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Wisconsin Logging Sector: Status and Future Direction

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🌲 Logging is a proud tradition. Our very best loggers are both producers of fiber and careful stewards of the forests. Yet it is increasingly difficult to be both while making a reasonable living. The challenge is to maintain both a strong logging industry and a sustainable forest. 🌲

Contents

Executive summary	1
Introduction	2
Results	2
Discussion	9
Conclusion	10
Notes	12
Appendix: Wisconsin Logger Survey	13



Executive summary

Wisconsin logging businesses play key roles in sustainable forest management by implementing ecologically sound practices. At the same time, they supply wood-using industries with needed raw materials. Yet little is known about the structure of these businesses. Relying on survey data of the 2003 and 2010 production years, we present findings describing production, profitability, and demographics of the logging industry in Wisconsin. Together, these important factors shape the logging industry and affect all who depend on Wisconsin's forests.

IMPLICATIONS

1 The logging sector has lost businesses but continues to be able to provide wood to mills because businesses have gotten bigger. This trend is likely to continue, but barriers exist. Further analysis and policy changes will likely be needed to ensure adequate logging capacity in the future.

2 Who will log? This often-asked question needs answers. Opportunities to gain technical skills are available, but can be difficult to access or pay for. Moreover, the capital required to enter the business provides a barrier to entry and a challenge to existing businesses looking to expand.



FACTORS OF PRODUCTION

- Nearly half of all logging businesses (49%) used the cut-to-length harvest system in 2010, while nearly a third (32%) fell and process trees with chainsaws. Cut-to-length systems primarily cut pulpwood, while chainsaws are used to cut high-value products like sawtimber and veneer.
- Production varies by harvest system. In both 2003 and 2010 more than 6,000 cords were cut by the cut-to-length system while 1,500 cords were harvested by businesses that cut timber only with chainsaws.
- A small number of logging businesses are increasing production and accounting for a greater share of the total amount harvested.

PROFITABILITY

- Self-reported profitability was relatively stable between 2003 and 2010, as were the main factors affecting it: fuel prices, mill prices, stumpage prices, equipment maintenance, and stumpage availability.
- Most capital was invested in harvest equipment ($\geq 80\%$ in 2010), with the largest businesses having median total investments of \$2 million.

SECTOR DEMOGRAPHICS

- Between 2003 and 2010, 20% of logging businesses left the sector. Looking forward, 19% predict they won't be in business five years.
- Business owners have aged "in place," with the median age increasing from 46 to 52 between 2003 and 2010. There were few "young" business owners in 2010.
- Consistent with the increasing production mentioned above, between 2003 and 2010¹ the mean number of permanent workers increased and a growing number of logging businesses had more workers.

Introduction

Active forest management can enhance the provision of ecosystem services ranging from wildlife habitat and water quality to fiber for wood products and energy. When timber is harvested, loggers are the primary actors who implement on-the-ground practices that support the provision of those ecosystem services through sustainable forest management practices. Loggers play three essential roles.

1. They help landowners and foresters meet their land management goals.
2. They directly and indirectly impact forest sustainability and the forest's capacity to provide timber and other ecosystem services.
3. They link suppliers (landowners) with fiber markets that include both traditional products (sawtimber, pulpwood, etc.) and new product opportunities (such as bioenergy).

Loggers and the logging sector face numerous challenges. The profession is not only physically dangerous but financially risky. Modern logging equipment necessary to cost-effectively feed the region's pulp mills, paper mills, and sawmills is very expensive. A single piece of equipment often tops \$500,000. Moreover, the market landscape has become significantly more uncertain in the

last 15 years as mills have closed, as getting access to capital has become more difficult, and as new landowners have taken over. A cadre of graying logging business owners has generated concern whether—both in the short term and long term—businesses will be retained and whether new owners can be recruited.

This publication describes three key factors that have impacted the Wisconsin logging sector in the past and will impact it in the future. Those factors are (1) production changes, (2) profitability, and (3) sector demographics. Insights are derived from comparisons of recent (2010) and past² (2003) data collected via mail surveys of logging businesses in Wisconsin. (For more on data collection methods and responses, see sidebar, STUDY METHODS on page 11).

Background

At its most basic level, logging is the harvesting of trees from the forests to obtain dimensional lumber for building, pulp for papermaking, fuel for heat or energy, and wood for other human uses. The harvesting process typically includes five steps: "felling" (cutting down a tree), "processing" (removing limbs and cutting a tree into market-specified length and diameters), "primary transport" (moving trees and/or cut products from the stump on site to a central location often referred to as the "landing"), "loading" (sorting, stacking, and loading onto trucks), and

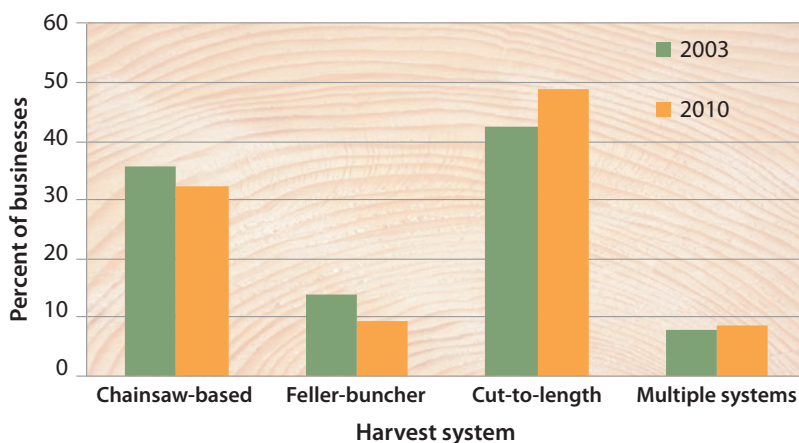
"secondary transport" (delivery of logs from the landing to the mills). Over the last two decades, the technology used in this process has changed radically. While some harvesting activities use and even require manual felling and processing with chainsaws (e.g., large trees for high-quality products such as veneer), most wood is harvested using mechanized harvesting systems (see sidebar, WISCONSIN HARVEST SYSTEMS on page 11). These mechanized systems are vastly safer and more productive than manual felling, but require substantial financial resources. For example, brand new harvesters—part of the cut-to-length system—often cost more than \$500,000, but the cut-to-length system increases productivity and decreases danger. Loggers now have a choice and must consider whether to continue with the low-investment, low-productivity and relatively dangerous system of manual felling, or whether to make large investments in more productive and less dangerous systems.

Results³

Production characteristics

Wisconsin logging businesses have not changed much in the way they harvest and process trees. In both 2003 and 2010, the logging system used by the largest percentage of businesses in Wisconsin was the cut-to-length system (43% in 2003 and 49% in 2010). Chainsaw-based systems (36% and 32%) were second most common. The other two harvest systems (feller-buncher and multiple systems) were used by roughly 10% of businesses in both 2003 and 2010 (figure 1). The overall distribution of harvest systems used in Wisconsin is statistically unchanged.⁴

FIGURE 1. Distribution of logging businesses using different harvest systems, 2003 and 2010.



