Forest Planting: Are We Planting Enough? What are The Hurdles?

North Carolina Forestry Association
2013 Annual Meeting
New Bern, North Carolina

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North Carolina Forest Service
Director-Forest Management & Development

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Focus Points

• Tree Planting
• Trends & Considerations
• Hurdles & Solutions
Tree Planting
Sources (and Challenges) of Tracking Tree Planting

- State Forestry Agencies
  - projects not associated with costshare or state forestry agencies

- USFS Forest Inventory & Analysis
  - 2-yr time lag and sampling error

- Georgia Tree Planting Survey
  - valid up through 2008 (divestiture of company lands)

- USFS recent efforts with nursery production
  - confidentiality; sales don’t always equal planted acres

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Slide from R. Harper & J. Turner, Forest Resource Analysts, USFS, Southern Research Station, - FIA 6/5/13 (Data from USFS)

Acres Planted in the South, 1928 - 2012

- Southeast (FL, GA, NC, SC, VA)
- South Central (AL, AR, KY, LA, MS, OK, TN, TX)
- Total South
Acres planted in South (Hernandez 2012)
(Source - Hernandez 2012; presented by Paul Van Deusen, NCASI, May 21-22, 2013)

Figure 1. State nurseries and total tree planting in the south: 1925 to 2010. Four distinct peaks in the number of acres planted correspond to the Civilian Conservation Corps (CCC), the Soil Bank program, the Conservation Reserve Program (CRP), and the expanded Conservation Reserve Program (CRP2).
Acres Planted in NC (1974-2012)
According to Forest Inventory & Analysis

Info from Barry New, NCFS;
Source = Forest Inventory Data Online, USDA, USFS, Northern Research Station.
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Over 1.3 million acres planted in NC by FDP since 1978
## Historical FIA Data for NC
(Source: 2010 NC Forest Action Plan and USFS FIA website)

<table>
<thead>
<tr>
<th>Forest Management Practice</th>
<th>Public</th>
<th>Forest Industry</th>
<th>Nonindustrial private</th>
<th>Total</th>
<th>% Change Between 1990 and 2002 FIA Surveys percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>thousand acres per year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Harvest</td>
<td>6.6</td>
<td>40.3</td>
<td>199.5</td>
<td>246.4</td>
<td>-19.7</td>
</tr>
<tr>
<td>Partial Cut</td>
<td>2.9</td>
<td>4.7</td>
<td>71.1</td>
<td>78.8</td>
<td>32.9</td>
</tr>
<tr>
<td>Thinning</td>
<td>3.8</td>
<td>26.7</td>
<td>20.8</td>
<td>51.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Timber Stand Improvement</td>
<td>1.9</td>
<td>3.0</td>
<td>9.9</td>
<td>14.8</td>
<td>23.6</td>
</tr>
<tr>
<td>Site Preparation</td>
<td>3.4</td>
<td>29.6</td>
<td>45.0</td>
<td>78.0</td>
<td>-24.1</td>
</tr>
<tr>
<td>Other Treatment</td>
<td>4.7</td>
<td>4.7</td>
<td>43.2</td>
<td>52.6</td>
<td>-51.1</td>
</tr>
<tr>
<td>Artificial Regeneration</td>
<td>4.6</td>
<td>32.9</td>
<td>63.0</td>
<td>100.5</td>
<td>-2.8</td>
</tr>
<tr>
<td>Natural Regeneration</td>
<td>8.7</td>
<td>10.8</td>
<td>193.9</td>
<td>213.5</td>
<td>-18.6</td>
</tr>
</tbody>
</table>
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Additional Sources of Info

Forestry and Tree Planting in North Carolina

Ken Calvert

Forester/Govt., North Carolina Dep't of Forest Resources, Raleigh, NC

Abstract

North Carolina’s forests cover more than 9.5 million acres (7.1 million hectares), making up more than 39 percent of the state. Swimming and boating are the most popular outdoor activities in the state. Forests are also important for wildlife habitat, water quality, erosion control, soil and water conservation, and recreation. The Forest Service is responsible for managing forests and providing recreational opportunities to the public.

