

Landowners and Forest Inventories: Frequently Asked Questions

Assume you just purchased a new car and have decided to sell your old vehicle yourself. What is the first thing you would do? You would determine the value of the vehicle and a reasonable sales price, right?

Most people wouldn't dream of trying to sell something as valuable as a vehicle without first knowing what it is worth. Yet, every day there are timber sales that can be much more valuable than a used car, and landowners have no idea what the timber is worth. They have no idea if they got a fair price for their timber.

It is well worth your time and effort to have your timber inventoried prior to a timber sale. Failing to do so may cause you to sell your natural resource assets for less than current market value because the actual value of the timber is not known, or because it may be marketed improperly.

The following will answer many of your questions about inventorying and selling your timber. Our goal is to make you a more informed seller.

What Is a Forest Inventory?

A forest inventory, or "timber cruise," is a process of identifying the location of timber and other forestland resources, and the volume and value of those assets. Depending on the landowner's objectives and reasons for conducting the inventory, a variety of data may be collected. Landowners often choose to conduct a forest inventory when:

- preparing to sell the property
- preparing rental or lease agreements
- determining insurance needs for the property
- determining net worth
- calculating depletion for income tax records
- determining timber volume in case of loss through fire or theft
- developing short- and long-term management objectives
- considering a timber harvest or stand improvement techniques
- preparing to sell the timber
- assessing forest values, including nontimber assets
- identifying recreational opportunities

Though there is no immediate return on investment when you pay for a forest inventory, your management decisions made based on the information gathered can reap rewards. If you conduct a timber cruise in preparation for a sale, the cost of the inventory is a good investment and may be recouped many times over.



Figure 1. A forest inventory can help you understand what your timber is worth, and it may help in designing a silvicultural prescription or land management plan to meet your objectives.



Figure 2. A forest may contain many different resources and timber, but without having an idea of what is out there or what it may be worth, it can be difficult for you to decide how to manage those assets.

Can I Conduct My Own Inventory?

In most cases, it is best if you hire a professional to do the inventorying—especially if the process involves assigning a dollar value to timber, if you are planning a timber harvest, or if the inventory will be used by someone else to develop an extensive land management plan. Because of the complexity of sampling and measuring trees, you want to make sure someone with proper training and experience conducts a timber cruise. In some cases, it may be appropriate for a landowner to conduct his or her own inventory; for example, if the landowner just wants to get a general idea of what is on the land, or if he or she wants to check the results of others.



Figure 3. It is important that as a landowner you discuss your objectives with the forester so he or she knows exactly what to measure and how the information will be used.

What Steps Need to Be Taken Before the Inventory?

Before conducting a timber cruise, several steps can be taken to ensure whoever is doing the inventory has all the information and can do a thorough job.

- **Define your objective.** Before doing anything else, sit down and decide the purpose for the inventory. Answer these questions: What information is needed? How will this information be used? This will save time and money, and it will ensure that the results of the inventory are accurate and meet your unique needs.

- **Obtain a map of your property.** Check your local library, county courthouse, or a surveyor's office. These are also good places to get other information that might aid in developing management plans for the property, such as estate planning or verifying tax assessment records.

- **Take a walk.** With a deed or land survey in hand, check out the property yourself, making sure the location and size recorded are accurate. Records should describe the boundaries of the parcel. Make sure these boundaries are clearly marked. Property lines may be designated either by painting or flagging boundary line trees.

- **Do some research.** Make sure to check references of forestry professionals in your area. Talk to other landowners who have had experience dealing with consultants and would recommend their services.
- **Compartmentalize the property.** If your property contains several different types of forests, or forest areas varying by age, species, or other characteristics, it helps to divide the land into separate units. This will make record keeping easier and allow management decisions to be made based on each site's unique needs.
- **Get cost estimates.** Prior to the inventory process, determine cost estimates for each phase of the inventory so you know exactly how you will be spending your money. These kinds of records may also be important for tax purposes and estate planning.



Figure 4. Before beginning an inventory, take a stroll around the property, making sure that boundaries are clearly marked and are consistent with what is recorded in deeds and land surveys.

What Should I Expect During the Inventory Process?

It is unlikely that every tree will be measured. A sample will be measured, the size of which depends on the size of the parcel, the purpose of the inventory, and the number and density of the tree species being inventoried.

First, similar forest stands are grouped based on vegetation type, location, and age. Then, plots spaced equal distances apart throughout the stands are designated as sample plots to be included in the inventory.

Once sample plots are identified, there are a variety of ways the trees within those plots may be measured. The two most common are fixed radius (all trees within a certain distance of the center are measured) and variable radius (also called prism plots; measures fewer trees but uses geometry to select measured trees and to calculate volume of standing timber).

What Is Measured During a Forest Inventory?