However, different harvest systems can produce vastly different volumes per year. Not surprisingly, manual-felling operations produce less volume than mechanized systems. For both 2003 and 2010, median annual production differed by harvest system⁵ (figure 2). Specifically, chainsaw-based businesses differed from the others, as did businesses using feller-bunchers. Businesses using cut-to-length and multiple systems were statistically equal, but differed from the other two.

While there appear to be substantial differences in the median volumes harvested in 2003 and 2010 by cut-to-length and multiple harvest systems (figure 2), median annual harvest volumes were not statistically different.⁶

Given these differences among harvest systems, particularly between chainsaw-based and the remaining mechanized systems, it makes sense to classify businesses by their annual harvest volume. Throughout this report we divide businesses into five categories based on

the number of cords of wood they produce per year: 100–1,000, 1,001–5,000, 5,001–10,000, 10,001–15,000, and greater than 15,000. Figure 3 presents both the portion of businesses in each production category, as represented by bar graphs, and the portion each category produces of the total volume that all respondents report harvesting in a year, as represented by line graphs. Evident here is that while the largest percentage of firms in 2003 and 2010 had annual harvest amounts between 1,001 and 5,000 cords, these firms contributed less than 20% of the total volume in each year, while those harvesting over 15,000 cords accounted for much more of the total volume, 30% in 2003 and 43% in 2010. Furthermore, those in the largest category (> 15,000 cords) harvested a larger share of total volume in 2010 than in 2003.

FIGURE 2. Median annual harvest volume in cords by harvest system, 2003 and 2010.

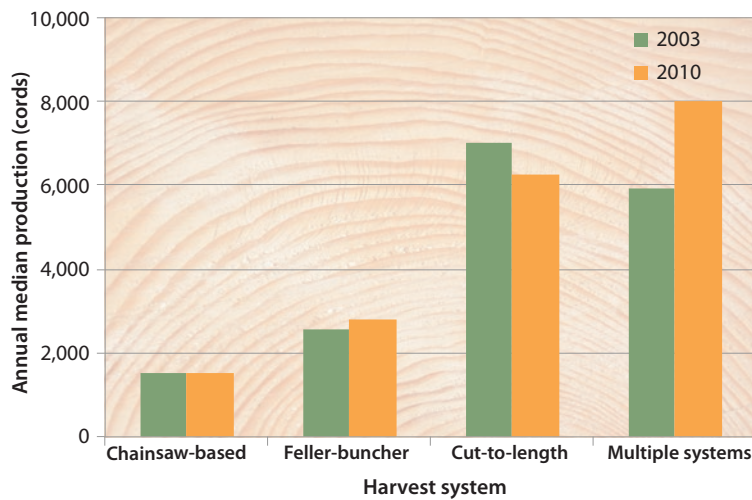
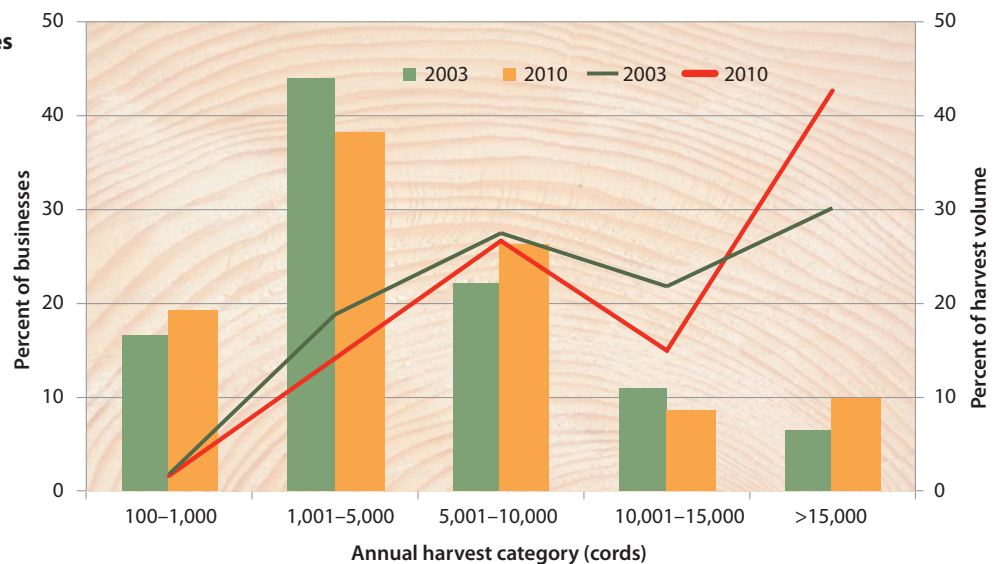


FIGURE 3. Portion of businesses and their contribution to total annual harvest by production category, 2003 and 2010.



Wisconsin Logging Sector: Status and Future Direction

In addition to total annual production, we calculated logging business “efficiency,” or what businesses actually harvested divided by what they reported they could have harvested in a given year.⁷ In general, this efficiency increases with greater annual production (figure 4).

As to what loggers harvested and where they found it, little changed between study periods. Hardwood pulp volume accounted for the majority of wood products removed in 2003 and 2010, followed by softwood

pulp (figure 5). Hardwood sawlogs were next highest in both years. These three categories account for roughly 85% of all products removed. A new category added for the 2010 study was woody biomass and this accounted for 2% of total volume harvested that year.

Loggers depend on landowners to supply the timber they cut, and all the various landownership categories in the state contribute to that supply. Landownership categories in Wisconsin include individuals

and families, Native American tribes, large timber and investment companies (“corporate”), and public lands managed by county, state, and federal agencies. Where a logging business is located has a big impact on which lands it harvests from. However, other factors also figure into the decision of where to harvest, including the expectations and limitations landowners place on loggers, forest certification and government regulations, and the type of products to be harvested.

FIGURE 4. Harvest efficiency (actual harvest/harvest capacity) by production category, 2003 and 2010.

