



Industry News

■ **Construction Corner: Could wood be the new Styrofoam?**

(Apr 6th)

Researchers have found that by stripping away all the filler material in wood, leaving just their fibers, the resulting "nanowood" material outperforms just about all existing insulation. Wood, it seems, might be the new Styrofoam. With proper treatment, wood can become stronger and more insulating than commonly used insulation, such as fiberglass for houses.

— *ConstructConnect*

■ **Conservation groups oppose development changes proposed for Maine woods**

(Apr 12th)

Conservation groups in Maine urged state officials not to expand the distance limit that determines where subdivisions and commercial projects can be built in the state's Unorganized Territory. The Land Use Planning Commission is considering a change in policy that would allow zoning changes to occur in unorganized areas of the state within at least 10 linear miles of the boundary of a designated "retail hub" community.

— *Bangor Daily News*

Industry Overview



New leaves on a sugar maple tree signal that growing season has begun in the northeast.

Forestland Operations

When it comes to weather in the Northeast – which can make or break any forest operations season – there is really no such thing as “average.” At best we run into curveballs that slightly alter our strategy for the season – at worst, we have to throw our plans out the window and start over. As regular readers of this newsletter know, the reason we spend much of our time discussing the weather is not to make idle chat. It is because weather drives almost everything we do in the forest and can either keep the wheels of the regional forest economy moving or can stop them in their tracks.

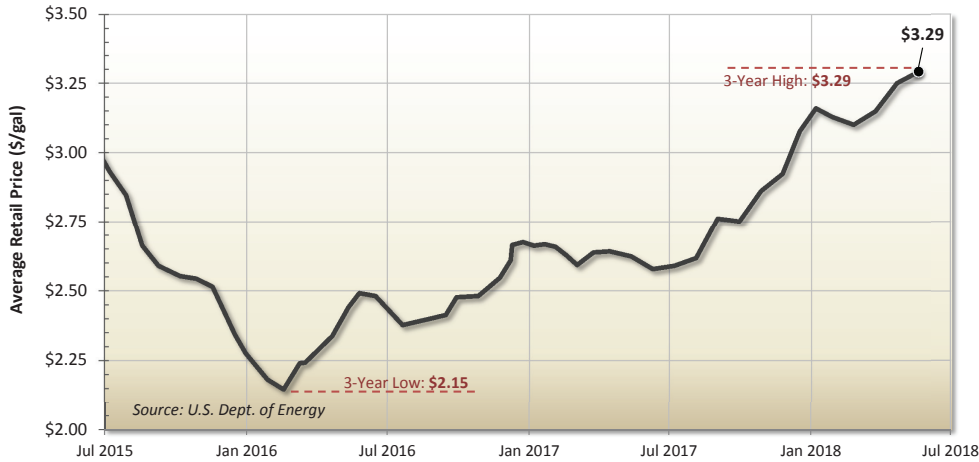
Our industry came into the first part of April on the tail of a good, reasonably steady winter. Although we had a disruptive thaw early in first quarter, the weather turned cold, things buttoned up quickly and we were able to continue harvest operations region-wide

into early April. A solid snowpack in some select areas allowed us to continue harvesting through the month of April, and solid gravel roads with good access allowed continued wood deliveries. April was generally wet and May generally dry, a rhythm called “mud season” that has become very familiar to those in our industry. We found timber markets to be more interested in our spring operations than they traditionally have been, and ultimately the predictable weather helped keep a small amount of wood in certain areas moving.

Although we take our foot off the gas during mud season with wood deliveries, our team remains busy. Without operations to supervise, our forestry staff turns its attention to immediate-term and long-term planning. Activities like walking the property, delineating future harvest blocks, identifying better soils,

NUMBER 2 DIESEL FUEL PRICES - NEW ENGLAND

3 YEAR HISTORICAL MONTHLY AVERAGES



planning and designing new roads, and identifying future property upkeep needs all occur in the springtime. This proactive hands-on approach to planning helps to minimize ongoing landowner costs and ensures the forest is optimally productive for the future.