Introduction

Forestry in North Carolina has a long history, beginning with the early colonists and continuing to the present day. The North Carolina Forestry Division (NCFD) is the state agency responsible for managing state forests and providing forest-related services to the public. The NCFD was established in 1933 and is headquartered in Raleigh. The NCFD manages 1.2 million acres of state forest land, including 96 state forests.

North Carolina’s Environment

North Carolina is one of the most geographically diverse states in the United States. It is located in the Southeastern United States and is bordered by Virginia, Tennessee, South Carolina, Georgia, and Florida. The state has a diverse range of ecosystems, including coastal plains, mountains, and Piedmont.

North Carolina’s Forest Resources Assessment

A statewide analysis of the past, current, and projected future conditions of North Carolina’s forest resources

North Carolina, 2010

Mark E. Brown and Barry D. New

North Carolina Forestry Service

Introduction

North Carolina’s forest resource assessment covers the state’s forests and woodlands, including private and public forests. The assessment provides information on forest composition, forest condition, and forest management practices. The assessment also includes data on forest products, forest land use, and forest-related economic activities.

Forest Inventory & Analysis Fact Sheet

Table 1: North Carolina’s forest inventory and analysis

| Year   | Total
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>2015</td>
</tr>
<tr>
<td>Total</td>
<td>2010</td>
</tr>
<tr>
<td>Forest</td>
<td>2010</td>
</tr>
<tr>
<td>Area</td>
<td>2010</td>
</tr>
<tr>
<td>Acres</td>
<td>2010</td>
</tr>
<tr>
<td>Wood</td>
<td>2010</td>
</tr>
<tr>
<td>Stock</td>
<td>2010</td>
</tr>
<tr>
<td>Products</td>
<td>2010</td>
</tr>
<tr>
<td>Value</td>
<td>2010</td>
</tr>
</tbody>
</table>

Forest Land Area

In 2010, North Carolina’s forest land area was 30.5 million acres (12.3 million hectares). The forest land area increased to 31.1 million acres (12.6 million hectares) in 2015. The increase in forest land area is due to the expansion of forested areas and the reclassification of non-forest land to forest land.

North Carolina’s forest resources...
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- Notable increase in acreage in the 26-30 and 31-35 year age classes.
- Notably more younger lob plantations in 2012 than in 2002 (acres).
- Curve shifts right toward older age classes.
Notable increase in net all live volume in the 26-30 and 31-35 year age classes:
Age distribution of loblolly pine plantations

- 0-5 years: 300,000 acres (2012), 250,000 acres (2007), 200,000 acres (2002)
- 6-10 years: 250,000 acres (2012), 200,000 acres (2007), 150,000 acres (2002)
- 11-15 years: 200,000 acres (2012), 150,000 acres (2007), 100,000 acres (2002)
- 16-20 years: 150,000 acres (2012), 100,000 acres (2007), 50,000 acres (2002)
- 21-25 years: 100,000 acres (2012), 50,000 acres (2007), 0 acres (2002)
- 26-30 years: 50,000 acres (2012), 0 acres (2007), 0 acres (2002)
- 31-35 years: 0 acres (2012), 0 acres (2007), 0 acres (2002)
- 36-40 years: 0 acres (2012), 0 acres (2007), 0 acres (2002)
- 41-45 years: 0 acres (2012), 0 acres (2007), 0 acres (2002)
- 51-55 years: 0 acres (2012), 0 acres (2007), 0 acres (2002)
- 56-60 years: 0 acres (2012), 0 acres (2007), 0 acres (2002)
- 61-65 years: 0 acres (2012), 0 acres (2007), 0 acres (2002)
- 66-70 years: 0 acres (2012), 0 acres (2007), 0 acres (2002)
Peak for net volume is 31-35 years:
Richard Harper (Southern Research Station FIA analyst), has been analyzing data that shows if current harvest trends continue (smaller diameter trees are being removed at a greater rate than larger diameter trees) there will eventually be a missing age class.