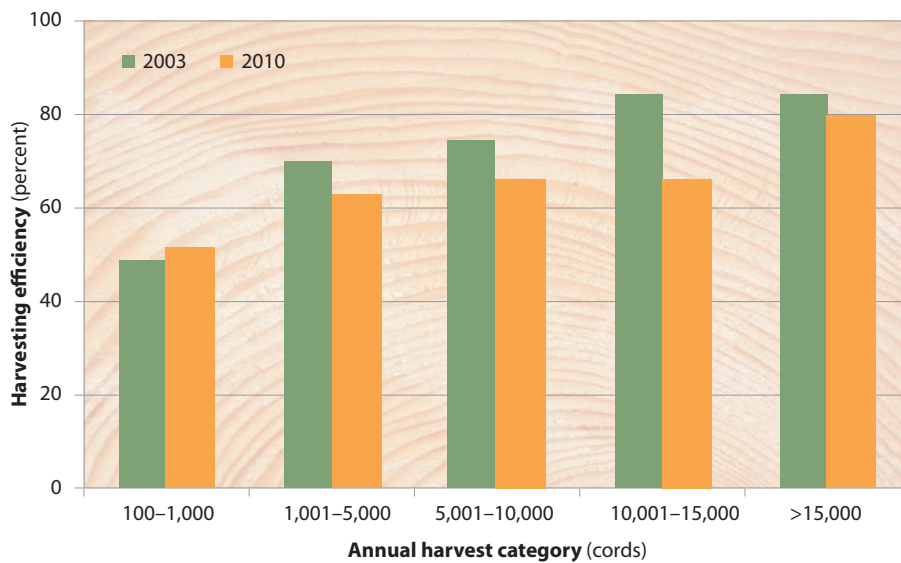
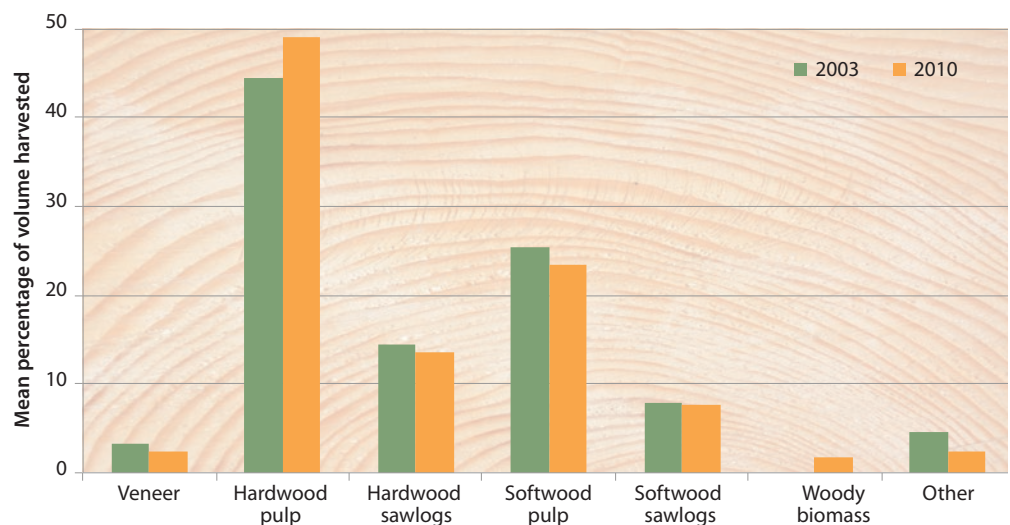


FIGURE 5. Harvested volume by product type, 2003 and 2010.



Logging businesses reported harvesting more than 45% of their volume from private woodlands and about 25% from county forests in both 2003 and 2010 (figure 6). The percent volume harvested from corporate lands in 2010 was about half of that reported in 2003, while state forests accounted for 9% of the volume harvested in 2010 (nearly twice that of 2003).

Profitability and associated factors

Over two-thirds of logging businesses reported “average,” “good,” or “excellent” profitability in both 2003 and 2010. The remainder reported either “poor” or “very poor” profits (figure 7), with 10% reporting “very poor” profits. While there may appear to be a drop between 2003 and 2010 in those reporting “good” or “excellent” profitability, there is no statistical difference between the two periods.⁸

FIGURE 6. Volume harvested by landownership category, 2003 and 2010.

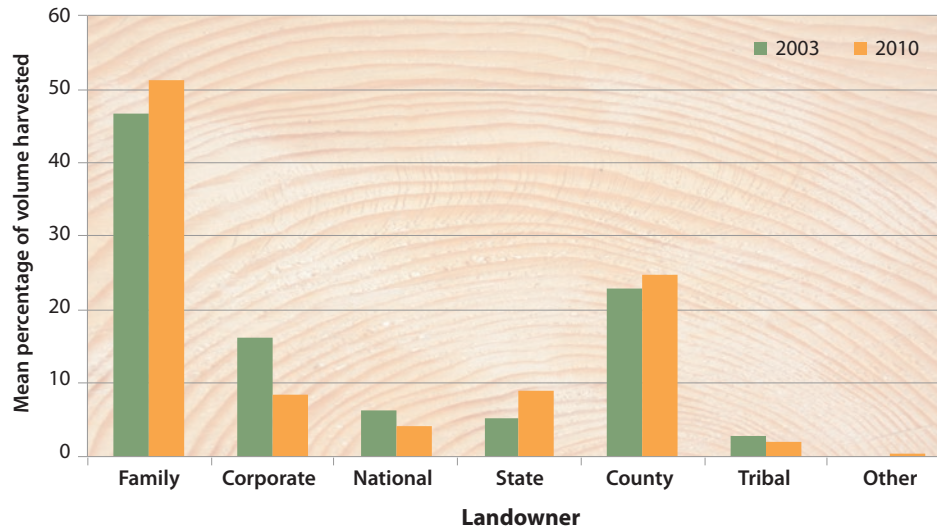
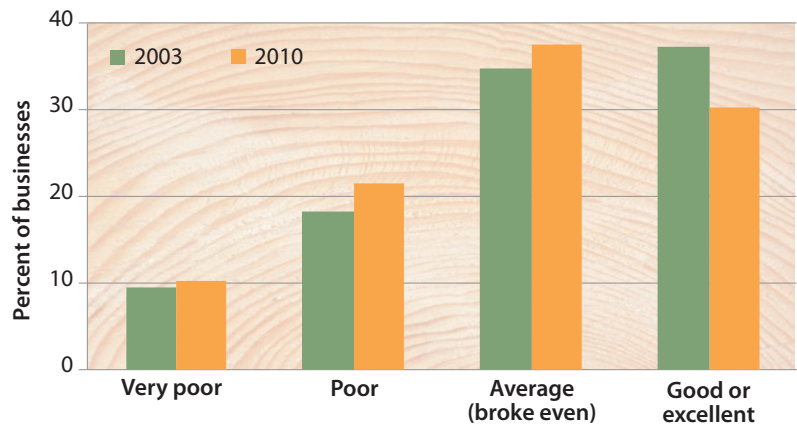


FIGURE 7. Self-reported logging business profitability, 2003 and 2010.



Wisconsin Logging Sector: Status and Future Direction

In both years the factors that most affected profitability were those related to prices received for products and to costs of acquiring and harvesting timber—specifically, prices, equipment maintenance, and stumpage availability (figure 8).⁹ Fuel prices in 2010 ranked as most important in affecting profitability. This factor was fourth in the 2003 survey, behind mill prices, stumpage prices, and equipment maintenance (all three of which still ranked high in 2010). One possible explanation for this is that diesel prices over the period went up. The U.S. Energy Information Administration (EIA) reported

that Midwest annual No. 2 diesel retail prices averaged \$2.964/gallon in 2010 and \$1.488/gallon in 2003 (both inflation-adjusted), indicating that prices for fuel doubled over the period.¹⁰ The only other factor to shift more than one place was regulatory requirements, which moved from ninth in 2003 to seventh in 2010.

Median fuel usage in 2010 was 5,900 gallons (no similar data for 2003). However, fuel consumption can vary widely depending on the extent to which logging businesses haul products to mills (i.e., secondary transport) using their own or leased trucks as opposed to contracting

that work to someone else, and depending on how much wood they harvest annually. Forty percent of businesses that reported contracting more than 70% of their annual volume to someone else reported median fuel usage of 3,579 gallons. Those hauling 70% or more of their harvest volume on their own trucks used 15,000 gallons (median). When categorized by annual harvest volume, the trend isn't surprising: the more one harvests, the more fuel one uses. However, fuel use is highest in businesses that haul the timber they harvest, particularly those that harvested more than 5,000 cords in 2010 (figure 9).

