Predator Prey

Upham Woods Outdoor Learning Center
UW Extension University of Wisconsin-Extension

fyi.uwex.edu/uphamwoods/ | uphamwoods@ces.uwex.edu | 608-254-6461

Program Purpose:
The purpose of this program is to learn about the food chain and populations in nature using an interactive game.

Program Length: 1 ½ hours

Age: Grades 4th-8th

Maximum Number of Participants:
None (great all camp activity)

Objectives:
After completion of this activity students should be able to:
- Define predator and prey.
- Discuss how a food chain works.
- Identify some components of nature which keep the food chain balanced.

Wisconsin Standards:
B.8.3 Explain the importance of biodiversity
C.8.6 State what they have learned from investigations, relating their inferences to scientific knowledge and to data they have collected
F.8.8 Show through investigations how organisms both depend on and contribute to the balance or imbalance of populations and/or ecosystems, which in turn contribute to the total system of life on the planet
F.8.9 Explain how some of the changes on the earth are contributing to changes in the balance of life and affecting the survival or population growth of certain species

Preparation:
Before the class arrives:
- Check food, water and shelter signs around camp using the map to make sure none are missing.
- Count out critter tags for the students. There are seven groups total and the size of the groups depends on the number of students playing (see below).
- Gather all materials for the class.

Guidelines for Splitting Class into Groups:
- 50% of group should be *insects* (split into Mosquito, Grasshopper and Cricket)
- 25% of group should be *frogs* (split into Bullfrog and Wood Frog)
- 17% of group should be *snakes*
- 8% of group should be *hawks*

Basic Outline:
I. Introduction *(10 minutes)*
II. Explain Rules *(10 minutes)*
III. Play the game *(45-60 minutes)*
IV. Conclusion *(15 minutes)*

Materials:
7 group signs
7 maps and keys
Bags of critter tags
2 orange vests and 3 bean bags (optional)

Important Vocabulary:
Predator- an animal that kills and eats other animals for food.
Prey- an animal that is killed and eaten by other animals for food.
Producer- an organism that can make its own food from photosynthesis or chemosynthesis.
Consumer- an organism that feeds on other organisms to survive.

Introduction:
Hand out critter tags (insects, frogs, snakes, hawks) randomly as the students come in the door. Instruct all like insects (i.e. mosquitoes) to sit together, all like frogs to sit together, etc. There should be one adult with each group who will collect the tags as the students come to them.

Introduce yourself and explain that the class will be playing a game that demonstrates predator/prey relationships. Ask the students what a *predator* is and what *prey* is. Why does a predator need to hunt prey? Food! They are considered *consumers*. All animals need food to survive. An animal gets the energy it needs to grow and survive from food. Let us make a food chain to show how energy travels from one living thing to another.

Not all living things eat other living things. Some living things can make/produce their own food. Where do these *producers* get their energy from (the sun!). Have a volunteer from the audience come to the front to be the sun. Give them a sign to hang around neck and instruct them to make a flashing motion with their hands to represent the sun. Next ask the audience for something that gets its energy from the sun (plants use photosynthesis). Choose a volunteer to come up and be a blade of grass and tell them to make a growing motion with their hands. Now ask what eats plants (insects), have someone come to the front of the room to be a grasshopper (rubbing hands together). Continue the chain

with a wood frog (hopping) eating the grasshopper, a snake (slither motion) eating a frog, and a hawk (soar and glide) eating the snake. As a finale have all of the students in the food chain make their motions at the same time. Expand the idea of a food chain to a food web. A food web is more accurate of what happens in real life.

What else do animals need to survive besides food? Water, shelter and space. Explain that the game you are about to play represents real life survival for animals in the wild.

Rules for Predator/Prey Game:
The game is an interactive tag game, which allows students to learn about the food chain by becoming a part of it. Before explaining the rules, take a preliminary count of how many people are in each group. Draw a pyramid on the board showing the numbers. Combine all of the insect species together for one overall insect count. Likewise combine all of the frog species and so on. Put the insects on the bottom of the triangle and the hawks on the top.

The objective of this game is for a group to get enough food, water and shelter to survive as a species (at least 2 members of that species left at the end of the game). Some groups (frogs, snakes and hawks) will have to "attack" other groups to get food. If you are an attacking group your goal is to tag as many people from the group you are attacking as possible. Likewise, if you are being attacked, your goal is not to get tagged.

