4.d.
Primary Wood-Using Facilities

Key Findings

- By 2007 the number of primary processor wood-using facilities in North Carolina was less than one-half of the number of facilities in 1990. Despite the large number of mills that have closed, however, total production from roundwood for all products and species has remained relatively flat since 1990.
- Secondary manufacturing was not evaluated for the assessment.
- Exporting opportunities for the forest products industry were not examined for this resource assessment.

Introduction

The wood products industry is a major contributor to North Carolina's manufacturing economy. In 2008 the industry had about 2,562 companies employing 82,780 people, a payroll of $3.1 billion, and shipping products valued at $18.3 billion (Ashcraft, 2009). The majority of these companies are small, employing fewer than 100 people. The industry can be divided into primary and secondary processors. This section focuses on the primary processing facilities, which are surveyed on a biennial cycle by the NC Division of Forest Resources (NCDFR), in cooperation with the Southern Research Station of the USDA Forest Service. The surveys complement the Forest Inventory and Analysis periodic inventory of volume and removals from the state's timberlands. They are conducted to determine the amount and source of wood sales and annual timber product drain, by county, and to determine interstate and cross-regional movement of industrial roundwood.

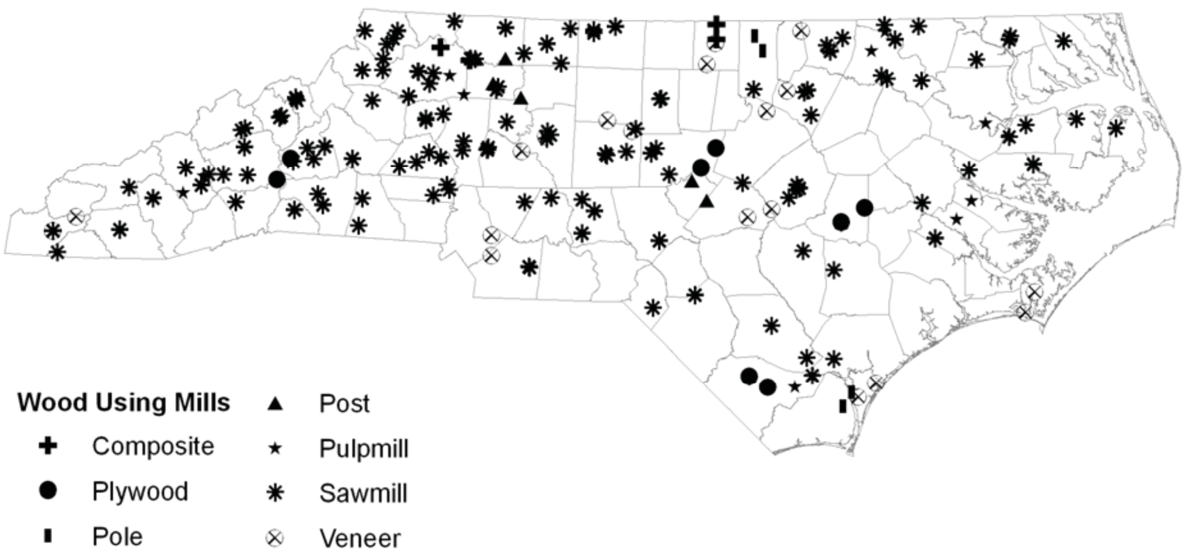
Primary Processing Facilities

Primary processing facilities are those wood processors that process roundwood in log or bolt form or as chipped roundwood. FIGURE 4*d*-1 shows the distribution of mills operating in 2007.

In 1990, North Carolina had a total of 366 primary processors. This included 308 sawmills, 32 veneer mills, eight pulp mills, five composite panel mills, and 13 other industrial mills, such as pole and piling and firewood producers. Since 1990, North Carolina has been steadily losing its primary processing manufacturing facilities, with an average annual decline of 4.7 percent for all mill types. By 2007, North Carolina had only 163 mills, a 55 percent decrease over 17 years. TABLE 4*d*-1 describes the decline in primary wood-using plants by type of mill from 1990 to 2007.