FIGURE 8. Mean importance scores for factors affecting logging business profitability, 2003 and 2010. Scores are in 2010 ranked order.

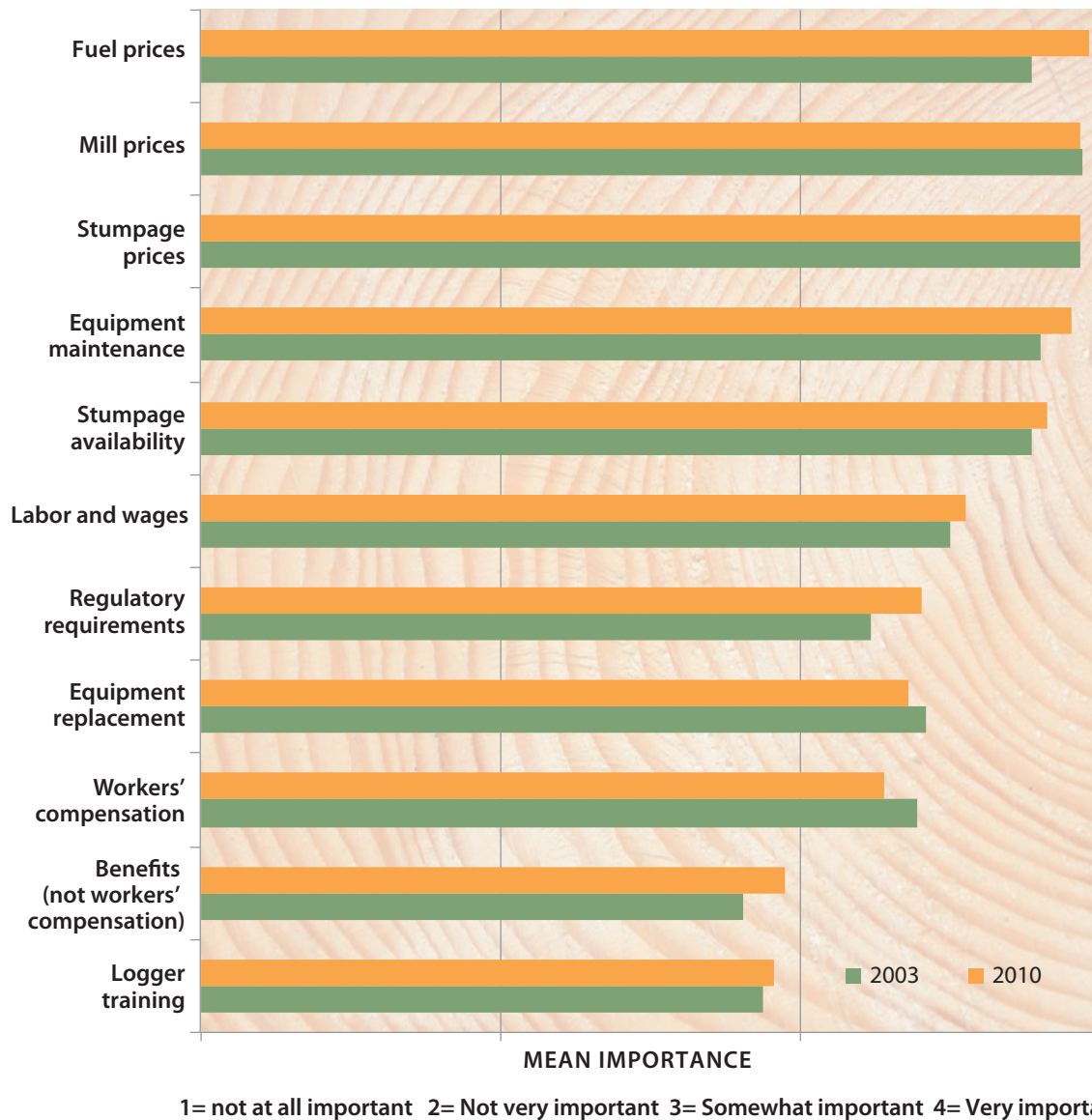
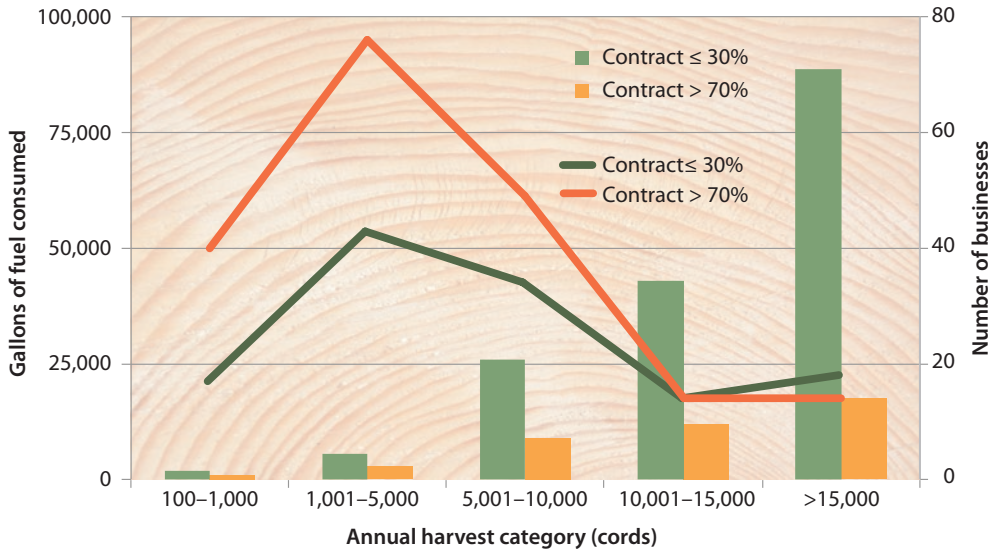


FIGURE 9. Median fuel usage in gallons (bars) and number of businesses (lines) by harvest volume category and extent of contractual trucking, 2010.



Capital investment is key for most logging businesses—particularly mechanized ones. Inflation-adjusted (2010 USD) median capital investment increased from \$190,400 in 2003 to \$223,000 in 2010. When we compare median capital investment (as represented on the chart by bar graphs) across annual volume harvest categories, we find that it held relatively constant between 2003 and 2010 (figure 10). The picture that emerges for both periods is not surprising: higher production is tied to greater financial investment.

Only the largest volume category had median investments over \$1 million (2010 USD) in both 2003 and 2010. Indeed, the correlations between cords harvested and capital investment for 2003 and 2010 were 0.71 and 0.75, respectively.¹¹ We report capital investment in median dollars because the amount of investment varies greatly between systems and amongst businesses.

Of 2010 capital investment, the median portion invested in logging equipment ranged from 80% to 90% depending on annual volume harvest category (figure 10 line graph). In 2003, the range was 68% to 80%, indicating that in 2010 more capital was tied up in equipment, leaving less for other investments such as purchasing stumpage from landowners. One-fifth of logging businesses reported that in 2010 more than 70% of the timber they harvested was purchased under contract

by a mill (no similar questionnaire item for 2003). For these businesses, the median portion of capital invested in equipment was 88%. For the remaining businesses (those with ≤ 70% under contract to mills) this median was 80%.

