Evaluating the Use and Effectiveness of CFI on State Forest Land in Tennessee

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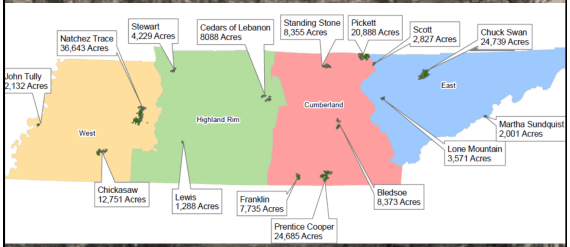
October 16, 2013 12:20 Room 160 PBB

Outline

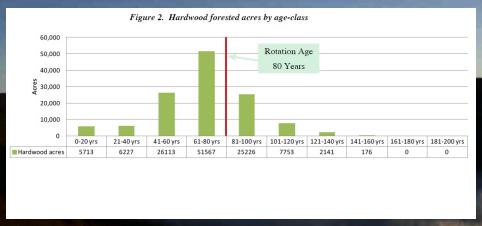
- Introduction
  - Tennessee Division of Forestry (TDF)
- Data
- Research Objectives
- Methodology
- Analysis

State Forest of Tennessee



Forest Structure

Figure 2. Hardwood forested acres by age-class



Currently Harvesting 531 acres/year

CFI

- Continuous Forest Inventory
  - Provides system wide, individual forest, and landscape level estimates
  - Does not replace stand level harvest estimates
  - 5 year increment
- Making precise tree measurements on permanent plots in conformance to a detailed plan. (Husch, Miller, & Beers)
- The past trends in growth, recorded by repeated measurements that can be used to predict future growth. (Spurr)

CFI

Data

- 2007
  - Implemented 720 Permanent CFI plots
  - Followed FIA field guidelines

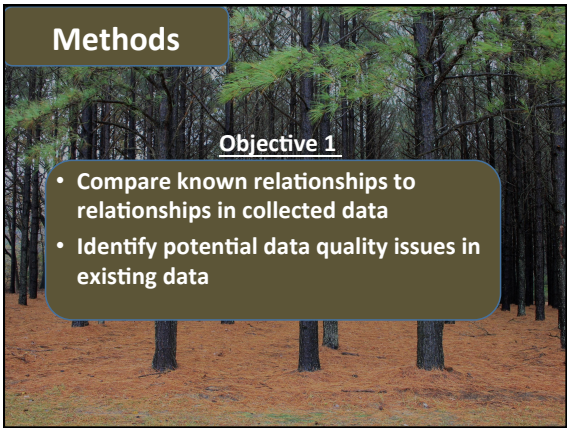
Objectives

1. To assess the quality of the data from the initial plot measurements
2. To determine the usefulness of forest vegetation simulator (FVS) for producing yield tables compared to traditional methods
3. To assess the quality of CFI results relative to FIA estimates
4. To evaluate the overall current inventory design

Justification

- To quantify variation you must accurately measure variation? (*Young 2013*)
- Growth and yield models become inaccurate over time (*Henning and Burk 2004*)
- Growth during long projection periods is inaccurately over predicted by FVS (*Christian 2010)*

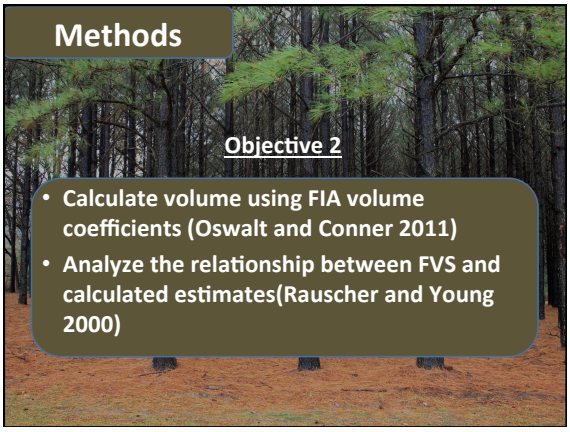
Methods



Objective 1

- Compare known relationships to relationships in collected data
- Identify potential data quality issues in existing data

Methods



Objective 2

- Calculate volume using FIA volume coefficients (Oswalt and Conner 2011)
- Analyze the relationship between FVS and calculated estimates(Rauscher and Young 2000)

Methods

Objective 3

- Calculate area estimates from FIA using county level data from surrounding counties
  - Use Evalidator to obtain specific area estimates
- Compare FIA sampling error estimates to TDF sampling error estimates

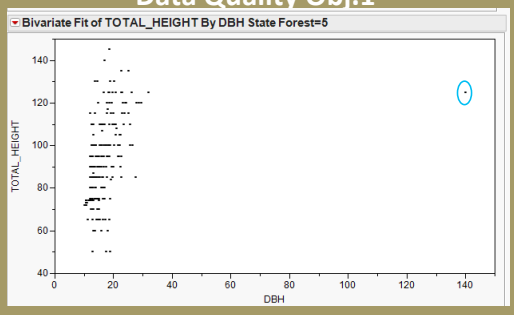
Methods

Objective 4

- Calculate optimal sampling intensity from the initial variance measured
- Develop a design to allow an increase in plots at the same budget constraint.

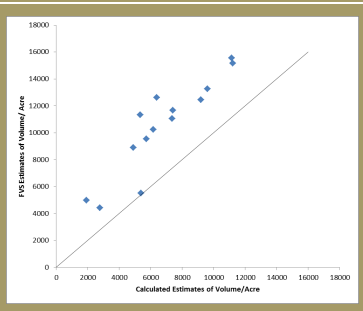
Analysis

Data Quality Obj.1



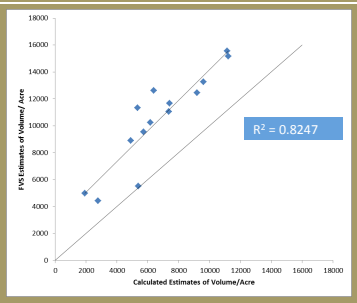
Analysis

FVS vs. Calculated Volume Obj. 2



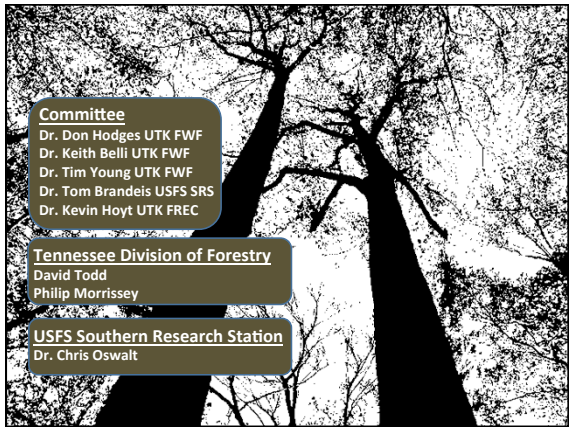
Analysis

FVS vs. Calculated Volume Obj. 2



Analysis

Objectives 3&4



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Questions