



This activity shows how ear shape can improve an animal's ability to hear. Many animals need good hearing to hunt their prey or to escape from predators.

DO NOT place small objects inside your ear, including the cardboard ears that you make.

What you need

- Thin cardboard or thick magazine pages (usually design or bridal magazines).
- Scissors.
- Sticky tape.
- Pictures of animals with large ears such as the Arctic fox, bats, etc.

What to do

1. Look at the animal pictures and see if there are any similarities between animals in the shape of their ears, or the size of their ears compared to the size of their head.
2. Draw and cut out different ear shapes from the thin cardboard, then gently roll the cardboard at one end so it forms a small tube, while the ear shape is flat or slightly curved at the opposite end.
3. Place the tube end of your cardboard ear near (NOT INSIDE) your ear hole.
4. Does the ear seem to amplify sound (make it easier to hear noise around you)?
5. Try making a cardboard cone or an open parabolic dish (similar to a shallow bowl shape). When these shapes are placed near the inner ear, do they improve your ability to hear?

What to notice

Does any cardboard ear shape work best at helping you to hear sounds better?

Can you wiggle your ears?

What's happening

Large ears can capture and concentrate sound into the inner ear.

You may have noticed your pet dog or cat moving their ears up and down or back and forth. This is because they have good muscles at the base of their ears that help them to change their ear shape and pick up sound better.

Although owls have great night vision, they rely on their sense of hearing to catch prey at night.

The owl's heart-shaped face and the pattern of their facial feathers channels sound to their ears.

The barn owl's ears are asymmetrical. Their left ear points down, while their right ear points up.

This ear positioning helps the owl to pinpoint a mouse rustling amongst the leaves, so the owl can snatch it up in complete darkness.

An echo is another example of how sound reflects off a solid surface (such as a brick wall, or a rocky canyon).

More information

Visit <http://www.physicsclassroom.com/Class/sound/u1113d.html> for more technical information on how sound can be reflected.

Extra activity on echolocation
http://www.accessexcellence.org/AE/AEC/AEF/1995/mills_echo.html

Biosonar Seeing with Sound
<http://www.biosonar.bris.ac.uk/chapters/1/start2.htm#>