FIGURE 10. Median capital investment (2010 USD) and percent of capital invested in equipment by annual volume harvest category, 2003 and 2010.

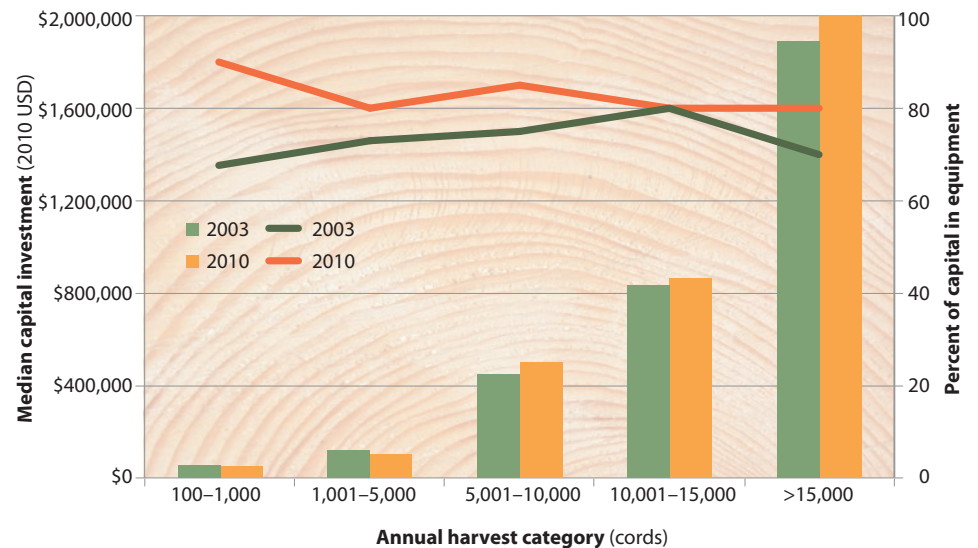


FIGURE 11. Distribution of employees and subcontractors, 2003 and 2010



Business and workforce characteristics

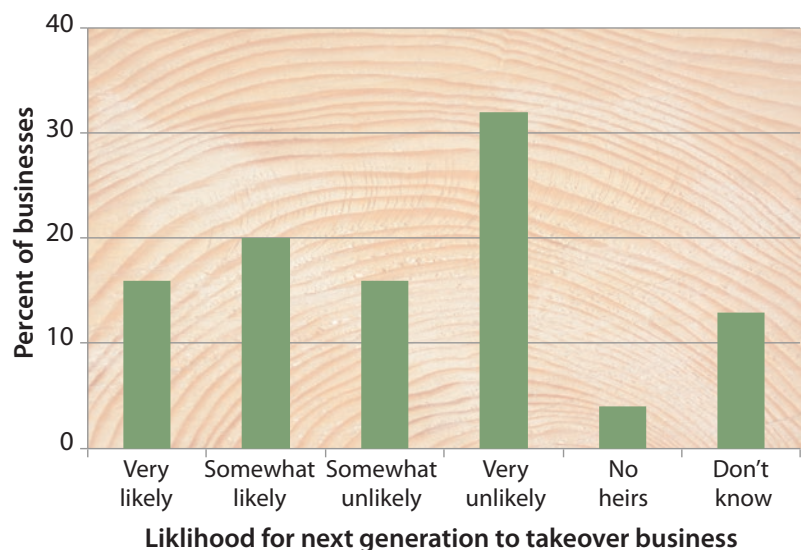
Logging businesses are small businesses. In 2003, we found that most logging businesses were organized as one-person, owner-operator businesses with no additional employees (figure 11). However, our 2003 questionnaire missed an important part of the workforce picture: the use of subcontractors. We found that in 2010 logging businesses were as likely or more likely to use subcontractors as they were to have permanent employees (excluding the owner-operator). It also appears that between 2003 and 2010 there was a slight shift toward businesses having more employees. The mean number of full-time equivalent employees rose from 1.9 in 2003 to 2.8 in 2010. Logging businesses elsewhere in the region typically have many more employees.¹²

Logging businesses are also predominately family-owned and operated. In 2010, 72% of respondents indicated they were a family business, down from 78% in 2003. As to the next generation taking over these family businesses, interest appears limited. In 2010, 36% believed that the next generation was very likely or somewhat likely to take over, while 48% believed this was very or somewhat unlikely (figure 12).

The cohort of logging business owners is aging and recruitment of young owners is limited. The median age of owners in 2010 was 52, up from 46 in 2003. In essence, logging business owners have “aged in place,” as is visually evident in figure 13. The percentage of owners who were 65 or older in 2010 (12%) was nearly double the percentage over 65 in 2003 (7%), while those in the 25-34 age category fell from 10% to 3%. The distribution of owners across age ranges is statistically different in the 2003 and 2010 survey years.¹³

Lastly, the 2003 survey asked respondents, “Do you expect to be in business in five years?” Nineteen percent responded negatively, and this group harvested 19% of the total volume harvested in 2003. As part of the 2010 study, we sought to determine actual exits since the 2003 study and found that 20% had exited the logging sector. We were not able to determine the actual production capacity that was lost. Our analysis suggests that during the same period only 10 businesses were added, representing 3% of our 2010 sample. To the same question in the 2010 study, 22% indicated that they would not be logging in five years. These firms harvested 16% of the total volume in the study.

FIGURE 12. Likelihood of next generation taking over the business, 2010.



Discussion

Almost a decade apart, the 2003 and 2010 studies do not reflect trend data. However, the two points in time do offer insights into how the logging industry has changed and what factors remain of importance in ensuring adequate logging capacity in Wisconsin. First, the age of logging business owners continues to increase and there is considerable uncertainty as to who will log in the next five years. In 2010, 19% of respondents expected to exit the business, which was similar to the situation in 2003. The interim recruitment of new owners was an estimated 3%. Second, the data suggest that there are fewer businesses and that the “solution” has been for a small number of businesses to get larger.

Aging owners and the next generation

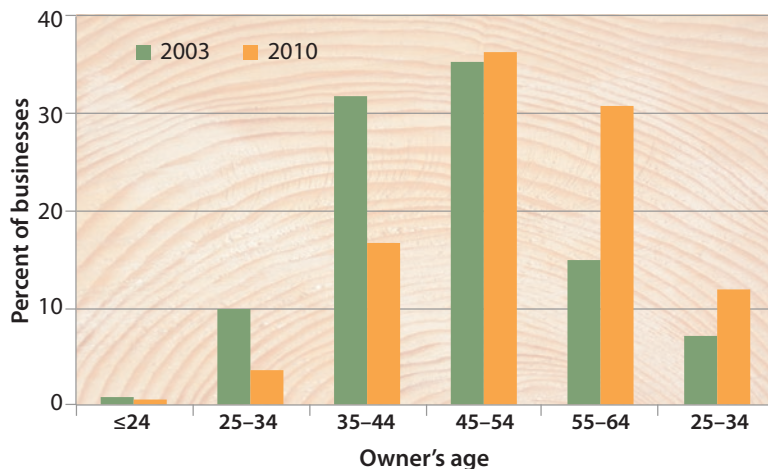
Logging business owners, as a group, continue to get older. In 2003 our survey findings suggested that owners were middle-aged. In the most recent survey, owners might be interpreted as graying and viewing retirement more and more as a real consideration. That business owners are older is not in itself a problem. Business skills, capital access and credit, access to markets, ability to manage labor, and life experience are often necessary requirements to run a business, and older owners are likely to have these things. One needs to learn how to work with foresters and landowners, to find and bid and schedule jobs, to maintain equipment, and to manage relationships with mills. However, the very small size of logging businesses in Wisconsin—often with one or two employees or subcontractors—doesn’t guarantee clear transition opportunities. Many observers fear that when someone packs it in, that business and all that went with it will be gone.

