

WELCOME TO THE LOG HOTEL

The Delightful Decomposers that Disassemble Dead Things

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Tennessee 4-H Youth Development

Welcome to the Log Hotel

The Delightful Decomposers that Disassemble Dead Things

Skill Level

Beginner – Intermediate – Advanced

Learner Outcomes

The learner will be able to:

- *Define decomposer and decomposition*
- *Explain the role of decomposers in food webs*
- *Create an appropriate habitat for decomposers*

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

30 minutes to discuss decomposers and build the log hotel

30 minutes to search for organisms

Materials List

- *Glass, acrylic or clear plastic container for the terrarium, at least 6 inches high, with a vented lid. This could be a jar or plastic container with small holes punched in the lid.*
- *Soil or topsoil that is loose and well-aerated*
- *Small log, twigs, bark*
- *OPTIONAL: Moss and lichens, shade-tolerant plants, small flowerpot*
- *Spray bottle with water*
- *Fresh vegetable scraps (especially cucumber)*
- *FOR SNAILS: eggshells or cuttlebone*

Introduction to Content

In this activity, students learn the importance of decomposers in terms of breaking down dead organic matter and their broader importance in food webs in terms of nutrient recycling and bioturbation.

Introduction to Methodology

After discussing decomposers and their importance in the soil food web and terrestrial ecosystem, students can create a log hotel, which is a terrarium habitat for common backyard decomposer organisms. Once they create their habitat, they can find decomposers in their yard or local park to add and observe. Decomposers are easy pets to keep and the log hotel can be kept indefinitely!

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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, also called rotting or decay.

Detritus (*duh-trai-tuhs*)– dead plants and animals (organic matter).

Bioturbation – reworking of soils and sediment by animals or plants.

Aerate – to introduce air into a mixture.

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)**.

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: Make a Log Hotel

1. Prepare your terrarium container. Container should be at least 6 inches tall with clear sides and a vented lid. If using a jar or plastic tub, punch small holes in the lid.
2. Put 2-3 inches of soil on the bottom of the terrarium. This could be potting soil, topsoil, garden soil or even coir (coconut fiber). Soil should be fairly loose and aerated. If you have very clayey soil, consider mixing with coir.
3. Create “rooms” or different habitat spaces in the terrarium. Hollow logs and bark provide both organic matter and hiding spots. A small flowerpot on its side provides a hiding cave. Twigs can provide a climbing place. Mosses, lichens and shade-tolerant plants can all be added for some greenery and interest. Decorative elements, like pebbles or even fairy garden items, could also be included to personalize it!
4. Use the spray bottle with water to generously moisten the soil in the terrarium. Soil should be damp but never flooded.
5. Gather your hotel guests! In your yard or local park, look for decomposers under old logs, under rocks, in decomposing leaf litter and/or in a compost bin. Look for earthworms, pillbugs (AKA roly-polys), slugs, snails, millipedes and beetles. Avoid grubs and larvae (as they may pupate into flies) and centipedes (which are predators, not decomposers). Handle your guests carefully, and wash your hands well afterwards.

Tips for Engagement

[Micropolitan Museum](#) has a fantastic series of time lapse videos on YouTube showing decomposers as they break down organic matter. These two videos highlight the actions of decomposers in leaf litter and compost.

Soil Fauna Bioturbation

<https://youtu.be/Mxp1nnrUG0Q>

Vermicomposting – Life in the Compost Bin

https://youtu.be/6em_8iFfKIk

Experience continued

6. Once your hotel guests are settled in, maintain your log hotel:
 - Feed a regular diet of fresh vegetables. Cucumbers and carrots seem to be favorites, but experiment to see what your guests like. Avoid fruit because it will attract fruit flies. For easier cleanup, you can put the vegetables on a small dish.
 - If you have snails, include a source of calcium for shell building: egg shells or cuttlebone.
 - Keep the hotel moist and out of direct sunlight. Mist with water regularly. If it is drying out too fast, cover some of the vent holes with plastic wrap. Remember, decomposers like it dark and wet!



Figure 1.

A: Supplies for assembling the log hotel.

B: Completed log hotel, side view.

C: A millipede, snail and pillbug enjoy their new habitat.

D: Top view of log hotel.

Share

What types of decomposers are in your log hotel? What are their preferred food sources? Use a notebook to record your log hotel observations.

Process

What are the key elements of the log hotel that make it a good habitat for decomposers? Think about what the decomposers need in terms of the four key habitat needs: FOOD, WATER, SHELTER and PLACE TO RAISE THEIR YOUNG.

Generalize

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

Apply

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

Life Skill(s)

- Use the senses to gain new information or find new ways to use information. (HEAD)
- Learn to form ideas, make decisions, and think critically. (HEAD)

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



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