

# Mechanical Early Entry Thinning

**“Who”**

Maybe it should read, **HEAVY** Mechanical Early Entry Thinning. Treeline, Inc., from little ole Lincoln, Maine. Is this concept a new one, no. Then why isn't everybody doing it? Because it's laborious & expensive but...

## **(THE RIGHT THING TO DO).**

**“What”**

What is it? Essentially were asking feller-bunchers & grapple skidders to do what could have been done with brush saws years prior. Leave a residual stand of desired tree species with good form & appropriate spacing.

**“When”**

Historically, but not necessarily, we conducted most of this work on surface firm conditions at the tail end of winter, very early spring. We try to take advantage of a good snow pack, non-posted roads and premium spring pricing.

**“Where”**

That is up to the landowner. We have conducted thinning's on industrial & non-industrial private landowners in Birch-Aspen, Fir thickets, young Pine and tolerant hardwoods.

**“Why”**

**(IT'S THE RIGHT THING TO DO)** Why not? If the landowner can get excellent silviculture & potentially some stumpage, NO BRAINER.

*Treeline has implemented over 1000 acres of forest stand improvement*

# HARDWOODS





# SOFTWOODS







## MIXED WOOD



In 2008 Treeline made the commitment



***“We are going to do this, FOOL”***

Besides practicing good forestry, we saw Early Entry Thinning’s as an avenue to grow our land base. Large tracts of land that would benefit from this application “*within striking distance*” of Lincoln are abundant. This allows our staff shorter commutes to a land base that is generally less expensive than heavily timbered lots.

# **TREELINE IS IN THE TREE GROWING BUSINESS**

The majority of the thinning work we do is on our own long term ownership “Core Acres” It is done when;

- The market can support it \$
- The right stand make up, preferably 3”>
- Trucking distance 20 miles or less
- Truck turn-around time is advantageous
- Stumpage \$ is low to non-existent
- Lay out is done correctly

When we conduct this work on “outside customers”

Treeline attempts to minimize & absorbs these  
**“RISKS”**



# Mechanical Early Entry Thinning

*(Information gathered from the NRCS Practice Specification Guide)*

The intended use is to increase the quantity & quality of forest products, and improve growth, vigor, and composition of sapling & pole-size stands.

The thinning should take place in stands where trees have matured enough to identify the dominant stems, are adversely affected by competition either from undesirable species or overstocking.

Selection of trees to favor should be based on stand type, stand structure, and the landowner's silvicultural guidelines.

Residual stand should be well distributed and fall within the following ranges of spacing:

Sapling	8' X 8'	or	681 trees/acre
	10' X 10'	or	436 trees/acre
Pole size	12' X 12'	or	303 trees/acre
	15' X 15'	or	194 trees/acre



## CONCERNS

**Operator fatigue, this work is intense. We & our customers have high expectations, our operators know the margins are thin and the work is demanding. Each employee must buy in to the concept.**



# 4,500

**Clicks of the Accumulating Arm  
switch per day**

**&**

**You thought your job was boring?**

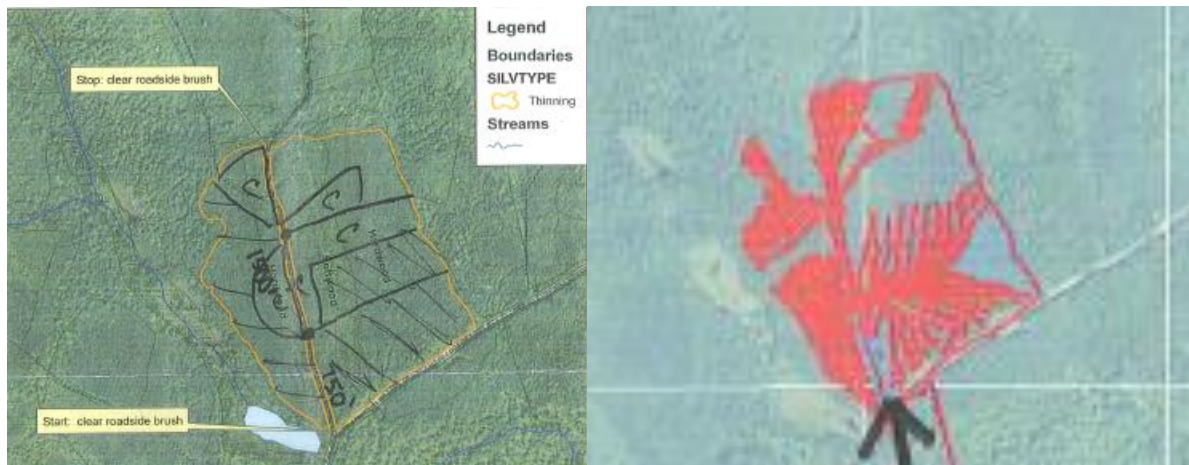






# COMMON SCENARIO

A landowner can conduct this practice thru a cost share program or on their own. Basically a market is secured, a stand of wood is identified and stumpage rate if applicable negotiated. The job lay out is identical to a mechanical harvesting job with the exception of a limber. It's beneficial to increase the size of the "leave strip" and carry your wood to the skid trail. This reduces the skid trail impact on the overall acreage of the block. The fiber gets yarded directly to an awaiting chipper. Cooperation with the receiving mill or having multiple outlets for the fiber is critical to ensure appropriate turn around times.