In the past the idea of logging businesses as ‘family businesses’ may have suggested continuity, but among the next generation there seems to be limited interest in continuing family logging businesses. Logging is as much a way of life as it is a way to earn a living. It requires long hours and is hard, complicated work. In terms of pay, benefits, and other intangibles it may not be as competitive as other work choices. Individuals who can operate a harvester or other mechanized logging equipment could likely operate similar equipment used in construction and mining. In some cases, notably mining, the sense is that such jobs often offer better pay and benefits. Also, broad societal trends are away from living in rural places, which is a challenge for all rural areas. Is work in the logging sector a competitive option, either for those who want to stay in the business or those who want to enter the business? The answer depends, in part, upon who will stay and whether those who do stay will be the most capable and skilled workers.

Fewer, bigger businesses

Our data indicate that between 2003 and 2010 the number of new businesses entering the logging sector fell well short of replacing those that exited due to retirement, bankruptcy, employees wanting to work in another industry, or other reasons. Less timber is being harvested in Wisconsin. USDA Forest Service data¹⁴ indicate that over roughly the same period (2002-2012) total annual wood output decreased by 15%, from 6.8 to 5.8 million cords per year. Whether harvest levels and logging capacity are in balance and what underutilized capacity might exist is beyond the scope of our data. However, there is a noticeable shift between 2003 and 2010 in that a small number of logging businesses have gotten larger (i.e., are harvesting more wood). These larger businesses appear to be more efficient in their production procedures and fuel use, and may have more capital available for non-equipment investments such as future stumpage purchases and training.

FIGURE 13. Distribution of logging business owners by decade cohort, 2003 and 2010.



As is typical in all economic sectors, these larger businesses appear to be seeking and may be achieving higher returns for increased capital investment. In this regard Wisconsin may lag behind other states in the region and country. On average, Wisconsin logging businesses had 4.2 workers (employees and subcontractors) while Minnesota logging businesses had 7.4.¹⁵ Because of Wisconsin workers' compensation rules, Wisconsin logging businesses historically relied on subcontracting. While these rules have changed to be more accommodating, a culture has evolved that likely favors the contracting business model, a model that remains entrenched in part due to the paucity of new businesses. Other barriers likely constrain the growth of the industry. For example, adding a second cut-to-length operation (another harvester and forwarder) requires capital and credit that many small and strapped businesses may not have. The extent to which these various factors impede logging business growth needs further consideration if we are to develop appropriate wood products industry responses and public policy responses.

Conclusions

Logging businesses play a critical role in the sustainable management of forests and the economic viability of the wood products industry. Between 2003 and 2010, logging businesses adapted to changes in the economy, in landownership, and in the practice of sustainable forestry. Many factors are beyond the control of Wisconsin businesses, local communities, legislators, and so on, due to the global nature of wood products markets. Emerging from this analysis, though, are two broad recommendations that could help Wisconsin maintain its current and future logging capacity.

- Reduce barriers that might prevent logging businesses from getting bigger or achieving more productivity with greater capital investment. Our data indicate a trend toward businesses getting larger. Yet Wisconsin businesses are smaller than those in surrounding states, which may put the state at a competitive disadvantage. What things keep businesses from getting bigger and increasing production of wood? Is it the culture of subcontracting? Access to credit? Unpredictable supply? Unpredictable mill demand? A broad dialogue to identify barriers and opportunities is needed to ensure that Wisconsin is positioned to compete.

- Develop the next generation of loggers. "Who will log?" is a common question in the forestry and logging communities. Programs aimed at building technical and field expertise are needed, such as those offered by FISTA, equipment manufacturers, and others. But where will loggers learn the business management, personnel management and marketing skills required to run a successful business? If someone is interested in becoming a logger, how do they do it and where do they secure the necessary capital and markets for wood they may harvest? Again, there are no easy answers here, but more focused discussions of the rural workforce and where logging fits (and how it might be made more attractive) are important and need to include more than just voices in the logging and forestry communities.

Logging is a proud tradition. Our very best loggers are both producers of fiber and careful stewards of the forests. Yet it is increasingly difficult to be both while making a reasonable living. The challenge is to maintain both a strong logging industry and a sustainable forest.



STUDY METHODS

Both the 2003 and 2010 studies used a four-wave mail survey¹⁶ sent to logging business. Both surveys included an initial mailing (cover letter, questionnaire, and return envelope) followed soon after by a postcard reminder. These mailings were followed by two follow-up mailings to those who hadn't yet responded. The initial mailing also included a \$2 bill that survey design research indicates improves overall response and actually reduces overall data collection costs. Each sample was compiled from lists maintained by Wisconsin Department of Natural Resources foresters, Wisconsin Cooperating Foresters, Wisconsin county, national, and state forest administrators, and the Forest Industry Safety and Training Alliance (FISTA). The 2010 survey included respondents to the 2003 study in order to permit additional analysis on industry change over time.

Response rates for both studies were high, 59% in 2003 and 63% in 2010. (The 2003 response rate was for the entire survey, which included both Wisconsin and Michigan's Upper Peninsula.) Only Wisconsin businesses were used in this analysis. The sample sizes analyzed were 369 in 2003 and 319 in 2010. Loggers harvesting less than 100 cords in a given year were excluded from analysis for that year. 🌿



WISCONSIN HARVEST SYSTEMS

Three harvest systems commonly operate in Wisconsin.

1 Chainsaw-based systems rely on hand felling and processing and typically use cable skidders to drag or forwarders to carry processed trees to the landing.

2 The feller-buncher system uses a feller-buncher to fell and pile standing trees, which are then dragged to the landing by a grapple skidder. A delimber and a slasher process the whole trees into saw logs, bolts, and pulpwood sticks. Sometimes a single machine called a processor performs the limbing and bucking functions.

3 The cut-to-length system uses harvesters for in-woods felling and processing (i.e., limbing and bucking). Processed logs, bolts, and pulpwood sticks are then carried to the landing using forwarders.

Our results are presented using these three categories of systems plus a fourth category, "multiple systems," for businesses that reported using both the feller-buncher and cut-to-length systems.

All harvesting systems, including fully mechanized operations such as feller-buncher and cut-to-length, occasionally use chainsaws to fell and process large-diameter trees that exceed the size capacity of the equipment. 🌿

Notes

¹ In 2003, loggers were asked only about the number of employees. In the 2010 survey this question was expanded to include a broader assessment of the contracted and subcontracted workforce.