In 2007, North Carolina's primary processors received 714.1 million cubic feet of roundwood. The productive output for all primary processing facilities was 728.4

FIGURE 4*d*-1. NC primary wood-using mills, 2007.



Created by: A. Bailey, NCDFR, 2010

TABLE 4*d*-1.—Primary wood-using facilities in North Carolina by mill type and percent change, 1990 – 2007

Mill Type	Year										Percent (%) Change 1990 to 2007	Annual percent (%) change
	1990	1992	1994	1995	1997	1999	2001	2003	2005	2007		
Sawmill	308	306	275	273	243	240	215	204	153	136	-78	-4.6
Veneer	32	29	27	27	23	24	20	18	14	14	-86	-5.1
Pulp	8	8	8	8	7	7	7	6	6	6	-35	-2.1
Composite panel	5	4	4	4	3	3	3	3	3	2	-71	-4.2
Other	13	10	8	8	4	4	4	4	4	5	-146	-8.6
All mills	366	357	322	320	280	278	249	235	180	163	-79	-4.7

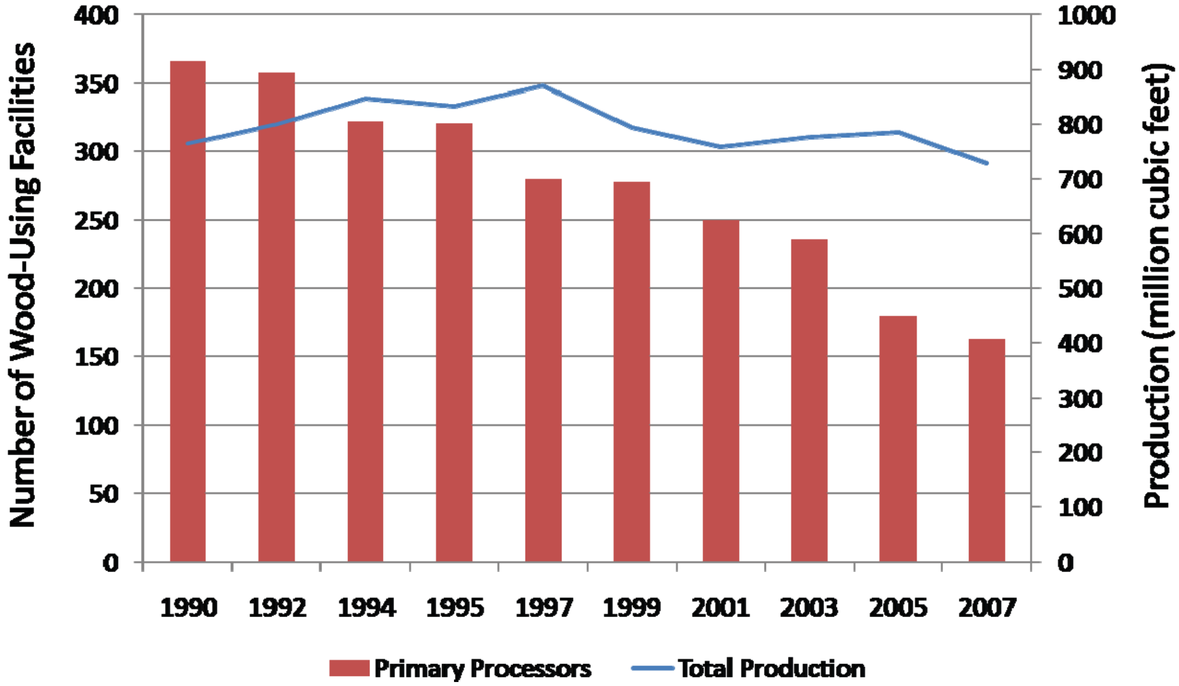
Source: Cooper, and Mann, 2009

million cubic feet, the lowest output since 1990. However, despite the large number of mills that have closed since 1990, total production from roundwood for all products and species has been relatively flat from 1990 to 2007 (FIGURE 4*d*-2). From 1990 to 1997, total production increased at the average annual rate of 1.8 percent; whereas from 1997 to 2007, total production of both hardwood and softwood declined at the average annual rate of 1.3 percent. Both softwood and hardwood production had positive annual growth from 1990 to 1997.

