

DECOMPOSER TAG

Jennifer DeBruyn, Associate Professor, Department of Biosystems Engineering and Soil Science



Decomposer Tag

Skill Level

Beginner – Intermediate

Learner Outcomes

The learner will be able to:

- *Define decomposer and decomposition*
- *Explain the role of decomposers in food webs*
- *Understand how temperature affects decomposition*

Educational Standard(s) Supported

3-LS4-3, 5-LS2-1, MS-LS2-3

Success Indicator

Learners will be successful if they:

- *Can explain what a decomposer is and why they are important in ecosystems.*

Time Needed

20 minutes

Materials List

- *Space to run around*
- *Identifiers (hats, armbands, vests, etc.) for 1-2 students playing the role of “death”*
- *Identifiers (hats, armbands, vests, etc.) for 1/3 of the class to play the role of “decomposers”*

Introduction to Content

This activity focuses on the function of decomposers in food webs using a modified game of tag that simulates the role of decomposers in converting dead plants/animals (organic matter) to nutrients for living plants/animals in an ecosystem.

Introduction to Methodology

This is a modified game of tag, where students play different functional groups in the ecosystem: decomposers, living plants and animals, and dead plants and animals (organic matter). Different rounds with slightly different roles and rules illustrate key concepts about decomposers.

Author

Jennifer DeBruyn, Associate Professor
Department of Biosystems Engineering and
Soil Science



Terms and Concepts Introduction

Decomposers – Organisms that feed on dead plants and animals.

Decomposition – The process by which dead organic matter is broken down into simpler organic and inorganic material by organisms, also called rotting or decay.

Detritus – Dead plants and animals (organic matter).

Decomposers are an important part of the soil food web. They **make space** by cleaning up dead plants and animals (detritus). Decomposition **releases nutrients** which can then be used by other living things. The activity of decomposers **generates heat**, which can help dissolve organic matter further, and **helps mix organic matter into soil or rock (bioturbation)**. One of the primary controls on activity of decomposers and thus rate of decomposition is temperature: decomposition goes faster at higher temperatures.

Setting the Stage and Opening Questions

If you look around outside, you've probably noticed dead plants and maybe even dead animals. What happens to those? Do you have a compost pile? If so, what happens to all the vegetable peelings and food scraps you put in there? How are they breaking down?

Dead plants and animals, or organic matter, is broken down by decomposers. What is a decomposer? How is it different from a producer or consumer?

Why are decomposers important in food webs?

Experience

Round 1: No Decomposers.

1. Assign one student to play "death" and have them put on the hat/armband. If playing with a large group and/or you want to speed up the pace, have two students play death.
2. Tell all the other students they are living plants and animals.
3. Play tag. Death is "it." When a living plant/animal is tagged, they must indicate they've died by lying down.
4. Round ends when everyone is dead.

Round 2: Decomposers arrive.

1. Tell your students you will now introduce decomposers. Assign about 1/3 of the class as decomposers and give them a different colored hat/armband.
2. Play tag. Play as in round 1, but this time, decomposers can release the nutrients from dead plants and animals by running around them three times. Once decomposed, the plant/animal can rejoin the game. Allow play to continue as long as you like.

Round 3: Winter is coming.

1. Tell your students that one of the most important factors determining rate of decomposition is temperature. When it gets cold, decomposer activity slows down.
2. Play tag. Play as in round 2, but this time decomposers must WALK around the dead plants/animals to simulate slower winter activity. Allow play to continue as long as you like.

Tips for Engagement

This modified game of tag is best played outdoors or in a large space with room to run around.

For added silliness, tell students to think of what type of animal or plant they are, and act it out as they run around! Challenge them to pick a new plant animal each time they are decomposed and re-join the game.

Share

With no decomposers, what happened to all the plants and animals?

When we added in decomposers, then what happened to the plants and animals?

What happened when the temperature got colder?

Life Skill(s)

Learning to think critically. (HEAD)

Learning how decomposing animals and plants can help make new life. (HEAD)

Process

Why are decomposers an important part of food webs?

Generalize

What would our planet look like if we didn't have decomposers?

Would you expect decomposition to be faster in a tropical ecosystem or an arctic ecosystem?

Apply

How do humans make use of decomposers to get rid of our waste?

Our planet is warming. How do you think the increase in global temperatures will affect decomposition rates? Decomposition produces CO₂, a greenhouse gas. Why is this concerning?

Supplemental Information

Educational Standards Met

3-LS4-3

Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

5-LS2-1

Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

MS-LS2-3

Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem