



Industry News

■ **ND Paper to invest \$111 million in Rumford mill; 50 more jobs** (Oct. 8th)

ND Paper plans to invest \$300 million in its mills in Maine and Wisconsin over the next two years. In Rumford, Maine, the \$111 million investment will sustain the jobs of the 650 employees and add 50 employees. The investment will finance two significant projects: The installation of a shoe press on one paper machine, which increases the machine's production capacity by approximately 20%, and the construction of a greenfield recycled pulp facility.

— *Lewiston Sun Journal*

■ **Shuttered Old Town paper mill to be sold to Chinese firm** (Oct. 10th)

The Old Town Mill is being sold again, this time to ND Paper LLC, with a promise of bringing "well over 100 high-paying jobs" to the area. ND Paper LLC has a definitive asset purchase agreement to buy the Old Town property from OTM Holdings LLC. To cut costs, ND Paper will move the production mix from hardwood kraft to softwood kraft pulp, because the latter is abundant locally. It also will eliminate the bleaching operations and focus on unbleached softwood pulp.

— *Bangor Daily News*

Industry Overview

Forestland Operations

The momentum that was built up in early autumn has, for the most part, continued through the fourth quarter. While the weather in October and the first part of November was relatively dry, significant wet weather covered the region in the later part of November. Nearly two weeks of rain brought a swift end to what had been a largely uninterrupted flow of timber, and a good part of the northeast shut down both road systems and harvest operations to protect the forest. Timber hauling on one major private road system was halted for over a week, which will likely have at least some cascading effect on early winter deliveries to Canadian sawmills.



Tall frosty pine trees in central Maine already beginning to bear the brunt of winter.

Not only does the supply chain ordinarily take time to get caught up when weather causes interruptions, but it is becoming more apparent each year that the trucking constraints that have been plaguing more remote regions for some time are becoming a significant impediment to getting wood to market. The confluence of many economic forces – low unemployment, market contractions, lack of skilled and trained workforce, the demanding nature of the job, escalating regulations, and low pay – have left many parts of the northeast without the surge capacity the forest products industry has become accustomed to. In 2018, more than any other year, the shortage of available trucks hindered the movement of forest products, and we found ourselves in competition for the services of good drivers. This challenge already has caused us to revisit trucking rates in some areas.

NUMBER 2 DIESEL FUEL PRICES - NEW ENGLAND

3 YEAR HISTORICAL MONTHLY AVERAGES



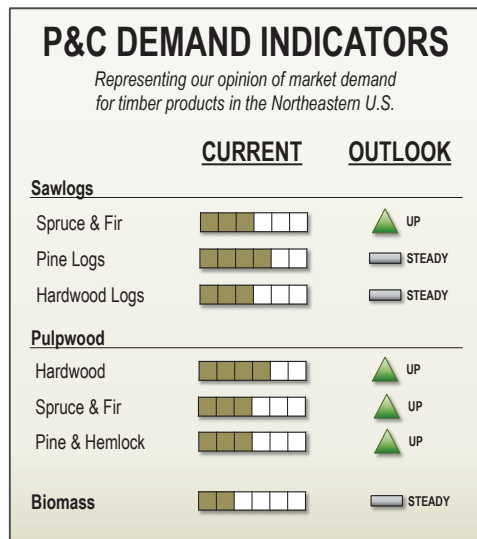
Thankfully, despite the weather and trucking issues, we were able to get a jump on our winter deliveries early in the quarter. We were able to finish 2018 either on or slightly ahead of our plans. At this point, the flow of wood is back up to pace and we are ahead of where we usually are this time of year. Wintertime is of course the season in which we move the most amount of timber, and all the pieces are in place for a good start to 2019. The only question is whether the cold weather will set in to support our logging operations –so, from here on out, it's in the hands of a higher power.

Forest Products Markets

Wintertime is as important a season for sawmills and pulp mills as it is for landowners and loggers. Mills rely on the same infrastructure to get the timber they need to keep running. Knowing they have to buy 6 months worth of wood in a 3 month timespan, mills have large plans during winter and try to buy as much wood as they can while the cold weather continues.

