

Woody Material



The Woody Material activity takes inventory of dead trees in our FERN plot. We inventory dead trees that are still standing (snags) and dead trees and tree parts that have fallen to the forest floor (coarse woody debris). Snags and coarse woody debris provide habitat to animals and nutrients to the soil as they break down and decompose. They also teach us about the history of our plot.

Before you Start:

Take a few minutes to walk around your FERN plot. Work with your classmates to find the boundaries of the 1/10 acre plot and the embedded 1/50 acre and 1/1000 acre plots. Find and walk your transect lines.

What do you notice about the forest around you?

What do you wonder?

Use your field notebook to record your thoughts. Make note of the date, the weather, and any other information you think might impact how you move through the activity today. One important key to data management is keeping good notes on what is going on around you while you're collecting your data. These factors impact how you do your work, and can give you helpful clues down the road if you notice that something might have gone wrong.

Snags are dead trees that are still standing upright.

Course Woody Debris (CWD) are logs, or dead trees that have fallen to the ground. Here, we define CWD as logs with a diameter of at least 3 inches.

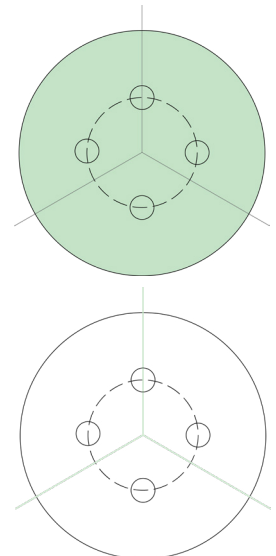
The Woody Material activity guides us through studying trees in the forest that have died. *How can you tell when a tree is dead? What might be different about the leaves, branches, or trunk of a living tree vs. a dead tree?*

When trees in the forest die, their role in the larger forest system changes. Living trees capture sunlight and use it to create sugar to feed themselves and the critters who eat their leaves, fruit, and seeds. *What other roles do living trees have? What roles do dead trees have?*

As we inventory snags and course woody debris, we will make note of **decay**, or how much the tree has broken down. *How does decay relate to the role of dead trees? How do you expect decay of a snag or log to change over time? What factors might impact the rate of decay (how fast or slow the tree breaks down)?*

What You'll Need

- biltmore stick
- calipers
- compass
- clinometer
- data sheet
- diameter tape
- Forest Trees of Maine book
- field notebook
- measuring tape
- tree ID Tags



Snags are inventoried in the 1/10 acre FERN plot while CWD is counted along transect lines

Snags Procedure:

If you completed the Overstory activity for this plot, you may have already collected some data on snags. Here, we collect additional data on each snag, looking specifically at the process of **decay**.

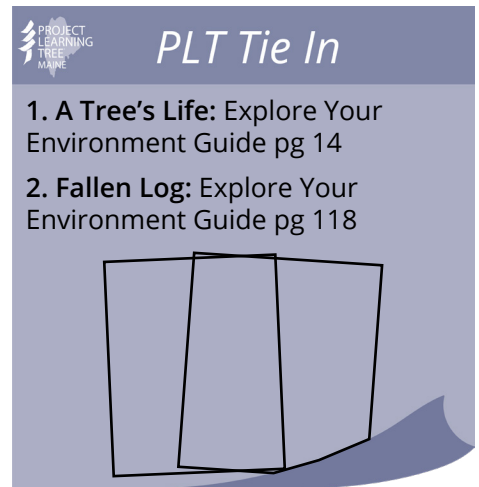
1. Stand at plot center and face north (*Note: figure out which way north is by using a compass or the marking on your plot center post*). Moving in a clockwise direction identify the first snag in your FERN plot.
2. Check to make sure your snag has a tree ID tag, if not, assign it a tree ID number and install a tag. Record the tree ID number on your data sheet.
3. If possible, record the species of the snag. If there is too much decay to identify species, you might be able to note if it is a **hardwood** or a **softwood**.
4. Use your diameter tape or a biltmore stick to record the diameter at breast height.
5. Use a clinometer to estimate the height of the snag and record your estimate on your data sheet.
6. Record the status of your snag. *Note: these statuses give us insight into how much the snag has decayed.* Status options are:

- Complete Crown: *the top of the trunk and branches appear completely in tact.*
- Damaged Crown: *the top of the trunk and branches appear partially missing or otherwise damaged.*
- Missing Crown: *the top of the trunk and branches appear to have fallen off the tree.*
- Downed: *use this code if data was collected on a snag in a previous year, but that snag has down fallen to the ground and is now a log. Note: be sure to collect more data on this one when you get to CWD .*

7. Return to plot center and repeat steps 2-6 for the next snag in your plot. Continue until data has been collected on all snags.

Course Woody Debris Procedure:

8. Stand at plot center and face north. Working with a buddy, use a tape measure to measure a straight, 50 foot line towards north from the plot center post. This line is your 0° transect line . *If you completed the full Establishing the FERN Plot procedure, the end of this transect line will already be marked with a flag stake.*
9. Walk along the transect line being careful not to disturb how it lies. When you encounter a log with a diameter greater than 3 inches, stop to collect data.
10. Using calipers, measure and record the diameter of the center point of the log. *Note: Where do we usually measure diameter? Why is it different this time?*



11. If possible, identify and record the species of the log. If you can't identify the species, you might be able to determine if it's **hardwood** or a **softwood**.

12. Note the **decay** class of the log's structure, bark, and twigs & branches using this chart

Decay Class	Structure	Bark	Twigs & Branches
1	Sound	Intact	Fine twigs present
2	Outer sapwood soft	Mostly intact	Large twigs present
3	Heartwood mostly sound	Falling off or absent	Branches present
4	Heartwood rotten	Detached or absent	Branch stubs easily fall off
5	Completely rotten	Detached or absent	Mostly absent

Note: classifying decay classes is subjective and your log might not fit perfectly on this chart. Make the best estimate you can with your observations and the decay class options.

13. Continue walking along the transect line and collect data for every log with a diameter greater than three inches that you encounter.

14. Once you reach the end of the transect, return to plot center and use your compass to face 120° from north. Repeat steps 8-13 for this Southeast transect. Then return to plot center and use your compass to measure 240°. Repeat steps 8-13 for this Southwest transect.

15. Return to your classroom and check the accuracy of your data. If the plot has been measured before, compare the measurements you just took with the previous measurements to make sure they make sense (*snags and logs should not change species or become less decayed!*)

16. Once the data is verified, share your findings with Maine TREE and the FERN network.

Definitions:

Decay: this is the breakdown or decomposition of wood as fungi and bacteria use its nutrients. Decay, or rot, can look like squishy wood or crumbly wood. Decay can be found on living trees that are injured, on snags, and is almost always found on logs that have been laying on the forest floor.

Diameter at breast height (DBH): often shortened to **DBH**, this is a standardized height used to maintain consistency in reporting the diameter of trees. It is the diameter of the trunk 4.5 ft up from the ground measured from the uphill side of the tree.

Hardwood: these trees have broad, flat-ish leaves. Their branches usually come off of the trunk at random intervals. Their wood tends to be pretty hard and may be slow to decay. Examples in your FERN plot might include sugar maple, red oak, paper birch, or American beech trees.

Softwood: these trees have needle-like leaves that often stay green in the wintertime (because of this, some people call them "evergreens". Their branches often come off of the trunk in a whirl (a circle of branches all at one height). Their wood tends to be soft and may be quick to decay. Examples in your FERN plot might include white pine, hemlock, red spruce, or Balsam fir.