WATCH YOUR BACK

Background Information for Activity Leaders

Overview

Children will explore the predator/prey relationship found in food chains. Children will play a game very similar to tag. Some children will be the predators (barn owls) that chase the prey. Some children will be the prey (field mice) that must find food while avoiding the predators.

Key Concepts

- All animals must eat to survive. **Predators** are meat eaters, or carnivores, that kill and eat other animals in order to survive. **Prey** are animals that are eaten by other animals; they must constantly avoid being eaten. Some animals can be both prey and predator. For example, a small fish may be prey for a larger fish, and it may also be predator to tiny fish.
- To keep the food chain model simple in this activity, we will assume that the barn owls only eat field mice. This is not typically what happens in most food chains. Food chains typically become food webs, and an owl's food would come from a variety of different sources. For example, owls can eat mice, rats, moles, squirrels, rabbits, skunks, worms, spiders, frogs, lizards, and small birds.
- **Barn owls** locate prey by flying over open grassland. They also use low perches, such as fence posts, to seek their prey. Barn owls rely greatly on their silent flight and extremely acute hearing to locate prey.
- Barn owls hunt at night. Their big eyes help them see their prey when there is not much light.
- **Field mice** are mice that have fuzzy coats and short tails. The color of their fur is black, brown, white, or grey. They primarily live in and eat grass. They dig burrows where they construct food and nesting chambers. Field mice do not hibernate; they are active throughout the winter.
- Predators and prey are interdependent on each other. When food becomes abundant, prey populations can grow rapidly. This increase in food supply for the prey means that their predators will have more food.
- When predators have more food they will also be able to have and support more offspring. However, if the number of predators becomes too high, they will eat all the prey and run out of food. This lack of food will cause some of the predators to die. As the predator population decreases, it allows the prey population to rebound. As the prey population increases again, so will the predator population.
- When something man-made or natural causes an imbalance in an ecosystem, it can affect an entire chain of other species; all living things are affected by each other.
- **Ecologists** are scientists that study the relationship between living and nonliving parts of an ecosystem. They collect data and maintain records.

Background Information for Activity Leaders

What to Expect

- As the game is played different scenarios will occur. There will be times when the owls eat all the field mice, other times when the owls will not be able to catch any of the field mice. Use each scenario as a teaching tool. Discuss with the children why it is important that some, but not all, field mice be eaten.

- Each time you play the game change one factor (more space between bases, more food for the field mice, a longer time limit, a smaller food requirement, or more owls). Ask children to predict the effects of the change.

Common Misconceptions

- *Children may think: "The relative sizes of prey and predator populations have no bearing on the size of the other."*

  Predator and prey populations continually affect each other. A large predator population can cause a prey population to decline. The decline in prey population can cause the predator population to decline, causing the prey population to increase again.

- *Children may think: "A food chain is the only correct representation of how animals obtain food."*

  Most animals are part of more than one food chain and eat more than one kind of food in order to meet their food and energy requirements. These interconnected food chains form a food web.

WATCH YOUR BACK

Rules

1. The activity leader will blow the whistle to start the game. The owls and field mice have two minutes to find their food. When the whistle blows again, each animal must return to its home base.

2. Each field mouse must eat (pick up) five chips during each two-minute period. If the field mouse does not eat five chips, it dies and does not return to its home base. It is out of the game.

3. The owl needs to eat (tap on the shoulder) at least one field mouse during each two-minute period. If the owl doesn't catch a field mouse, he dies, and is out of the game.

4. The owl must return to its perch after each time it tries to catch a field mouse.

5. Field mice are safe on their bases.

6. No field mice or owls may leave the habitat.

WATCH YOUR BACK

Animal or Character for Headbands

WATCH YOUR BACK

Data Collection Sheet

Name:_____ **Date:**_____

WONDER Which animal will win the game "predator versus prey?"

RECORD

Data Table

Trial	number of predators 		number of prey 		amount of food collected (game chips)	
	Start	End	Start	End	Start	End
1						
2						
3						

CONCLUDE What would happen if all the plants were eaten?

_____

What would happen if all the owls or all the mice "lost" the game?

_____

Look at your data. What do you notice?

_____

_____

WATCH YOUR BACK

Activity Leader's Guide

Set Up the Expedition

Materials

For the activity leader:

- ***Watch Your Back*** Learning Cards
- (1) field mouse and barn owl hand puppets
- (1) bunch of silk field grass or flowers
- clay or Styrofoam™ brick to support flowers
- (1) roll of tape
- (1) pencil and clipboard
- several 5 cm by 61 cm strips of colored paper
- animal characters for headbands
- (4-6) hula hoops or sports bases

For each group:

- (1) stopwatch
- (1) whistle
- (1) package of game chips

For each child:

- (1) ***Watch Your Back*** Data Collection Sheet

Prepare the demonstration:

1. Identify a flat surface to use for the puppet show (table, large box). Simulate a field of flowers by placing silk flowers or grasses in a Styrofoam™ or clay base.