Mills generally have two options when sourcing wood to their facilities - they can either buy wood direct to their mill, or they can buy wood into a satellite wood yard on a good road system. The first option is often the preferable one for a mill; it is less expensive to do, and it is more

comforting to have the timber already at the same location where it will be processed. However, the second option is often more preferable for loggers and truckers, because wood yards are located along shorter and more convenient routes. With landowners, loggers, and mills all competing for trucking capacity, we have seen mills forced to shift their sourcing strategy to rely more on remote wood yard infrastructure so they can get the wood they need.



Pulpwood Products

It's not unusual for the regional pulp mills to have low raw material inventory coming into the winter operating season. However, it is unusual to have had the great logging



■ **Maine's paper industry 'positioned to have a revitalization'** (Oct. 14th)

For much of this decade, the paper industry's most notable product has been bad news: entire mills closing, others idled for weeks or months, bankruptcies, machines shutting down and workers laid off. Now, after two decades of cascading drops in papermaking jobs, the basement seems to have been reached. And that, ironically, gives hope to those watching the future of the industry.

— Press Herald

■ **Homebuilder confidence plummets to the lowest level in more than two years as 'demand stalls'** (Nov. 19th)

Rising mortgage rates and continued home price growth are hurting affordability and fast becoming a toxic cocktail for the nation's homebuilders. Sentiment among homebuilders dropped 8 points in November to 60 in the National Association of Home Builders/Wells Fargo Housing Market Index.

— CNBC

■ **ReEnergy shuts down Fort Fairfield biomass plant** (Nov. 18th)

ReEnergy Holdings has closed its biomass-fueled electricity plant in Fort Fairfield. The 37-megawatt facility, which opened in 1987 and employs 21 people, stopped operations on Nov. 11. The plant runs on chipped tree branches and other low-value forest residue from timber harvesting operations. Over recent years, ReEnergy's five biomass plants in the state have struggled financially amid declining rates for electricity.

— Maine Biz

conditions that we have, and still be low on inventory. Part of the story is overall consumption at the mills, which has not slowed and remains quite elevated. But another reason is rooted in labor issues and the limitations of a logging force that has downsized from its peak. Although demand is high and mills are going through material quickly, wood suppliers are having a hard time keeping up. For the moment, there are no restrictions on deliveries at any of our regional pulp facilities.

The large regional producers of hardwood kraft pulp continue to find ways to increase the percentage of softwood species in their mix because of both price and availability. In years past that appetite mostly consisted of spruce and fir. However, technical advances have allowed the introduction of other lower priced coniferous species into the blend. This has created fresh demand for hemlock and pine pulpwood as well.

New owners of the pulp mill in Old Town, ME have announced a restart of that facility with the intention of purchasing softwood. This will be the only mill operating on the venerable Penobscot River corridor, which was once home to nearly all of Maine's pulping capacity. To temper expectations, one must remember that softwood pulp is generally considered a byproduct of

producing softwood sawlogs, and therefore the volume doesn't carry the same weight as hardwood pulp. However, the new life in the softwood market does provide our foresters with some silvicultural tools and harvest opportunities that have not been available for years.

Sawn Products

Softwood Sawstock

Extreme volatility in lumber prices have led to agonizing times for dimension saw mills. The regional producers of lumber are high-volume producers and as such they need to carry a high amount of inventory in their yards. When lumber prices move up and down, mills with outsized finished goods inventory can be quickly bitten.

Also affecting sawmills is the disconnection between the lumber pricing, which moves daily, and log prices, which are set through contracts seasonally. For that reason log prices can lag lumber prices by several months. Moreover, sawlog prices tend to be more influenced by regional effects while lumber tends to move with national and global trends. Unless sawmills are able to adjust their log supplier pricing when their finished goods prices fall, they quickly can get stuck with high-cost logs sitting in



■ Tax lien on former Millinocket mill torpedoes plan for \$30 million factory (Dec. 18th)

An old federal tax lien against the former Great Northern Paper Co. mill site will keep LignaTerra Global from launching a \$30 million factory there to produce a composite wood product that can replace steel in high-rise building construction. LignaTerra's principals have not ruled out building a plant on the Millinocket site when the lien is resolved.

