

# Appearances Are Deceiving

Grade

6

Topic: Water  
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Duration: 45 minutes

*Students will play a game to show the roles of invertebrates in the creeks around their area.*

## **Curriculum Expectations**

- 6s1: Demonstrate an understanding of ways in which classification systems are used to understand the diversity of living things and the interrelationships among living things
- 6s7: Identify and describe the characteristics of invertebrates, and classify invertebrates into phyla
- 6s11: Describe ways in which micro-organisms meet their basic needs
- 6s12: Formulate questions about and identify the needs of different types of animals, and explore possible answers to these questions and ways of meeting these needs
- 6s16: Communicate the procedures and results of investigations for specific purposes and to specific audiences, using media works, oral presentations, written notes and descriptions, charts, graphs, and drawings
- 6s29: Demonstrate that air expands when heated
- 6e48: Ask and answer questions to obtain and clarify information
- 6m106: Systematically collect, organise, and analyse data
- 6p16: perform movement skills in the kind of combinations that are required in a variety of modified games, gymnastics, dance, and outdoor pursuits
- 6p17: Demonstrate the principles of movement while refining movement skills
- 6p18: Perform a combination of locomotion/ travelling skills using equipment

## **Background Information**

Some would say that because the water is flowing, looks clear, and doesn't smell, it must be safe. This is not always the case. Simulating how water stressors affect invertebrates will increase awareness of how bio-diversity and health are interrelated in stream ecology.

## **Accountability**

Teachers and students will need to be aware of what is happening in their local waterways. Students will be able to describe invertebrates from the stream and their habitat needs.

## **Teacher Notes**

1. Materials: craft sticks labelled for the seven invertebrates, rope pieces for leg tying, pylon to mark off playing area.
2. Show the class what invertebrates they will become: caddis-fly larva, mayfly larva, stonefly larva, dragonfly larva, damselfly larva, midge larva and rat-tailed maggots.
3. Discuss the tolerance levels of each invertebrate to oxygen levels in the stream.
4. Divide the class into the seven groups (for play value at least 4 students per species).
5. Some invertebrates have hindrances to how they move during the game.

- a. Caddis-fly larva- hop with both legs tied together - stop every five hops to gasp for breath
  - b. Stonefly larva - do push-up every ten steps
  - c. Mayfly larva - flap arms and spin in circles as crossing field
6. Students may volunteer to be environmental stressors to the environment. They could be sedimentation, sewage or fertilizer. All these things affect the levels of dissolved oxygen in the water.
  7. In a field space (15m by 20m) have invertebrates at one end and stressors in the middle of the area. Invertebrates must get from one side of the field to another. Those with hindrances must move in the manner of their invertebrate. If they are tagged they go to the side of the field and in the next round take on the roles of more tolerant insects. If tolerant insects are touched they just get another life stick.
  8. Record populations of all species after each round. Play three rounds: as the game goes on intolerant species' population numbers decline and tolerant species' population numbers increase.
  9. At end of game discuss the outcome with students. Have class compare individual invertebrate populations before and after the game.

### ***Home Extension***

Go to a local waterway and try to find the invertebrates used in the game. What population did you find more of? What does that tell you about the stream area?

### ***Lesson comments***

What did your students find?

What did it tell them about the water quality?

What creative extensions did they come up with for the game?