

Increased Precision in Forest Inventory Parameters Based on Canopy Sampling

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Biometricians have long pointed out that stratification generally yields more precise estimates of forest parameters than does simple random sampling. This results from the greater homogeneity of the sampling units within a stratum than for the population as a whole. Two new tools, GPS and image segmentation software provide an opportunity to take advantage of the ability to quickly stratify a forest stand not only on species but on the presence of canopy or lack thereof. The canopy area of a typical mature forest stand may be less than half of the actual physical surface area. For stands that have been thinned, the canopy area as a percent of total stand area is likely to be even smaller. An image segmentation program was used to locate all tree canopies based on a supervised classification of an aerial photograph of the stand. Plots were located only in canopy areas and statistics were derived based on the area of the stand actually occupied by mature trees. Plots were located on the ground with a sub-meter GPS receiver. This study presents a comparison of estimates of stand parameters based on traditional systematic sampling as compared to stratified sampling in only canopy areas.

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