



A Brief History of Pulpwood in the South -- Update

We have looked at pulp mill capacity and pulpwood production delivered to pulp mills in the US South in two previous Forest Research Notes. In this issue we provide another update with four additional years of data available and point out some things we found interesting.

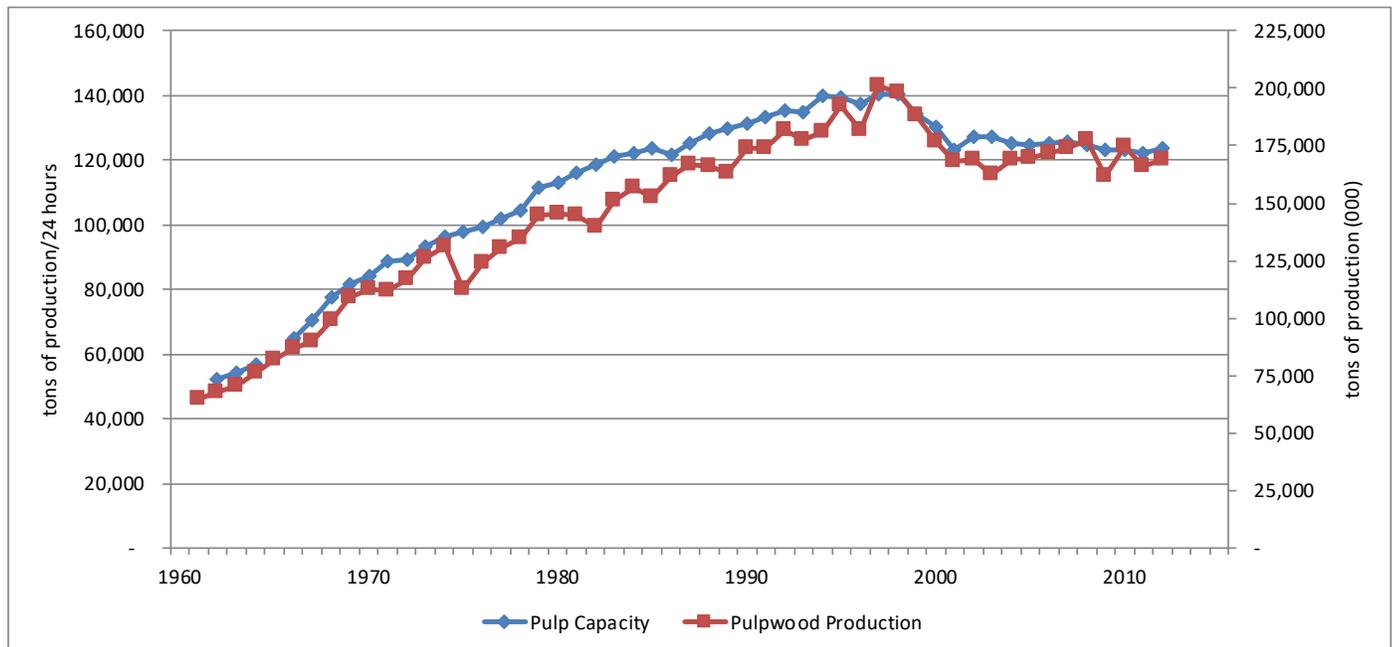
Figure 1 compares pulp mill capacity and pulpwood production across the South from the early 1960s through 2012. The USFS commonly reports pulp capacity (blue line) in terms of tons per 24 hours. The red line shows thousands of tons of “pulpwood” produced per year. This volume consists of roundwood and residues.

Mill capacity dropped sharply between 1988 and 2000, recovered a little in 2001 and has been declining slowly but steadily from 127,000 tons per day in 2002 to

123,000 tons per day in 2012 (a decline of about 0.3 percent annually). Pulpwood production has remained fairly steady at an average of 170 million tons per year since 2000.

