The Forests and Forest Industry of South Carolina

Scott Danskin
South Carolina Forestry Commission
South Carolina has more wood than has ever been recorded!

- **Net Volume of Live Trees (>5inch)**
  - 26,205.1 million cubic feet in 2017
  - 26,608.2 million cubic feet in 2018
  - 26,855.8 million cubic feet in 2019

However, acreage overall continues to decrease

- **Area- Forest land**
  - 13.1 million acres in 2012
  - 12.91 million acres in 2016
  - 12.86 million acres in 2019
Timberland area and live-tree volume, South Carolina

- Area (million acres)
- Volume (million tons)

- Planted Stands
- Natural Stands
- Total Volume


Data sourced from South Carolina Land Trust Network, July 15th 2021.
Land ownership in South Carolina, 2019

- Federal: 5% (53,000 acres)
- State and Local: 8% (87,000 acres)
- Corporate: 34% (2,600,000 acres)
- Individual: 53% (3,400,000 acres)

Forest industry has largely divested land holdings, from a high of 2.6 million acres (1986) to 137,000 acres (2014).

11.2 million acres (87%) Privately owned and produce 96% of the state’s timber supply.
FOREST TYPE BY ACREAGE, SOUTH CAROLINA 2019

- **Natural Pine** 24%
- **Planted Pine** 24%
- **Mixed Pine/Hardwood** 12%
- **Upland Hardwood** 21%
- **Bottomland Hardwood** 19%
### Species count by individual species*

**Most common trees, South Carolina 2019**

<table>
<thead>
<tr>
<th>Species</th>
<th>Total Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>loblolly pine</td>
<td>820,290,403</td>
<td>47.90%</td>
</tr>
<tr>
<td>sweetgum</td>
<td>186,604,494</td>
<td>10.90%</td>
</tr>
<tr>
<td>water oak</td>
<td>72,098,720</td>
<td>4.21%</td>
</tr>
<tr>
<td>red maple</td>
<td>67,211,137</td>
<td>3.93%</td>
</tr>
<tr>
<td>longleaf pine</td>
<td>66,769,935</td>
<td>3.90%</td>
</tr>
<tr>
<td>swamp tupelo</td>
<td>48,888,684</td>
<td>2.86%</td>
</tr>
<tr>
<td>yellow-poplar</td>
<td>42,408,040</td>
<td>2.48%</td>
</tr>
<tr>
<td>white oak</td>
<td>37,602,957</td>
<td>2.20%</td>
</tr>
<tr>
<td>laurel oak</td>
<td>27,326,812</td>
<td>1.60%</td>
</tr>
<tr>
<td>shortleaf pine</td>
<td>24,352,440</td>
<td>1.42%</td>
</tr>
<tr>
<td>southern red oak</td>
<td>18,089,596</td>
<td>1.06%</td>
</tr>
<tr>
<td>winged elm</td>
<td>17,192,327</td>
<td>1.00%</td>
</tr>
</tbody>
</table>

**Grand Total** 1,712,374,426

*species count for all live trees, 5inch DBH and greater*
Timberland Acreage of Southern Yellow Pine, SC 1978
Timberland Acreage of Southern Yellow Pine, SC 1986
Timberland Acreage of Southern Yellow Pine, SC
1993

Acres

5-yr Age Class

South Carolina Land Trust Network, July 15th 2021
Timberland Acreage of Southern Yellow Pine, SC 2001

Acres

5-yr Age Class

South Carolina Land Trust Network, July 15th 2021
Timberland Acreage of Southern Yellow Pine, SC
2006
Timberland Acreage of Southern Yellow Pine, SC 2011
Timberland Acreage of Southern Yellow Pine, SC 2016
Timberland Acreage of Southern Yellow Pine, SC 2019

5-yr Age Class

Acres
Growth and removals by management type
SC 2018

- Softwood Growth
- Softwood Removals
- Hwd Growth
- Hwd Removals

Million cubic feet

Planted Pine | Natural Pine | Mixed Pine/Hwd | Upland Hardwood | Lowland Hardwood | Total
The Forests Products Industry
A wooden map of wood-using mills

income. Compared to other leading industries in South Carolina, forestry ranks:
#1 in jobs;
#2 in labor income; and
#3 in direct economic output.

