

Explore Edgewood!

Rot in the Woods

Suggested for Ages 9 to 99

What happens to litter dropped in an oak woodland?

Leaf litter, or duff, is the term for leaves, stems, bark, twigs and other natural things that fall to the woodland floor. Litter is also a word for the waste that people (humans) drop in public places.

We found these pieces of leaf litter and human litter nearby. We put them in boxes of duff -- leaves, stems, bark, twigs and other things from the woodland floor -- for you to investigate up close.

Every four weeks, we add a new set of litter to a different duff box, so you can discover what happens to litter in the woods.

Explore on your own, read the ideas on the signs above the duff boxes, or follow the experiment below.



Tools on Site:

- Duff boxes
- Pile of sticks for digging, and to use like chopsticks to pick up objects.
- “Decomposers in the Garden” banner
- Your eyes, ears and nose, for observing carefully.
- Your voice, for sharing your observations and thoughts out loud.

Optional Tools to Bring

- Measuring tape or ruler, to accurately record changes in size.
- Paper and drawing tools, to capture images, ideas or data as you investigate.
- Camera to take pictures of your notebook or your findings.



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Don't touch me!

Poison oak may give you a very itchy rash. Wash with plenty of soap and water to avoid the itch!

Investigate: Explore what (and who!) is on the woodland floor

Choose a stick off the ground to gently explore in a duff box, all the way to the bottom. Be a detective! Use your senses -- sight, smell, sound and touch -- to thoroughly investigate what's inside the box.

Describe out loud what you feel, see and hear, "I notice..."

Did you come up with questions? Say your questions out loud, "I wonder...?"

Does it connect to something you remember? Finish the sentence out loud, "It reminds me of ...!"

Keep talking till you run out of things to say! Listen to your families' observations, too, and see what you can add.

Naturalist John Muir Laws says, "By describing what you see, your brain also processes each observation more deeply. This is reinforced by the auditory feedback loop of hearing your own voice describing what you see. You will find that the things that you say remain in your working memory much longer than what you think quietly to yourself."

If you have a notepad, record your observations on paper by drawing and writing down anything you find interesting about what's in the box. You don't have to be a good artist to make a page that is full of information! Use sketches, words and numbers on paper to remind yourself, and tell others, about all the things you noticed. Watch this [video](#) for some ideas.

Did you come up with questions that you want to investigate?



To do at home:

Become an exceptional observer! Start by watching this video [WoW 348: I Notice, I Wonder](#) .

Adults! Taking time to use your senses to focus attention in nature builds observation skills, develops curiosity, and relieves stress. Describing things out loud reinforces the quality and memory of observations, while sharing them aloud makes this a social experience. Find out more about guiding students to practice the essential skills of observation and developing questions:

[Three prompts for deeper nature observation](#) from [John Muir Laws](#)

[I Notice, I Wonder, It Reminds Me Of](#) [Parent Guide](#) and [video](#) from [BEETLES Project](#)

Experiment 1: What changes happen over time to these objects on the woodland floor?

1) Find duff box 1 and look at the photo by the box.

Use sticks off the ground to pick up and carefully observe each of the items shown in the photo. Use your eyes, nose and ears to observe. Describe each item out loud to a friend, or on paper. Note the color, thickness, whether it seems hard or soft. Measure the objects if you have a ruler (if you don't, estimate the size from the photograph). Be sure to record the date from the sign, "These items were placed in this duff box on _____."



What else do you notice?

In what ways are items similar or different from each other?

2) Predict what changes will happen to each object after 16 weeks on the woodland floor.

This is your hypothesis. Record your predictions for each object in a notebook. (If you don't have a notebook today, can you think of other ways to record your hypothesis?)

3) Gather data. Check the other duff boxes to see what date a set of items was placed in the box. If the experiment has been running long enough, then you can see what has happened over time, by comparing the same item in different boxes. (If not, come back to Edgewood again in about 4 weeks.)

What evidence can you find of changes happening to the items in the duff boxes? In a notebook, record the same type of data as you did for duff box #1. Watch this [video](#) for ideas on how to journal your results.

