Loggers of the Northeast:
Are they Thriving, Striving or just Surviving?

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Binghamton, NY
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Background

• The economic sustainability of logging contractors is critical to successful forest management.

• Expectations have increased due to the expansion of harvesting regulations and the adoption of forest and logger certification programs.

• Rising expectations can result in increasing logging costs.

• There is general concern over the economic viability of loggers.

Variables Impacting Productivity & Profitability

• Total harvest volume
• Harvest volume per acre
• Species value
• Average logs per stem
• Area of sale
• Skidding distance
• Topography
• Access system
• BMPs
• Amount of non-commercial timber stand improvement

Implications for Loggers

High variability!

Lack of predictability!

Economic Viability at Stake!

• Contract loggers commonly paid by the thousand board feet (MBF) to cut, skid, land.
• Rates range from roughly $110/MBF to $220/MBF (pulpwood/chipwood $12 – $22/ton).
• Rates should fluctuate from job to job based on achievable productivity rates, but often they do not, leaving loggers exposed to financial losses.
Background – Case Study

Two simple examples of how logging job characteristics can impact logging costs.

“The tree that built America”
Huntington Forest, Newcomb

This 96-year old Huntington Forest white pine stand represents among the best stocked forest stands in the Northern Forest (of any species) with a standing volume of 60MBF/acre.

The Harvest

Northern Logger – “Poster Child”

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Logging Costs?

Production: 100mbf/week

- Skid Distance: 600ft
- Logs/Stem: 5-6
- 650bdft/stem
- Cut Volume: 20mbf/ac of white pine
- Flat terrain
- Minimal BMPs

In this case, you are cutting 20mbf/ac and logging conditions are favorable.
Logging costs were $94/mbf.

Pack Forest, Warrensburg

100-year old natural white pine stand with 20mbf/acre, includes hemlock.

Production: 25mbf/week

- Skid Distance: 1500 - 2000ft
- Logs/Stem: 2-3
- Cut Volume: 4.2 mbf/ac white pine & hemlock pulp
- Flat terrain/minimal BMPs

In this case, cutting 4mbf/ac and logging conditions are less favorable.
Logging costs were higher – in the range of $155/mbf – so margins are more challenging.

Logger Viability Study

(Regula, Germain, Bick & Zhang 2018)

Objectives:
- Examine the profitability of logging contractors with differing harvest systems and job characteristics across New York State and Northern Pennsylvania.
- Determine which factors most impact logging productivity and profitability.

Methods

- Working in partnership with procurement foresters we interviewed 25 loggers.
- 30-minute interviews were conducted at the landings around the close out of the job.
Research Area

Majority of the harvests in northern hardwoods – with a few in mixed-wood forest cover types.

Data Collection

- Harvest system
- Equipment information
- Employees
- Sale area
- Volume
- Products
- Access system
- BMPs

Data Analysis

Fixed Costs
- Depreciation
- Interest
- Insurance

Operating Costs
- Maintenance & Repair
- Fuel
- Lube
- Wages
- (Depreciation)

Data Analysis

- PATH (Planning and Analysis in Timber Harvesting) (Bick, 2017) was used to calculate:
  - productive machine hour (PMH) costs
  - Operating Costs
  - Net Profit
  - ROI

Do loggers know their costs?

Some caveats:
- Most had very good data for variable costs.
- Some issues with repair and maintenance.
- Many struggled estimating fixed/overhead costs.

Average Distribution of Costs

88% - Variable 12% - Fixed

(No new equipment)
Our Thresholds: Striving, Thriving or Just Surviving

Surviving
• Partially cover costs while loss of equity to uncompensated depreciation

Striving
• Break-even by meeting operating costs, including depreciation

Thriving
• Cover costs, make profit and return on investment

Important Caveat!

These results represent a “snapshot” of one of many jobs these loggers will complete in a year.