Prepare the exploration:

1. Photocopy the headband template to provide one animal character picture per child. Cut out a strip of card stock paper, long enough to fit around a child's head. Attach an animal character picture onto each headband.
2. Identify one child to be an ecologist.
3. Identify a large area (indoors or outdoors) to play the game. Scatter game chips in different locations. Tell children that the game chips represent the field mice's food.
4. Place one predator base and four prey bases around the area. Make the predator's base a different color from the other bases or label it.
5. Place the RULES where all the children can see them.

Engage

Group Size: whole group
Time: 45 minutes

1 Gather the children together. Put the field mouse puppet on your hand and ask the children the following questions:

"What type of animal is this?" The animal is a field mouse.

"Where do you think this animal lives?"
Have the field mouse walk around its grassy habitat.

"Yes, this animal's habitat is grassy fields. A habitat is where an animal lives. What do you think field mice eat?" Use the puppet and the wild grasses to show how the field mouse eats. As you ask the question move the puppet's mouth and show the children how field mice eat plants. Put the owl puppet on your other hand.

"What type of animal is this? Yes, it is an owl. In fact, it is a barn owl. Owls like to perch on trees and fence posts."
Demonstrate with the puppet how owls perch.

"What do you think barn owls eat?"
As you ask the question, have the barn owl swoop down on the field mouse with its wings pointing toward the field mouse. Move the puppet's mouth and show the children how owls swallows a field mouse whole.

"What can the field mouse do to escape the barn owl?"
The field mouse can use camouflage to blend into its habitat, or hide in its burrow.

"What must the field mouse do when it gets very hungry?" Help the children understand that the need for food drives the field mouse out of its burrow.

APEX SCIENCE

Explore

2 Divide the children into groups of six or more. Assign one child per group the role of predator (owl). The other children will be prey (field mice). One child will play the role of ecologist.

Distribute a paper headband to each child, according to their role. Give the ecologist a clipboard with the Data Collection Sheet and the Learning Card.

3 **Say:**
"We are going to play a game today. Let's pretend this area is a habitat for owls and field mice. There are several bases in the area that represent burrows for the field mice." Point to the "burrows."

"One base is a perch for the owl." Point to the "perch."

"Listen carefully to the rules for the game we will play." Review the "Watch Your Back" rules with the children.

4 Play a round of the game. Remind children to be gentle when capturing prey. All chasing must stop when the whistle is blown. Remind the ecologist to record the number of predators, the number of prey, and the amount of food collected.

If younger children are having trouble getting enough "food," give them more time between whistles blows.

5 If time permits, play the game several times so that each child has the opportunity to play each role.

Conclude

6 Gather the children together to talk about the game. Guide the children to use the data they collected on the Data Collection Sheet to help answer the following questions:

"What did the field mouse and the owl do to get to their food?"

"What happens when a field mouse does not come out of its burrow?"

"What happens when an owl is not able to catch enough field mice?"

"What happens when the field mice ran out of food?"

7 **Say:**
"Congratulations! You have earned your 'Ask Me About the Food Chain' stamp. You are ready to tell people about the food chain."

APEX SCIENCE

WATCH YOUR BACK

Expedition Learning Card

How do predators and prey interact with each other and their habitat?

predator
prey
ecologist

Explore the relationships between predators and prey.

1 WONDER Who will win the game of "predator versus prey?"

Write or draw your ideas on your Data Collection Sheet.

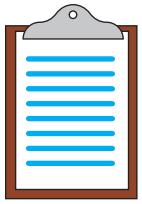
2 EXPLORE
Put on your headband and play your role!

Predator
barn owl

Prey
field mouse

Barn owls eat field mice. They can't fly all the time so they must return to their perch after each time they try to catch a field mouse.

Field mice eat the seeds of wild grasses. They stay away from barn owls by hiding in their burrows.



Ecologists are scientists that record numbers of animals to better understand how their ecosystem works. In this game, ecologists will use the Data Collection Sheet to record what they observe during the game.

APEX SCIENCE

WATCH YOUR BACK

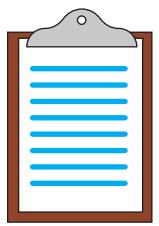
Expedition Learning Card

3 RECORD Notice everything you can about each round of the game and the results of each trial.

Use the Data Table to record what you observe during the game.

4 CONCLUDE

- What would happen if all the plants were eaten?
- What would happen if all the owls or all the mice "lost" the game?
- Look at your data. What do you notice?



Discovery

Why did we do that?

- Animals need food to live.
- Animals find food in their habitat.
- Some animals are food for other animals.
- Prey must risk getting caught by a predator to find food.

Congratulations!

You have earned your "Ask Me About the Food Chains" stamp! Now you are ready to tell people about food chains.

ASK ME ABOUT

APEX SCIENCE