The two data series are highly correlated (0.98), but are not identical because the blue line shows pulp mill *capacity*, not pulp production or wood consumption. Pulp and paper mills are very expensive (new ones start at around \$1 billion), so they tend to run 24 hours a day with a week or two of scheduled downtime for maintenance each year. But there are times when they don’t operate at full capacity. They may even close down a pulp line and paper machine for a few weeks when prices for their paper or paperboard are lower than they like.

Figure 1. Pulp Capacity and Pulpwood Production Delivered to Pulp Mills in the Southern United States



Source: USDA Forest Service

Despite the ups and downs of both mill capacity and wood production, the relationship between the two has been fairly constant.

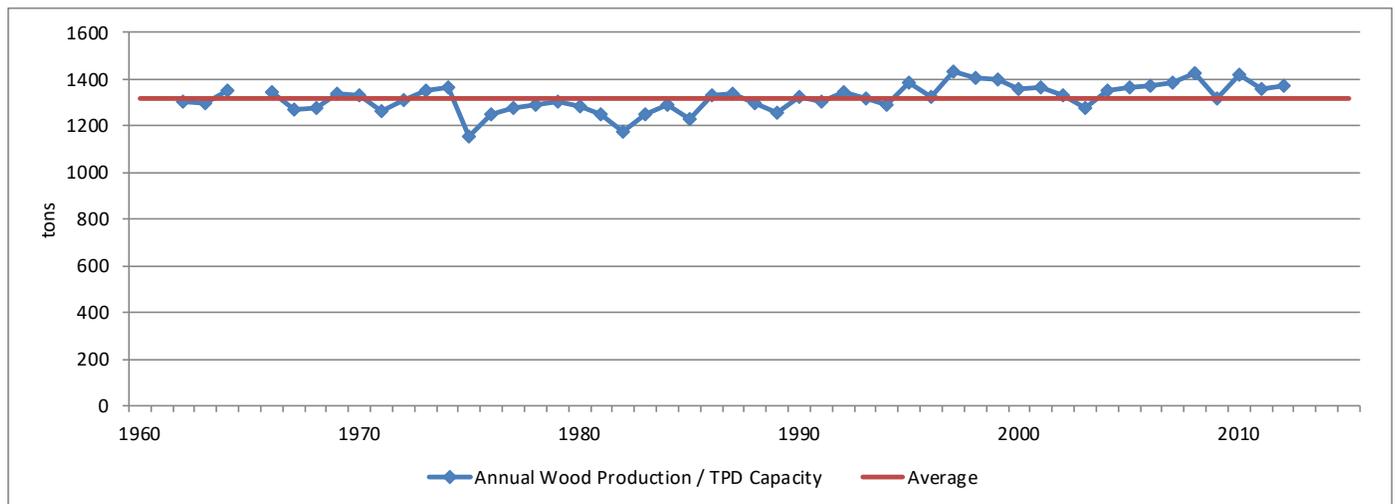
Figure 2 compares the annual volume of wood produced for delivery to pulp mills with pulp mill capacity. Since the 1960s, an average of 1,319 tons of roundwood and chips have been delivered to pulp mills for each ton-per-day (tpd) of mill capacity.

This can provide us with a rough idea of the impact of a pulp mill startup or closure on pulpwood demand. For example, a mill with a capacity of 1,000 tpd were to close, we might expect annual pulpwood demand to fall by nearly 1.4 million tons (1,000 tpd capacity * 1,319 tons of wood per tpd = 1,368,000 annual tons). Conversely, a new mill (which would likely be bigger than 1,000 tpd if built today) would increase demand by 1.4 million tons per year.

Note however, that the exact ratio of wood to pulp capacity depends on a number factors including the pulping process used by the mill, the age and condition of the mill's equipment and the species (hardwood vs. softwood) and form of the wood (chips vs roundwood) used.

The USFS breaks down the pulpwood production by species and product. The mix of roundwood vs. residues has changed a little over the years (Figure 3). The annual volume of softwood roundwood generally increased through the late 1990s, but fell steadily as a percent of total pulpwood production from 67 percent in the early 1960s to about 45 percent of the pulpwood volume from the mid-1980s to the mid-2000s (Figure 3).

