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## **Pulp Mills, Forest Management...and People**

A pulp mill is a timberland manager's friend, especially in the US South and Northeast. It is very helpful to have a pulp mill or two within delivery distance of your timberland. Pulp mills consume tremendous volumes of small and low-quality wood, providing a great market for those materials for timberland owners. Particleboard and pellet plants also consume "pulpwood", but in much small quantities.

Most pulp mills in North America are integrated with paper mills. These combined facilities employ anywhere from a couple of hundred to over a thousand people directly and hundreds more indirectly in the nearby forests and in the neighboring towns. They can also account for a significant portion of the local property tax base.

### ***Pulp Mills***

The amount of wood a pulp mill consumes is a function of the type of pulp it produces. Groundwood mills, producing pulp for products such as newsprint, use about 2 tons of green wood per ton of pulp produced. Chemical pulp mills, producing pulp for printing & writing papers and paperboards, may use up to 4 tons of wood per ton of pulp produced. Mills making specialty pulps for non-paper use may use even more wood per ton of pulp.

Pulp mills have gotten bigger over time. When Great Northern Paper's mill in Millinocket, Maine opened in 1900, it was the largest pulp mill in the world, producing 120 tons/day of sulfite pulp and 240 tons/day of groundwood pulp (and 240 tons/day of newsprint) (PulpandPaper.org, 2013). The pulp mill would have consumed over 300,000 tons of pulpwood per year at that time.

The Finland-based forest products company UPM has recently proposed a new pulp mill in Uruguay

(its third such mill there) that is expected to produce about 2.3 million tons of pulp per year (UPM, 2019). This level of pulp production might (depending on the pulping process and species of wood used) require over 9 million tons of pulpwood and sawmill chips each year.

### ***Forest Management***

Forest managers have to deal with significant quantities of small and low-quality wood.

### ***South***

In the South, pine seedlings are usually planted at densities that allow the tree canopy to close quickly, which helps suppress competing vegetation. Tree growth will start to slow after a decade, when about a significant number of trees may be removed. This allows the remaining trees more room to grow and maintains a strong rate of growth in the stand.

One common thinning method used early in the life of a southern pine stand is to remove every third row. A later thinning (or thinnings) will be more selective and remove diseased, deformed or suppressed trees.

There is a large body of southern pine thinning literature and advice available from universities and Cooperative Extension Service offices across the South. The links below lead to some examples:

### **Univ. of Arkansas Cooperative Extension Service**

- <https://www.uaex.edu/environment-nature/forestry/FSA-5001%20Thinning%20Pine.pdf>

### **Georgia Forestry Commission**

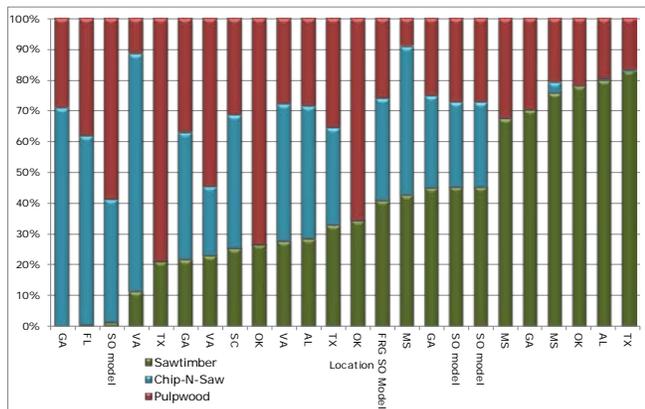
- <http://www.gfc.state.ga.us/resources/publications/PineThinning.pdf>

### **Mississippi State Univ. Extension Service**

- <https://extension.msstate.edu/sites/default/files/publications/publications/p2260.pdf>

Almost all the volume from an early thinning will be pulpwood, not sawtimber. While most southern pine management regimes are focused on maximizing sawtimber volumes, a large portion (as much as 30-40 percent) of the final harvest is still pulpwood (Figure 1). Without nearby pulp mills, it would be a challenge finding markets for the small logs removed during thinnings and final harvests.

