Blind Hunter

GRADES
3-8

TIME
30 minutes

OBJECTIVE
At the end of the activity, students will be able to explain how an owl's hearing works to help it locate prey in total darkness.

METHOD
Students will engage in a lesson concerning an owl's auditory anatomy. Once an understanding of how their hearing functions in "3-D", they will participate in a game that demonstrates the owl's perch and pounce hunting strategy.

VOCABULARY
asymmetrical, ear conchs, facial disc, prey, talons

MATERIALS
laminated owl skulls sheet, funnel, owl study skin or mount, blindfold

BACKGROUND
Owls possess super-sensitive hearing, and it is probably among the best in nature. There are owls that depend more on hearing their prey than on seeing it. A great gray owl can hear a beetle running through the grass at the length of a basketball court away, and hear the squeak of a mouse at a half-mile's distance (3).

Owls' external ears are large slits hidden under the feathers of the outer rim of the facial disc. Facial discs are composed of long, soft-edged feathers fastened into the rims of the ear slits. These ear slits are flaps of skin, called ear conchs, which open into large ear canals (2). The large, round facial disc catches sounds, concentrates them, and funnels them into the ears. The facial disc moves to improve sound reception (3).

Many owls have ears that are placed asymmetrically – one ear is lower on the head than the other – and are of different sizes. With one ear lower than the other, sounds that come from below can be distinguished from sounds that come from above (3). Any given sound will reach one of the ears before it reaches the other. The owl adjusts its head until it is receiving the sound evenly in both ears, allowing the owl to locate prey with astonishing pinpoint accuracy. This gives owls the opportunity to hunt for prey travelling under leaves, snow, or in underground burrows.

PROCEDURE
1. Talk to the students about the way an owl uses its remarkable hearing to find prey in the darkness. *But, where are their ears anyway?*
2. *If you lifted up the edge of the facial disc (the rings of feathers around the owl's face that make it round), you would see that it has a slit on each side of its skull.* Show facial disc on owl mount. *These flaps of skin are called ear conchs (pronounced konk).*
3. *Now, place your first fingers just in front of each of your own ears. Your fingers should be pointing toward each other because your ears are located directly across from one another.*

This is called symmetrical placement. Take your right finger and move it down under your earlobe. Put your left finger on top of your opposite ear. This shows the way that some owls' ears are placed upon their heads – they have a low ear and a high ear. This is known as asymmetrical placement. Show and pass around laminated owl skulls sheet.

4. *How could this be helpful? Think about what an owl eats... When do they do their hunting?*
5. *Owls use their facial disc and asymmetrical ears to judge exactly where sounds are coming from. The facial disc acts like a funnel* (pull out the funnel and put it to your ear) *to gather sounds and route them into the ears. Most of the time a rustling mouse or a scampering squirrel is either lower or higher and off to the left or the right of where the owl is perching. If the potential prey is low and on the right, the sounds it makes will reach the owl's right ear first. The owl moves its head until the noise reaches both ears at the same time. The prey has given itself away now, even if the owl has not seen it. The prey's hiding place is revealed, and the owl can pounce. This hunting technique of perching and waiting until one's hearing and/or sight locate a victim, and then gliding down upon it is known as perch and pounce* (3). Northern hawk owls, great horned owls, great gray owls, and barred owls are among the owls that use the perch and pounce method (4).
6. *Do you think you can locate prey with pinpoint accuracy by using you hearing alone? Studies show that a blindfolded owl can fly directly to prey that it cannot see, and then grasp it in its talons* (3). *The slightest movement or sound will alert an owl to ready its position to descend upon its prey.*
7. To warm up for the game, have everyone gather up in a tight group sitting on the floor and close their eyes. You will snap your fingers way up high over your head, way down low near the floor, or over to the right or left of your body. The students must indicate from which direction they think the sound is coming by saying right, left, down or up after each time you snap. If they are good at this, then perform a sequence and have them tell you what order of directions you snapped in.
8. One student will become the owl. The rest of the students become prey. If you want to get more involved with the food chain of a particular species of owl, you can make up cards with names of species that make up the owl's prey base on them and have students draw what they will become from the deck. Get the prey to visualize how they would move, what they would eat, and where they live.
9. The owl will sit on the floor blindfolded. Blindfold the owl as completely as you can, but leave his or her ears as exposed as possible. The prey will line up in two lines facing the owl about 10-15 feet away. Taking turns so that the prey are staggered, several students try to stalk past the owl and try to reach a home base 5 feet beyond the owl. If the owl hears anything, he/she will point in that direction. Any prey that is pinpointed must freeze. The owl is strictly forbidden to blindly sweep his pointing around! After several prey have been frozen, call a time out and let them return to start to try again. Encourage them to refine their methods. The owl may cup his/her hands behind their ears. The first one to pass the owl and reach home base becomes the new owl.

WRAP-UP

Review new vocabulary and the owl's auditory anatomy. Answer questions regarding topics discussed. Invite students to take a look at the mount.