Lecture 18: Forest Inventory Practices
- Types of Inventory
- The Inventory Process
- Social Surveying

Forest Inventory: Overview
Forest Inventory: Collecting data on the quantity, quality, and condition of a forest resource

Forest Resources can include:
- forest health
- timber value
- water quality
- wildlife habitats
- recreation resources
- soil condition

Timber Estimation and Sales
Surveys designed to evaluate the net volume and value of merchantable trees

Land Acquisition

Soil/Site Information and Distance to Mills

Management Planning
Surveys designed to evaluate the growth, yield, and potential harvest of wood
Surveys designed to evaluate the condition and change of multiple resources, such as wildlife habitat
Most Inventories include:
- Area Estimation
- Topography Description
- Ownership Information
- Accessibility and Transport Data
- Timber Quantity and Quality
- Estimates of Growth

1. Purpose of the inventory
   - Why the inventory is required
   - How the results will be used
2. Background information
   - Past surveys, reports, maps, photos
   - Personnel, budget, or time constraints
3. Description of area to be inventoried
   - Location, size, terrain, accessibility, transportation factors

4. Information required from inventory
   - Tables and graphs
   - Maps
   - Outline of report
5. Inventory design
   - Identification of the sampling unit
   - Construction of the sampling frame
   - Selection of the sampling technique
   - Determination of the sample size
Forest Inventory: Overview

6. Measurement procedures
   - Location of sampling units
   - Establishment of sampling units
   - Measurements within sampling units
   - Recording field data
   - Supervision and quality control

7. Compilation and calculation procedures
   - Data editing
   - Conversion factors
   - Statistical calculations

8. Reporting the results, maintenance and storage of records
   - Number and distribution of copies
   - Storage and retrieval of data
   - Plans for updating inventory

Forest Inventory: The Inventory Process

1. Develop your Inventory Design
   a) Identify the finite area which is your population (stand level);
   b) How many plots are needed is based on the estimated population variability;
   c) Location of the plots must adhere to the principles of stratified random sampling theory (random plot placement);
Forest Inventory: The Inventory Process

2. Locate plots on the map
   a) Random starting point;
   b) Each plot may be randomly located;
   c) If the starting point is random, then each
      subsequent plot on a square or
      rectangular grid is also random;
   d) Obtain good distribution across the
      population

Out of 49 plots, 38 are in the sample population.
Forest Inventory: The Inventory Process

General Observations:
• Intensity of sampling increases as the value of the resource increases
• Intensity of sampling increases as area covered decreases
• Intensity of sampling increases as risk of making a bad management decision increases

What do you see?

Message of the Day: Our ability to use appropriate management responses may depend on aesthetic qualities of how that activity affected the resource.

Social Surveying: Where it all Began

Charles Booth:
"The Life and Labor of the People in London"
He used direct observations of a sample of London’s populations with repeated standard measurements
His findings had direct policy implications
Social Surveying: Where it all Began

The result of Booth’s survey was a spatially explicit map of poverty in London in 1898.

Social Surveying: Main Concepts

In a survey we take a sample from a population to infer information about the whole population.

A survey of an entire population is called a census.

Why we survey (or sample):

- takes less time
- more cost-effective
- breadth rather than depth

Social Surveying: The Main Steps

1. Have a clear and well-defined research question

Do not:

- Ask everything and then fish for information or correlations
- Ask questions that can not be answered
- Ask leading questions that bias a particular method you may like
2. Select your Type of Social Survey

<table>
<thead>
<tr>
<th>Method</th>
<th>Pros</th>
<th>Cons</th>
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<tbody>
<tr>
<td>Postal Questionnaires</td>
<td>Low response rates</td>
<td>Face-to-face interviews: Researcher can select who to interview to balance the demographic nature of the sample</td>
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<tr>
<td>Telephone Interviews</td>
<td>More flat-out refusals than when face-to-face</td>
<td></td>
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3. Determine the Size of your Sample

Generally, the bigger the better
If statistical tests are going to be applied to the data then we can calculate the sample size we need.

We will explore this in more detail later when we cover sampling methods.
**Social Surveying: Group Exercise 1**

What questions would you ask to determine the opinion of land managers as to what trees should be harvested in a given year?