Survival: Sow Bug Behavior

A Carolina Essentials™ Investigation

Overview

Students will perform a simple experiment using sow bugs to determine if sow bugs change their behavior when environmental conditions change. Since sow bugs are crustaceans with gills, they need a damp environment for the exchange of oxygen and waste gases. In the damp experimental environment, sow bugs will spread out beneath a damp paper towel in a cup. When the environment dries, the sow bugs tend to group along the outside perimeter of the cup and pile up on one another. Researchers have indicated that the bugs pile up on each other to slow the rate of evaporation from their bodies. This behavior is an example of animals forming groups to increase the likelihood of survival.

Life Science
Grade: 3

Essential Question

Do animals change their behavior to help the group survive?

Investigation Objective

Observe how sow bugs change their behavior when the level of dampness decreases.

Next Generation Science Standards* (NGSS)

PE 3-LS2-1. Construct an argument that some animals form groups that help members survive.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Engage in Argument from Evidence • Construct an argument with evidence, data, and/or a model.	**LS2.D: Social Interactions and Group Behavior** • Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size.	**Energy and Matter** • Cause and effect relationships are routinely identified and used to explain change.

Safety Precautions

Treat all animals with care and respect.

Teacher Preparation and Disposal

Precut the paper towels to fit the container bottom. Sow bugs may be kept in a terrarium for the school year. If you wish to dispose of them, collect them in a resealable plastic bag, place them in the freezer for 3 days, and then dispose of them in the classroom trash.

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TIME REQUIREMENTS

PREP	ACTIVITY
15 min	30 min

Teacher Prep: 15 min
Student Activity: 30 min

SAFETY REQUIREMENTS

Treat all animals with care and respect.

MATERIALS (PER GROUP)

1 8-oz cup with lid
10 sow bugs
1 piece of paper towel
1 cup of water
1 disposable pipet
1 plastic spoon

HELPFUL LINKS

Terrestrial Isopods Care Guide
Video: Critters in the Classroom: Pill Bugs
Video: Pill Bug
Carolina LabSheets™: Pill Bug Behavior

REFERENCE KITS

Carolina STEM Challenge®: How to Train Your Isopod Kit

RESOURCE

Wagler, R. 2017. Exploring Terrestrial Isopods. *Science Scope*, 40 (9), 47–52. http://www.nsta.org/publications/browse_journals.aspx?action=issue&id=109813

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Student Procedure

1. Put a clean paper towel sheet into the cup.
2. Use the dropper and water to **dampen** the paper towel. Make sure there are no puddles on the bottom of the cup.
3. Use a plastic spoon to put 10 sow bugs in the cup.
4. Watch the sow bugs for 5 minutes. Describe the sow bugs' motions and locations in the cup. Record your observations in the Data section.
5. Draw a picture of your observations in the Data section.
6. Remove the damp paper towel from the cup. Make sure all the sow bugs stay in the cup. Put the lid on the cup.
7. Let the cup dry for about 5 minutes.
8. Remove the lid. Watch the sow bugs for 5 to 10 minutes. Describe the sow bugs' motions and locations in the cup in the Data section.
9. Draw a picture of your observations in the Data section.

Disposal: Return the sow bugs to the place your teacher instructs. Throw the paper towel in the trash.

Teacher Preparation and Tips

Precut paper towel sheets to fit the container.

Check to ensure students just dampen paper towels and do not saturate them.

You may wish to add the sow bugs to the containers rather than have students transfer the bugs to the container.

Students may use ovals or another symbol to represent the sow bugs.

Ask students to look carefully for the sow bugs. Some may be underneath the damp paper towel. Students should count the bugs to make certain there are 10.

Make sure the bottom of the container is dry.

You may keep the sow bugs in a terrarium for the remainder of the school year.

Data and Observations

Sow bugs will explore the entire bottom of the container while it is damp. After the container dries, they will group along the walls of the container and pile up, sometimes 3 to 4 bugs high.

Analysis and Discussion

1. Did the sow bugs change locations when the cup was dry? Where did the sow bugs go? *The sow bugs moved to the outside of the container and piled up on top of each other.*
2. How did the motions of the sow bugs change in the dry cup? *They did not spend any time exploring the dry part of the container. The bugs stayed very close together.*
3. Sow bugs must stay damp to breathe. How can the behavior of sow bugs in the dry container be explained? *When the sow bugs piled up, it helped the bugs retain the moisture in their bodies.*
4. Use your observations to explain this statement: Some animals form groups that help members survive. *When the sow bugs lost the moisture in their environment, they changed their behavior or adapted. To conserve moisture so they could breathe, the bugs piled up and stayed close to each other around the outside of the cup. Being in a group helped the sow bugs stay moist so they could breathe and continue to survive.*

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TEACHER NOTES