² Rickenbach, M., T.W. Steele, & M. Schira. 2005. Status of the Logging Sector in Wisconsin and Michigan's Upper Peninsula-2003. Madison, WI: University of Wisconsin-Extension Cooperative Extension Service.

³ Results are reported as statistically significant with $\alpha = 0.05$.

⁴ χ^2 test statistic of 2.9144 with 3 degrees of freedom, $p = 0.4050$.

⁵ Pairwise comparison for each year tested using two-sided multiple comparison analysis using the Dwass, Steel, Critchlow-Fligner method.

⁶ Based on comparison of 95% distribution-free confidence limit

⁷ This measure does not reflect what might have impacted efficiency, such as weather conditions, lack of sales, equipment, etc. More technical and detailed measures of logging efficiency are available but were beyond the scope of this study.

⁸ χ^2 test statistic of 4.6130 with 3 degrees of freedom, $p = 0.2024$.

⁹ Mean importance scores were based on 1 = "Not at all important," 2 = "Not very important," 3 = "Somewhat important," and 4 = "Very important."

¹⁰ US Energy Information Agency data are available at http://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_r20_a.htm.

¹¹ Pearson correlation coefficients; both are significant at < 0.01 .

¹² Blinn, C.R., Tim J. O'Hara, T.J., Chura, D.T. & Russell, M.B. 2014. Status of the Minnesota Logging Sector in 2011. St. Paul, MN: University of Minnesota Department of Forest Resources Staff Working Paper 226.

¹³ χ^2 test statistic of 46.5 with 5 degrees of freedom, $p < 0.01$.

¹⁴ USDA Forest Service. 2012. Timber Product Output (TPO) Reports. Knoxville, TN: USDA Forest Service, Southern Research Station. http://srsfia2.fs.fed.us/php/tpo_2009/tpo_rpa_int1.php. [Date accessed: 6/12/2014].

¹⁵ See footnote 12.

¹⁶ Dillman, D. A., Smyth, J. D., & Christian, L. M. 2009. Mail and Internet Surveys: The Tailored Design Method, Third edition. New York: John Wiley and Sons



Appendix: Wisconsin 2011 Logger Survey

A joint study by the University of Wisconsin-Madison and the University of Wisconsin-Stevens Point

Timber Supply

We would like to begin with some questions about the timber you produce. In answering these questions, please provide your best estimates. Please either mark your responses with an “X” or write in your answers where appropriate. Remember, all of your answers will remain strictly confidential.

1. Do you own or manage an independent logging business?

Yes
 No → If No, go to Question 2 below.

If Yes, go to Question 3 below.

2. Have you owned or managed an independent logging business in the past? If so, please indicate the year you stopped logging.

Yes, stopped logging in:

No

If you do not currently own or manage an independent logging business, please turn to page 12. You do not need to complete the questionnaire, but we would welcome your comments on the logging industry in the box on the back cover.

3. In what county is your business based?

4. Using your best estimate, how much timber volume did you harvest in 2010? Please use the units that best fit your recollection. For example, “10,000 cords and 20,000 board feet.”

	Volume	
a.	<input type="text"/>	Cords
b.	<input type="text"/>	Thousand board feet (MBF)
c.	<input type="text"/>	Green tons
d.	<input type="text"/>	Other unit (please specify below):
	<input type="text"/>	

Please continue to Question 5 above. ↗

5. Of the timber you harvested in 2010, what percentage did you harvest under contract for a mill and what percentage was stumpage you purchased? (If none, please write in “0.” These should total 100%).

	Percent
a. Under contract for a mill	<input type="text"/>
b. Stumpage you purchased	<input type="text"/>
Total	100%

6. How many individual timber sales did you complete or partially complete in 2010?

	Number of Sales
a. Completed	<input type="text"/>
b. Partially completed	<input type="text"/>

7. Of your 2010 timber sales, how many were in each of the following acreage categories? Also, how many of the sales in each acreage category would you rate as profitable?

	Total number of sales	Total number of sales that were profitable
a. 0-5 acres		
b. 6-10 acres		
c. 11-20 acres		
d. 21-40 acres		
e. 41-80 acres		
f. 81-160 acres		
g. 161 acres or more		
Total		100%

8. What percentage of your 2010 harvest volume came from the following ownership categories? (If none, please write in "0." These should total 100%.)

	% Harvested	
a. Private woodlands		
b. Industrial or corporate owned forests		
c. National forests		
d. State forests		
e. County forests		
f. Tribal forests		
g. Other (please specify):		
Total		100%

Please continue to Question 9 above. ➤

9. What percentage of your 2010 harvest volume was allocated to the following product categories? (If none, please write in "0." These should total 100%.)

	% of 2010 Harvest Volume	
a. Veneer		
b. Hardwood pulp		
c. Hardwood sawtimber		
d. Softwood pulp		
e. Softwood sawtimber		
f. Woody biomass for pellets or bioenergy		
g. Other (please specify):		
Total		100%

10. What percentage of your 2010 harvest volume did you deliver to the following types of mills? (If none, please write "0." These should total 100%.)




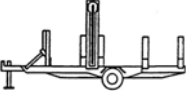
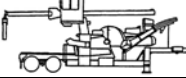
	% Delivered in 2010	
a. Small sawmill (produces less than 5 million board feet per year)		
b. Large sawmill (produces 5 million board feet per year or more)		
c. Pulp or paper mills		
d. Log buyers		
e. Pellet or bioenergy plant or mill		
f. Other (please specify):		
Total		100%

Appendix: Wisconsin 2011 Logger Survey




Nature of Business

The next set of questions is about the nature of your business in terms of your harvest systems and personnel.

11. How many of the following pieces of equipment do you actively use in felling and processing timber? (If none, write "0." Do not include older pieces of machinery that are non-operational or used only for parts.) Also, please indicate the age of the newest piece of equipment for each category.

		Number of pieces	Age of newest piece
a. Chainsaws	(no image)		
b. Feller-bunchers			
c. Harvesters			
d. Delimiters			
e. Slashers			
f. Chippers			
g. Other (please specify):			

12. How many of the following pieces of equipment do you actively use in off-road transport? (If none, write "0." Do not include older pieces of machinery that are non-operational or used only for parts.) Also, please indicate the age of the newest piece of equipment for each category.

		Number of pieces	Age of newest piece
a. Cable skidders			
b. Grapple skidders			
c. Forwarders			
d. Loaders	(no image)		
e. Other (please specify):			

13. In 2010, how far was your average one-way travel distance from your primary business location to the timber harvest site?

Less than 30 miles

30 - 60 miles

60 - 90 miles

90 - 120 miles

120 - 150 miles

More than 150 miles

14. In 2010, how far was your longest one-way travel distance from your primary business location to the timber harvest site?

Less than 30 miles

30 - 60 miles

60 - 90 miles

90 - 120 miles

120 - 150 miles

More than 150 miles

Please continue to Question 15 above. ➔

15. In terms of trucking, please indicate what percentage of your 2010 harvest volume was transported to mills by trucks you own, versus trucks you contracted. (If none, please write "0." These should total 100%.)

