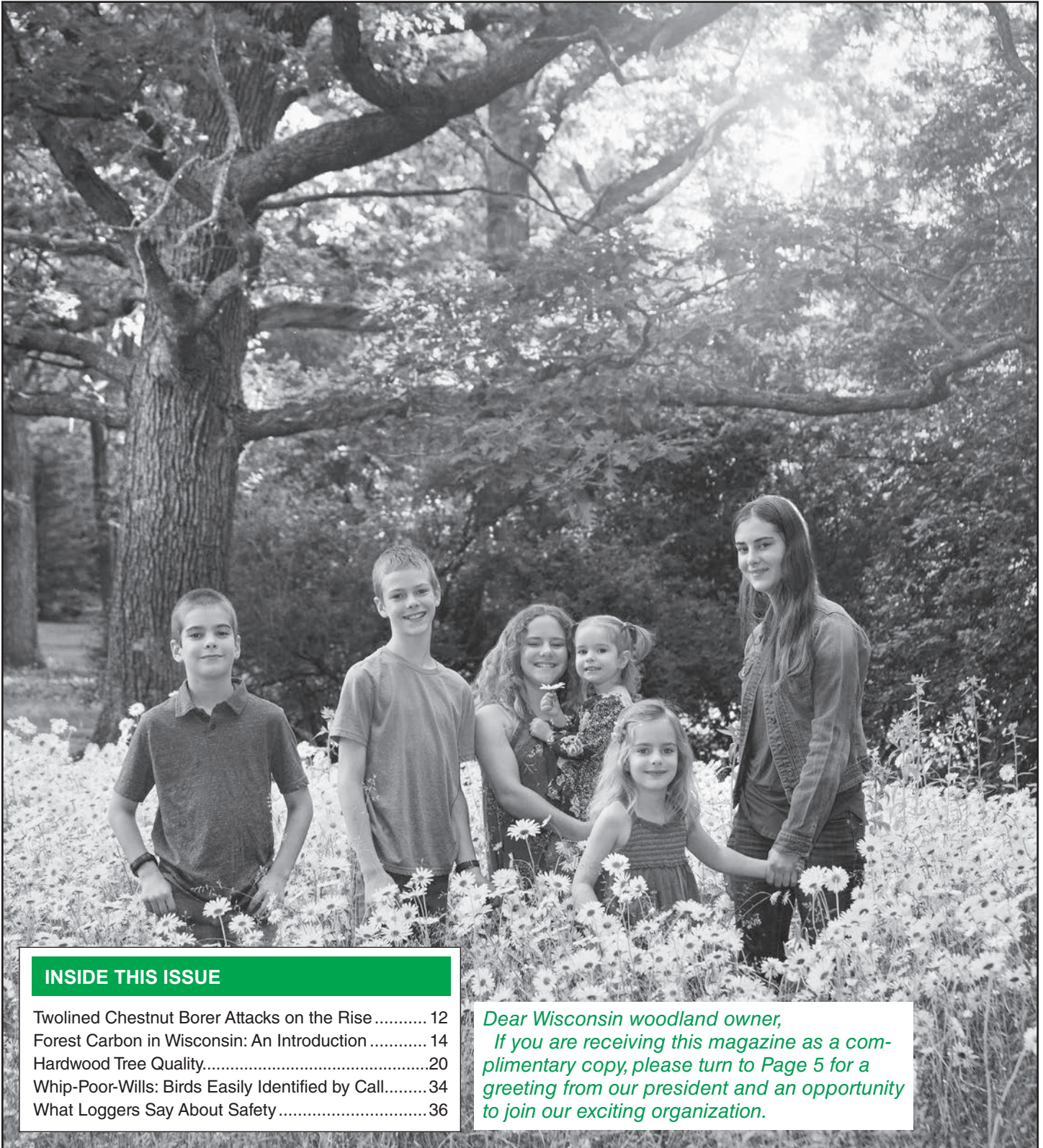


Wisconsin Woodlands



VOLUME XLIV, NUMBER 2

SUMMER 2023



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*Dear Wisconsin woodland owner,
If you are receiving this magazine as a complimentary copy, please turn to Page 5 for a greeting from our president and an opportunity to join our exciting organization.*

Creating Tomorrow's Woodlands Today

Reasons to be optimistic for virgin fiber in the face of recycled fiber's inarguable success

By Paul Fowler



Pulp, paper and fiber industry dynamics are changing like never before. Uses of fiber and applications of paper and paperboard products are rapidly diversifying.

While it is true that graphic paper consumption is in steep decline, global demand for fiber and paper-based products as a whole is increasing.

Global megatrends like e-commerce, more sustainable food packaging, an anti-plastic sentiment, and use of hygiene and specialty products are all driving growth. Prompted by these trends and underpinned by sustainability strategies, demand for recycled fiber as a manufacturing component in these applications is at an all-time high. However, these same key domestic and international factors could critically and permanently impact the recovered paper industrial cycle, creating opportunity for virgin fiber from sustainably managed Midwest forests.