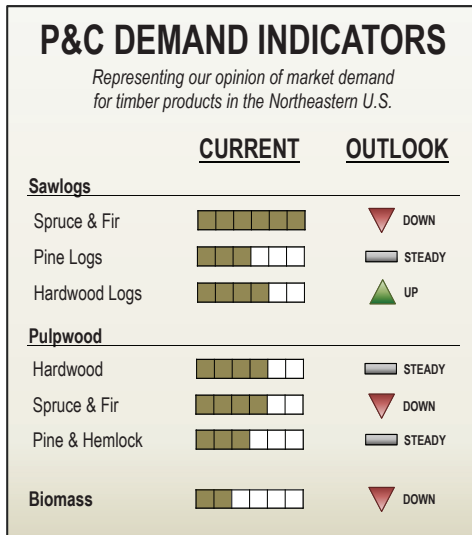
We are keeping a close eye on the market price of diesel fuel, which is the lifeblood of our harvest and delivery network. While diesel is a direct cost to our contractor force, landowners can rarely avoid being exposed to its price swings. Recently, the price of the fuel seems to be slowly emerging from its favorable lows, and now it is approaching the threshold where we pay a fuel premium to contractors to help offset their increased operating costs. Over the past quarter, we have heard similar concerns raised by our contractors – a sign that they are starting to feel the pinch of rising fuel costs. While most short-term forecasts signal stable prices, if and when the price of fuel rises, landowners should be prepared to shoulder at least some part of the burden.

Forest Product Markets

With their winter inventory falling slightly short of targets and the risk of unpredictable weather, forest product markets in the northeast were anticipating the need for additional volume of wood during the springtime. Any volume that was not already committed for others was quickly spoken for by early spring. However, the generally consistent and favorable logging conditions

left many of the high-consumption mills pleasantly surprised with the amount of wood they received during mud season. As it turned out, spring conditions allowed most mills to bridge the gap until all contractors got going and the industry reached a normal summer pace. For some of the lower-consumption mills, which utilize specialty products that represent a low volume in the forest, it has taken more time to come up to speed as landowners and contractors gathered enough material to keep deliveries consistent. By July 1st, deliveries across the product spectrum have reached full speed.

Except for seasonal variations in production that regularly occur with some products, demand had been relatively steady in our forest products over the quarter. As always, there are nuances to each product which color our thinking and we discuss them below.



■ **Wood pellet fuel deemed 'carbon neutral' in U.S. spending bill** (May 3rd)

The budget bill that the U.S. House of Representatives passed on Wednesday, which makes way for nearly \$1.2 trillion in federal spending, directs the Environmental Protection Agency, the Department of Energy and the Department of Agriculture to "establish clear policies that reflect the carbon neutrality of biomass."

— Reuters

■ **Trump gives the gift of high lumber prices** (May 10th)

It appears that every time the U.S. picks a fight with Canada over its alleged subsidies of softwood lumber, U.S. lumber prices go up. Donald Trump started doing that soon after taking office, and now the average duties on Canadian lumber are up to 21 percent. Investment returns on timber in U.S. have been on a long decline, but they do seem to have perked up in the past during softwood lumber trade disputes.

— Bloomberg

■ **Catalyst Paper agrees to sell its two U.S. mills to Nine Dragons for \$175 million** (May 25th)

Catalyst Paper has entered into a Sales and Purchase Agreement with ND Paper LLC, a wholly owned subsidiary of Nine Dragons Paper (Holdings) Ltd. for the sale of Catalyst's U.S. operations to ND Paper for \$175 million. Upon the closing of this transaction, ND Paper will acquire Catalyst's Rumford, Maine and Biron, Wisconsin mills.

— PaperAge

Pulpwood Products

While still quite regionally dependent, during this past quarter we saw a continuation of the recent trend of improved regional demand for just about all pulpwood products. Demand for both softwood and hardwood pulpwood has steadily improved in the last 8 months, but the change has been most dramatic with softwood pulpwood. During the winter, our region went from an extremely tight market almost fully satisfied by softwood chips from sawmills, to one where buyers were actively seeking pulpwood from landowners and, in some cases, even paying a little extra to get it to their facility. Not only did this help clear out some pent up wood in the supply chain, the improved markets also allowed some deferred silviculture to take place. Seeing the opportunity to target our spring harvests and selectively treat some of our softwood stands, we took full advantage of the situation.