— Bangor Daily News

■ Timber Innovation Act to be signed into law, incentivizes timber construction (Dec. 13th)

The bipartisan Farm Bill promotes new and innovative uses for wood as part of the Timber Innovation Act - which accelerates the research and development of wood for use in construction projects, like cross-laminated timber. Cross-laminated timber is driving the effort to replace concrete with wood in construction. These buildings are faster to construct, more energy efficient, and comprised completely from renewable materials.

— Woodworking Industry

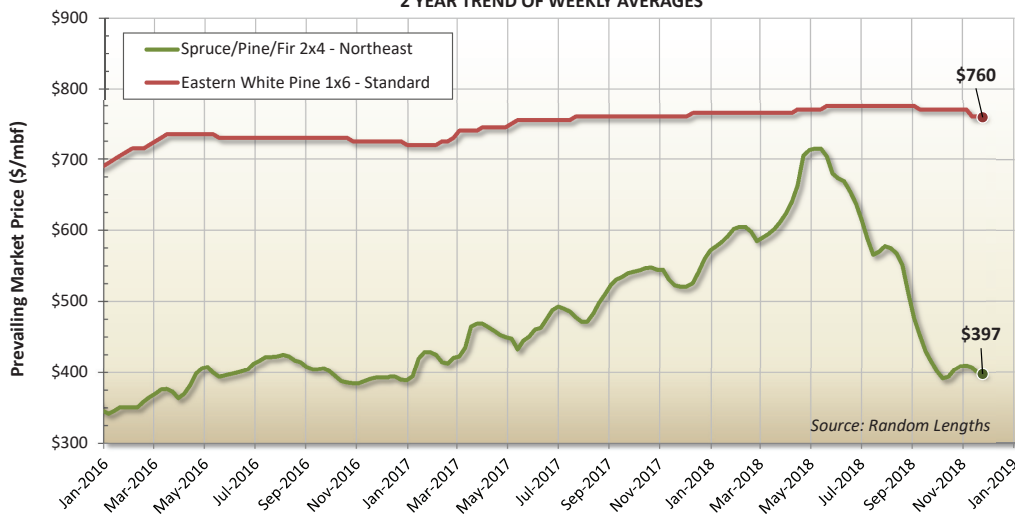
■ Wood makes a comeback as mass timber projects thrive (Dec. 18th)

Despite a few setbacks, tall wood building construction is thriving in the United States and beyond. As of June 2018, more than 400 mass timber projects have been completed or are in the design stage. Mass timber is defined by products that are engineered and consist of smaller pieces and are assembled into larger pieces.

— Construction Equipment Guide

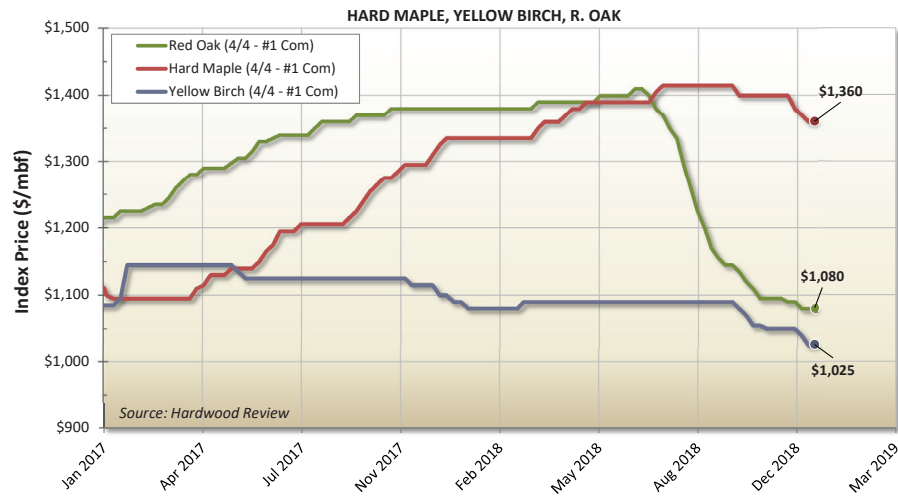
PRICE TRENDS IN SOFTWOOD LUMBER

2 YEAR TREND OF WEEKLY AVERAGES





RECENT PRICES IN HARDWOOD LUMBER - NORTHEAST



their wood yard, and low-value sawn products waiting to be sold. Needless to say, margins can quickly erode.