Harvest Systems

Tree length Harvest Systems
• Eight single-person operators
• Eight 2-person crews
• Three 3-person crews
• Four 4-person crews

Experience

• Veteran loggers
  – 83% with over decade of experience as an owner
  – 43% with over two decades of experience as an owner

Equipment

• “Veteran” Equipment
  – 16%: 1980 – 1989
  – 48%: 1990 – 1999
  – 33%: 2000 – 2009
  – 16%: 2010 – present

Results

<table>
<thead>
<tr>
<th>ID</th>
<th>Harvest System</th>
<th>Acreage</th>
<th>Volume MBF</th>
<th>MFB/Acre</th>
<th>Total Volume MBF</th>
<th>Ft³/Acre</th>
<th>Unit Cost $/Ft³</th>
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Results

Total Volume from 23 logging jobs:
- 612,157 cubic feet (16,203 tons)

\* Sawtimber: 34%
\* Firewood: 38%
\* Pulpwood/chipwood: 28%
What it takes to "Thrive" 10% and 10%

<table>
<thead>
<tr>
<th>ID</th>
<th>Net Revenue</th>
<th>Net Profit</th>
<th>Profit Margin (%</th>
<th>Contract Rate Increase to &quot;Thrive&quot; (%)</th>
<th>Productivity Increase to &quot;Thrive&quot; (%)</th>
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Unit Cost ($/ft³) vs Profit Margin

Regression: Significant Variables

Profit Margin

$\hat{y} = -6954.31 + 50.09 X_1 + 19.27 X_2 - 589.55 X_3$

- Harvest Area
- Harvest Intensity
- Hours on BMPs

Discussion

- There can be a fine line between financial loss, equity erosion, and profitability.
- Modest increase (up to 10%) in contract rate and productivity can move a job from striving to thriving
- Important break-even unit cost threshold: $\approx 1.40$/ft³

Finding the Sweet Zone

- Pareto principle: 80:20 rule
  - 80% of Italy’s land is owned by 20% of the population
  - 80% of the world’s income controlled by 20% of the population
  - 80% of sales come from 20% of clients
  - 80% of profits from 20% of products
- Allocate resources to revenue-producing activities
- Avoid product/service clutter

Know Your Cash Cow!

Ford – 150 Series

900,000 sold in 2017
2500 per day
$45K per vehicle
Profit per vehicle = $13K

80% of profits from 20% of products
**Pareto’s Principle – “Vital Few” 80/20 Rule**

- Loggers complete 10 – 15 jobs per year (plus or minus)
- 20% of those jobs will likely generate 80% of the annual profit

![Diagram showing System Productivity (cd/PMH) over Weeks with labels B, C, D, E, G, H, J, K, N, Q, S, T, M.](Unpublished study by Jeff Benjamin, University of Maine)

**Discussion:** Look at the Big Picture

- Thriving
- Striving
- Surviving

![Graph showing Annual System Productivity & Profit with system productivity values and weeks labeled with B, C, D, E, G, H, J, K, N, Q, S, T, M.](Unpublished study by Jeff Benjamin, University of Maine)

**Discussion:** Look at the Big Picture

- Loggers need to be cognizant of potential marginal or unprofitable jobs – make informed decisions
- Loggers need to be aware of those factors that impact productivity and profitability
  - Harvest area
  - Harvest intensity
  - Skidding distance
  - BMPs
- Foresters share in this responsibility.

**Discussion: Running on Equity**

- Contractors often cannot upgrade equipment
- Running old, often antiquated equipment
- Leads to downward spiral of productivity to “running on empty”

**Discussion:** Running on Equity

- Thriving
- Striving
- Surviving

**Discussion: Forest Resource**

- Not in best interest of forest resource to have a logging force living on the edge.
- Loggers in “Surviving” mode are not in best position to be attentive to silvicultural implementation, residual damage and BMPs.

**Take Home Message**

- Rising expectations on loggers
- High variability and lack of predictability across jobs

**Loggers need to raise their level of business sophistication:**

- Understand their costs
- Know factors impacting productivity and profitability
- Negotiate contract rates that allow them to thrive
Thank You

Acknowledgements

- Participating Loggers
- Participating Foresters
- Watershed Agricultural Council