Figure 2. Annual Tons of Pulpwood Produced for Delivery to Pulp Mills per Ton Per Day of Pulp Mill Capacity



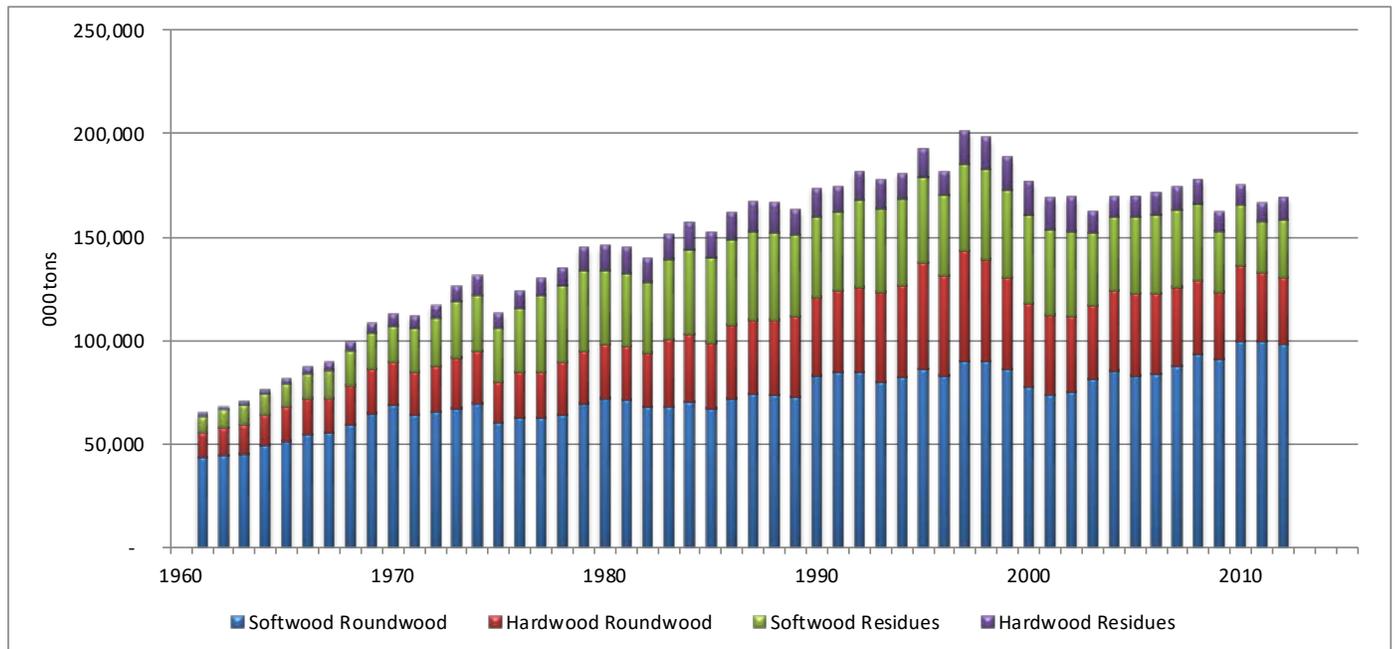
Softwood chips increased from about 10 percent of the supply in 1961 to 20-25 percent by the late 1970s. Some of this increase would have come from the development of chip-n-saw mills, which diverted some “pulpwood” volume to lumber production. These small logs would yield one or two 2x4’s and a large volume of pulp chips.

The collapse in housing starts beginning in 2006 shifted the softwood mix in two ways. It reduced the supply of sawmill chips available as lumber production fell and increased the volume of roundwood available as timberland owners harvested pulpwood to generate cash flow. Figure 4 shows southern pine lumber production

fell from 1,667 MMBF in April 2006 to 925 MMBF in January 2009 (production was actually lower in December 2008, but that was due to the annual holiday shutdown (which is clearly visible in most years)).

