

**Dedicated
to Reducing
Pesticides**

Unit 3 Section 1 Lesson 4: Flag On The Playing Field

Focus Areas: Pest Control: Biological/Natural; Science, Physical Education, Math

Focus Skills: following directions, recording data, drawing conclusions, speculating

Objectives

- To recognize the relationship between predator and prey
- To understand that certain prey behavior enables the prey to avoid predators
- To recognize that nature provides biological control methods
- To better understand the importance of cooperation among group members

Essential Questions

- What cooperative methods are used by some prey to avoid predators?
- How can the natural predator/prey relationship be used to provide biological control of pests?

Essential Understandings

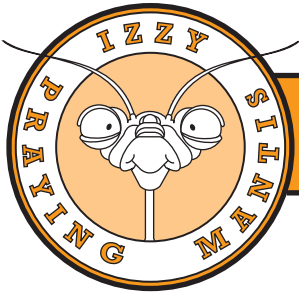
- Nature provides natural enemies for both plant and animal populations.
- The natural law of Survival of the Fittest insures a balance in nature.
- Man sometimes interferes with nature's natural order and sometimes enhances it.

Background

Plants and animals that are considered to be prey have adapted to their natural environment and developed behaviors that ensure their survival. The fittest survive. This is a natural law. Without the influence of man, predator and prey populations would follow a natural pattern of increase and decrease. However, nature is sometimes too slow for man's comfort. In addition, man sometimes inadvertently upsets the balance of nature in the name of progress by impeding or implementing environmental changes.

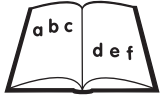


University of
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College of Agriculture
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Vocabulary



adaptation	a behavior or adjustment in physical structure that allows an organism to better survive in its environment
biological control	natural forces often used in Integrated Pest Management (IPM) to control plant/animal populations
predator	an animal that hunts another as a food source
prey	an animal that serves as a food source for a predator
“Survival of the Fittest”	the natural law that determines only the best adapted of a species survives to produce the next generation



Logistics

Time: 60 minutes

Group Size: 5 to 30

Space: an area with comfortable seating; a large open area for the predator/prey game



Materials

Handout 1 “Tally Sheet for Predator vs. Prey Game” *

a stop watch

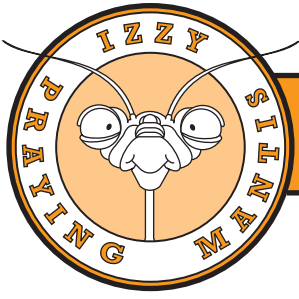
playing pieces (marbles, macaroni, checkers or something similar)

a white handkerchief

blindfolds

white/black board or chart paper

* single copy provided



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Preparation



1. Make copies of Handout 1, “Tally Sheet for Predator vs. Prey Game.”
2. Collect playing pieces (enough for group size).

Activity



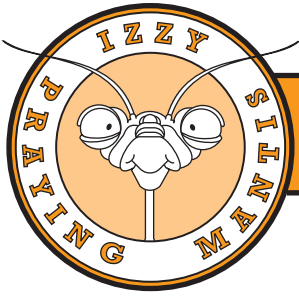
Challenge: Explore the factors that influence predator/prey relationships. (*Display for group viewing*)

Introduction

1. Print the words **Predator** and **Prey** on the board or chart.
2. Discuss the meaning of each word to determine the group’s understanding. If necessary, check the definition of each word in a dictionary.
3. Divide the group in half. Designate one half as predators and one half as prey.
4. Allow time for each group to brainstorm characteristics or adaptations that would help their group survive.
(**Predator:** size, speed, strength, camouflage, sharp teeth, claws, etc.
Prey: numbers, speed, bad taste, poison, camouflage, hard skin/shell, etc.)
5. Share lists and discuss choices.

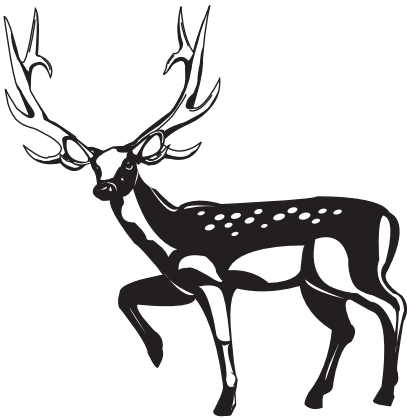
Involvement

1. Game: **Predator/Prey** (best played in a grassy outside area; allow 30 additional minutes)
 - a. **Round 1:**
 - i. Scatter playing pieces (counting sticks, checkers, marbles, or some other small objects) across the playing area. These pieces represent food for the deer players.