Sawmills

In 2007, North Carolina had 136 sawmills, a net loss of 17 mills since 2005 and only 44 percent of the number of sawmills operating

FIGURE 4*d*-2. Wood-using facilities and total roundwood production by year in North Carolina, 1990 – 2007.



Source: Cooper and Mann, 2009.

in 1990. On an annual basis, North Carolina is losing sawmills at an average rate of 4.6 percent (TABLE 4*d*-1). The piedmont has the most sawmills of any survey unit with 61, followed by the mountains with 40, the northern coastal plain with 19, and the southern coastal plain with 16. Twenty-four sawmills are classified as large, capable of producing more than 20 million board feet of product. Of the 24 large mills, 11 are located in the piedmont, six each in the northern and southern coastal plain, and one in the mountains. About 79 percent of the small and medium sized sawmills are located in either the mountains or the piedmont (TABLE 4*d*-2).

Small to medium mills outnumber the large mills, but the large sawmills produce considerably more output. Of the mills operating in 2007, 24 percent had receipts of less than 1 million board feet and 60 percent had receipts less than 10 million board feet. Fifty-five sawmills (40 percent) had receipts greater than 10 million board feet. However, those 55 sawmills accounted for 90 percent of saw log receipts.

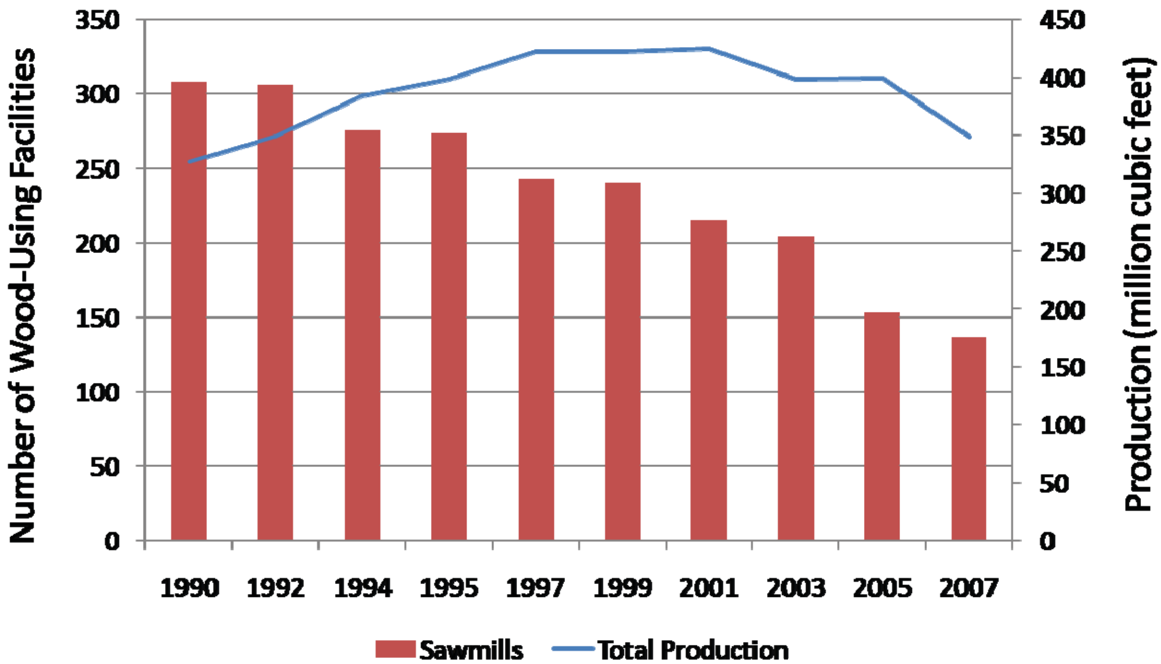
In 2007, total roundwood receipts at the 136 sawmills were 374.4 million cubic feet and accounted for 52 percent of North Carolina's total receipts for primary processors (FIGURE 4*d*-3). Softwood represented 71 percent of total roundwood receipts, while