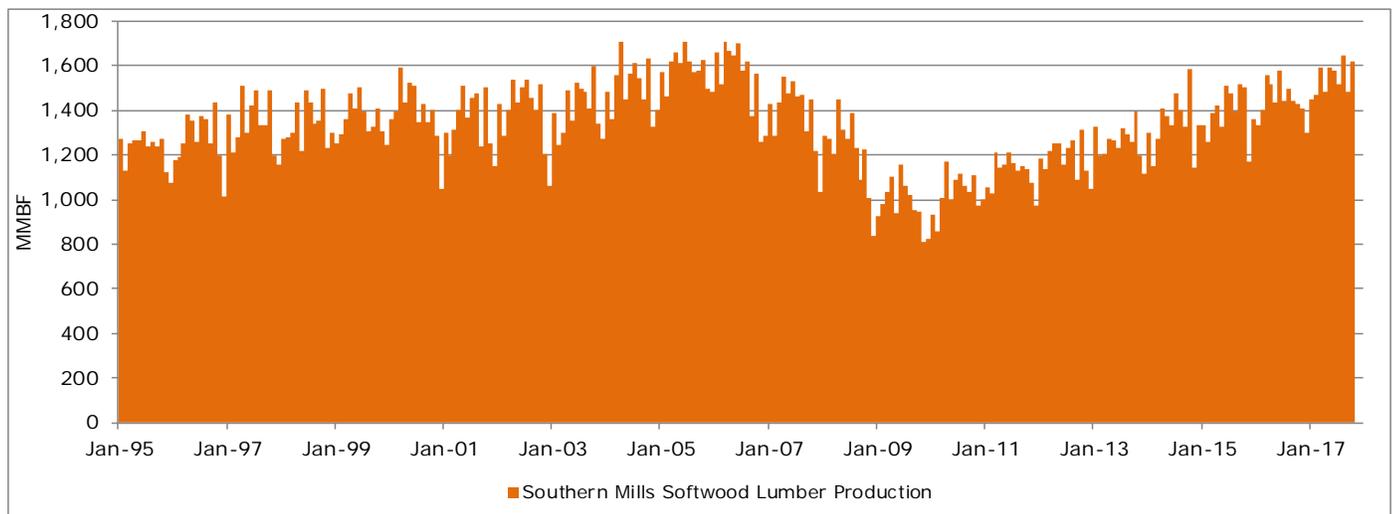
As lumber demand fell, timberland owners began storing sawtimber on the stump (see, for example, Vol 12 No 4 *Storing on the Stump*) and turned to pulpwood for cash. They concentrated on thinning younger stands, which increased the volume of pulpwood roundwood available to pulp mills.

Figure 3. Pulpwood Production by Species and Product (mm tons)



Source: USDA Forest Service

Figure 4. Southern Softwood Lumber Production (MMBF)



