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2) What kind of echo does a bat hear from a object moving way from it?

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3) What would you miss if you suddenly switched from seeing with your eyes to echolocation? Why?

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4) What is the main idea of this reading passage?

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5) What might cause echolocation to work differently for whales than it does for bats?

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