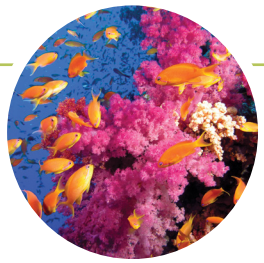
Group Behavior and Survival

A Carolina Essentials™ Activity

Student Worksheet



Overview

Do you feel safer walking home by yourself or with friends? Maybe you've seen signs at the beach that read "Never Swim Alone." Humans are not the only species to form groups for safety—other animals do too and for a variety of reasons. These videos show a couple of examples. Watch the videos and write down the animal behaviors you observe and any questions that come to mind.

MATERIALS

Game pieces

String

Timing device (smartphone or stopwatch)

Phenomenon

View "How do starlings coordinate their flights?"

Think about this: Can the flock behavior impact the survival of individual starlings?

View "Shoal of small fishes swimming"

Think about this: How does the presence of a predator affect group behavior?

You'll play the role of prey or predator, in 3 scenarios:

1. Healthy herd and a lone predator
2. Herd with healthy individuals, sick individuals, infants, and 1 predator
3. Herd with healthy individuals, infants, sick individuals, and a group of predators

The time to capture a prey will be recorded for each trial. Herd and pack behaviors are just 2 of many behaviors impacting survival. What benefits do the individual animals receive by being in a group, and how is the species as a whole affected by the behavior?

Essential Question

How can group behavior impact the chance of survival for an individual and/or a species?

Activity Objective

Gather data from 3 game scenarios simulating group behaviors and individual and group survival chances.

Activity Procedures

Wear gloves and goggles and practice safe laboratory procedures.

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Game Rules

1. You'll be assigned a role:
   - Alpha prey—communicates with the group, oversees the group, tells the group where and how fast to move. No running. Only a brisk walk is allowed.
   - Healthy prey—stays in the group and can move quickly if needed.
   - Infant prey—finds a parent and stays close, moves slowly.
   - Sick prey—stays on the outside of the group and moves slowly.
   - Predator—catches a prey by flipping over the sign on the prey's back to reveal the blank side; cannot touch the prey in any manner.
   - Timer—start the scenario and stop time when the first prey is caught. If no prey is caught in 4 minutes, stop the scenario and record 4 minutes for the time. Depending on the size of the class, your teacher may extend the time. After time has stopped, debrief the predators and prey. Take notes on each scenario.
2. The alpha prey can communicate with all other prey, but the prey cannot communicate with each other.
3. Acceptable prey behaviors are grazing, drinking, and moving as directed by the alpha prey.
4. The group of predators can communicate with each other before and during the third scenario.
5. Put on your assigned role sign. The sign should hang down your back, with your role facing out. You've been caught if a predator flips the sign over (blank side facing out). There can be no contact between predator and prey other than flipping the sign over.
6. Your teacher may want to repeat the scenarios. If so, make note of what you learn from each trial.

Scenario 1: Healthy herd and lone predator

1. The alpha herd member will dictate the herd activity.
2. Time how long it takes for a prey to be caught.

Scenario 2: Herd with healthy individuals, sick individuals, infants, and 1 predator

1. Repeat the steps above.

Scenario 3: Herd with healthy individuals, infants, sick individuals, and a group of predators

1. Repeat the steps above.
2. Your teacher may want to run each scenario several times.

Data and Observations

Group Behaviors: Time to Capture 1 Prey			
Trial	**Scenario 1**	**Scenario 2**	**Scenario 3**

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Analysis and Discussion

1. For each scenario, explain which role—predator or prey—was favored. Explain your answer using the time data. Translate your explanation above into a mathematical statement.

2. Describe how the probability of survival for **individuals** changes for each role, predator and prey, across the 3 scenarios. Refer to your data.

3. Describe how the probability of survival for the species changes for each role, predator and prey, across the 3 scenarios. Refer to your data.

4. If you ran several trials, what did you learn from each trial? How does this apply to herd animals and lone individuals?

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