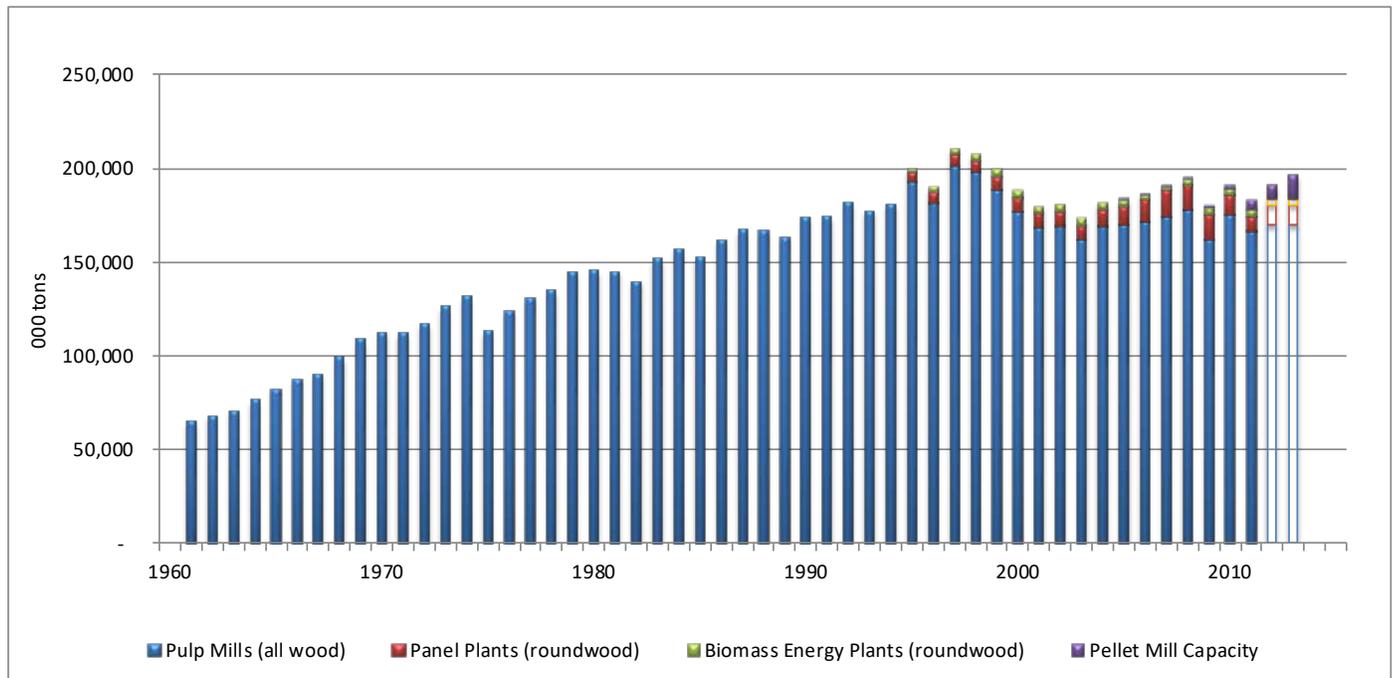
Source: Random Lengths

Finally, we found some not-quite-compatible data that shows where other “pulpwood” roundwood and mill residues have been going. Figure 5 adds these other consumers to the pulp mill wood deliveries in Figure 1. It shows roundwood harvested for delivery to panel plants (mostly oriented strand board (OSB)) and plants that generate electricity by burning wood. The data for these mills runs from 1995 to 2011. We also have

southern pellet mill capacity for 2003-2013. Pellet mill capacity has increased rapidly, but to show this in Figure 5 we had to estimate wood consumption for the other mills for 2012 and 2013.

The data aren’t quite apples and oranges, but they are a mix of oranges and lemons and grapefruits.

Figure 5. Roundwood and Residue Consumption



Source: USDA Forest Service and Abt et al 2014

The chart shows that consumption of “pulpwood” by other types of consumers has not offset the drop in consumption by pulp mills that began in 1998, but that they are pushing total consumption back up to near 200 mm tons per year.

References

Abt, Karen Lee, et al, 2014, *Effect of Policies on Pellet Production and Forests in the U.S. South: A Technical Document Supporting the Forest Service Update of the 2010 RPA Assessment*, SO Research Station, General Technical Report SRS-202

USDA Forest Service, a formerly annual series (*Southern Pulpwood Production*) including: Bentley, James W., and Jason A. Cooper, 2014, *Southern Pulpwood Production*, 2012, SO Research Station, Resource Bulletin SRS-206

Up-Coming Events

International Society of Forest Resource Economics

Gatlinburg, TN
March 19-21,2018

I will be presenting a paper: *Timberland Investment Mythbusters*, which will examine some common perceptions about institutional timberland investments to see whether they are (or were true).

For more information, see:

<http://sofew.cfr.msstate.edu/meeting2.asp?id=42>

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Jack Lutz, PhD
Forest Economist
Forest Research Group
78 Stonybrook Way
Hermon, ME 04401
(207) 605-0037

jlutz@forestresearchgroup.com
www.forestresearchgroup.com