Maine TREE Foundation's

FERN

FOREST ECOLOGY RESEARCH NETWORK

FERN Toolkit

A FERN toolkit can be rented from the Maine TREE Foundation or supplied by a forester with the Maine Forest Service district foresters. The materials of a FERN kit contain everything needed to establish a FERN plot and complete all of the outlined activities.

To rent a FERN toolkit contact:

Lena Ives
Maine TREE Director of Education
lena@mainetree.org
(207) 621-9872 ext. 2

What is included in a FERN Toolkit?

- 100-foot measuring tape
- aluminum nails (for Tree ID tags)
- biltmore sticks
- diameter at breast height (DBH) tapes
- Forest Trees of Maine Guide
- calipers
- clinometers (tangent tree height)
- compass
- flag stakes
- flagging
- hammer
- magnifying glasses
- measuring stick
- Maine Invasive Plants Field Guide
- permanent markers
- Tree ID tags

To esablish your FERN plot you will also need:

- One 4x4 inch wooden post (colorfully painted)
- Four grade stakes (colorfully painted)

Maine TREE can provide these items on an as-needed basis

What do you need from the classroom?

- clip boards
- computer(s) to record data
- data sheets (printed)
- field notebooks
- pencils

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FERN Toolkit Glossary

100-foot measuring tape

You will use these durable measuring tapes when establishing your FERN plot and any time you lay out your transect lines. They are also a great tool to help estimate tree height when used with a tangent tree height clinometer.

biltmore stick

aluminum nails (for Tree ID tags)

Aluminum nails are used for forestry purposes because aluminum does less damage to mill equipment than other metals if a tree with an embedded nail ends up in a mill. Make sure you leave plenty of space for your labelled trees to grow when you're hammering in Tree ID tags.

DBH tape

biltmore sticks

These sticks look like long rulers and have embedded calculations that can help you estimate the diameter and height of a tree. Where your eye is in relation to the stick makes a big difference in making these estimates (*your classroom's FERN forestry expert can show you how).*

Forest Trees of Maine

diameter at breast height (DBH) tapes

These tapes might look like regular measuring tapes, but don't be fooled! One side of the tape has inches, and the other has inches divided by π (3.1416). This allows you to wrap the tape around the tree to measure circumferance (the distance around the trunk, or around any circle) but to read the diameter (the distance across the trunk or across any circle).

Forest Trees of Maine Guide

This field guide is published by the Maine Forest Service and has tools to help you identify the tree species commonly found in the Maine woods. All of the trees in your FERN plot should be in here!

calipers

calipers

Like a DBH tape, calipers help you estimate the diameter of a tree. Instead of using the circumferance to estimate the diameter, the tool has arms that expand to sit on points on either side of the trunk and the distance between those points is displayed. This distance is your diameter.

clinometer

clinometers (tangent tree height)

A clinometer is any tool that helps you estimate the height of a tree (a tricky task to accomplish without a very tall ladder). In the FERN program, we use tangent tree height clinometers, which allow us to estimate tree height using trigonometry. Your classroom's FERN forestry expert can show you how to use these clinometers, and might even have a fancier one you can experiment with.

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compass

Compasses use the magnetic pull of the earth's core to orient you towards north. You will use the compass to set up your FERN plots and to orient yourself within your FERN plot in later activities.

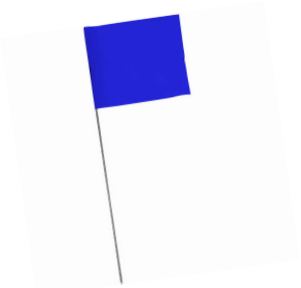
compass

flag stakes

These stakes are an easy to spot way to mark a point on the forest floor. You will use them to mark the ends of your 50 foot transect lines, and perhaps other points you want to keep track of around your plot.

flagging

Like flag stakes, flagging is a colorful way to mark a point in the woods. Flagging is usually tied to a branch or a trunk to mark a point at eye-height. Forestry professionals use flagging all the time to keep track of trees they are sorting into groups (for example, healthy vs. not healthy or harvest vs. don't harvest). You will use flagging to mark the outside edge of your FERN plot and perhaps other points you want to track around your plot.



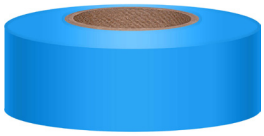
flag stake

hammer

Your hammer is for installing tree ID tags.

measuring stick

These sticks have measurements noted at 6, 12, 24, and 54 inches to help you quickly estimate the height of seedlings.



flagging

magnifying glasses

Magnifying glasses are a great way to look at leaves, buds, twigs, etc. up close. Use them to help you idenfity a tree species, or to get a closer look at something you're curious about.

Maine Invasive Plants Field Guide

This book is published by the Maine Natural Areas Program and describes plants that have been identified as invasive specifically in Maine's ecosystems. Identifying invasive species in your FERN plot can help you better understand the past, present, and future ecosystem dynamics at play. *Ask your FERN forestry expert about how invasive species impact their work in the woods.*

Maine Invasive Plants

permenent marker

Make sure you use permanent marker when you mark your wooden plot-center stakes. We want to make sure your markings are as weather-proof as possible.

tree ID tags

Tree ID tags

Tree ID tags help us keep track of which tree is which so we can look at how the measurements of each overstory tree in our plot change over time.

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