



Scouts Australia Environment Program



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ECHOLOCATION

Aim

Give scouts a practical experience that demonstrates how echolocation is used by bats to find food and navigate.

Educational objectives

- Learn how bats use echolocation to navigate and catch food
- Experience relying on a sense other than sight

Age range

6-18 years old

Summary

This game gives youth a fun way to experience how bats navigate using echolocation in order to develop their understanding of this navigational technique.

Equipment

Blindfold

Preparation

Nil.

Duration

10-20 minutes

Setting

This activity can take place anywhere with enough space for the group playing to form a circle. The area needs to be smooth and free of obstructions.



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Background

Bats use a technique called echolocation to navigate their environment and catch prey. Echolocation uses the same principles as sonar detection systems used by humans in submarines. A sound is emitted by the bat (usually of a high pitch, some outside of the hearing range of humans) which then bounces off objects in the bats surroundings. The echo will reach the bats ears at different times depending on the location of the object, and thus bats are able to develop a mental map of their surroundings using only sound. Bats evolved this system of sensing the environment due to their nocturnal activities and cave habitat.

Other animals that use echolocation are toothed whales, oilbirds, swiftlets, shrews and tenrecs. The echolocation used by toothed whales (including dolphins, porpoises, killer whales and sperm whales) differs from other users of echolocation in that it takes places under water, with sound travelling through water rather than air.

Step by step guide to activity

Begin by explaining the principles of echolocation, and say that this will be demonstrated through a game.

Gather youth in a circle in an open area. One person is the bat and is to be blindfolded, while another few people (number depending on size of group) are nominated as insects. The insects and bat stand on the inside of the circle, and once blindfolded, the bat calls out "bat". The insects then reply with "bat", and the bat has to catch the insects by using repeated calls. The circle stops the bat from flying too far away.

To make the game more difficult, some players can be selected as trees, and stand in place in the

middle of the circle. When the bat calls out, these players reply with "tree".

Play a few rounds of the game so that each player gets a go at being either the bat or an insect.

Evaluation

Once the game has finished, have a chat to the scouts about their experiences with echolocation. If some youth observe the difficulty in using echolocation, the point can be made that bats evolved to do this, while humans didn't.

As an extension, it could then be explained that some people who are blind have taught themselves to use echolocation. A good video that explains this can be found at <http://www.youtube.com/watch?v=WHYCs8xtzUI>.

Further activities

There are plenty of Scouts Australia activities about the environment; please speak to your local environment team member or take a look on Scout Central or your state website.

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