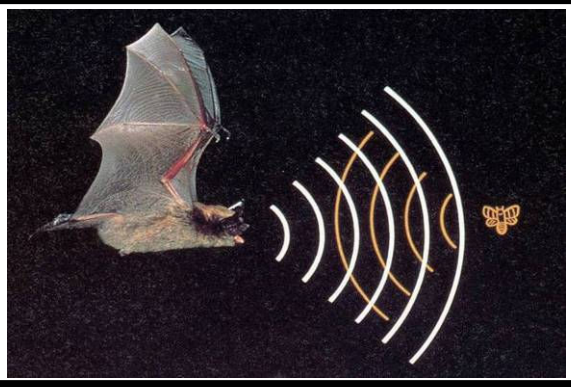


THE BAT MOTH GAME

This exciting game can be played by anyone to demonstrate how insectivorous bats hunt for their prey and find their way.

To find their way around and to find food, insect-eating bats use a technique called echolocation. This is when they produce sounds and listen for the returning echo.



Material

A group of people to be trees
One person to be a bat
One to be a moth
A blindfold
Plenty of space

Steps

1. The bat is blindfolded, and all the rest of the players stand around the bat in a circle about 4 m across.
2. The moth joins the blindfolded bat in the circle; the objective is for the bat to catch the moth. To find the moth, the bat calls out "bat" and immediately the moth must reply with "moth". This is like a bat emitting an echolocation signal and getting an echo back from the moth, and then using that echo to work out the direction of the moth.
3. Every time the bat calls out, the moth must answer, and both the bat and moth can walk swiftly (don't run!) within the circle.
4. The bat will need to keep calling and to listen carefully for the moth's replies or "echoes", until it is close enough to catch and "eat" the moth.
5. Got the hang of it? Now have several bats and several moths at once.

6. Now add in some trees - trees stand still and call out "tree" every time the bat calls "bat". Any bat that bumps into a tree is out of the game!
7. Everyone should take a turn at being the bat and moth.



Discussion points

What happened when a bat started to close in on a moth? As real bats get nearer to their prey they start calling more and more often and the calls get shorter as they try to get as much information about the location of the insect as possible. During the final attack the bat will be producing up to 200 calls per second!

Did the moths actively avoid the bats or did they just fly around? You probably found that your moths did all they could to avoid the bats because they could both hear and see them. Real moths can't see the bat but some have developed a simple hearing system that is tuned to the frequencies that many of the bats use. When they hear a bat they change course to avoid it. If the bat is too close they take emergency action and stop flying immediately. They spiral downwards out of harms way!

Was it easier to find an insect when it was out in the open, away from the trees, or when it was near the trees? Many bats find it difficult to tell insect echoes from tree echoes when the insects are very close to the trees. To get around this problem, bats that hunt in dense vegetation often rely on their ability to pick out the fluttering of insect wings.