**Figure 1. Distribution of Products from Southern Properties and Models**



Source: Forest Research Group files

**Northeast**

In the South, a large pine tree in a plantation will usually be a sawtimber tree. In the Northeast, size is less of a guarantee of quality. In addition to small trees removed in thinnings and selection or clearcut harvests, northern forest managers need markets for large low-quality logs. As in the South, pulp mills are usually the best markets for the volumes generated.

**Impact of Pulp Mill Closures**

The lack of adequate markets for pulpwood can cause big changes in the way forests are managed. Without markets for low-grade material, we may see only the largest, best-quality trees removed (high-grading). This process leaves the lower-value trees to grow on the site and this will lower the value of the forest over time.

There are two common reasons for pulp mills to close. In some cases, they are integrated with paper mills that are making papers for which demand has declined. International Paper (IP) closed its 2,400 ton per day mill in Courtland, AL in 2014. The 45-year-old mill was making printing & writing papers, and IP decided to demolish the mill rather than

convert it to making other products like containerboard or tissue.

In other cases, mills have closed because they were old and struggling to compete with newer, larger mills. Most of the mills that have closed in northern New England were over 100 years old (and making papers that consumers didn't want). Most of these mills were wedged into now-too-small sites against rivers, with no room for expansion or improvement. Vermont and New Hampshire have no remaining pulp mills and Maine has only five left.<sup>1</sup>



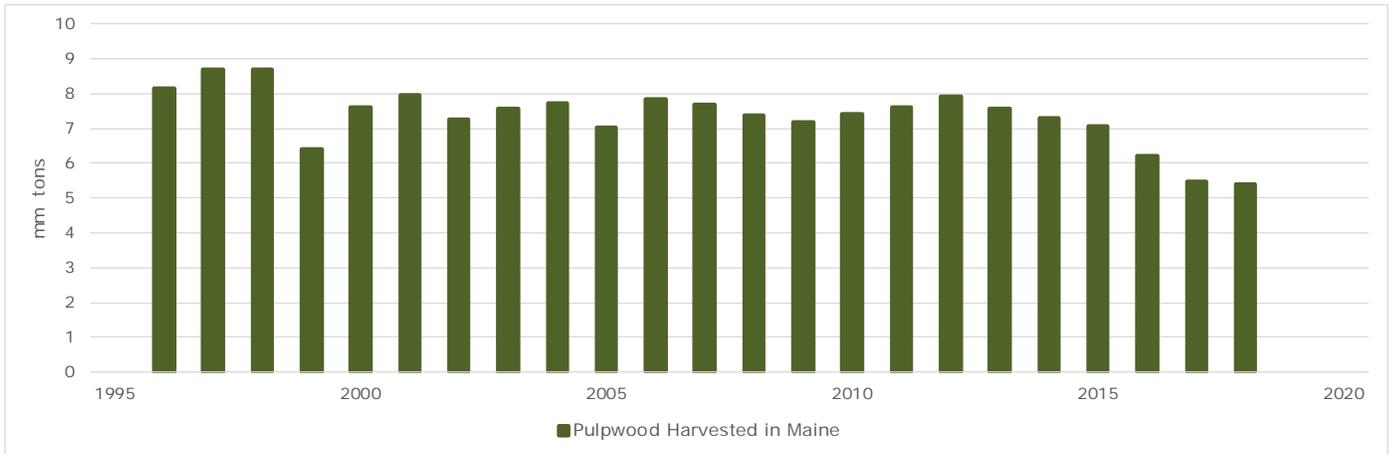
Winter twilight view of the closed (but not yet demolished!) pulp and paper mill in Lincoln, Maine

The impact of the closures on Maine's timber harvests are clearly seen in Figure 2. The state's pulpwood harvest fell from a recent peak of 7.9 mm tons in 2012 to 5.4 mm tons in 2018. (Maine's sawtimber harvest fell by more than 50% between 2006 and 2009, but has been increasing very gradually since then.)

Maine's pulpwood harvest is only part of the picture. The state is a net importer of pulpwood from other states and provinces. Pulpwood consumed fell from 9.6 mm tons in 2012 to 6.5 mm tons in 2018 (Figure 3). While the pulpwood harvest is down 2.5 mm tons, Maine pulp mills are using 3.2 mm fewer tons (bad news for loggers in New Hampshire and Vermont who were hauling wood into Maine).

