

Echolocation

Overview

Students learn about a micro-bat's most defining adaptation – the ability to navigate and find their prey using **Echolocation**. This will be achieved through using videos and conducting fun experiments.

Background information

Apart from being able to fly, echolocation is probably the biggest unique adaptation that micro-bats have. Echolocation is when a sound is bounced off an object and the echo is used to determine the direction and distance of the object. This is the same way a radar or sonar works. Micro-bats use echolocation as well as dolphins, whales and porpoises.

Micro-bats emit pulses of sounds, normally at frequencies beyond the range of human hearing. We need to use a device called a Bat Detector to hear them. The sound waves are created in the bat's voice box and are emitted from the mouth or the nostrils. The echo that comes back to the bat can tell it how far away the object is, as well as its size, texture and if it's moving!

There are a couple of species that have echolocation calls that people with sharp ears can hear – the yellow-bellied sheath-tail bat and the white-striped freetail bat. Their calls are a regular metallic-sounding tick... tick... tick...

Micro-bats rely on echolocation to find insects while flying quickly through the air. They do this with startling efficiency. This is why micro-bats are such great controllers of insects and should be encouraged in both the urban and rural environments.

Resources

Echolocation made easy

SmartBoard for watching videos
Echolocation Made Easy poster

How sound works

Bowls of water
Tuning forks
Slinky
Blindfolds
Stopwatches
Metal/plastic trays
Large sheets of cardboard
Cardboard boxes

Activity descriptions

Activity 1: Echolocation made easy

Reinforce the term **adaptations** with the class. Ask them to define what they remember from the previous lesson on *Flying mammals*. Inform students that echolocation is one of a micro-bats most unique adaptations.

Watch a 10 minute segment on "The Life of Mammals: Insect Hunters". It explains how micro-bats use echolocation to hunt for prey. Follow up by watching an animated music video on echolocation.

www.allaboutbats.org.au/biology/

As a class, discuss points of interest between the two videos. Complete the activity sheet.

EXTENSION ACTIVITY: Invite a local expert on micro-bats to talk to the students and show them a Bat Detector. Experts can include:

- Fraser Coast Micro-bat Group
- University of the Sunshine Coast

Time requirement: 30 mins (approx)

Echolocation made easy

1. In your own words, define the term ECHOLOLOCATION.

2. What animals use echolocation to find food and objects?

3. Complete the diagram below by adding in sound waves.
Describe what is happening.