Your company makes an invaluable contribution to South Carolina’s allied forest products industries, which together generate a $21 billion impact on the Palmetto State’s economy.
Primary and secondary mills are constantly changing
Primary mills, 2020

<table>
<thead>
<tr>
<th>Type of Mill</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomass Energy</td>
<td>7</td>
</tr>
<tr>
<td>Chip mill</td>
<td>8</td>
</tr>
<tr>
<td>Log Export Yard</td>
<td>8</td>
</tr>
<tr>
<td>Pallet/Specialty Mill</td>
<td>3</td>
</tr>
<tr>
<td>Pole &amp; Post</td>
<td>9</td>
</tr>
<tr>
<td>Pulp and Paper</td>
<td>7</td>
</tr>
<tr>
<td>Sawmill</td>
<td>33</td>
</tr>
<tr>
<td>Shavings &amp; Mulch</td>
<td>9</td>
</tr>
<tr>
<td>Veneer/Panel</td>
<td>7</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>91</strong></td>
</tr>
</tbody>
</table>

Mill Types of South Carolina, 2020

- Biomass Energy
- Chip mill
- Log Export Yard
- Pallet/Specialty Mill
- Pole & Post
- Pulp and Paper
- Sawmill
- Shavings & Mulch
- Veneer/Panel

http://www.state.sc.us/forest/refind.htm
## Secondary wood-using mills

~800 total businesses operating in the state

### Most common secondary businesses by category

<table>
<thead>
<tr>
<th>Category</th>
<th>Count of Category</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabinetry</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>Cabinetry Furniture</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>Millwork</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Furniture</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Paper Products</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Other Wood Products</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Furniture Cabinetry</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Industrial Products &amp; Suppliers</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Millwork Cabinetry</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Pallets/Crates</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Millwork Furniture</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Other Wood Products Cabinetry</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Buildings/Structures</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Pallets/Crates Cabinetry</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Other Wood Products Furniture</td>
<td>17</td>
<td></td>
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<tr>
<td>Paper Products Cabinetry</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Millwork Furniture Cabinetry</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Industrial Products &amp; Suppliers Cabinetry</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Other Wood Products Millwork Furniture Cabinetry</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Other Wood Products Millwork Furniture</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Cabinetry Buildings/Structures</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

South Carolina Land Trust Network, July 15th 2021
Number of mills by type, 1989 –Current

*Includes post and pole, mulch, log export yards, pallet mills, bioenergy and other.
From 2004 – Present
• 107 forest product announcements
• 17 greenfield mills (11 primary, 6 secondary)
• 10 sawmill expansions/upgrades
• >$6 billion in capital investments
• >5,800 new jobs
South Carolina production of primary timber products
1936-2019

- Pulpwood
- Sawlogs
- Veneer Logs
- Composite Panel
- Post & Pilings
- Bioenergy
- Other Industrial

South Carolina Land Trust Network, July 15th 2021
Stumpage prices not following lumber price trend

SC Sawtimber Stumpage Prices*

*based on Timbermart South pricing and adjusted to current value using Consumer Price Index
Growth in pellet manufacturing leveling off?
Log export yards: boom or bust
Engineered wood products are a growth area

Snow Family Outdoor Fitness and Wellness Center
Clemson University
South Carolina’s future forests
Increased emphasis on volume/acre

Landowners have more choices in planting stock than ever before:

- Open pollinated orchard mix
- Open pollinated single family
- Control mass pollinated single family
- Clonal seedlings
- Containerized seedling vs bareroot
Tree planting is increasing

SEEDLINGS PLANTED IN SC, 1928-2018

180 million

100 million
AREA OF TIMBERLAND HARVESTED

THOUSAND ACRES

Final Harvest
Commercial Thinning

Sub-Regional Timber Supply (SRTS) Model

“A bio-economic model that integrates Forest Inventory and Analysis data and economic principles to estimate inventory, supply, demand and prices trends.”

Sample visualization of SRTS results
Sub-Regional Timber Supply (SRTS) Model

Allows users to explore future inventories by:

- Growth of existing inventory modeled over specific time period
- Changes in demand
- Changes in product definitions
- Price
- Other factors (damage assessments)

Modeled South Carolina

- 7 custom products
- Known increases in demand
  - New operations
  - Current expansions
Hardwood Sawtimber inventory continues to increase.
Pine Pulpwood decreases steadily over next 20 years.
Pine Sawtimber continues to increase
Southern Yellow Pine Sawtimber Inventory Compared to Growth and Removals
South Carolina 2001-2038

Sawtimber defined as all merchantable volume 9"+, current volumes from FIA and projections based on SRTS
The Timber Supply Analysis Tool
Includes summary results for:

- Area of Timberland by Forest Type
- Standing Timber (weight or volume)
  - All Live
  - Pulpwood
    - Hardwood, softwood
  - Sawtimber
    - Small- and large-softwood sizes
    - Hardwood types (hard and soft)
    - Hardwood Grade (Grades 1,2,3)
- Growth and Removals
Pulpwood

Pulpwood-size trees are used for a variety of purposes with a large proportion used for paper, pulp, and structural panels (e.g., oriented strand board). Pulpwood can be a source of material for some types of biomass to energy products, for example wood pellets. Although not included in these estimates, sawtimber-size trees can also be a source of pulpwood, specifically the portion of the bole above the sawlog and below a specified top diameter.