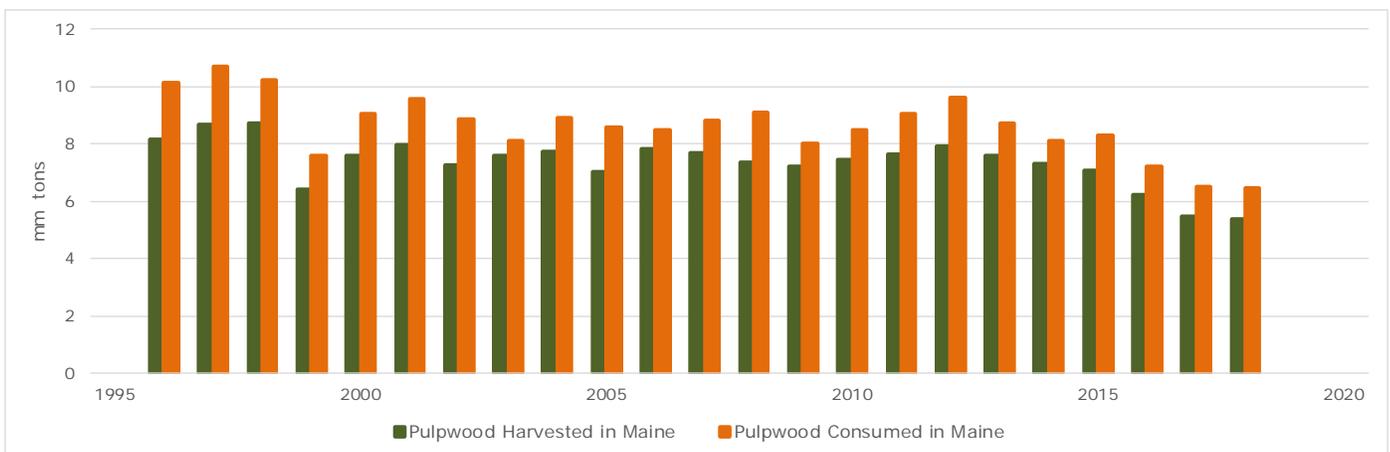
<sup>1</sup> Operating pulp mills are in Rumford, Jay, Skowhegan, Old Town and Baileyville. Sappi in Westbrook produces paper, but not from wood pulp it produces on site. Twin Rivers Paper in Madawaska produces paper, but not pulp. Its pulp comes from its sister Twin Rivers pulp mill a mile across the river in Edmundston, NB.