**CUT BLOCK DESCRIPTIONS:** Typical cut blocks consist of small diameter pole sized trees (2-5 inches). Many are clear cuts from the 80's. Common pre-treatment basal areas are 150 sq.ft. > Use of the pre-existing skid trails is desirable.

**SILVICULTURAL GOALS:** Semi-Commercial Thinning- Leaving the dominant trees that will yield the best growth and quality while removing the low quality suppressed stems. Provide operator with a preferred species list.

**OPERATIONAL INSTRUCTIONS:** Leave the best quality trees that are dominant in the stand. Residual trees left between the skid trails should have an average of 10x10 foot spacing to minimize branch sprouting & sun damage. Average basal area after harvest should be around 60-80 sq. ft. Some landowners request no pulpwood or merchantable round wood sized trees be cut unless it's nothing more than biomass.



# **Non-Industrial Private Landowner Testimonial**

*My brother and I had 2 compelling reasons to enter this property and conduct an early entry thinning:*

- 1). Generate some income from the property.*
- 2). Reallocate growth to the most dominant and vigorous “crop” trees available while capturing volume that would imminently fall out of the stand.*

*We felt that this stand was well suited for this type of work as it was overstocked; however the trees had differentiated themselves enough that the dominant stems had clearly emerged making it very easy for the operator to identify leave trees. Also, there was a component of round wood to be captured (residual trees from the last harvest and some of the thinned trees were of merchantable round wood size). The harvest breakdown was approximately 33% round wood 67% biomass.*

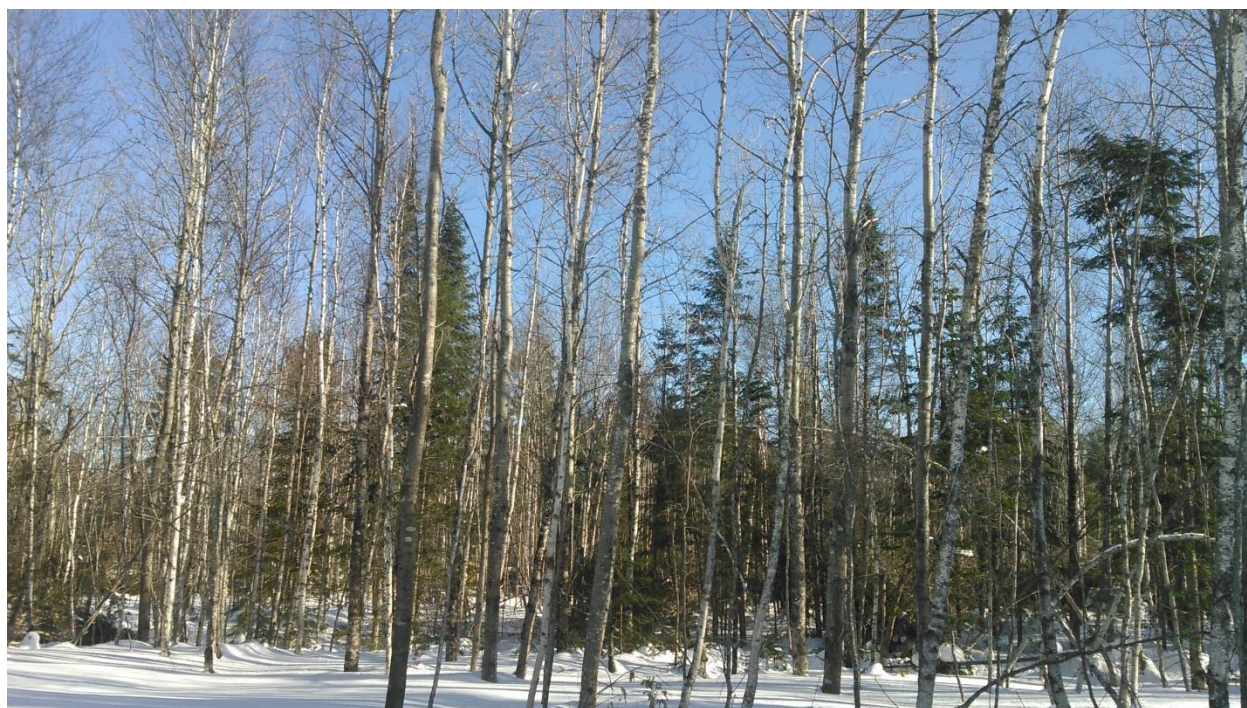
*To this point there has been little if any response to this thinning, however this would be expected as it only has had 1 growing season since the treatment. There has been very little blowdown as most of the trees were the dominant stems and have relatively large live crown ratios. Our biggest concern is a major ice event or even a wet heavy snow storm.*