“I have been tracking the potential volume decline of 6 and 8 inch diameter classes for pine for a couple years. Part of that analysis includes area of harvest treatments and the change over the last decade or so. Clear-cutting area has declined (mostly due to poor sawlog markets) and commercial thinning area has increased 3 or 4 fold for a variety of reasons. With a decline of clear cutting coupled with low revenue from clear-cuts, there may not be as much area to replant and landowners may not be willing to invest in replanting. Although there are signs that tree planting has increased in the last year or two.”
(R. Harper 9/25/2013 email)
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Acres of “Final Harvest” and “Tree Planting”, As Recorded by NCFS Rangers
(Source: NCFS Accomplishments Database)
Acres of “Intermediate Harvest” in NC,
As Recorded by NCFS Rangers
(Source: NCFS Accomplishments Database)
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0
10000
20000
30000
40000
50000
60000
70000
80000

Acres Addressed by NC Regeneration Management Plans
(Source: NCFS Accomplishments Database)

- Regeneration Plan Acres (NCFS)
- Regeneration Plan Acres (Consultants)
Wood Pellets & the European Union

Growing Demand for Pellets


Biomass Pellet Production and Consumption, EU-27: 2011-2021

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (Million Tons)</th>
<th>Consumption (Million Tons)</th>
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</thead>
<tbody>
<tr>
<td>2011</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2012</td>
<td>3</td>
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</tr>
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<td>2013</td>
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<td>2020</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>2021</td>
<td>12</td>
<td>14</td>
</tr>
</tbody>
</table>

(Source: Pike Research)
Uncertainties

- Future timber markets
- Politics and Europe’s pellet demand
- American biomass and bio-energy policies
- Prices of alternatives (energy; building materials)

The CRP “wall of wood” is now small sawtimber diameter classes and there is a void behind this growing stock. By the time we figure out just how much the growing stock in the smaller age classes is dropping, it may be too late to fill in the gap.
Hurdles & Solutions

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Limited FDP Funding

• NCFS & Natural Resources Conservation Service (NRCS) worked to establish significant tree planting opportunities under the Environmental Quality Incentives Program (EQIP)

• NCFS has added longleaf and shortleaf tree planting practices to its Southern Pine Beetle Prevention Program

• NCFS and the Farm Services Agency (FSA) helped landowners utilize Emergency Forest Restoration Program (EFRP) funds to reforest tracts impacted by recent tornadoes and hurricanes
Encouraging Timely Reforestation by Landowners

Reforestation in the Absence of Cost-Share: Does It Pay?

William F. Johnson, Graduate Research Assistant, Department of Forestry; Daniel L. Goerlich, Associate Extension Agent, ANR/Natural Resources; and Dr. Harry L. Hancy, Jr., Garland Gray Professor of Forestry and Extension Specialist, Department of Forestry; Virginia Tech

Publication Number 420-407, posted February 2003
Assisting With Timely & Affordable Reforestation

- NCFS Strategic emphasis on visiting harvest sites while active
  - Prevent water quality problems
  - Mitigate problems faster/cheaper
  - Timely contact with landowner regarding reforestation options

**Measure**

Annual percentage of initial FPG harvest inspections conducted on forestry sites that are still active\(^1\). Our intent is to conduct the initial inspection when forestry operations are active as opposed to after they have been closed-out. This proactive approach results in more timely resolution of water quality issues, and can prevent problems from occurring in the first place. Our goal is 4-8% by June 30, 2016.