TABLE 4*d*-2.—Number of sawmills by size and survey unit, 2007

Size of Sawmill	Mountains	Piedmont	Northern Coastal Plain	Southern Coastal Plain	Total
Small (0-5 mmbf)	24	28	6	7	65
Medium (5-20 mmbf)	15	22	7	3	47
Large (>20 mmbf)	1	11	6	6	24
All Plants	40	61	19	16	136

Source: Cooper and Mann, 2009

FIGURE 4*d*-3. Number of North Carolina wood-using facilities and total roundwood sawlog production by year, 1990 –2007.



Source: Cooper and Mann, 2009

hardwood comprised the remainder.

On the output side, saw logs accounted for 48 percent of the state's total roundwood output. In 2007, North Carolina sawmills produced 348.4 million cubic feet of wood products. Softwood output was 244.6 million cubic feet, while hardwood output was 103.7 million cubic feet. From 1990 to 2001, total saw log production increased at an average annual rate of 2.4 percent. However, from 2001 to 2007, total production declined at an average annual rate of 3.4 percent (FIGURE 4*d*-2). On a species basis, softwood output increased from 1990 to 2001 and then began to decline at an average annual rate of 3.4 percent. Hardwood production increased from 1990 to 1999 then began a slow decline of 2.2 percent annually.

In 2007, North Carolina retained 94 percent of its saw log production for in-state manufacturing. Saw log imports, at 46 million cubic feet, exceeded exports by 26 million feet in 2007, making North Carolina a net importer of saw logs.

Pulp Mills

Six pulp mill facilities were operating and receiving roundwood in 2007, two fewer than in 1990. Four of North Carolina’s six pulp mills are located in the coastal plain, three in the northern counties and one in the southern counties. The mountainous western part of the state has two pulp mills. No pulp mills are located in the North Carolina piedmont.

In 2007, total pulpwood receipts for the six mills were 245 million cubic feet, accounting for 34 percent of the total receipts for all primary processors in North Carolina. Softwood accounted for 63 percent, or 155 million cubic feet of receipts. Hardwood accounted for 37 percent, or 90 million cubic feet of receipts.

Total output was 280 million cubic feet, 38 percent of the total output for North Carolina. Softwood accounted for 151 million cubic feet of output, while hardwood accounted for 129 million cubic feet.

The loss of pulp mills has an immediate impact on the total receipts and output of the remaining facilities, unlike North Carolina's sawmill industry, which mitigates the loss of some sawmills by expanding, becoming more efficient, or both. With each loss, as in 1997 and 2003, the overall consumption and production of roundwood pulpwood suffers (FIGURE 4*d*-4).

