Continuing discussion of creating a Forest Management Plan for the Town of Raymond
May 6, 2011

One of the most important things for forest landowners to know about their forest property is how much timber they own, and its respective value. Getting this information in done by measuring a sample of the larger population of trees on the property. There are several tried-and-true scientific methods of gathering information. All require measuring the volume of all trees in an known area.

Because it is terribly inefficient to measure every tree on 200 acres of forest, foresters take a sample of the total tree population by measuring trees in a known area. For example, on a strip cruise, the forester measures all the trees in a foot wide strip on the whole length of a woodlot. He then measures all the the trees in a parallel 50 foot wide strip, 200 feet from the first strip, repeating the procedure until he gets to the end of the property. Using these parameters, twenty percent of the trees will be measured and expanded to represent the total volume of all 200 acres.

The method I will be using is called a "variable radius cruise," which is more complicated to describe than a 50 foot strip cruise. In general, a prism is used at a plot center to decide which trees in a 360 degree radius area are measured. The term "variable radius" is used because the diameter of each tree measured in the plot determines the area (acreage) of which that tree will represent (see Fig. 14-1). The larger the tree, the smaller the area it represents. Statistically, this is a superior method, because a higher percentage of the larger, more valuable trees are sampled.

To get a statistical 90% confidence interval, I have determined that 61 variable radius cruise plots are needed on the 75 acres of the Files lot forest land. To accomplish this, I will locate a cruise plot every 230 feet. On the Patricia Drive parcel, a cruise plot will be located every 275 to get 71 plots. I almost never get the calculated number of plots (see attached), due to many factors, including irregular spacing between plots (from hills or going around swamps, etc), and other things.

As I use my compass to pace a straight line between plots, I also note features of the property that can be mapped. I typically note stone walls, tree stands, streams, and drains, ponds, woods roads, foundations, gravel or other mines, tree houses, and even scrap iron from old cars. I also note wildlife evidence (heard/seen) and unique trees and plants.

Look for more information about creating this plan in the near future.

Gregory E. Foster
Timberstate G. Inc.
Consulting Forester
29 Ledge Hill Road
Raymond, ME 04071
Call: 207-272-4270

"angle count cruising," "plotless cruising," "point sampling," and "variable plot cruising," has earned a valuable place in the forester's tool kit. Probably no single forestry technique has been described so often, as indicated by the excellent bibliographies by Thomson and Deitschman (1959), and by Labau (1967). Numerous articles have focused on the topic "why point sampling works," and it is evident that there is no "one way" to develop the workings of the technique. One of the more traditional discussions of Bitterlich's angle count cruising (or, more definitively, "horizontal point sampling") would proceed as in the following section.

14–4.1. Fundamental Concept of Horizontal Point Sampling. In the application of horizontal point sampling, a series of sampling points is chosen much as one would select plot centers for fixed-size plots. The observer occupies each sampling point, sights with an angle-gauge (an instrument designed to "project" a horizontal angle of some arbitary size) at breast height on every tree visible from the point, and tallies all trees that are greater than the projected angle of the gauge. Figure 14–1

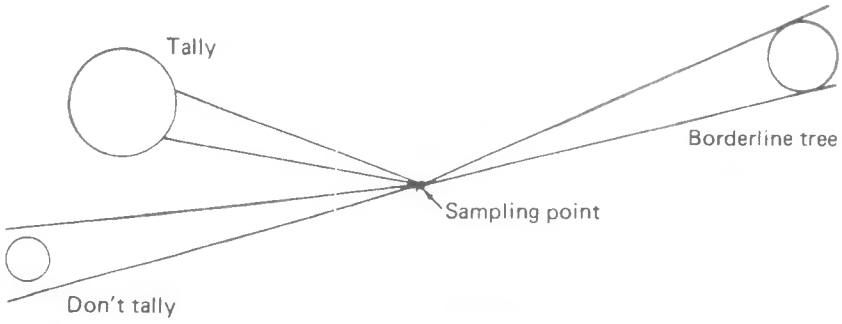


Fig. 14–1. Selection of trees in point-sampling.

illustrates the procedure. The circles represent the cross-sections of trees at breast height, and the lines indicate the angle projected from the sampling point. Any variables associated with the selected trees may be measured, just as in the case of fixed-size plots, but the unique feature of horizontal point sampling is that *no tree measurements* are needed to obtain an unbiased estimate of basal area per acre (hectare) from that sampling point. The number of trees counted which are larger than the projected angle, multiplied by a constant factor, dependent only on the size of the angle, yields the basal area per acre (hectare) estimate. Thus, it will be shown that each qualifying tree (i.e., each tree larger than the projected angle), regardless of its dbh represents the same basal area per acre.