In order to survive, each group must obtain a certain amount of food, water, and shelter. There are posts around camp where these necessities may be found (see map for locations).

	Insects	**Frogs**	**Snakes**	**Hawks**
Food	2	3	3	4
Water	1	2	3	3
Shelter	2	2	2	3

ATTACK Rules:
- The speed limit while looking for resources around camp is WALKING! You may only run when an attack is on and only in the designated attack area (sand field).
- A group may not split up while walking around camp. Groups must move together as a unit.
- Insects can't attack other groups because they are prey for all of the other animals in this game. Frogs may attack insects. Snakes may attack frogs and insects. Hawks can attack all three. There is no cannibalism in this game (i.e. frogs may not attack other frogs).
- The adult leader with each group should hold the group name card while walking around camp. When a predator group spots prey they shout "We the _____ group attack the _____ group". Once this happens, both groups report to the sand field for the tag game.
- An "attack" lasts between 10-30 seconds (depends on how big the group is, Naturalists call). The tag game begins once the Naturalist/Adult Leader blows their whistle once. In order to stop the "attack", the leader will blow his or her whistle twice. Prey who are tagged (eaten) join the predator group. Prey who were not tagged stay with the prey group.
- A group cannot attack the same prey twice in a row. They must either attack another group or get a different survival requirement (water, shelter).
- Two groups may not attack the same prey group at the same time.
- A predator group may not attack a different predator group that is already attacking a prey group.
- Each group gets a designated amount of "peace time" after being attacked. Insects get 2 minutes, and frogs and snakes get 30 seconds. Peace time is designated by holding the peace sign (2 fingers) up in the air.

SURVIVAL:
- If all but one member of a group gets tagged, the surviving member must join the predator group because one member of a species cannot survive on its own. (This is due to reproduction, but don't tell the students yet. Let them come up with it during the conclusion).
- Attacking a prey group counts as food points (3-5 kids = 1 point depending on group size), however water and shelter must be obtained using the posts.
- The food cards on posts are for the insects, which don't attack anyone.
- When getting the food, water, or shelter points, everyone in the group must be touching the tree or pole the resource card is on. All group members must also sing a song (it doesn't matter what song, but they all should be singing the same song) to obtain the resource.
- Groups can be attacked while obtaining food, water, or shelter.

BOUNDARIES:
- No one may go outside the designated boundaries (from PBM to the base of cabin hill, between the road and the path along the river—NOT on the beaches).
- No one may go into buildings during the game.
- Groups may only hide for a total of 5 minutes during the game.

GAME END:
- The end of the game is signaled by the bullhorn. At this time group leaders should count the number of

students in their group and all should report to the meeting place (main lodge). Good idea to notify group leaders ahead of time when the game will end so they can bring students back in case they do not hear the bullhorn.

To begin the game, allow the insects to leave first, then frog, snakes and lastly hawks. Give each group some grace period/head start before sending out the next group (2-5 min.) When all groups are out of the lodge, signal the actual start of the game by blowing your whistle.

If there are kids who can't run (due to disability, injury, etc) have them be hunters. Hand out orange vests to hunters and explain the rules for hunting.

- Hunters can't run.
- They have 3 bean bags that they toss underhand only at predator groups. If a predator is caught, he or she is returned to a prey group.

Don't mention hunters in the intro to the whole group, and it's kind of a surprise.

Conclusion:
Collect the final numbers from each of the groups. Compare the numbers at the beginning of the game to the numbers at the end of the game. Next to the triangle on the board representing the numbers of critters in each group from the beginning of the game, draw a shape representing the numbers at the end of the game (again have insects on the bottom and hawks on the top). The numbers from the end of the game should resemble either an inverted triangle or an hourglass shape. Ask the students which way they think nature is more stable. Have a volunteer from the audience help demonstrate the stability. First have them stand like the triangle you have just drawn that represents the beginning numbers (feet apart, arms over head with hands together). Give the person a little push and see if they fall over (it's pretty hard to push them over in this stance). Next have them stand like the ending shape. Push them again (but gently because they will fall). This works best if you choose a dramatic student to help demonstrate.