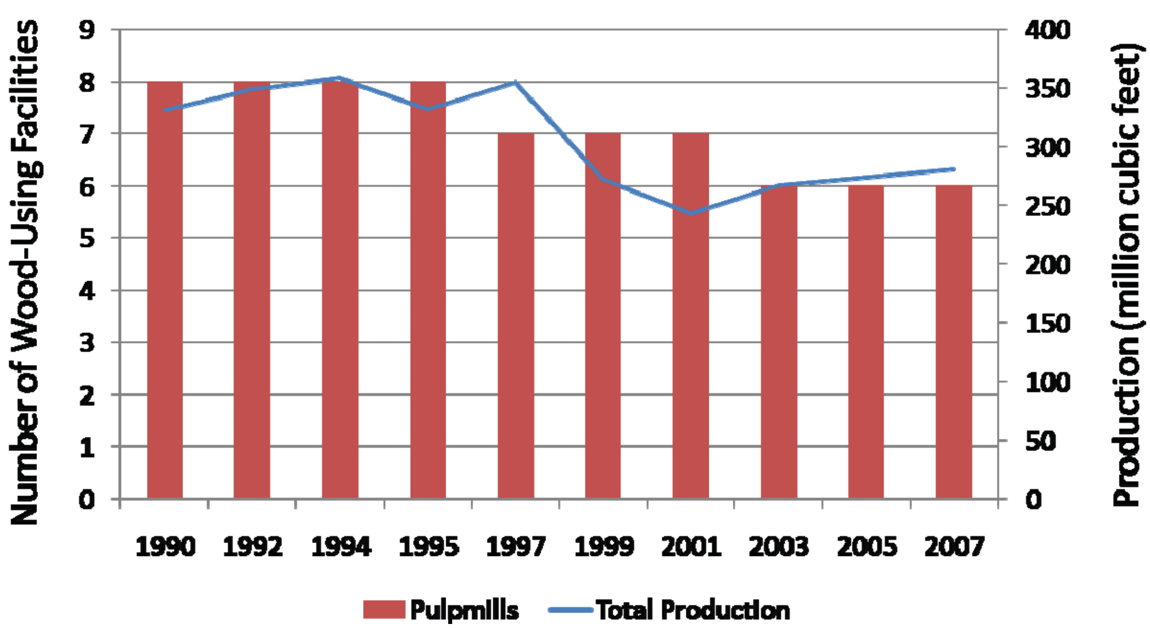
Seventy percent of the roundwood cut for pulpwood was retained for processing by NC pulp mills. Roundwood pulpwood exports amounted to 85 million cubic feet, while imports totaled 50 million cubic feet, making North Carolina a net exporter of roundwood pulpwood.

Composite Panel Mills

In 1990, North Carolina had five composite panel manufacturing facilities. In 2007, only two of these facilities remained. In 2007, the total roundwood receipts for the state's two composite facilities were 39 million cubic feet, or 5.5 percent of the total receipts in North Carolina by primary processors. Softwood accounts for 83 percent of the receipts, while hardwood accounts for 17 percent.

Total mill output in 2007 was 45.7 million cubic feet. From 1990 to 1997, total output remained flat at around 34 million cubic feet. Total output was about equal from both hardwood and softwood production. Beginning around 1994, hardwood production began declining, at the average

FIGURE 4*d*-4. Number of NC wood-using facilities and total roundwood pulpwood production by year, 1990 – 2007.



Source: Cooper and Mann, 2009

annual rate of 8.1 percent. In 1997, softwood production began increasing at an annual rate of 7.9 percent (FIGURE 4*d*-5).

Seventy-three percent of the composite panel production was retained for processing by NC mills. Exports amounted to 12.2 million cubic feet, while imports totaled 5.9 million cubic feet, making North Carolina a net exporter of roundwood used for composite panels.