	Percent
Owned	
Contracted	
Total	100%

16. Please estimate how many gallons of fuel you used in 2010.

Gallons

17. How much capital is invested in this logging business?

Dollars

18. What percentage of that capital is invested in harvesting and off-road transport equipment?

Percent

19. How easy is it to obtain capital for this business?

Very easy

Somewhat easy

Neither easy nor difficult

Somewhat difficult

Very difficult

20. How would you rate your business's profitability in 2010?

Very poor	Poor	Average (broke even)	Good	Excellent
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix: Wisconsin 2011 Logger Survey

21. During 2010, what volume could you have produced working at full capacity? Please use the units that are most convenient for you.

Volume	
a.	Cords
b.	Thousand board feet (MBF)
c.	Green tons
d.	Other unit (please specify below):

22. What volume of wood do you need to produce annually to break even financially? This should include paying yourself.

Volume	
a.	Cords
b.	Thousand board feet (MBF)
c.	Green tons
d.	Other unit (please specify below):

Please continue to Question 22 above. ➤

23a. Are you chain of custody certified through the Forest Stewardship Council (FSC)?

Yes
 No ➔ Go to Question 23b.

23b. If not, do you see this as a potential growth area for your business?

Yes
 No

➤ Please continue to Question 24a.

24a. Are you chain of custody certified through the Sustainable Forestry Initiative (SFI)?

Yes
 No ➔ Go to Question 24b.

24b. If not, do you see this as a potential growth area for your business?

Yes
 No

➤ Please continue to Question 25a.

25a. Are you a Certified Master Logger?

Yes
 No ➔ Go to Question 25b.

25b. If not, do you see this as a potential growth area for your business?

Yes
 No

26. Below is a list of factors that might affect profitability in the logging industry. Please mark the circle that indicates how important each is to your business.

	Not at All Important	Not Very Important	Somewhat Important	Very Important	Not Applicable
A. Benefits (not including worker's compensation)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B. Equipment Maintenance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C. Equipment Replacement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D. Fuel Prices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E. Labor and Wages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
F. Logger Training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
G. Mill Prices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
H. Regulatory Requirements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I. Stumpage Availability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
J. Stumpage Prices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
K. Worker's Compensation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
L. Other (please specify):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="text"/>					

In the boxes below, please tell us which of the factors in Question 26 is the first, second, third, and fourth most important in remaining profitable. Print the corresponding letter of each of the four most important items from Question 26 in the box next to each level of importance.

27. Most important	<input type="text"/>
28. Second most important	<input type="text"/>
29. Third most important	<input type="text"/>
30. Fourth most important	<input type="text"/>

Appendix: Wisconsin 2011 Logger Survey

31. Do you employ workers or subcontract for services? (Answer “Yes” if you do either.)

Yes

No → If No, go to Question 34 on Page 9.

If Yes, go to Question 32.

**32. How many workers or subcontractors does your company employ or work with?
Please include yourself in the count.**

	Full time	Part time	Subcontract
a. Woods workers			
b. Truck drivers			
c. Procurement			
d. Mechanics			
e. Office and clerical			
f. Supervisor/manager/owner			
g. Landowner assistance forester			

33. For each of the following employment-related statements, please indicate the degree to which you agree or disagree by marking the circle that corresponds to the response that best applies.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a. Reliable workers are hard to find.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Skilled workers are hard to find.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Worker turnover is high in my company.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Reliable subcontractors are hard to find.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Skilled subcontractors are hard to find.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Bioenergy

The next set of questions is to gauge your opinions about bioenergy in general and in relation to your business. **When we refer to “woody biomass” in these questions, we mean wood harvested for the primary purpose of generating heat or electricity.**

34. What portion of your area’s future energy supply will come from woody biomass?

None
or almost none

A little

About half

Most

Nearly all

35. How positive or negative an effect do you think the emergence of woody biomass will have on your area?

Very negative

Somewhat negative

No change

Somewhat positive

Very positive

36. How plentiful do you think your area’s potential supply of available woody biomass will be?

Very scarce

Somewhat scarce

Neither scarce
nor plentiful

Somewhat plentiful

Very plentiful

37. What is the chance that you will be supplying woody biomass in the next 3 years?

Very low

Somewhat low

50-50

Somewhat high

Very high

38. Over the next 3 years, what change do you expect to see in the portion of your total harvesting of woody biomass for bioenergy?

Large decrease

Small decrease

No change

Small increase

Large increase

39. Think about the profitability of your business. What kind of payoff would you expect from supplying woody biomass to pellet or bioenergy markets?

Very low

Somewhat low

Moderate

Somewhat high

Very high

Appendix: Wisconsin 2011 Logger Survey

40. Think about most landowners that you work with. How do you think they would react to the idea of harvesting woody biomass from their land?

Resist strongly Resist somewhat Neither Pursue somewhat Pursue strongly

41. How reasonable is the investment needed for you to participate in harvesting woody biomass?

Very reasonable Somewhat reasonable Just within my means Somewhat beyond my means Very much beyond my means

42. Compared to your current operation, how risky do you think it is to involve your business in harvesting woody biomass for pellets or bioenergy markets?

Much safer Somewhat safer No change Somewhat riskier Much riskier

43. How stabilizing or disruptive do you think the growth of bioenergy will be in the broad markets for wood products?

Very stabilizing Somewhat stabilizing No change Somewhat disruptive Very disruptive

44. How many opportunities do you see for marketing woody biomass?

None A few A moderate amount Many Very many

45. What financial incentives are necessary for woody biomass harvesting to be a profitable component of your business? Check all that apply.

- None
- Reduced interest loan
- Tax credit
- Cost share
- Other (please specify):

46. A family business is one in which the family plays a central role in the leadership and daily workings of the business and includes at least two family members (e.g., father and son, husband and wife).

Based on this definition, is your company a family business?

- Yes → If Yes, go to Question 47 below.
 No



If No, go to Question 48 below.

47. Will future generations (e.g., son, daughter, niece, nephew) of the owner's family take over the business?

- Very unlikely
 Somewhat unlikely
 Somewhat likely
 Very likely
 No heirs
 Don't know

Please continue to Question 48 below.

48. Do you expect to be in the logging business in 5 years?

- Yes
 No → Please explain why not, in the box below:

Appendix: Wisconsin 2011 Logger Survey

Demographics

49. What is the age of the owner?

Years

50. How many years has the owner been in the logging industry (not necessarily as owner)?

Years

51. How many years has this company been in operation?

Years

Please continue to Question 52 above. ↗

52. What is the highest level of education completed by the owner of this business?

- No formal education
- High school
- Some college
- College graduate
- Graduate degree
- Other (please specify):

53. Would you like to receive a copy of the results of this survey? (Expected in Spring 2012.)

- Yes
- No

To receive a copy of the results, please write your name and mailing address below.

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Comments:

**Thank you for your help with this study.
Please place your completed questionnaire
in the postage-paid return envelope provided,
and return it today.**

If you have questions about the survey, please contact the UW-Madison Department of Forest & Wildlife Ecology. If you need a replacement questionnaire, please contact the University of Wisconsin Survey Center.

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