

Basic Tools for Forestry

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Trades of all different types have a basic set of tools that are needed to do the job correctly, and forestry is no different. Over the years, many new tools have been added to the tool kit and are very beneficial. Here are the basics.

Number one on my list of forestry tools would be a compass. A compass is essential because you must know where you are going and how to get back to the truck once you get there, especially if you are on an unfamiliar piece of property. There are several types of compasses available, varying greatly in price and options. My favorite compass is equipped with a mirror that can be used for sighting a line. I find it more accurate than a compass without a mirror. This is most useful when trying to identify property lines or when cruising timber. A compass should not be relied on to run survey lines. However, it can give a good idea where a property line is located, if you have a good starting point and know where you are going.

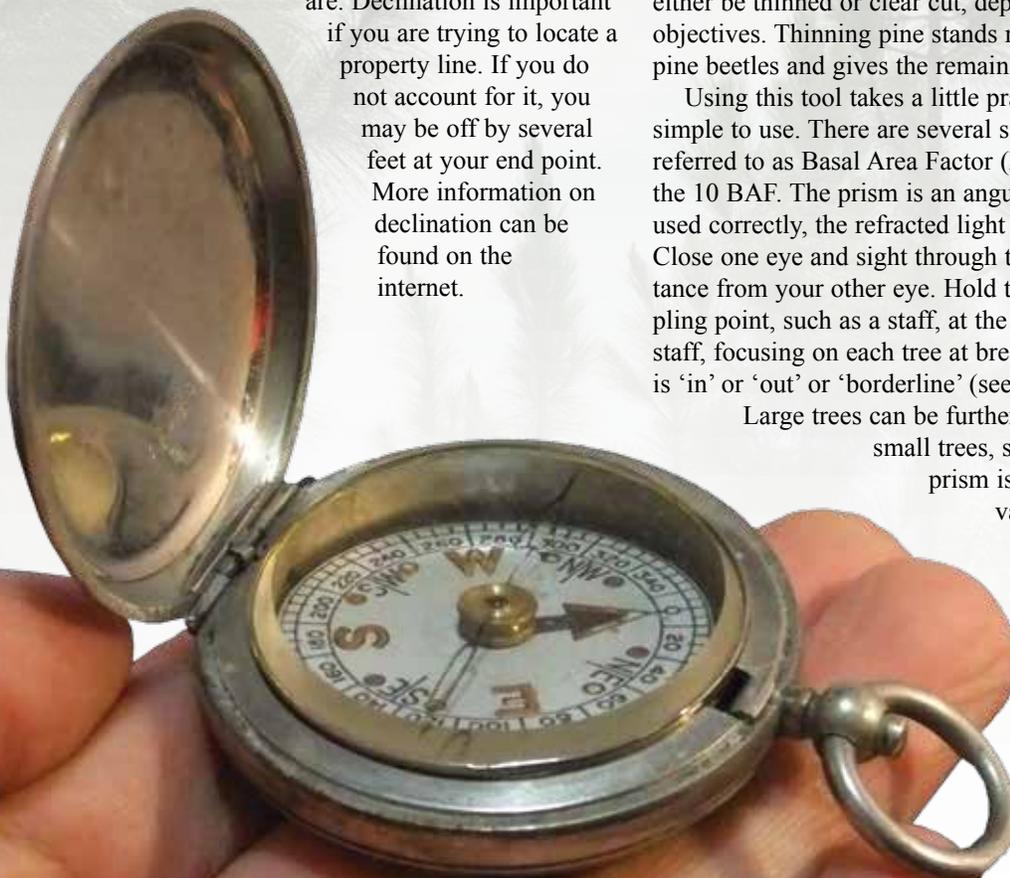
Also, don't forget about declination, the degree difference between magnetic north and true north. In Alabama declination uses ranges from 0 to 3 degrees west, depending on where you are. Declination is important if you are trying to locate a property line. If you do not account for it, you may be off by several feet at your end point. More information on declination can be found on the internet.

The next piece of equipment needed for forestry is the wedge prism. Many people that own timberland hear the term 'basal area' and may not understand what this really is. Basal area is simply the amount of cross-sectional area that a tree occupies on an acre of land, which can be measured by using a wedge prism. Each tree, depending on the diameter, takes up a different amount of space in the forest. This information is important to know as it correlates not only to the carrying capacity of the land but also to forest health.

The prism is very useful in managing timber as it can tell if there is sufficient stocking, or if it is time to thin a stand. The general rule for thinning pine stands is to have the basal area and the site index close together, usually around 80 square feet per acre in south Alabama. Pine stands with high basal area should either be thinned or clear cut, depending on the landowner's objectives. Thinning pine stands reduces the threat of southern pine beetles and gives the remaining trees room to grow.