The truth is, there have been a number of recent, positive developments in our regional softwood consumption. Probably the most significant news affecting softwood demand is the retooling and pending restart of an idled paper machine at the Verso Paper facility in Jay, Maine. This machine will produce packaging and boxboard grade products, which is one of the few growing segments of the pulp & paper market worldwide. The product also necessarily consumes more wood than the facility's thinner traditional grades of paper, and therefore will draw a significant amount of additional softwood pulpwood produced in our region. Additionally, the price of softwood kraft pulp has been strengthening globally. Given the low prevailing price of softwood pulpwood in our region, the kraft price may be enticing some mills to produce softwood kraft, or to blend it into their pulp mix. Both of these things have brought a little life back into this important forest product. Here at the end of the quarter,

most of the immediate demand has been fulfilled and the market has tightened once again. But we expect this tightness to be temporary – the result of a flood of pent-up supply suddenly filling a hole. By late summer we expect demand for softwood pulpwood to ramp back up.

At the same time, other wood buyers continue to seek hardwood pulpwood to run through their facilities. While this product is produced on a year-round basis in the northeast, normally there is a slight preference for landowners to harvest softwood in wintertime due to the type of soils in which this material typically grows. This preference, combined with increased appetite for softwood pulpwood in the marketplace, drew loggers to cut lower than usual amounts of hardwood pulpwood. As a result, springtime hardwood inventories at our regional pulp mills were lower than usual, making wood buyers nervous. As the spring progressed and the good logging conditions prevailed, the coffers filled back up to the point where the anxiety eased off.

Panel and engineered lumber producers continue to push their output to the max, supported by good demand for the building products they manufacture. As with any mill, they have specific preferences for what type of wood they use in their processes, but they also have limitations and constraints. Market factors – such as availability and price of their most desirable species – can influence what they buy. Production factors – such as output yield and species restrictions because of emissions laws – can as well. However, in our region, the fallback product that these facilities consume is hardwood pulpwood, making them direct competitors with pulp mills for sourcing their raw material. Therefore, the growth in consumption at these facilities is helping to boost overall demand for hardwood pulpwood.



■ **Builders say lumber tops labor as biggest challenge**

(May 25th)

The most serious headwind facing housing markets today is the escalation of framing lumber prices - up 59% since the start of 2017. Recent NAHB surveys suggest the price for lumber has overtaken the availability of labor as the primary business challenge for home builders.

— *National Association of Home Builders*

■ **Emerald ash borer makes long-dreaded appearance in Maine, but not where it was expected**

(May 29th)

State and federal entomologists have confirmed the presence of a destructive, invasive beetle in Maine for the first time. The emerald ash borer was found in a tree in Madawaska on May 22, just five days after Canadian officials announced the pest's discovery just across the river in New Brunswick.

— *Press Herald*

■ **The shift from coal to biomass is on in Europe**

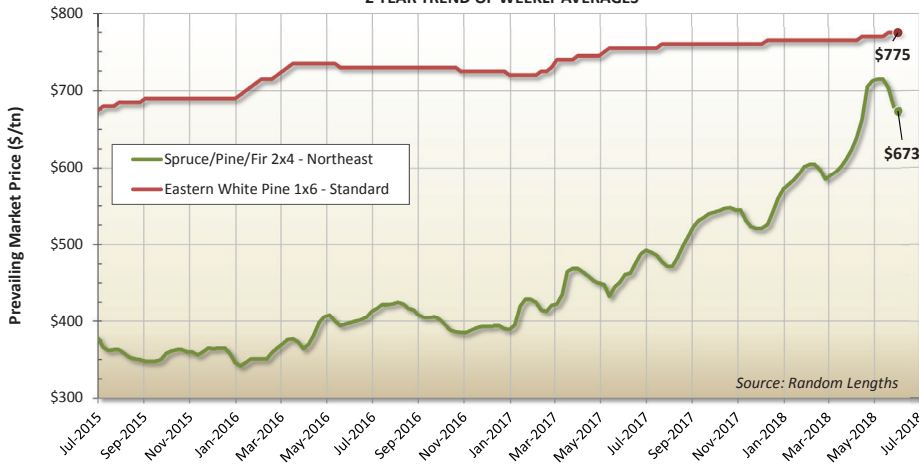
(June 1st)

Various schemes are underway in Europe as nations use existing coal-fired power plants to generate electricity without coal as the feedstock. With rising carbon prices, some big utilities are repowering with sustainable biomass. The European Union is preparing to fully generate 20% of its electricity by 2020 using only renewable sources.