Veneer and Plywood Mills

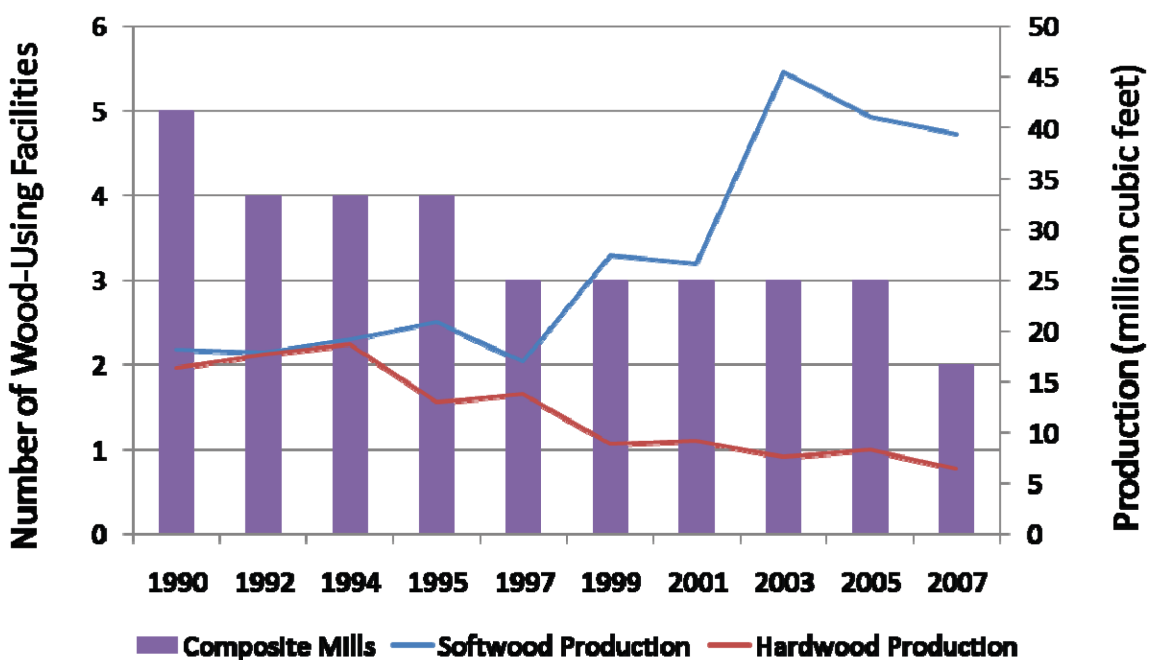
In 1990, more than 30 veneer or plywood mills were operating in North Carolina. By 2007, less than half of them remained in operation. The piedmont, with seven mills, has the most facilities, followed by the southern coastal plain with four facilities, the mountains with two, and the northern coastal plain with one facility (FIGURE 4*d*-6).

Total roundwood receipts in 2007 were 53.8 million cubic feet, or seven percent of the total receipts in North Carolina by primary processors. Softwood accounts for 60 percent of the receipts and hardwood 40 percent.

Total mill output in 2007 was 50.4 million cubic feet. Total output declined at an average annual rate of 1.5 percent from 1990 to 2007 (FIGURE 4*d*-6). Overall, hardwood production has declined the most, at an average annual rate of 2.8 percent from 1990 to 2007. Softwood production also declined, but at a slower rate of 0.9 percent annually.

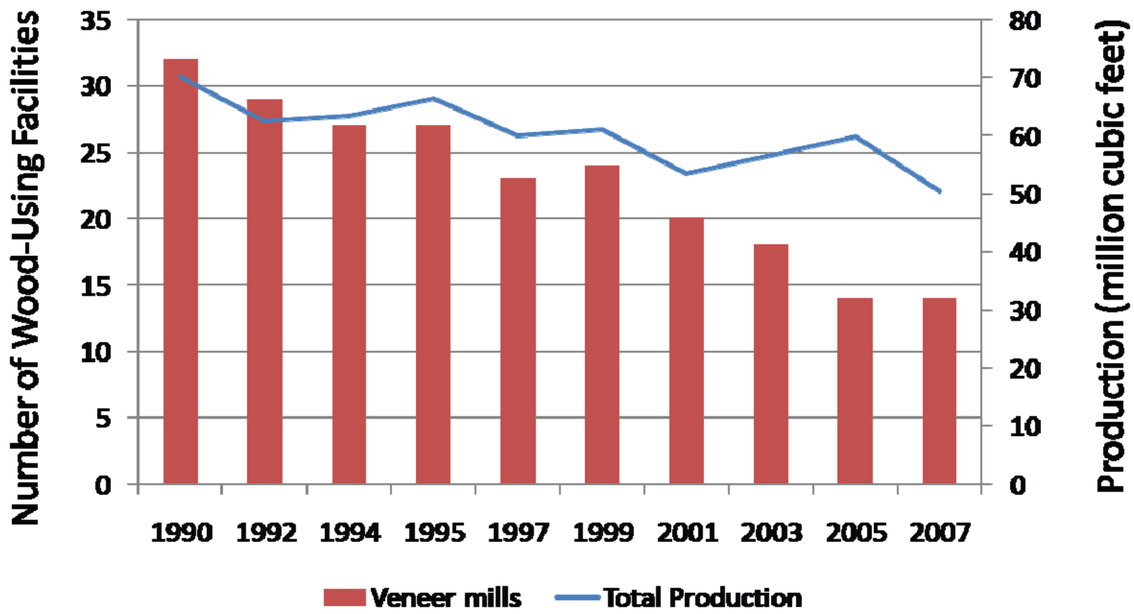
North Carolina retained 85 percent of its veneer log production for processing at veneer mills within the state. Imports amounted to 10.7 million cubic feet, while exports totaled 7.3 million cubic feet, making North Carolina a net importer of roundwood veneer logs.