- 71 Plots ~~CA 140 ac~~ → ~~CA~~ 122 ac

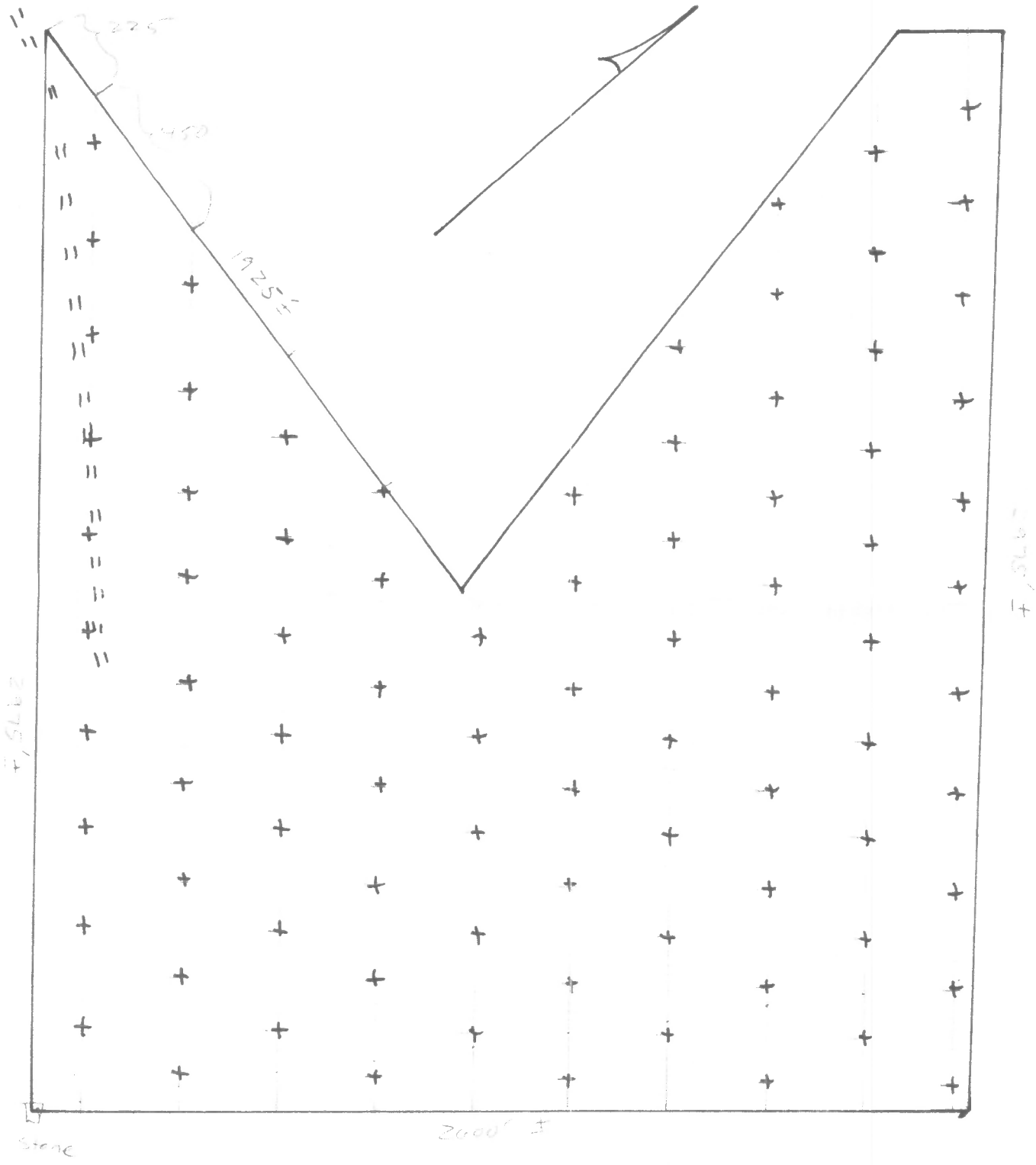
~~1 plot / 3.35 ac~~

~~1 plot / 384'~~

1 plot / 1.7 ac

1 plot / 275'

∴ 1 plot / 270'



Approx. Scale 1" = 400'