— *Powermag.com*

PRICE TRENDS IN SOFTWOOD LUMBER

2 YEAR TREND OF WEEKLY AVERAGES



Sawn Products

Softwood

Demand for spruce & fir sawstock continues at record levels, and regional price for the raw material has followed accordingly. Driving the demand for wood is of course the fervent lumber markets, which have seen a three year run-up in prices. As of the end of May, the Random Lengths 2x4 pricing index has risen 74% since May of 2016, with most of that gain occurring within the last 12 months (see chart above). There has been volatility within the upward movement of this index as markets have adjusted to various national supply constraints and governmental intervention of matters of international trade, but each downward price correction has been followed by a strong recovery.

From our perspective, the high lumber prices mean that the mills are running with the goal of producing as much as possible. Their appetite for softwood sawstock has certainly expanded to match these output goals. The regional sawmills are reaching out further to acquire the material they need – and willing to pay for it. Accordingly, for the landowner, the price of wood has gone up.

Why is the market so hot? There are several dynamics to consider. For one, new home construction has been ramping up, now at 1.3M annual starts – a peak point after the Great Recession. The low inventory of available homes has added

fuel to the construction of new homes. Second, a series of natural disasters have necessitated home rebuilds and repairs, which is the primary market for softwood lumber. Third, substantial fires and pest infestations in western North America have caused significant mass mortality and constrained the supply of timber. Last but by no means least, the market for lumber is currently artificially boosted by the U.S. government's protectionist trade stance on the importation of softwood lumber from Canada. This latter factor is likely responsible for a good portion of the recent price run-up in lumber.

We do expect that the domestic lumber market will cool off in the coming months, for a variety of reasons. For one, the high price of lumber itself makes building new homes more expensive. There will be some point where the price of a new home will be a headwind to new home construction. Additionally, rising mortgage interest rates and more expensive debt will likely dampen interest in home buying. On the supply side, there are several new high-production facilities in the U.S. south currently in construction, along with more than enough available timber, that will increase domestic lumber production and push additional supply into the system. Ultimately, the high prices that both mills and landowners have been enjoying are likely to taper off.

Demand for pine logs remained solid through the quarter, despite the fact it is a much more local and less intense market.



■ **US softwood lumber consumption on track for record highs**

(June 13th)

US consumption of softwood lumber is likely to reach record-highs by 2030, resulting in export opportunities for sawmills in Europe and Latin America. Higher lumber demand from all end-use sectors in the US in the coming years will result in continued expansion of sawmill capacity in the US South and increased imports from overseas, while Western Canada will reduce its shipments to the US market.

— *The Working Forest*

■ **Future uncertain for Aroostook ReEnergy plants**

(June 19th)

Depending on a range of factors, two of the ReEnergy biomass plants in Maine could shut down in September for an undetermined amount of time. But the company is hoping that some changes could buy the facilities time as they pursue potential "co-location" projects with business partners that could pave the way to longer-term financial sustainability.

— *The County*

■ **Skyrocketing prices, demand for new homes signal uptick in Maine lumber market**

(June 20th)

Prices for wood to build and renovate houses have as much as doubled over the past six months, increasing costs for consumers but boosting Maine's softwood sales and signaling a turnaround in that segment of the forestry market. To meet demand, mills in the state are boosting production, adding jobs and raising wages.

— *Bangor Daily News*



Mills have been able to sustain relatively high inventories for the last 18 months, but consumption has kept pace. For the time being, each of our regional pine sawmills seem to be running at capacity. Generally, we avoid harvests with significant blocks of pine in the summertime; it's a market that can get flooded quickly, and summer heat & humidity brings on spoiling fungus when pine sits too long. An unsawn pine log sitting in summertime can quickly and substantially drop in value.

Inventories at regional cedar sawmills are pretty full, given our good logging conditions and the fact that cedar harvests mostly occur in the wintertime. Now is the time that cedar markets are focused on their production rather than the procurement of wood.

Demand for hemlock logs has increased in the last few quarters, with hemlock log buyers seeking additional volume for their facilities. Demand for their finished products, which includes industrial timbers, construction mats, landscape timbers and railroad ties, has been increasing throughout the

U.S., and they are struggling to keep up in the northeast. Because of the way hemlock grows – often crooked and with large limbs – a hemlock tree normally contains a substantial percentage of pulpwood. And because of the very limited ability to sell the pulpwood, landowners are reluctant to cut hemlock logs.