Although sawmills can dial down their production relatively quickly, workforce limitations can make this impractical and a double-edged sword when it is time to ramp back up. Therefore several dimensional sawmills have kept up their pace of buying despite the slump, working toward operating more efficiently and reducing variable costs. Year over year, the holiday season has never represented a high water mark for lumber pricing, and so some of the low lumber pricing is seasonal. That doesn't mean we are anticipating an immediate rebound, but historically recoveries have generally occurred once the spring construction season begins.

Demand for pine logs remains high and steady, despite a slight decline in the associated lumber price indexes we track. We've even seen a few marginal price increases for logs as sawmills work to build their winter inventories.

The market for cedar shows the tale of two different end-uses. Demand for logs for making cedar shingles, perhaps 65-70% of the cedar volume we sell, is tepid due to lackluster demand for shingles and the slow construction market. Demand for cedar sawlogs, made for fencing, log cabins, structural timbers, etc. has been reasonably steady. Winter is the time of year when landowners cut 80-90% of their cedar volume, and while we don't know what the weather will hold yet, the slow shingle market will likely not support a large cedar harvest this winter.

Hardwood Logs

The tariff situation related to hardwood logs appears to be reaching

a more mature stage. Earlier in the year China announced retaliatory tariffs on the import of U.S. hardwood lumber and logs, and there was an immediate response by in both the price and demand of the two most desirable export species of red oak and ash. Regionally in the northeast, it is high quality red oak that has taken the brunt of the impact - demand for other species seems to have been insulated.

Despite the tariffs, and despite what we are seeing in lumber indexes, there seems to be a good amount of optimism at our regional hardwood sawmills. Unlike their softwood lumber cousins, hardwood sawmills can and often do adjust to market fluctuations by sawing other species. While oak and ash have been big export species, sawmills are working hard on sawing other species not as dramatically affected by international trade issues. Hard maple, soft maple, and yellow birch are more immune to these matters because much of the volume is consumed domestically. Demand for hard maple sawlogs is strong, with some modest price increases over the quarter, and demand for soft maple and yellow birch are steady. Inventories at the mills seem to be seasonally appropriate.

Biomass

It is getting increasingly difficult to locate contractors willing and able to process and deliver biomass. At this point we continue to sell only limited volumes from very specific regions. The fuel source for heating systems at pulp mills, which had long been the bread-and-butter for biomass coming from the woods, has been almost entirely substituted for natural gas based systems. A few biomass plants producing electricity are struggling but surviving. And there is still some life in the pellet industry and we have some biomass that finds its way into that market. There are only marginal opportunities to sell biomass into each of these locations.

