



# How do bats navigate at night?

**Overview:** Bats are nocturnal mammals, over half of which use echolocation to locate and feed on insects. Students will perform an experiment which demonstrates how bats navigate in the darkness.

**Subjects:** Science

**Grades:** 3-7

**Length:** Short

**Materials:**

- two long cardboard tubes (such as wrapping paper tubes)
- four equal-sized books
- ceramic dinner plate
- watch that ticks
- cotton balls or foam packing material

**Procedures:**

1. Stack the books into two piles that are the same height. Place the piles several inches apart on the table. Balance the tube on each pile.
2. Place the watch just inside the end of one of the tubes. Lightly cover the watch with cotton balls or foam packing material to muffle the sound of the ticking. Position the tubes so they form a "V" shape.
3. Ask a student to put an ear to the end of the other tube. The one that does not have the watch in it. The student will not be able to hear the ticking.
4. Have the second student stand by the other ends of the tubes (where the point of the V is). Have the student hold the plate up to the ends of the tubes. Now the first student will hear the watch ticking.

Explain to the students that sound travels through air waves called sound waves. The sound waves from the watch traveled through the first tube, and when the plate was held up to the end of the tube, the sound waves bounced off the plate. The reflected sound then traveled through the second tube producing the **echo**.

Tell the students that bats find their way in the darkness by listening to echoes. When bats fly they make a high-pitched sound (ultrasound) that bounce off objects in their path. The echoes give the bat information about where the objects are located so it will not crash into the object in the flight path. The echo also helps the bat find insects and other animals when it searches for food.