Hardwood

The hardwood log market is generally still strong, particularly with the staples of the northeast: hard maple and yellow birch. We have seen strong demand and prices for these species and the hardwood lumber mills seem to be running well. We have experienced some shrinkage in demand for red oak, and have had a slight reduction in oak log prices through the quarter. While it is not a dominant product of the northeast forest, it is something worth watching.

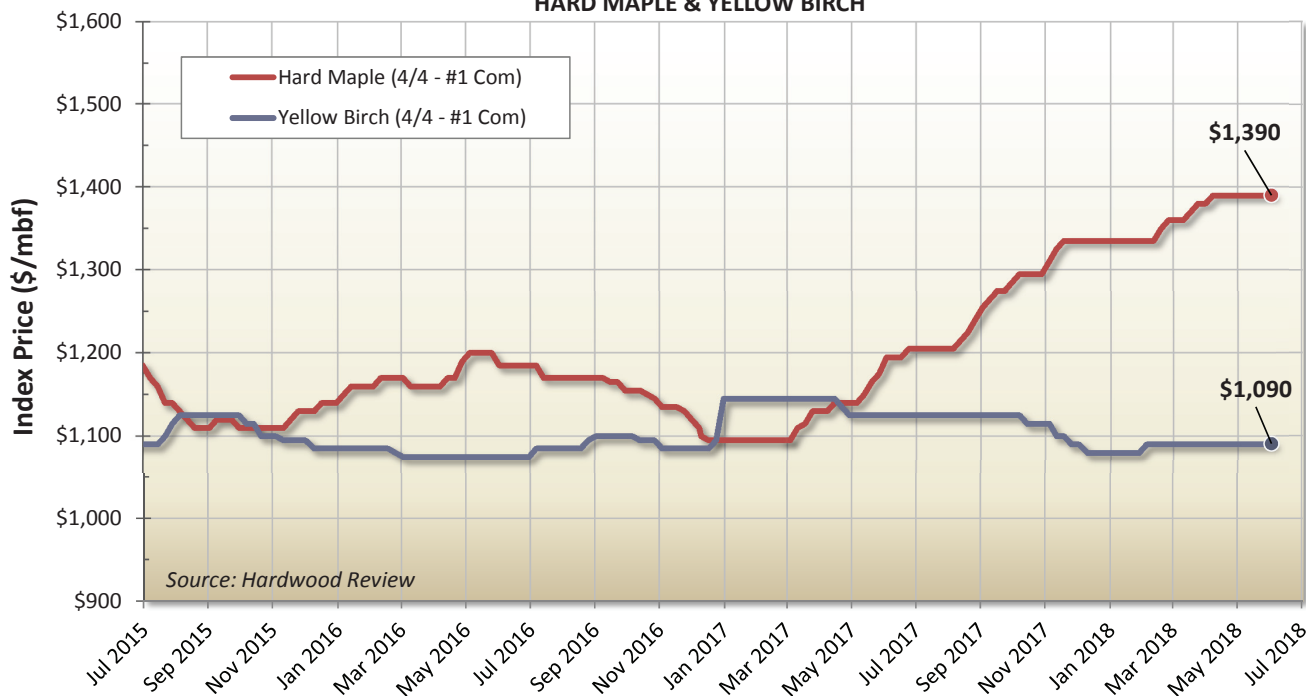
The market for ash logs has been in a steadily upward trend in both price and demand, most likely due to the constraints introduced through ash quarantines put in place to slow the spread of the Emerald Ash Borer. Within

the northeast, there are sub-regions under quarantine which restricts the transport of ash logs. Recently the pest was found in the State of Maine and now the flow of ash logs from Maine is restricted. It will be permitted to sell within the quarantine regions, but we are unable to sell Maine ash outside quarantine areas between the bug's dormant months of October through March without a permit. This restriction will likely serve to drive the value of ash logs higher.

Hardwood industrial grade logs remain in very high demand, buoyed by huge demand for timber mats used in construction and infrastructure maintenance. This is an important market because it allows landowners to sell logs of lower quality that do not meet lumber grade standards. All signs point to strengthening in this market. The story is the same on the opposite side of the grade spectrum with veneer logs. End markets for veneer products are good and mills are increasing their output, extending their geographic reach and in some cases even buying slightly lower quality logs to fill their demand.

