



Accurate Forest Inventory
How to do a practical, efficient,
and accurate timber cruise, plus a great review for the NC
Registered Forester Exam

Hampton Inn RBC Center - Raleigh, NC

December 10, 2008 - Introduction to Basic Forest Inventory
December 11, 2008 - Forest Inventory and Statistical Sampling
December 12, 2008 - Advanced Forest Inventory and Biometry

About the Workshop

This workshop will give timber cruisers, forestland managers, and appraisers the information they need to design accurate and efficient forest inventories. The instructor will explain the major methods of inventory cruising, including prism, fixed plots, and strips. Participants will learn to develop statistically reliable inventories and to make informed conclusions based on cruise results. The field exercise will provide opportunity for hands-on comparison of the various inventory methods. Emphasis will be placed on practical considerations with numerous applications and examples.

The course will encompass 3 days, covering the very basics of timber cruising through more advanced topics in forest inventory and sampling by the third day. If you do not have much experience with forest inventory techniques, then it is recommended that you sign up for the first two days only.

Accreditation

Society of American Foresters has accredited this course with Continuing Forestry Education credits as follows:

Day 1- 7 contact hours in Cat1-CF

Day 2 - 7 contact hours in Cat1-CF

Day 3 - 7.5 contact hours in Cat1-CF

Who Should Attend?

This course will be valuable to forestry consultants, engineers, landscape architects, appraisers, surveyors, and regulatory professionals who are responsible for collecting and analyzing forest inventory information. The addition of the basic cruising option on the first day, this course is now ideal for the forest landowner wishing to take active management of their land. The third day of the course will appeal to forest managers responsible for forecasting, modeling, and precise valuation of forest stands.

Attendees at this workshop in the recent past have told us it was invaluable preparation for taking the NC Registered Forester Exam. It is recommend for professional appraisers and land surveyors as well.

About the Instructors

Bronson Bullock is assistant professor of forest biometrics and timber management in the Department of Forestry and Environmental Resources at North Carolina State University. Bronson has been at NCSU for six years and teaches Forest System Mapping and Mensuration I, Forest Systems Mapping & Mensuration II at the forestry summer camp, and Forest Measurements, Modeling, and Inventory in the undergraduate curriculum; he also teaches graduate level courses on Advanced Forest Modeling. Bronson has a B.S. in Natural Resources Management – Forestry from Rutgers University, M.S. in Forest Biometrics, M.S. in Statistics, and Ph.D. in Forest Biometrics from Virginia Tech. His research interests focus around traditional and upcoming techniques in forest biometrics (volume and taper equations, weight equations, growth and yield modeling, spatial statistical applications to forest inventory and modeling, etc.)

Lodging and Transportation

The workshop will be held at the Hampton Inn - RBC Center in Raleigh, NC. A map with directions will be included with your registration confirmation letter. Lodging is not included in the registration fee. However, rooms have been blocked at the Hampton Inn. To make a reservation call 919-233-1798 before December 1st and mention that you are with the group “NCSU Forest Inventory”. Transportation is provided to and from the nearby field site on Wednesday, December 10th.

Equipment

Attendees should bring a scientific calculator (cell phones and PDA do not suffice). For Thursday's field trip we will utilize hard hats, BAF 10 prism, loggers tape, D-tape, compass, and clinometer. Instructors will be bringing field measurement instruments if you don't have your own. Laptops will be provided, but students wishing to bring their own laptops may do so. Be sure to wear appropriate field attire, and bring rain gear. .

Tentative Agenda Wednesday, December 10 Introduction to Basic Forest Inventory

- 7:30 am Registration
- 8:00 am Day 1 Overview
- 8:15 am Introduction to Basic Cruising – Plot Sampling
- 9:15 am Introduction to Basic Cruising – Point Sampling
- 10:30 am Field Exercises – Travel to Schenck Forest for fieldwork. Walk through installation of plot and point samples. Group assignment of plot and point samples with summarization of results.
- 12:00 pm Lunch at Schenck Forest (provided)
- 1:00 pm Field Exercises continued.
- 2:30 pm Return to classroom for discussion on sampling designs; cover type mapping

3:00 pm Problem solving session, data analysis and summary, generating inventory values

5:00 pm Adjourn

Note: The workshop will take place, rain or shine. Please dress accordingly.