Factors impacting recovered paper & recycled fiber supply & demand

There are four key factors that are disrupting the recovered paper and recycled fiber industrial cycle.

E-Commerce

Recent years have witnessed a sustained, increased demand for e-commerce, for perishable goods shipped via the cold chain, and for prepare-at-home meal kits, all requiring transportation packaging in which the preferred materials derive from recovered paper and recycled fiber. Collectively, these trends have prompted paper manufacturers to either convert existing paper mills or construct new paper mills to meet demand for packaging products across the United States. Wisconsin has its own examples. Green Bay Packaging completed construction recently of a new paper mill that relies 100% on recovered paper and board, and recycled fiber, for its output of corrugate and container board. In doing so, Green Bay Packaging almost tripled its existing mill production

capacity from 250,000 tons a year to 685,000 tons.

About five years ago, Appleton Coated in Combined Locks re-emerged as Midwest Paper at the same time it was switching from manufacturing fine, white papers to corrugated box components. In Biron, ND Paper purchased the Catalyst Paper mill and committed a \$189 million investment in new capabilities including two recycling lines for production of recycled liner board and corrugating medium.

Across the nation as a whole, some 20 projects have been completed, initiated or announced to convert or build paper machines for manufacturing corrugate and board materials from recycled fiber in response to demand for boxes.

Sustainability initiatives

Sustainability initiatives by companies and brands are leading the displacement or substitution of plastics in consumer-packaged goods and single-use food service ware. At the same time, companies are framing their sustainability strategies around the use of recycled content, which in the case of paper products requires the use of recovered paper. Additionally, as individual states begin to legislate against single-use packaging materials, we see further demand for recovered paper that will be converted into recycled fiber.

Tissue and towel

The tissue and towel sector is currently growing. Some of this is a temporary effect of the enhanced focus on hygiene resulting from the COVID-19 pandemic, but an aging population and resulting increased demand for sanitary products is also a longer term-determinant. Tissue- and towel-manufacturing mills use large quantities of recycled fiber in their products and so they are sourcing more recovered paper as raw material feedstock.

Disruption of global trade in recovered paper

China’s Blue Sky plan and its evolving National Sword policy completed a process in 2021 to prohibit about 15 million tons of recovered paper being exported from the United States to

Recent mill closures

Company	Location	Production capacity (tons/yr)
Domtar	Hawesville, KY	412,000
Domtar	Kingsport, TN	304,000
Pixelle	Jay, ME	182,000
Verso	Duluth, MN	250,000
Verso	Wisconsin Rapids, WI	540,000
Total		1,688,000

China. On the face of it, the ban means an unprecedented amount of recovered fiber being available for domestic use in the United States.

However, these policies have prompted a fascinating trend domestically whereby a number of Chinese companies have bought closed or struggling paper machine assets in the United States. With these investments comes a revitalization of the rural economies in which those mills are situated, and the retention or creation of much needed family-supporting jobs in those communities.

A driving factor for Chinese mill owners is to utilize this domestic supply of recovered paper that was being exported to China and to upgrade it here on-shore into material for containerboard. Those mills then export that value-added product to China to meet China’s own huge demand for packaging for e-commerce and other purposes. In overcoming the National Sword restrictions, these practices effectively mean that a large proportion of the 15 million tons of fiber for export has not suddenly become available for use in domestic recycled fiber product end-uses.

Consequences of the recycled fiber supply-demand imbalance resulting from these trends

The combined effects of e-commerce, sustainability initiatives and tissue and towel manufacture are all contributing to a huge increased demand for recovered fiber. As discussed above, China’s National Sword will not likely result in a massive upswing in availability of recovered paper for domestic supply chains.

Within the printing and graphic paper

sectors of the paper-making industry, incredible disruption and a real degree of uncertainty is occurring. The mills that make high-quality, high-value printing papers for magazines, advertisements and inserts, and for the graphics paper industry are to a large extent highly reliant on virgin fiber. That virgin fiber and the products that are derived from it become the future feedstocks for recovered paper and recycled fiber.

Recently, at least five mills that manufacture virgin pulp and high-quality white graphic papers have idled or closed permanently. Such closures effectively end the production of virgin fiber for future recycled fiber production. Several others temporarily suspended operations including UPM’s Blandin mill and SAPPI’s Cloquet mill, both in Minnesota.

While some mill idling may be temporary and associated with the downturn in graphic paper use accelerated by the COVID-19 pandemic, the real concern is that many mills producing virgin pulp and turning that into high quality virgin, bleached fiber currently serve markets that are in secular decline.

What does this mean for the recycled fiber sector and the mills that currently use those fibers? It would not be such a problem if it were possible to recover fiber and recycle it infinitely. In reality, however, paper fibers may be recycled only five to seven times. Furthermore, each time a fiber is recycled, its properties are diminished. Each time a box is recycled its fiber is downgraded and downcycled. Each time a page of a magazine or advertisement insert is recycled, the performance of its fibers is compromised and it is used to manufacture a lower-value product. Consequent-



Photo: Tom Charlesworth, UW-Stevens Point

Lindsey Hoffman makes paper hand sheets.

ly, as mills manufacturing high quality virgin fiber exit the supply chain, so the recycled fiber supply remaining is degraded and devalued.