RECENT PRICES IN HARDWOOD LUMBER - NORTHEAST

HARD MAPLE & YELLOW BIRCH



Biomass

In many ways the story of biomass as a reliable commercial forest product seems to be winding down. The remaining stand-alone biomass-to-energy plants are openly talking about shutting their doors for good, citing the low price for electricity and for Renewable Energy Credits (RECs). From a biomass supplier's standpoint, biomass is a hard sell as a feedstock. The material is not reliably produced in the forest, it is too expensive to aggregate into economically meaningful volumes, and the material is often needed in the forest to stabilize ground conditions. When we are able to sell it and we don't need it in the forest, we do so, but it has the potential to generate only a marginal return. Ultimately, a stand-alone biomass plant faces a long list of challenges

that make profitability elusive if not downright impossible in today's market. We don't expect these facilities to continue operations much longer unless they can find a way to co-locate with other energy consumers.

Biomass will still be a product that will be regularly consumed by pulp mills and sawmills where they have invested in co-located biomass plants. Despite having a better efficiency profile than stand-alone plants, these co-located plants will still be exposed to competition with other fuel sources for electricity generation and the volatility inherent in electricity prices.

Benjamin D. Carlisle
PRESIDENT

The Great Timberland Transfer

by Sam Radcliffe, Vice President

The US population is aging and will continue to age at least through the year 2060, the final year in current Census Bureau projections¹. This trend is driven by the generation that has dominated the country's population and economy since the 1950's: the Baby Boomers (Figure 1²). The Census Bureau's projection is astounding to one who doesn't pay regular attention to population demographics: by the year 2030 all Boomers will be over age 65 and will represent more than a fifth of the total population. By 2060, nearly one in four Americans will be over age 65.

This aging of the population has profound social and economic implications, and in turn will have significant impacts on the ownership of forest land. How? A good place to start is the Baby Boomers' current financial situation.

Over the past decade or so, much has been made of "The Great Wealth Transfer", referring to some \$30 trillion³ expected to be gifted or bequeathed from the Boomer generation to their Gen X and Millennial offspring. This stark projection hides an important detail: most of the Boomer wealth (and most of the wealth in any generation) is owned by the top quintile. As shown in Figure 2⁴, 80 percent (bottom four quintiles)

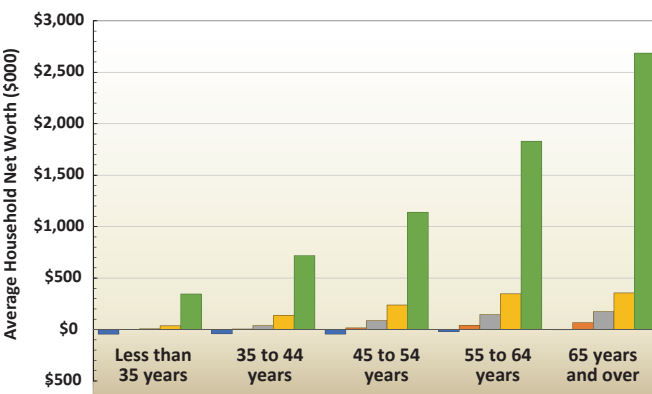


Figure 2. Average Net Household Worth by Quintiles within Generations, 2011.

of Boomer households have a net worth less than about \$350,000, and that includes home equity. It has been estimated that Boomers have median retirement savings of \$164,000 but they acknowledge they will need \$500,000 to retire⁵.

Clearly most Boomers are unready to retire. What are the potential implications for forest land?

Whereas only about ten years ago it was projected that Boomers would relocate to rural areas in retirement⁶, "aging in place" seems a more likely trend now. With a need to continue working past age 65, many Boomers will likely stay in their current jobs in an urban location. If not, relocation would be toward areas with good employment opportunities and strong health care infrastructure, which are often not attributes of rural communities. Stagnation or even contraction in rural communities suggests a declining trend in the demand for forest land.