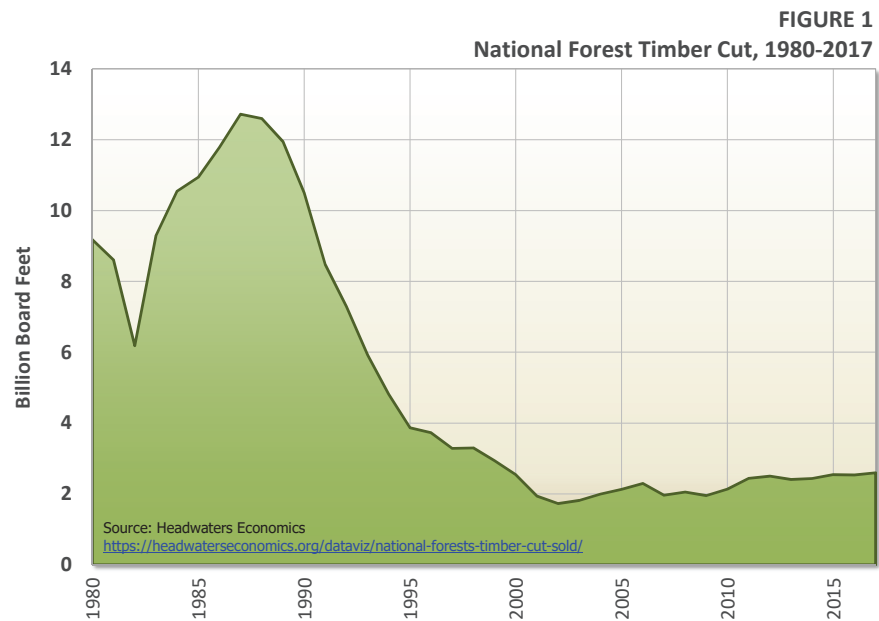
Benjamin D. Carlisle
PRESIDENT

40 Years: A Look Back

by Sam Radcliffe, Vice President

After more than 40 years in the forestry consulting and land management business, on December 31 I will retire from Prentiss & Carlisle. I've been reflecting on all that changed in the forestry world during my career (and wondering how it went by so quickly!)

When I finished graduate school in 1977, my chosen field of forest economics was firmly focused on the national forests. How was the new National Forest Management Act (1976) going to be implemented, and how would it affect timber markets? Although "getting out the cut" became more challenging due to persistent litigation brought by environmental groups, the harvest level on the national forests continued to rise into the mid-1980's. In the late 1980's, national forest harvesting was increasingly subject to legal challenges and started to sputter, but the death knell was the listing of the northern spotted owl under the Endangered Species Act in 1990. Because the national forests are so heavily concentrated in the West, the NSO listing and subsequent protections in the early 1990's brought the entire



national forest system harvest down precipitously (Figure 1).

The log shortage that resulted from the dramatic reduction in national forest harvests led to a shift in lumber manufacturing capacity from the West to the South and raised prices for timber from private lands in both regions (Figure 2).

Rising prices greatly benefitted the

growing timberland investment sector. Timberland Investment Management Organizations (TIMO's) were created to raise and deploy funds for institutional investment in timberland. The Employee Retirement Income Security Act (ERISA) of 1974 had encouraged pension funds to diversify their portfolios away from fixed income investments, which resulted in investment in specialized asset classes such as timberland being developed in the early 1980's. At the same time, unfavorable tax status, accounting standards, and Wall Street pressure for higher returns motivated forest products corporations to liquidate their timberlands, and in the new TIMO sector they found willing buyers.

In the early years the investment timberland market was not particularly efficient, and the sell-side (forest products corporations) did not really appreciate the valuation perspective of the buy side. Consequently properties were sold at relatively low prices which when combined with rising timber prices created out-sized investment