**Baseline**

57% of all initial inspection were conducted on active sites
(average from July 1, 2007 to June 30, 2012)

\(^1\) Actual is a rolling average based on the fiscal year being reported and the previous 4 years. Example: FY 2013 data will be average initial active inspections from July 1, 2008 to June 30, 2013
Seedling Supply

- NCFS committed to a strong Nursery & Tree Improvement Program to ensure a stable supply of quality seedlings
- Over 15 million seedlings produced annually
- Strengthened capacity for containerized longleaf

Photo source: Ken Roeder, NCFS, 2009)
Bottomland Hardwood Regeneration

- NCFS’s “Cypress and Bottomland Swamp Taskforce” reviewing regeneration in bottomland swamps
  - Are desirable species naturally regenerating following harvests?
  - Review hydrology; timing; competition; logging techniques
  - Effectiveness/financial assessment of inter-planting seedlings
Strong Markets

• Strong markets = healthy forests and economies
  ➢ One of 3 central points from the 2010 NC Forest Action Plan

• More NCFS coordination with NCDA&CS International Marketing Division and Southern Group of State Foresters’ Services, Utilization & Markets Taskforce
  ➢ International outreach trips to Germany, China

• Increased collaboration with NC ports

• Nov., 2013 NC Wood Exports Conference (New Bern)
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Tools to Communicate/Advertise

www.forestproductslocator.org      NCFS Service Provider Listing

District One, Asheville
(Buncombe, Henderson, Madison, McDowell, Mitchell, Polk, Transylvania, Yancey)
- Pesticide application
- Pre-commercial thinning
- Prescribed burning
- Tree planting

District Two, Lenoir
(Alexander, Alleghany, Ashe, Avery, Burke, Caldwell, Watauga, Wilkes)
- All services

District Three, Rockingham
(Anson, Chatham, Lee, Montgomery, Moore, Richmond, Scotland, Stanly)
- Herbicide application
- Pine straw baling
- Portable saw mills
- Pre-commercial thinning
- Prescribed burning
- Site rehabilitation
- Site preparation
- Tree planting

District Four, New Bern
(Beaufort, Carteret, Craven, Jones, Lenoir, Onslow, Pamlico, Pitt)
- Herbicide application
- Pre-commercial thinning
- Prescribed burning
- Site preparation
- Tree planting

District Five, Rocky Mount
- Best Management Practices
- Herbicide application
- Logging

District Six, Fayetteville
(Cumberland, Harnett, Hoke, Johnston, Robeson, Sampson)
- Herbicide application
- Pre-commercial thinning
- Prescribed burning
- Scalding
Review of Timber Supplies

• NCFS & NCSU-Extension Forestry working on North Carolina timber supply review
  • Discussed with SFI-SIC

• South Carolina and Dr. Bob Abt reviewed their forest resources

• Florida’s Legislature allotted $300,000 for timber supply study

• Georgia concerned about timber supply; considering reforestation program similar to NC’s FDP or a reforestation tax credit

• We need to closely review woodbaskets that are seeing an increase in forest industry – may warrant regional planting initiatives

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We need to stay vigilant and ensure our tree planting efforts today are setting North Carolina up for future prosperity.

Thank You for Your Time

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sean.brogan@ncagr.gov
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Take Home Points

1. "Everyone" wants small diameter wood.

2. 6”+8” DBH removals increased 44% and net growth declined 17% over the last 7 years in GA (SYP/Private).

3. Removals exceed net growth in 6” to 8” diameter classes in GA – don’t forget new industry not reflected in FIA data (FIA lag time) (SYP/Private).

4. Area of harvest type shift – thinnings ↑ 518%

5. Tree planting decline – nowhere to plant, landowners not reinvesting, or both?
Take Home Points (con’t)

6. Apparent decline in the number of trees for the 2”, 4”, and 6” DBH classes in GA (SYP/Private).

7. Total volume for 6” and 8” diameter classes shows decline in GA and for some 75 to 100 mile radius queries – However, current volume still exceeds 1997 volume (SYP/Private).

8. More 10” and 12” utilized for PW, OSB, energy

9. FIA EDRR (early detection rapid response)