Spending more time in work means less time for leisure, and obviously the finances for leisure activities may not be as plentiful as hoped for. Hunting interest already declines

Figure 1. U.S. Population By Generation, 2016 (Millions)

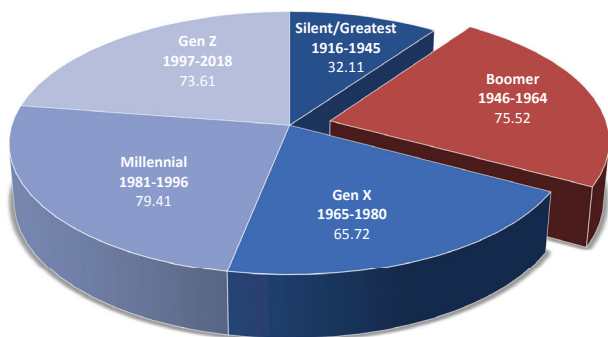
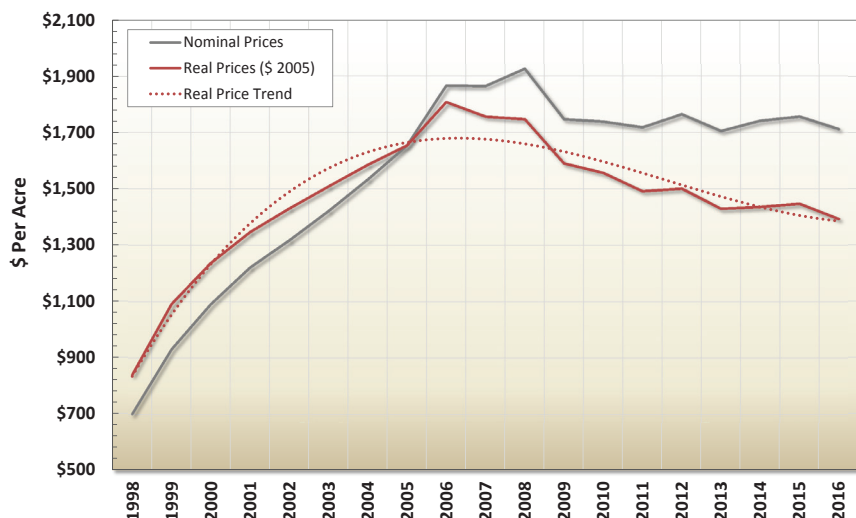




Figure 3. Trends in Prices for Retail-Level Forest Properties in Northern Wisconsin.



as age increases, and a lack of time and resources may accelerate that trend. Hunting participation as a percent of the total population has in fact been declining for at least 25 years⁷. As interest in hunting declines, the incentive to hold on to the family “hunting forty” also declines. With aging Boomers needing a financial shot in the arm, it is easy to imagine that many such properties will be brought to the market. This suggests an increasing trend in the supply of forest land.

Econ 101 tells us that a decline in demand and increase in supply of forest land will result in a decline in prices. We have already seen this in northern Wisconsin (Figure 3). Inflation adjusted prices began declining in 2006, coincidentally (?) the year that the oldest Boomers turned 60.

Nationwide the Boomer and older generations account for a large share of the privately-owned forest land. The private sector owns 437 million acres of forest land, and of this 65 percent are described as family-owned⁸, with the balance primarily in corporate ownership⁹. Within the family-owned land, the primary owner of more than 80 percent of the acreage is a Boomer or older (Figure 4). These are not just

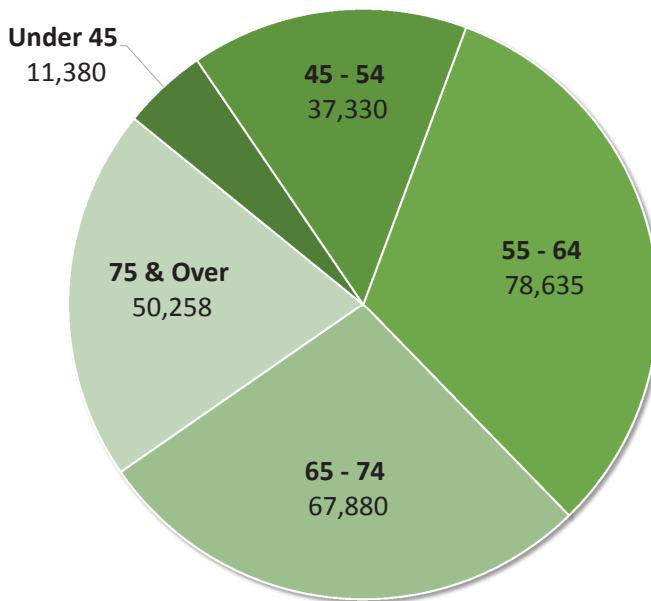
the highest-wealth Boomers. Figure 5 shows that among forest owners older than 54, nearly two-thirds have a household income of less than \$100,000. By US Census statistics, households with income of \$100,000 have roughly \$143,000 in net worth, but only \$74,000 if home equity is excluded¹⁰. In other words, it appears that forest-owning Boomers are in no better shape to retire than the rest of their generation.