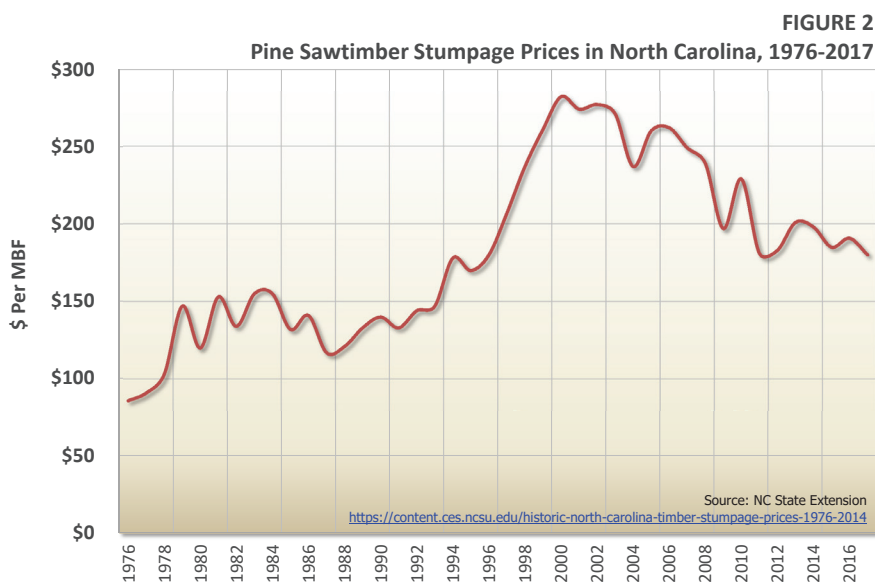
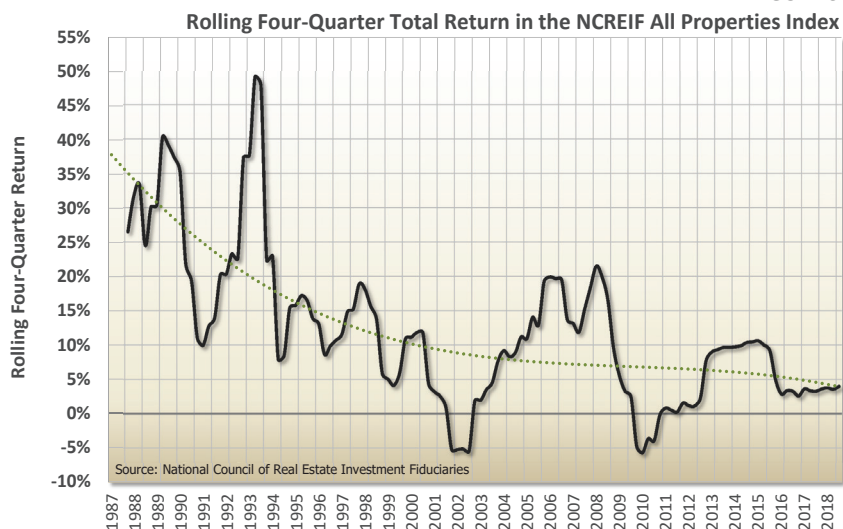




FIGURE 3



returns from the mid-1980's to late 1990's (Figure 3).

The great transfer of corporate lands to TIMO's was nearly complete by 2006, the year in which International Papers sold its 6+ million acres of U.S. timberland. In the late years of the "timberland rush", rich prices were being paid in a market where the sellers now better understood how to market their properties, and buyers recognized that the supply of investment scale properties was limited. Lower and generally declining investment returns since then are partially attributable to the high property prices paid and partially attributable to the continued decline in timber prices since housing peaked in 2005-06.

The TIMO industry is more invested in the U.S. South than in any other region. Following the Great Recession, it was expected that southern pine sawtimber prices would recover as housing picked back up. Even though housing starts have come a long way back, pine stumpage prices remain stubbornly low. The initial explanations were that the lack of harvest during and following the recession caused a build-up of inventory that would take several years to bring down. It is now recognized that the glut of inventory was created primarily by the Conservation Reserve Program, a federal subsidy that paid farmers to plant idle land to trees beginning in 1986. By some estimates, this "inventory overhang" will keep prices in the U.S. South depressed for the next 25 years^[1].

With low investment returns, stagnant timber prices and competitive buyers and sellers, the timberland market in recent years has been grinding almost to a halt. In both Maine and Wisconsin, there was not a single investment grade property transaction in 2018. This is a somewhat unsatisfying point at which to end a career, because it feels like the industry is without direction, or at least the path forward is not obvious. The past 40 years has seen portions of the industry destroyed and a new industry created almost solely by a perfect storm of unrelated public policies. Considering the erratic behavior and polarized atmosphere that characterizes Washington these days, one wonders what unintended consequences may befall our industry some day in the future.

Nevertheless, I have no regrets about my career choices. Helping clients navigate through this period was a challenge but a pleasure, as both clients and colleagues became friends. It would be hard to overstate how many good people there are in forestry as compared to most other professions. My thanks to all of you. 🌲

[1] "Thousands of Southerners Planted Trees for Retirement. It Didn't Work." Ryan Dezember, The Wall Street Journal, October 9, 2018. <https://www.wsj.com/articles/thousands-of-southerners-planted-trees-for-retirement-it-didnt-work-1539095250>

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