Pulpwood is softwoods with diameter at breast height from 5.0 to 8.9 inches and hardwoods with diameter from 5.0 to 10.9 inches. Weight is the green weight of sound wood, including bark, in the merchantable bole of live trees, from a 1-foot tall stump to a minimum 4-inch top diameter outside bark, or to where the central stem breaks into limbs all of which are less than 4.0 inches diameter outside bark. Rotten, missing, and termite are not included.

<table>
<thead>
<tr>
<th>Year</th>
<th>Softwood</th>
<th>Hardwood</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>14.1</td>
<td>18.5</td>
<td>32.6</td>
</tr>
<tr>
<td>2014</td>
<td>13.7</td>
<td>18.1</td>
<td>31.8</td>
</tr>
<tr>
<td>2015</td>
<td>13.2</td>
<td>18.4</td>
<td>31.5</td>
</tr>
<tr>
<td>2016</td>
<td>12.2</td>
<td>18.9</td>
<td>31.1</td>
</tr>
<tr>
<td>2017</td>
<td>11.8</td>
<td>18.8</td>
<td>30.7</td>
</tr>
<tr>
<td>2018</td>
<td>12.4</td>
<td>18.8</td>
<td>31.2</td>
</tr>
</tbody>
</table>

Weight in million green short tons.

4. Growth and Removals

All Live

A comparison of net growth and removals provides insight on the sustainability of the resource. Inventory levels are expected to increase over time when net growth exceeds removals. Inventory levels are expected to decrease over time when removals exceed net growth.

Growth estimates are average annual net growth of live trees at least 5.0 inches diameter at breast height on timberland. Net growth estimates are gross growth minus mortality. It is possible for net growth to be negative. For example, net growth may be negative when mortality exceeds gross growth as may happen after a hurricane or other major disturbance. Removal estimates are average annual removals of live trees at least 5.0 inches diameter at breast height on timberland.

<table>
<thead>
<tr>
<th>Growth and removals of all live trees on all timberland in the supply analysis area</th>
<th>Softwood</th>
<th>Hardwood</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Growth</td>
<td>4.9</td>
<td>1.5</td>
<td>6.4</td>
</tr>
<tr>
<td>Removals</td>
<td>4.2</td>
<td>1.2</td>
<td>5.4</td>
</tr>
<tr>
<td>Ratio (G/R)</td>
<td>1.17</td>
<td>1.24</td>
<td>1.19</td>
</tr>
</tbody>
</table>

Weight in million green short tons per year.
FOREST TREES
OF SOUTH CAROLINA

WHITE ASH
FRAXINUS AMERICANA

Height: 80' - 150'

Characteristics
Leaf: Opposite leaf arrangement, compound; 8 to 12 inches long with five to six oblong leaves with smooth or finely toothed margins; upper surface is dark green and smooth; underside is light green to white; petiole is jointed at nodes.

Flower: Divergent, dark red; male appear in dense clusters; female appear in loose clusters.

Twigs: Stout and gray-green; terminal bud looks like a spinach nut or pinched chocolate chip; lateral bud-like on the leaf axis.

Bark: Thick and gray-brown; finely fissured; inner bark is soft and fleshy; outer bark is rough and scaly.

INVASIVE SPECIES
OF SOUTH CAROLINA

http://www.state.sc.us/forest/

South Carolina Land Trust Network, July 15th 2021
Seedlings are available!

SCFC and ArborGen have joined forces!

What the partnership means to SC landowners

The South Carolina Forestry Commission is proud to partner with commercial seedling provider ArborGen on the production, sales and delivery of forest tree seedlings for SC landowners. Taylor Nursery, near Trenton, S.C., is still owned by the Forestry Commission, but ArborGen is now providing management services to operate the nursery.

ArborGen is making capital investments to the facility to increase its production capacity; this unique public/private partnership will guarantee SC landowners improved genetics and quality seedlings for years to come.

Under this partnership, the Forestry Commission will determine seedling production for up to 5 million seedlings annually, with 3.34 million seedlings to be grown in 2019-2020. The Forestry Commission will set prices for these seedlings grown specifically for South Carolina landowners by ArborGen. The prices in this guide will only apply to the first 100,000 seedlings ordered each year by qualified landowners for seedlings to be planted in South Carolina.

When placing your order, be sure to state if the seedlings are to be planted in South Carolina.

As always, feedback from you on our seedling program is essential. Please supply ArborGen with your email address when placing your order so we can include you in our annual Seedling Customer Satisfaction Survey at the end of each planting season.

For more information, or if you just have questions about this partnership, please contact SCFC Resource Development Director Tam Adams at (803) 986-8802 or tadam@scfc.gov.

And don’t forget to ask for South Carolina landowner pricing when making your order!