4) Analyze your data. Describe how your findings support or contradict your hypothesis.

5) Make conclusions from your experiment. Ask and answer questions like: Which things changed the most? What do they have in common? Which things changed the least? What is different between the things that changed a lot or a little?

Are there ways you could change the experiment to investigate any unanswered questions?

Experiment at home:

[A Rot is Happening Here](#) from [San Mateo County Office of Sustainability](#)

[Compost: A Scientific Investigation](#) from [California Academy of Sciences](#)

Who cares what happens to litter?

Read about “Decomposers in the Garden” on the banner at the Education Center, or watch “[The Dirt on Decomposers](#)” video. Decomposers use dead plants and animals for food. Which items in the experiment do you think are food for decomposers? Which are not?

Discuss with a friend what would happen to the duff from trees and plants and animals if there weren't any decomposers.

When objects decompose, they release the materials they are made of. For example, trees use sunlight to make leaves, wood and bark from water, carbon dioxide, and nutrients from the soil. When leaves decompose, the same materials that the tree used to make the leaves go back into the soil, air and water. What are candy wrappers made of? What do you think gets released into nature when a candy wrapper decomposes?

Find out why [Plastics last “FOREVER.”](#)

Water and sunlight may eventually break down the litter that decomposers can't use for food -- metal, rock, plastic -- but that can take a very long time, hundreds, thousand or even millions of years. What would happen at Edgewood if items like plastic water bottles, [juice boxes](#), and food wrappers are left on the ground?

What actions can people take to reduce human litter?

Tell us your ideas! Draw a picture, make a flyer or video, share some photos, animate a cartoon, or create some other way to show people how they can reduce litter. Send an email to Explore@FriendsofEdgewood.org showing your Call to Action!

Here are some ideas for other investigations. How would the experiment need to change to answer these questions?

Which items will last longest on the woodland floor? Arrange the items in the duff box in the order that you think they will last longest on the woodland floor.

Does bark decompose faster or slower than the wood inside an oak branch?

Do leaves decompose faster when they are wet? If it is colder?

Are you curious about the woodland floor?

Did you come up with other questions that you want to investigate?

Send an email to Explore@FriendsofEdgewood.org describing an experiment you'd like to try in these boxes, or showing us the data you gathered.

Experiment 2: Which items will last longest on the woodland floor?

1) Find duff box 1 and look at the photo by the box.

Use sticks off the ground to pick up and carefully observe each of the items shown in the photo. Use your eyes, nose and ears to observe. Describe each item out loud to a friend, or on paper. Note the color, thickness, whether it seems hard or soft. Measure the objects if you have a ruler (if you don't, estimate the size from the photograph). Be sure to note the date on the sign, "These items were placed in this duff box on _____."



What else do you notice?

In what ways are items similar or different from each other?

2) Arrange the items in the duff box in the order that you think they will last longest on the woodland floor.

Discuss with a friend the reasons you placed them in that order.

Record your hypothesis -- your prediction of the order the items will last longest on the woodland floor. (If you don't have a notebook today, can you think of other ways to record your hypothesis?)

We've set up an experiment so you can evaluate your hypothesis. Each duff box has the same set of items. We add a new duff box added every four weeks, so you can observe how the objects change over time. The items will be in duff box 1 for 16 weeks.

3) **Gather data.** Check the other duff boxes to see what date a set of items was placed in the box. If the experiment has been running long enough, then you can see what has happened over time, by comparing the same item in different boxes. (If not, come back to Edgewood again in about 4 weeks.)

What evidence can you find of changes happening to the items in the duff boxes? In a notebook, record the same type of data as you did for duff box #1. Watch this [video](#) for ideas on how to journal your results.

4) **Analyze your data.** Describe how your findings support or contradict your hypothesis.

5) **Make conclusions from your experiment.** Ask and answer questions like: Which things changed the most? What do they have in common? Which things changed the least? What is different between the things that changed a lot or a little?

Did the experiment provide enough data to thoroughly evaluate your hypothesis?