



# Can You Hear Me?

## **Audience**

Designed for ages 4 years old and up.

## **Goal**

Students will be able to understand sound waves and how animals use echolocation.

## **Objective**

- To observe sound waves in water.
- To understand how bats use sound to find their food.
- To learn how bats hear differently from people.

## **Conservation Message**

Bats make up 50% of the mammal species! They are found almost everywhere, except for in extremely cold places. They are a very important species to have in an area. Many bats in the tropical rainforest are important pollinators and seed-dispersing animals. In Oklahoma many of our bat species eat insects, and just one single bat can eat 1200 mosquitos in one hour! We can help the bats in the rainforest by protecting their habitat, to do this you can use a reusable water bottle instead of plastic and recycle as many items as you can. To help the bats right here in Oklahoma you can use natural pesticides instead of chemicals, put up a bat house and tell your friends and family how important bats are to have around.

## **Background Information**

A bat is a type of mammal; they have hair/fur covered bodies, give live birth and are warm blooded. Bats are the only type of mammal that can fly. Some bats can fly over 100 mph! They eat a wide variety of things such as fruit, nectar and insects. Most bats use echolocation. Echolocation is the use of sound to find the location of objects. Sound is made up of vibrations, or sound waves that we can hear. The sound waves travel through air, water and solid objects as vibrations. When they reach our ears, these waves make the delicate skin of the eardrums vibrate. The bats will make a high-pitched sound; the high-pitched sounds will hit an object and the bats will listen for the echo of that sound to come back to them. The time it takes for the echo to come back to them allows them to figure out how far that object might be and what the object

looks like. Echolocation is helpful to the bats because they are nocturnal, meaning they are awake and hunting at night. Their eyes do not work the same way humans do, by using echolocation it allows them to see but with sound.

## **Materials Needed**

### Activity 1

- Small Shallow Bowl (preferably clear)
- Googly Eyes (or small objects that can float)
- Small Rock (or small object that will sink)

### Activity 2

- Blindfold
- A Friend or Another Person.

### Activity 3

- Blindfold
- Lightweight Ball (beach ball, whiffle ball, dodge ball, etc.)
- Outside Wall

## **Length of Activity**

15 minutes per activity

## **Procedure**

### Activity 1

- Fill a bowl with water, about half full or less.
- Set the bowl on a flat sturdy surface.
- Place your floating objects on surface of the water.
- When the water surface is still, drop a sinking object into the water. Watch the waves spread and how the floating objects move.
- Use your finger to "poke" the water, watch the waves spread and how the floating objects move.
- Safely, hit the surface your bowl is sitting on with your fist. Watch the wave spread and how the floating objects move.

Take away: By dropping the rock into the water, you can see the waves that it makes. Sound waves travel the same way; however, you cannot see them in the air like you can in the water.

### Activity 2

- One person will be a bat and the other person can be the moth. If you have more people, they can be moths too!
- The bat is blindfolded and stood in the middle of the room.
- The moth(s) will stand away from the bat somewhere in the room.
- The bat will clap. Every time the bat claps, the moth(s) will clap twice.

- The bat will point to where they think the moth(s) are in the room.

Take away: Just like a bat, you can use sound to locate the direction it is coming from.

### Activity 3

- Blindfold one person to be a bat.
- Gently spin them around and place them about 10 feet away facing a wall.
- Hand them a ball.
- The bat will throw the ball at the wall and listens for the sound.
- The bat will move closer to the wall each throw until they believe that they are only a step away.
- The bat will try to get as close to the wall as possible without touching it. If they touch it, their turn is over.
- The bat that can get the closest to the wall without touching wins!

Take away: The change of the sound as you get closer to the wall, helps you determine your distance away.