Tentative Agenda Thursday, December 11 Forest Inventory and Statistical Sampling

7:30 am Registration

8:00 am Day 2 Overview

8:15 am Statistics Review – Populations and samples; calculating means, variances, standard deviations, and confidence intervals; interpretations; bias; precision; accuracy; linear regression; statistical summaries and interpretations

10:00 am Break (provided)

10:15 am Log Volume and Taper – Smalian's, Newton's, & Huber's formulas; determining log volume and taper

10:45 am Log Rules and Measuring Merchantable Timber – Doyle, Scribner, Int-¼ log rules; scaling logs; log grading; tally errors effect on volume; Girard form class used in volume calculations

11:15 am Forest Inventory – Stocking and Stand density (basal area per acre, trees per acre, stand density index, 3/2 law of self thinning, relative spacing, crown competition factor); 100% cruising; strip cruising

11:45 am Forest Sampling with Fixed Radius Plots – applications and summary statistics (basal area per acre, trees per acre, volume per acre); edge bias; sample size determination

12:00 pm Lunch (provided)

1:00 pm Plot Sampling – cont'd

1:45 pm Forest Inventory with Variable Radius Plots (Point Sampling) – applications and summary statistics (basal area per acre, trees per acre, volume per acre by volume factors approach); edge bias; sample size determination; limiting distances; thumb calibration; stand and stock tables.

2:45 pm Stand and stock tables; effect of errors in sampling on estimates

3:45 pm Break (provided)

4:00 pm Questions and Answers

4:45 pm Workshop Evaluation

5:00 pm Adjourn

Tentative Agenda Friday, December 12 Advanced Forest Inventory and Biometry

7:30 am Registration

8:00 am Day 3 Overview

- 8:15 am Forest Inventory Review – Summary statistics for point and plot sampling data collected; stand and stock tables; effect of errors in sampling on estimates
- 9:30 am Forest Inventory and Sampling Statistics – Simple random sampling; Systematic random sampling; Stratified random sampling; Stratified systematic sampling; Sample size determination
- 10:00 am Break (provided)
- 10:15 am Stratified Random Sampling cont'd. – Statistics and examples; incorporating costs into sample size allocation; accounting for variability in the stands in sample size allocation
- 11:00 am Double Sampling with Regression – Statistics and examples
- 12:00 pm Lunch (provided)
- 1:00 pm Big BAF Sampling – Statistics, installation, and examples
- 1:30 pm Variable Radius Plot Sampling – Volume calculations by the VBAR approach; Weight calculations by the WBAR approach
- 2:15 pm Sampling Design Issues – Merchantability specifications; errors; volume equations and tables – information needed for use; outputs and conversions; comparing point and plot samples
- 3:00 pm Break (provided)
- 3:15 pm Cluster Sampling – statistics and examples
- 3:30 pm Two-Stage Sampling – statistics and examples
- 3:45 pm 3P Sampling – statistics and examples
- 4:45 pm Workshop evaluations
- 5:00 pm Adjourn

Registration and Fees

The registration fee is \$145 for any single day with the registration fee decreasing by \$10 per day with each additional day taken. This includes instruction, course materials, lunch, refreshment breaks, and field trip transportation. Registration deadline is December 1, 2008. In order to enhance the experience of all participants, enrollment in the workshop is limited to the first 30 registrants.

Cancellations

Cancellations made by December 1, 2008 will receive a refund less a \$25 service charge. Cancellations made after December 5th are not eligible for a refund and sending a substitution attendee is recommended in this situation.