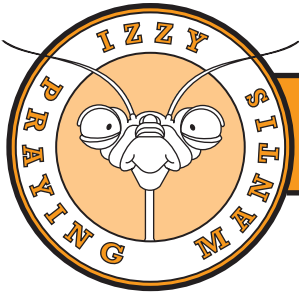
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- ii. Tell the group they are going to be deer and their goal is to have lunch.
- iii. Show the group what the food pieces look like, and tell them they must gather as many pieces as they can after you say, “**GO**,” but that they must stop immediately when you say, “**STOP**” and “**RETURN**” to you when told to do so.
- iv. Give the signal and allow 2 minutes for lunch. Then call, “**STOP**” and “**RETURN**.”
- v. Tally the number of food pieces each deer found, and eliminate the 4 deer who found the highest number of pieces.
- vi. Have these 4 players redistribute their food in the playing area.



b. Round 2:

- i. Tell the remaining deer that they must gather at least _____ food pieces. (Substitute the average number of food pieces gathered by the deer.) Collect the food from Round 1.
Note: The purpose of setting a goal for the deer is to keep them focused on their task and not on the predators you are going to introduce in Round 2.
- ii. Tell the deer that they may be asked to leave the game by one of your helpers before you call, “**STOP**.” Remind them that this is part of the game and that they should cooperate.
- iii. When the remaining food has been distributed and the 4 distributors have returned, tell the deer to surround the area where they will be looking for food.
- iv. Tell the 4 top gatherers from Round 1 that they now are predators and have to tag out as many deer as they can. They are to say, “You’re out!” and tell each deer tagged to leave the playing field immediately. Give the “**GO**” signal, and allow 3 minutes for play before calling, “**STOP**” and “**RETURN**.” Discuss who the helpers represented. (predators)
- v. Tally how many deer they caught and the average number of food pieces gathered. Ask what could be done to protect the herd. (post a deer to watch for predators and warn the others)



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- What would he/she do? (patrol and give a warning signal)
- vi. Tell the group this is exactly what deer do in real life and that they do this by flashing the white underside of their tails.

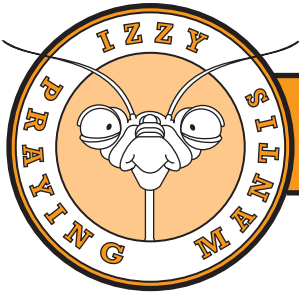
c. Round 3:

- i. Give a white flag to the first deer captured in Round 2, and tell the group he/she will be the lookout in the next round. Their job is to warn the other deer of danger. The lookout doesn't gather food. The 4 predators will play the same role in Round 3. The remaining children will be deer trying to gather food.
- ii. The deer should gather as many food pieces as they can, but when the lookout waves the flag and runs, they should follow and try to reach the safe area beyond the playing field boundary.
- iii. Redistribute the food of the players called out for Round 3. Collect the remaining food pieces from the active deer.
- iv. Send the lookout to the center of the playing field and deer to the perimeter of the playing field, and call, "**GO**" for both predators and prey.
- v. Allow 2 minutes of play time, then call, "**STOP**" and "**RETURN.**"

Follow Up

Discuss the outcome using Handout 1, "Tally Sheet for Predator vs. Prey Game" to verify:

- Were fewer deer captured in Round 3?
- Did the predators find it more difficult to capture their prey in Round 3?
- Is the average amount of food gathered more or less in Round 3?



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than in Rounds 1 and 2? Why?

Discuss what could be done if the prey were pests in a garden or home, such as ladybugs eating aphids, and their number reduction would help. (Introduce more predators, reduce or remove the prey's food supply.)

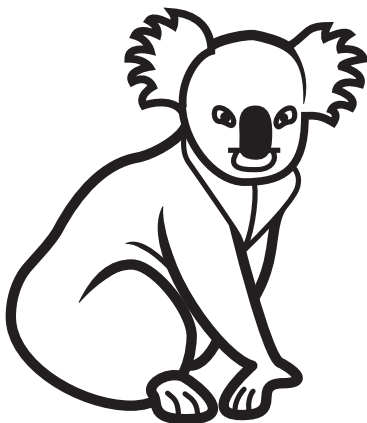
Follow Through

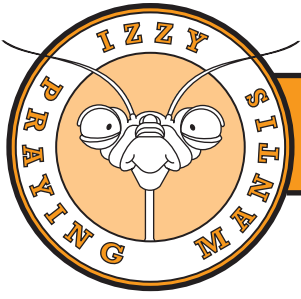
1. Play one more round of the predator/prey game. This time, handicap some of the deer. Blindfold one or two of the prey. Tell a few others that they must hop to the safe zone. Allow 3 minutes of play. Tally the results.
2. Discuss how the weaker members of the "herd" could be protected.

Assessment

Have the children respond to the questions based on their experience during the simulation.

1. How did teamwork among the deer affect the results of the outcome of the hunt?
2. How did the natural law "Survival of the Fittest" apply in this simulation?

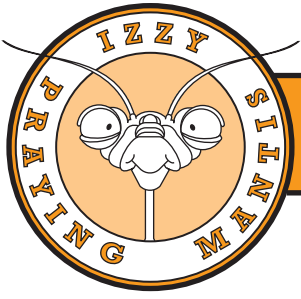




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Notes





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