FIGURE 4*d*-5. Number of NC wood-using facilities and total roundwood composite panel productions by species and year, 1990 – 2007.



Source: Cooper and Mann, 2009

FIGURE 4*d*-6: Number of NC wood-using facilities and total roundwood veneer log production by year, 1990 – 2007.



Source: Cooper and Mann, 2009

Other Mills

Roundwood harvested for other industrial uses (poles, posts, mulch, firewood, logs for log homes, and all other industrial products) were processed by five primary processing facilities. Four facilities are located in the North Carolina piedmont with one located in the southern coastal plain. Total receipts at these five facilities were 1.3 million cubic feet in 2007, less than one-quarter of 1 percent of the total roundwood receipts for North Carolina.

Roundwood output was 3.4 million cubic feet. Softwood accounted for 70 percent of the output, and hardwood accounted for 30 percent. North Carolina was a net exporter of roundwood used for other industrial products.

Summary

The number of total roundwood production facilities in North Carolina has declined steadily since 1990, although total roundwood production has remained flat. The state is a net exporter of roundwood for pulp, panels, and other industrial uses, while it is a net importer of veneer and sawlogs. It is unclear what impact an increased demand for pulpwood by bioenergy companies will have on North Carolina's primary processing facilities.

Map Data Sources

FIGURE 4d-1: USDA Forest Service

References and Sources Cited

Ashcraft, D. 2009. Personal communication. Raleigh: NC State University, College of Natural Resources, Office of the Executive Director of Development and College Relations.

Cooper, J. A. and Mann, M. C. 2009. North Carolina's timber industry—An assessment of timber product output and use. *2007. Resour. Bull.* SRS-156. Asheville, NC: USDA Forest Service, Southern Research Station.

Glossary

composite panels. Roundwood products manufactured into chips, wafers, strands, flakes, shavings, or sawdust and then reconstituted into a variety of panel and engineered lumber products.

consumption. The quantity of a commodity, such as pulpwood, utilized by a particular mill or group of mills.

primary processor. *See* **primary wood-using plant**.

primary wood-using plants. Industries receiving roundwood or chips from roundwood for the manufacture of products, such as veneer, pulp, and lumber.

production. The total volume of known roundwood harvested from land within a State, regardless of where it is consumed. Production is the sum of timber harvested and used within a State, and all roundwood exported to other States.

pulpwood. A roundwood product that will be reduced to individual wood fibers by chemical or mechanical means. The fibers are used to make a broad generic group of pulp products that includes paper products, as well as fiberboard, insulating board, and paperboard.

receipts. The quantity or volume of industrial roundwood received at a mill or by a group of mills in a State, regardless of the geographic source. Volume of roundwood receipts is equal to the volume of roundwood retained in a State plus roundwood imported from other States.

roundwood (roundwood logs). Logs, bolts, or other round sections cut from trees for industrial or consumer uses.

roundwood products. Any primary product, such as lumber, poles, pilings, pulp, or fuelwood, produced from roundwood.

timber products. Roundwood products and byproducts.

timber products output. The total volume of roundwood products from all sources plus the volumes of byproducts recovered from mill residues (equals roundwood product drain).

veneer log. A roundwood product either rotary cut, sliced, stamped, or sawn into a variety of veneer products, such as plywood, finished panels, veneer sheets, or sheathing.