Nature likes to be stable and the beginning triangle is more stable than the inverted one or the hourglass. Ask the students what nature does to keep things balanced that we did not have in our game (reproduction). Now revert the triangle using the number of offspring each animal has. Multiply the ending number of insects by 10,000, the ending number of frogs by 100, the ending number of snakes by 10 and the ending number of hawks by 2. This will revert the triangle making nature stable again.

***Note**
You can also talk about bioaccumulation of DDT in Eagles or other human impacts on these animals.

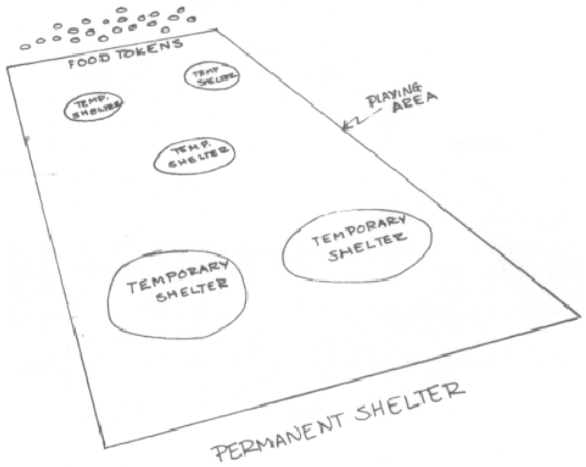
If you play the game more than once it is interesting to add humans into the equation either as cars, DDT, or something else that affects the Hawks. If you decided to have the humans affect the hawks, after they are attacked (it works best if only 1 or 2 adults are representing the human group) return them to an insect group.

Reference:
"Predator Prey" Project WILD.

Additional Activities:
Quick-Frozen Critters

Group Size: between 10-50 students
Materials: 4 cones, 5 hula hoops, bandanas, food source tokens.
Objective: students will play an active version of freeze tag that simulates a predator/prey relationship.
Rules:

1. The group is split into predators (coyotes) and prey (cottontails). There should be one predator for every 4-6 prey.
2. Set up the playing field like the diagram below.



3. One end of the playing field should be the permanent shelter. This is where the prey will start at the beginning of each round. The other end of the playing field is where the prey food source will be located. Place 5 hula hoops randomly in the playing field. The hula hoops represent cover or temporary shelter for the prey.
4. The predators should be identified by having a bandana wrapped around their head. Predators will begin each round spread throughout the playing field.
5. The game will start when the instructor blows the whistle once and end with two whistle blasts. A round should last 5-7 minutes.
6. Once the game starts the task of each prey is to collect three food tokens (popsicle sticks) to survive. Prey can only grab one food token at a

time from the food source end of the field and then they must take that token back to their permanent shelter. Prey cannot be tagged while in the permanent shelter or in the food source area, these are safe zones. Traveling through the playing field is dangerous due to the predators. Prey have two ways to prevent themselves from being caught/tagged by a predator. Prey can "freeze" if a predator is close to them. Frozen prey may blink but otherwise should be basically still and silent. Prey can also run to cover (have at least one foot within one of the hula hoops).

7. Prey can remain frozen for as long as they like. Prey can also stay in the hula hoops or safe zones for as long as they want as well. However, if they do not collect three food tokens by the end of the round they will starve to death.
8. Predators must capture at least 2 prey in a round in order to fulfill their food needs. A predator can only tag MOVING prey! Once a predator tags a prey they must then walk the prey to one side of the playing field. Then the predator can return to hunting. The prey will stay on the side of the field until the round is over. NO PUPPY GUARDING.
9. Play 2-4 rounds, allowing each student to be both predator and prey.

Conclusion

Discuss with students the ways they escaped capture when they were prey. Which ways were easier? Which were most effective? What means did they use as predators to capture prey? Which ways were best? What did the predators do in response to a prey animal who "froze"? How would have these game been different if we had not had hula hoops in the playing field? In what ways are adaptations important to both predator and prey? What would happen if there had been twice as many predators as prey? Ask students to summarize what they have learned about predator/prey relationships.

Reference:

"Quick Frozen Critters" Project WILD.

WI Standards
Environmental Education
Energy and Ecosystems
B.4.1, B.4.4, B.8.3

Life and Environmental Science
Characteristics of Organisms
F.4.1
Populations and ecosystems
F.8.8
Diversity and Adaptations
F.8.9
Biological Evolution
F.12.5
Interdependence of Organisms
F.12.7