

# A Rottin' Place to Live

In this activity you and your students are going to take a close-up look at a dead tree to learn about decomposition.

## Background

Many things depend on dead trees for food, shelter and/or nesting sites. Fungi, bacteria and wood-eating insects such as termites and some beetles are usually the first to “move into” a dead tree. As they feed on the tree they help soften the wood, and the tunnels of the wood-eating insects provide access routes through which water and other fungi, bacteria and small animals can enter the tree. Some of the animals lay their eggs in the soft wood and the larvae feed on the wood when they hatch. Others feed on the fungi or animals already living in the dead tree. And some animals make their nests or seek shelter inside decaying trees. As all of these animals excavate, eat and burrow through trees, they help to break them down. The process of breaking down a tree into its nutrients is called *decomposition*. As a tree breaks down, the nutrients it contained are dissolved back into the soil, forming a rich layer of soil called *humus*. It takes a long time to turn a tree into humus. The nutrients in the humus can be taken up by living plants’ roots in the soil and are used to help make new leaves, twigs, branches, roots, and flowers and seeds.

## Preparation

Scout around your area to find a site that has several rotting logs (or large fallen limbs) close together that will be accessible to your kids. Avoid areas that may have standing dead trees at risk of falling. You will be taking your kids on a field trip to this location to examine decomposing trees and branches.

Collect some leaves, twigs, bark and any other tree materials you can find. Put all of one kind of material into the same paper sack. (For example, put all of the leaves in one paper sack, all of the twigs in another, and so on.)

## Activity

### Part 1

1. Spread out some newspaper in an area where all of the kids can gather around it. Explain that as a tree grows it collects minerals and other nutrients from the soil and air around it. These nutrients—carbon, nitrogen, phosphorus, and some others—are used by the tree to make new bark, roots, leaves, twigs, wood, and seeds. After a tree dies it is slowly broken down into *humus*, a dark, rich layer of soil. The process of breaking down a tree into its nutrients is called *decomposition*. The nutrients in the soil then become available for animals and other plants to use.
2. Ask the kids what parts of a tree might become part of the soil (all parts). As they give their answers, sprinkle your samples onto the newspaper. (For example, if someone says “leaves” you can pour the leaves out of the paper sack and onto the newspaper.) When you have piled up all your samples, ask the kids if they think the mess on the newspaper is soil. When they say “no”



## Objectives

- Define decomposition
- Explain how dead trees are important to wildlife

## Grade Level

K-8

## Materials

- Paper bags
- Leaves, twigs and bark
- Newspaper
- Pencils and paper
- Clipboard or sturdy cardboard pieces with rubber bands to use as writing surfaces (at least one for each group)
- Magnifying glasses or hand lenses (one for each group)
- Bug boxes or jars with lids (one for each group)
- Field guides or computer with internet access
- Digital cameras (if available)

ask them if they know what is needed to turn it into soil. Then explain how decomposition works (see Background above).

## Part 2

1. Take your kids on a field trip to the location you scouted earlier and divide the group into teams of three or four. Before starting the activity, go over any guidelines, such as “Do not stick bare hands into dark holes or under branches or logs, release all animals after observing and sketching them, and replace the log or branch in its original position after examining it.”
2. If you have magnifying glasses, hand lenses or digital cameras, pass them out to the groups. Give each group one or more bug boxes or jars with lids. Pass out pencils or crayons, paper and clipboards or sturdy pieces of cardboard to the groups to use as writing surfaces. Pass out any field guides or keep them in a central location for all the groups to use as needed. You may want to prepare ready-to-use backpacks or bags with all the materials already divided up so you can start the activity quickly.
3. Each group should choose a rotting log or branch to study or several groups can use one log. Explain to the kids that they should examine the log and the surrounding area and write, draw and/or photograph what they see.
  - One or more groups should look for animals that are using the rotting logs (insects, worms, birds, salamanders, etc.).
  - One or more groups should look for fungus and plants growing on the rotting logs.
  - One or more groups should look at the leaves, if the fallen trees or branches still have any leaves, and the surrounding soil. Using the jars and bags, have each group take samples of the soil from around the tree, and small samples of the bark. They can use a magnifying glass or hand lens to help them see the organisms in their samples.
  - Have the kids write and draw or photograph what they are seeing or feeling.
  - If you have field guides available, the kids can try to identify what they are seeing.
4. When they return to the classroom (on the same day or another day) have them use a computer with internet access or field guides to see if they can identify:
  - Tree itself (if it is still possible to identify it)
  - Insects and other invertebrates
  - Amphibians
  - Reptiles
  - Birds
  - Mammals
  - Plants
  - Fungi
5. Have the groups share what they discovered with each other.

## Extension

- Make a mural of a tree based on the students own drawings and photographs.
  - Draw a log on a big piece of butcher paper or several pieces of easel paper joined together.
  - The kids can cut out their drawings and print and cut out their photographs and tape the drawings around the log. They can use piece of yarn to connect their drawings and photos to the place in, on or around the log where they found the animals and plants.



- Read a book about trees, such as *The Giving Tree* by Shel Silverstein, *The Tree: A First Discovery Book* by Scholastic, *Trees Are Terrific* by the National Wildlife Federation staff, or *The Lorax* by Dr. Seuss.
- Create a sculpture display from sawdust. Sawdust can be obtained from many lumber companies at low or no cost. Children should combine two cups of sawdust, three cups of flour, and one cup of salt. Add water as needed to make pliable dough that can be sculpted into trees, birds, and other objects of nature. Add water in small amounts as you want the dough to be thick in order for it to hold shape while it dries. This is a great group project as children work together to create a display.