While much of the Boomers’ wealth might need to be spent in retirement

rather than transferred to the next generation, the only way to “spend” timberland is to sell it. If the older generation is going to sell, who’s going to buy?

- Higher net worth Boomers, particularly those with current forest holdings, may be motivated to add to their legacies if there are opportunities at attractive prices.
- Wealthier Millennials may have more interest in forest land as an investment than as a place to recreate. A US Trust survey¹¹ found that 25 percent of Millennials were interested in timberland and farmland as investment assets as compared to only 10 percent of older generations. That survey also found Millennials to be more interested in “impact investments”. Timberland has not been widely marketed as such, but certainly could be packaged and sold in a way that would appeal to such interests.
- Less wealthy Millennials are only recently becoming homeowners as the economy improves, so they should not be expected to be a large component of forest land

Figure 4. Ownership of Family Forests by Age Class of Principal Owner (000 acres).





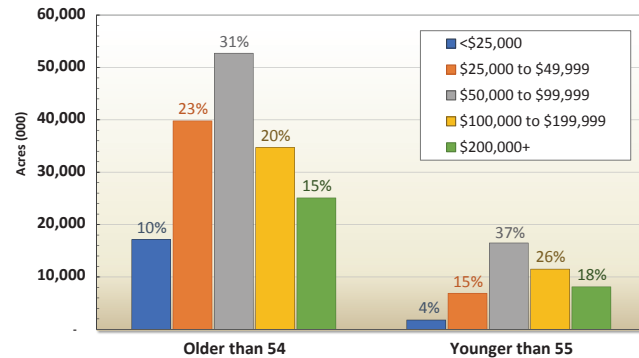
demand for some time. However, since this is the largest group of potential buyers, in the longer term they might reverse the downward price trends.

- Timber managers, including REIT's and TIMO's, may find some opportunities if prices fall far enough, but generally land prices at the retail level far exceed what is required to make a reasonable return on timber management. Moreover, such investors currently are significant sellers in retail markets. "Buy wholesale, sell retail" strategies may not work as well in the future as they have in the past. To the extent such strategies drive wholesale acquisitions, we may see a dip in prices for wholesale properties as well.

One might make the argument that this story of Boomers unprepared for retirement could be extended to all asset classes. Is the stock market going to crash because Boomers

must liquidate their portfolios to buy groceries? The clearest counter-argument is that the wealthiest 10 percent of households own 84 percent of all stocks¹², and these households would not be in forced liquidation mode. As we have shown (Figure 5) this inequality of ownership does not exist in the forest land market. Forest land may in fact be a unique asset class in that regard.

Figure 5. Acres of Family Forest Owned by Median Household Income for Two Generational Cohorts.



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2. Source: US Census Bureau data summarized at <https://knoema.com/egydzc/us-population-by-age-and-generation>

3. <https://www.cnbc.com/2016/11/29/preparing-for-the-30-trillion-great-wealth-transfer.html>

4. US Census Bureau, Survey of Income and Program Participation (SIPP). Table 1. Distribution of Net Worth, By Net Worth Quintiles and Selected Characteristics: 2011 <https://www.census.gov/data/tables/2011/demo/wealth/wealth-asset-ownership.html>

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10. Semega, Jessica L.; Kayla R. Fontenot, and Melissa A. Kollar, 2017. Income and Poverty in the United States: 2016. Current Population Reports P60-259, Issued September 2017. <https://www.census.gov/content/dam/Census/library/publications/2017/demo/P60-259.pdf>

11. "Boomers vs. Millennials" US Trust Capital Acumen Issue 33; <https://www.ustrust.com/articles/family-wealth-boomers-vs-millennials>

12. Rob Wile of Money Magazine, December 19, 2017 <http://time.com/money/5054009/stock-ownership-10-percent-richest/>, citing: Edward N. Wolff, 2017. "Household Wealth Trends in the United States, 1962 to 2016: Has Middle Class Wealth Recovered?", National Bureau of Economics Research Working Paper No. 24085. <http://www.nber.org/papers/w24085>

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