An intriguing prospect is that as demand for recycled fibers grows while at the same time their supply tightens, the opportunities to position and differentiate virgin fibers increases. At the very

least, the sustainability of the recycled fiber industry requires an influx of new virgin fiber; that is where one real challenge and opportunity lies ahead.

Sources of recycled paper

In the United States as a whole, approximately 50 million tons of

various paper grades and quality were recovered in 2017. Of those, about 20 million tons were exported overseas as part of the global trade discussed earlier.

Around 30% of the recovered paper supply comprises virgin, white grades in secular decline. The remaining, roughly 70% comprises old corrugated containers.

The remaining 30 million tons comprised the grades and tonnages. Pulp substitutes are cuttings and materials that are often recovered within paper mills themselves and that have never been used, such as semi-bleached material, or untreated, unprinted post-industrial scrap and off-cuts. High grade de-inking grades are typically sorted office paper and magazine stock. Mixed papers generally contain everything else, such as papers that are unsorted, some paper board and some corrugate. The remainder comprises newspapers and some imports.

Except for corrugate, the other recovered paper sources represent about 30% of all recovered materials that are collected and used as feedstocks for making recycled fiber. The production of the majority of these materials is under secular threat as discussed above. Collectively, the idling or closure of the Domtar, Pixelle and Verso facilities removed production capacity of about 1.7 million tons in 2021.

Those 1.7 million tons comprise high-quality fibers that are a key component of the recycled fiber industrial cycle. The production capacities of these five facilities alone corresponds to almost 20% of all non-corrugate paper recovered for recycled fiber production annually.

As mills remain idle, the likelihood of the same production ever returning becomes lower for two reasons. Firstly, those mills may be converted to make recycled pulp and recycled products (Domtar's Kingsport, Tennessee facility was converted to 100% recycled containerboard production). Secondly, history teaches that the longer a mill remains idled, the more likely it will

ultimately be converted to manufacture another product or it will never reopen.

The outlook

Recycled fiber markets are tightening and will get tighter as the use of recovered paper and board for recycled products is increasing. Some recycled fiber market pressure is temporary due to the pandemic. Some is structural as secular decline in virgin paper grades may lead to permanent shuttering of virgin fiber pulp mills. This could result in a massive imbalance in recycled fiber supply and demand.

The United States has a lot of sustainably managed forests, but the manufacture of long fiber-containing products from virgin (soft)wood sources is not increasing. Worse still, virgin pulp production in the United States is declining. However, recovered paper availability cannot grow in the face of that decline.

An evident tension will emerge that could be solved domestically by retention, or new installation, of capacity for virgin fiber production. On the one hand, this would be driven by the practical limit on the number of times paper can be recycled, when quality is degraded and devalued. On the other hand, a repositioning and re-thinking of the intrinsic performance differentials of virgin fibers, coupled with the teachings and evidence of sustainability science, could help reframe their sustainable use in the eyes of their customers and their end-users.

A case for supporting the production of virgin fiber & pulp

Almost weekly, brands in the fast-moving consumer goods, food service and hospitality arenas announce sustainability strategies crafted around recycled content, recycled paper or paper-substitutes for plastic.

The recycling of paper is the inarguable bright star of the waste recovery industry. And yet, it risks becoming the victim of its own success, especially when demand outstrips supply. Much has been touted about the environmental credentials of recycled paper, but recent lifecycle assessments point to the very efficient and significant use of

renewable energy in virgin pulp production which demonstrably shifts the balance toward virgin pulp. Consumer-facing brands may well be advised to consider having Plans B or C that weave virgin pulp into their sustainability portfolios.

Viewing virgin pulp with fresh eyes as a source of sustainable production feedstock, coupled with sustainable forest management, may be a key factor in the packaging and paper industry's success in the future. It will also require a renaissance and innovation in virgin fiber manufacturing in the United States. Such innovation and efficiency in virgin fiber production may be driven by the next wave of sustainability challenges coming from an (over) reliance on the use of recovered paper.

There are signals of changing perspectives toward virgin fiber coming from overseas. Here are two examples: Stora Enso is investing \$425 million to convert its Oulu, Finland mill to manufacture virgin fiber. SCA is investing

\$175 million to increase its virgin pulp production at its Ortvikén, Sweden mill by 200,000 tons.

Now may be the moment to re-imagine virgin wood fiber applications as well as their sustainability story. This should go alongside innovation in production, processing and applications. If the sector can begin to differentiate high-quality, performance-leading packaging, food service and specialty products, and find a new way forward that does not follow the trend of downcycled corrugate manufacture, then so its customers might start to embrace the performance, sustainability attributes and high-end requirements they demand for their next generation packaging and specialty materials. 



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