This depends on your objective. The following are often included in a timber cruise:

- **Species.** Tree species are recorded and often later grouped based on how the timber can be marketed.
- **Diameter at breast height (DBH).** The diameter of each tree sampled is taken at 4½ feet above the ground on the uphill side of the tree, and rounded to the nearest inch, or 1/10 inch.
- **Height.** Usually, the merchantable height or total height is measured. This may be determined by the tree species, the product for which the tree will be cut, and the tree's physical characteristics, such as defects. Total height is generally measured in inventories designed for stand management purposes.
- **Defect.** Trees may possess characteristics that reduce their value for certain products or make them unsuitable for sawlogs. These may include crooked or swollen stems, cavities or hollows, scars, and rot. Defect may be expressed as a percentage of the total volume.

The following less common measurements may also be included in a timber cruise:

- **Past growth rates.** An increment borer may be used to remove cores of wood from sampled trees of different diameter classes. By counting the rings, the tree's age can be estimated, as well as its growth rate over the past several years.
- **Site quality.** Various factors may be assessed to determine the quality of a timber site, including total tree heights, volumes, tree age, or other indicators of the land's ability to grow trees. Site quality can also be assessed by looking at historical records, relationships between species in the overstory and understory, as well as topographic features, weather, and soil types.

Other assessments may be taken during an inventory, depending on the purpose for the inventory. These include the following:

- **Wildlife habitat.** Though specific animal species are difficult to track, location, quantity, type, and arrangement of understory vegetation can be good indicators of wildlife presence. Observations of other evidence of wildlife, such as nests, dens, deer browse, and droppings, can also be made.
- **Fuels.** Fire risks can be assessed as part of the overall inventory. The amount and potential flammability of fuel material is recorded. This information allows you to evaluate steps that can be taken to reduce risks of fire.
- **Grazing resources.** If raising livestock is part of your activities or plans, an inventory can be conducted to assess potential resources available on forestland. These can include forage grasses, fences, and water sources.

- **Recreational resources.** An inventory can also help you develop a management plan to increase recreational and aesthetic values enjoyed by you, your family, or those who rent or lease the property. Features that may be recorded include locations of wildlife habitat, panoramic views, and hunting stands.
- **Soil.** An important part of forest management is taking steps to protect the supporting ecosystem. You may include in the inventory an assessment of site features such as soil quality and type, ground slope, or other indicators of erodability or water pollution sources. Varying soil types affect production capacity, and identifying these types and assigning a site index can help you maximize benefits.



Figure 5. An inventory can also help you identify potential grazing resources for livestock.

What Information Should Be Included in an Inventory Report?

Again, this depends on the purpose of the inventory, but there are some values that are typically calculated and reported in a forest inventory:

- **Trees per acre.** An estimate of the number of trees found on each acre of your forestland. This will vary, depending on the age, management practices, and history of the stand; for example, whether it has been harvested or sustained destruction from forest fires.
- **Basal area.** Usually reported in square feet per acre, measurements are taken of the cross sections of tree trunks, usually at breast height and inclusive of the bark. Basal area gives an idea of the density of trees in a stand. This number, which combines average diameter and trees per acre, is often used to set management objectives and determine silvicultural prescriptions.
- **Volume.** This value, determined by tree dimensions, is reported to give the buyer an idea of how much material is available based on the product to be cut from the trees. Some common units of measure used to report volume are tons, thousands of board feet, thousands of cubic feet, or cords (wood stack standing 4 feet high by 4 feet wide and 8 feet long).

In addition to field measurements and other information pertaining to timber, the inventory report should contain other items, including the following:

- **Description of sampling system used.** A statement should be provided explaining sampling techniques employed, sample size, and statistical reliability of the results.
- **Summary of inventory findings.** The report should include a summary of measurements (tree sizes, volumes), values (depending on product sought), and other resource assessments (wildlife) identified at the outset of the inventory. If the land was cruised in preparation for a timber sale, the final report should include the amount and value of the timber based on product type. These types include the following:

Poles—trees with tall, clean boles, specifications can vary by region or product type.

Sawtimber—trees of the size (usually at least 10 inches DBH) and quality to yield saw logs.

Pulpwood—trees, usually at least 4 inches DBH, used to manufacture wood fiber products.

Chip-n-saw—trees that are larger than pulpwood but smaller than sawtimber, from which both lumber and chips are sawn.

Summary

A professional forester can help you determine the measurements that should be taken and the proper sampling system to meet your needs. With the final inventory report in hand, you will be in a good position to make management decisions about your land, and in the event of a sale, you can have confidence that you know the value of your land or timber.

If you need further assistance or help locating a registered forester, contact your local Alabama Cooperative Extension System office (on the Web at www.aces.edu/counties) or the regional Alabama Forestry Commission office in your area (www.forestry.state.al.us/regional2.aspx).

References

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For more information, call your county Extension office. Look in your telephone directory under your county's name to find the number.

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