



# Schools in Parks

# Rock, Paper, Scissors Ecosystems

## Science Essential Standards:

- 5.L.2.2 (ecosystems)

## Time:

45-60 minutes

## Audience:

5<sup>th</sup> grade

## Learning Objective:

Describe a food chain including the flow of energy.

## Materials (optional):

- pictures of a hawk, snake, and mouse

## Vocabulary:

consumer, producer, decomposer, food chain, food web, predator, prey

## Preparation:

- ✓ Choose an area large enough to move around in safely as students play the game.
- ✓ Familiarize yourself with the area in which you will be teaching. Check for poison ivy, jagged rocks & other safety concerns.
- ✓ Gather the materials needed for the lesson.
- ✓ Know how many students are in your group.

## Background:

**Organisms** interact with one another in their ecosystem in order to receive the resources they need to survive. The flow of energy through the ecosystem originates from the sun. **Producers** utilize sunlight to make their own energy through the process of photosynthesis. A **consumer** must eat other organisms in order to obtain its energy. Consumers are grouped based on the other organisms they eat. A **carnivore** eats other animals while an **herbivore** eats only plants. An **omnivore** eats a combination of plants and animals. **Scavengers** eat dead plants and animals. The **prey** is the animal being eaten by the **predator**, which is also another animal. **Decomposers** return materials to the ecosystem by breaking down dead organisms. They receive energy from these other organisms and create **organic** matter from previously living things. The **food chain** outlines the flow of energy from producers to consumers to decomposers. In most ecosystems, a **food web** is more accurate because it links different food chains together in an ecosystem.

This activity will demonstrate a food chain involving hawks, snakes, and mice. The [Red-Tailed Hawk](#) is the most common hawk found in North Carolina. They can fly up to 300 feet searching for prey such as rodents, rabbits, or snakes. In this activity, the hawk will eat a snake. [Corn snakes](#) are one of many snake species found in North Carolina. They typically eat rodents, birds, or small mammals. The corn snake in this activity will eat a [Deer Mouse](#). They eat small insects, seeds, fruits, nuts, and other plants.

## Instructions:

1. Students use the game *Rock, Paper, Scissors* to act out a food chain in an ecosystem.
2. Explain to students that you are going to play a game about **food chains**.
3. As the game incorporates playing *Rock, Paper, Scissors*, briefly **review** how to play it and **confirm that students understand the basic rules** before adding in the ecosystems portion of the game.

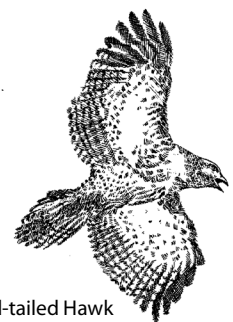
- a. Consider asking for a **student volunteer** to help **explain** and **demonstrate** how to play *Rock, Paper, Scissors*.
  - b. **Explain** that students will be choosing either **rock, paper, or scissors** for each round. **Show** the different corresponding hand motions.
  - c. For each round, you will pair off with another student.
  - d. **Demonstrate** to students moving your fist up and down as you count to 3 and then say “go” to signal when to show if they chose rock, paper, or scissors for that round.
  - e. **To win a round:**
    - i. paper covers rock (paper wins)
    - ii. scissors cut paper (scissors win)
    - iii. rock crushes paper (rock wins)
  - f. You may even choose to **demonstrate** a quick round with a volunteer or have students turn to a student next to them to play a quick round.
4. For *Rock, Paper, Scissors Ecosystems*, a food chain will be incorporated into the game to determine which students will be paired together for each round.
  5. Explain that **our ecosystem** contains **mice, snakes, and hawks**. Ask students to show the **flow of energy** in this ecosystem by creating a **food chain**.
    - a. Mice -> Snake -> Hawk
  6. Each animal has a **hand motion** to help students find like animals in the game.
    - a. For **mice**, use three fingers next to your mouth to make whiskers.
    - b. For **snakes**, place your palms together in front of you and stretch your arms out in front of you while wiggling your hands and arms back and forth like a snake.
    - c. For **hawks**, stretch out your arms into wings and flap your arms up and down.
  7. **Everyone begins the game as mice**. As you win a round, you move up the food chain. So, if you **win** the first round you become a **snake**. If you lose, you stay a mouse.
  8. Mice play mice and snakes play snakes in the second round. If you **win** as a snake, you become a **hawk**.
  9. Play for several rounds to allow several students to become hawks.
  10. Once a hawk, students can play other hawks and discuss what happens next in a food chain.
  11. Ask students, “Who won?” **Decomposers!** Ask a student to explain how decomposers are the real winners.
  12. You can then play again starting over with everyone as mice or play again another time. You could even change the food chain to different animals.



Deer Mouse



Corn Snake



Red-tailed Hawk

## *Behavior & Materials Management Tips:*

- ◆ **Model the behavior** to the students so they see exactly how you expect them to behave.
  - Students are more likely to meet expectations if have been clearly demonstrated.
  - Having the students then model the behavior back to you reinforces the behavior.
- ◆ Give students **defined boundaries** for how far they can go.

## *References & More Information:*

North Carolina Division of Parks and Recreation. (n.d.). Deer Mouse. Retrieved from [http://www.dpr.ncparks.gov/mammals/view.php?page=maps&species\\_id=48&get\\_ns=1](http://www.dpr.ncparks.gov/mammals/view.php?page=maps&species_id=48&get_ns=1)

North Carolina Wildlife Resources Commission. (n.d.). Corn Snake. Retrieved from <https://www.ncwildlife.org/Learning/Species/reptiles/corn-snake>

North Carolina Wildlife Resources Commission. (n.d.). Red-Tailed Hawk. Retrieved from <https://www.ncwildlife.org/Learning/Species/Birds/Red-Tailed-Hawk>

## *Credits:*

*Illustrations by Cindie Brunner.*

*Header photo of the Neuse River by Lauren Greene at Cliffs of the Neuse State Park on March 6, 2020.*

Adapted from *Rock, Paper, Scissors, Ecosystems* by Sean Higgins, North Carolina State Parks.

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