Using this tool takes a little practice, but once mastered it is simple to use. There are several sizes of prisms available that are referred to as Basal Area Factor (BAF), the most common being the 10 BAF. The prism is an angular piece of glass that when used correctly, the refracted light will offset the trunk of the tree. Close one eye and sight through the prism at a comfortable distance from your other eye. Hold the prism directly over a sampling point, such as a staff, at the plot center. Rotate around the staff, focusing on each tree at breast height, and count whether it is 'in' or 'out' or 'borderline' (see photos 1, 2, and 3 opposite).

Large trees can be further away from plot center than small trees, so care must be taken when the prism is used in forests that have large variations in tree diameter. If you are using a 10 factor prism, multiply the number of trees counted 'in' by 10 and that is your basal area. Several plots should be taken throughout the stand and averaged together to get a basal area estimate for the entire stand.





Diameter tape ('D-tape') is also a good tool to have on hand. Most people can guess when a tree is large enough to be harvested, but sometimes having an accurate measurement can be the difference between selling your timber for pulpwood

or chip-n-saw. Your local timber buyer can tell you the different specifications for products such as pulpwood, chip-n-saw, saw logs, ply logs, and even poles.

Trees should be measured at 4.5 feet from the ground line, often called DBH (diameter at breast height). Poles are measured at 6 feet above the ground line. I prefer to use what is called a loggers tape, which comes in different lengths from 50 to 100 feet and has the diameter measurements on one side. Having this tool can be very useful if taking 1/10th acre plots or measuring tree diameter.

The clinometer is a device for measuring the height of a tree. Using this tool takes a bit of practice but can be helpful in giving you the full picture when it comes to managing your trees. Standing at a distance of 66 feet from the base of the tree, use one eye to look through the lens at the scales while the other eye sights alongside the clinometer housing. An optical illusion is created with the horizontal sighting line appearing to project on the side of the clinometer housing. Place this sighting line with the base of the tree, remembering the number. Then do the same looking at the top of the tree. Adding these two numbers together equals the tree height. When measuring tree height, try to stand so that you are fairly level with the base of the tree. Keeping both eyes open and focusing on two objects at the same time can be tricky at first, but this exercise can be practiced using a known height such as a telephone or power pole. Although somewhat expensive, clinometers are worth having if you want to know accurate heights of your trees.

Other tools used in forestry today include a **hypsonometer** for electronically measuring distance, and an **increment borer** for taking a core sample from a tree to count the age or look at growth rates. Most of these tools have been around for years and are utilized to varying degrees, depending on the forester.

One modern tool that I find myself using more each day is the smart phone. Several different useful apps are available, such as mapping that can be used to pinpoint your exact location in the forest. There are also 'soils' apps that can help identify soil types, tree identification apps, and wildlife apps. The list goes on and on.

Whether measuring your basal area, or using a diameter tape to monitor a logging operation in your forest, landowners would be wise in learning to use some of these tools as they can help manage their property to its fullest extent. Forestry Suppliers* and Ben Meadows*, as well as other providers, are good sources for the instruments mentioned and others. If you need assistance using any of these forestry tools, your local Alabama Forestry Commission personnel can help, and there is helpful information on the web.📍

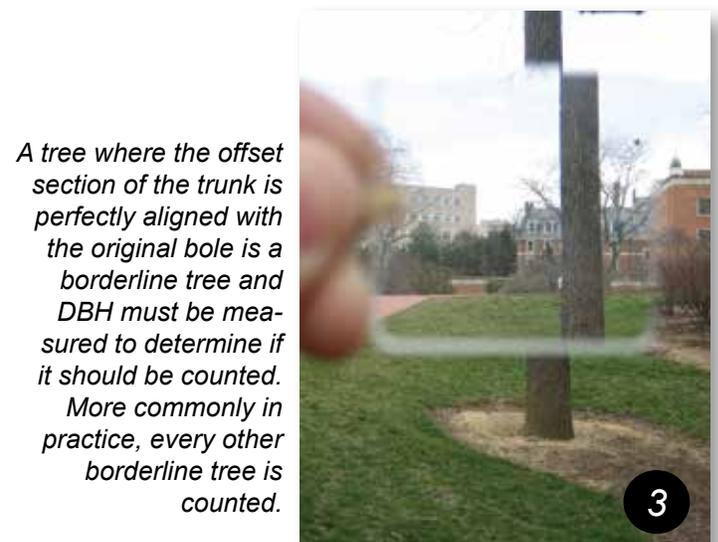
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1
A tree is considered 'in' if the offset section of the tree overlaps the bole as viewed with the prism.



2
A tree where the offset section of the tree does not overlap or touch the original bole is an 'out' tree and is not counted.



3
A tree where the offset section of the trunk is perfectly aligned with the original bole is a borderline tree and DBH must be measured to determine if it should be counted. More commonly in practice, every other borderline tree is counted.