**Figure 2. Pulpwood Harvested in Maine**



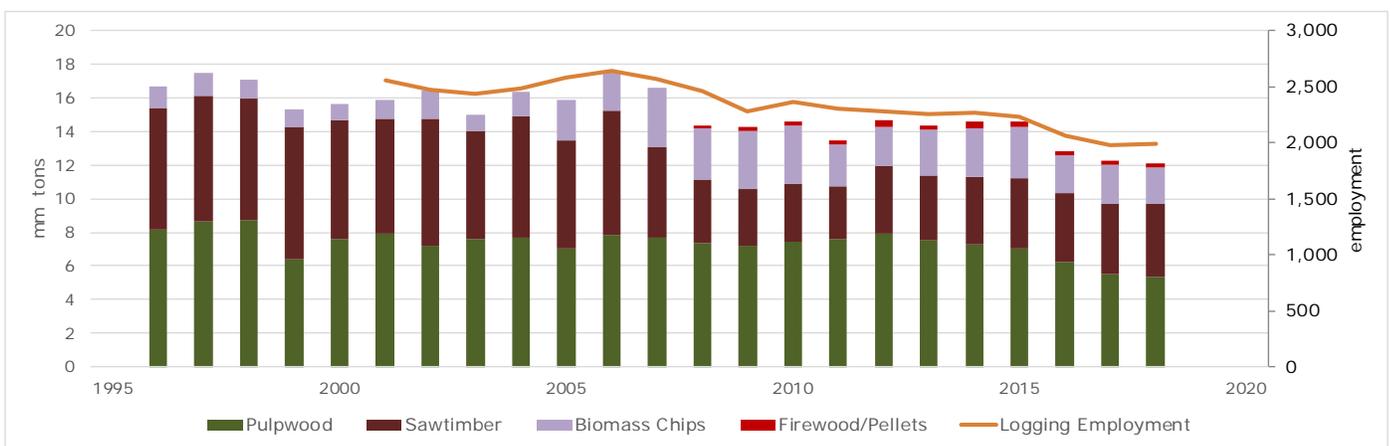
Source: Maine Forest Service

**Figure 3. Maine Pulpwood Harvested and Consumed**



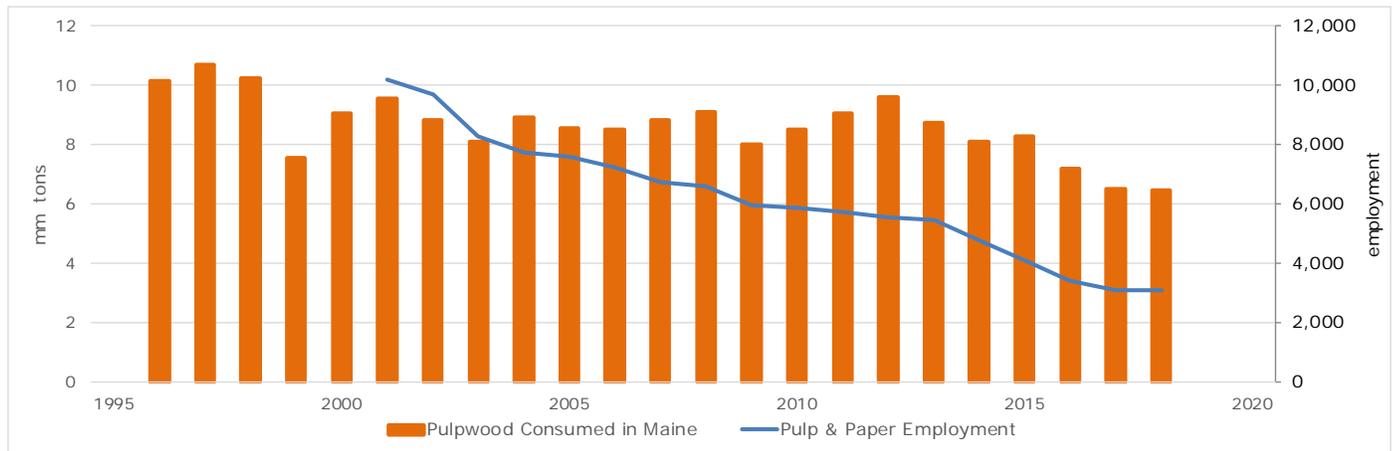
Source: Maine Forest Service

**Figure 4. Maine Timber Harvested and Logging Employment**



Sources: Maine Forest Service and Maine Department of Labor

**Figure 5. Maine Pulpwood Consumed and Pulp & Paper Employment**



Sources *Maine Forest Service and Maine Department of Labor*

**...And People**

The other impact of mill closures is on people. The big mill in Courtland, AL employed about 1,100 people at the site. Its closure caused additional job losses for logging and trucking companies.

Maine’s logging employment has dropped 24 percent since 2006 (Figure 4). This drop was helped by sawmill closures as well as pulp mill closures, and it does not include log truck drivers because they are included with general trucking employment numbers.

In addition to logging jobs, mill jobs have been lost in the shutdowns. There were about 17,000 jobs in the pulp and paper industry in Maine between 1950 and 1990. The number of jobs had fallen 80 percent to 3,100 by 2018 (Figure 5).

Even without mill closures, there would be fewer people working in Maine’s mills now. Back in 1900, every valve that needed to be opened or closed at the Great Northern mill in Millinocket had to be opened or closed by a human. Every gauge that needed to be watched had to be watched by a human. It took thousands of people to run a big pulp and paper mill complex. In 2020, computers are opening and closing valves and monitoring the gauges. A large, modern mill can be run by dozens

of people, where thousands were needed even as late as 40 years ago.<sup>2</sup>

**References**

PulpandPaper.org, 2013, <https://web.archive.org/web/20131024015617/http://pulpandpaper.org/history.shtml>

UPM, 2019, <https://www.upm.com/about-us/for-media/releases/2019/07/upm-continues-its-strategic-transformation-and-invests-in-a-world-class-pulp-mill-in-central-uruguay/>

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<sup>2</sup> Yes, we had computers back then! And they were compact enough that we could move them around in a small truck.