*The timetable for the next entry is unknown currently and largely depends on available markets and the status of the regenerating stand but we anticipate within the next 15-20 year period.*

*The final key to making this operation a success was having skilled operators who are not only adept at running the equipment but also identifying proper crop trees and otherwise practicing good timber harvesting techniques from the stump to the truck including product merchandizing.*

*Ultimately, with the right markets and stands this is a win-win scenario. We feel the residual stand is healthier and is well positioned for maximum growth. On top of having a valuable stand of trees left we were also able to generate income from the property.*

## BEFORE & AFTER





## BEFORE & AFTER





# WINTER vs. SUMMER





**When we were thinning in earnest our equipment consisted of two CAT 501 Feller-bunchers. These were great machines for this type of work but not perfect. Manufacturers when R&D money is available are working on smaller bunchers with larger hydraulic capacity.**







**When operating in stands that have some pulpwood, we teamed up a Pull Thru De-Limber**





**In the fall of 2014 Treeline Demoed  
equipment specializing in thinning.**



***Tigercat 718E “Drive to Tree Machine”***

***Popular in the plantations of the south, the rubber tired  
configuration didn’t fare well in the wet wild forests of Maine.***





# OUR CURRENT EQUIPMENT



***TIGERCAT 822C***



***TIGERCAT 615C***



[illegible]

The company ended up choosing 822C feller bunchers for the flexibility of thinning and clear felling, & 615C skidders to combat soft soil conditions.



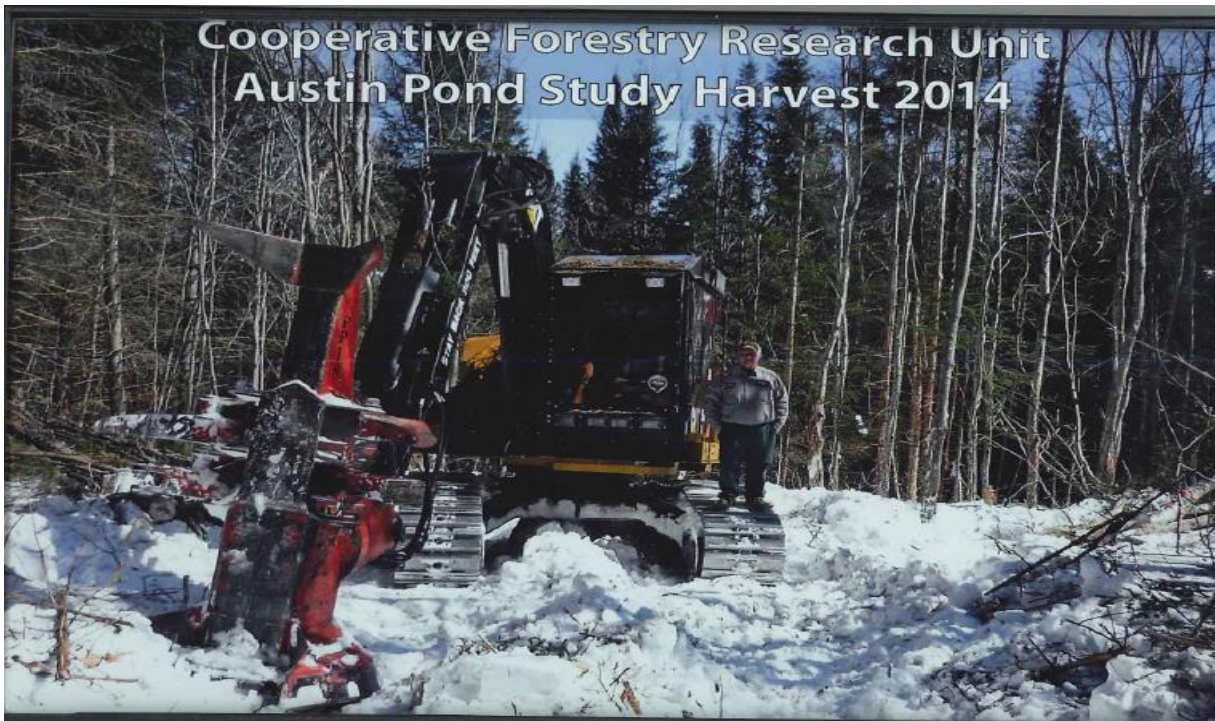
## **Professor Souers swears,**

*The acreage that we have thinned is growing an estimated 1 ton per acre per year of biomass and another ton per acre per year of pulp wood. I have yet to see a clear cut in Maine perform like that. If a clear-cut could in fact grow wood like that, I would suggest we do more clear-cuts! ☺*





For those of you that need *smart-ER people* with an alphabet soup behind their name...



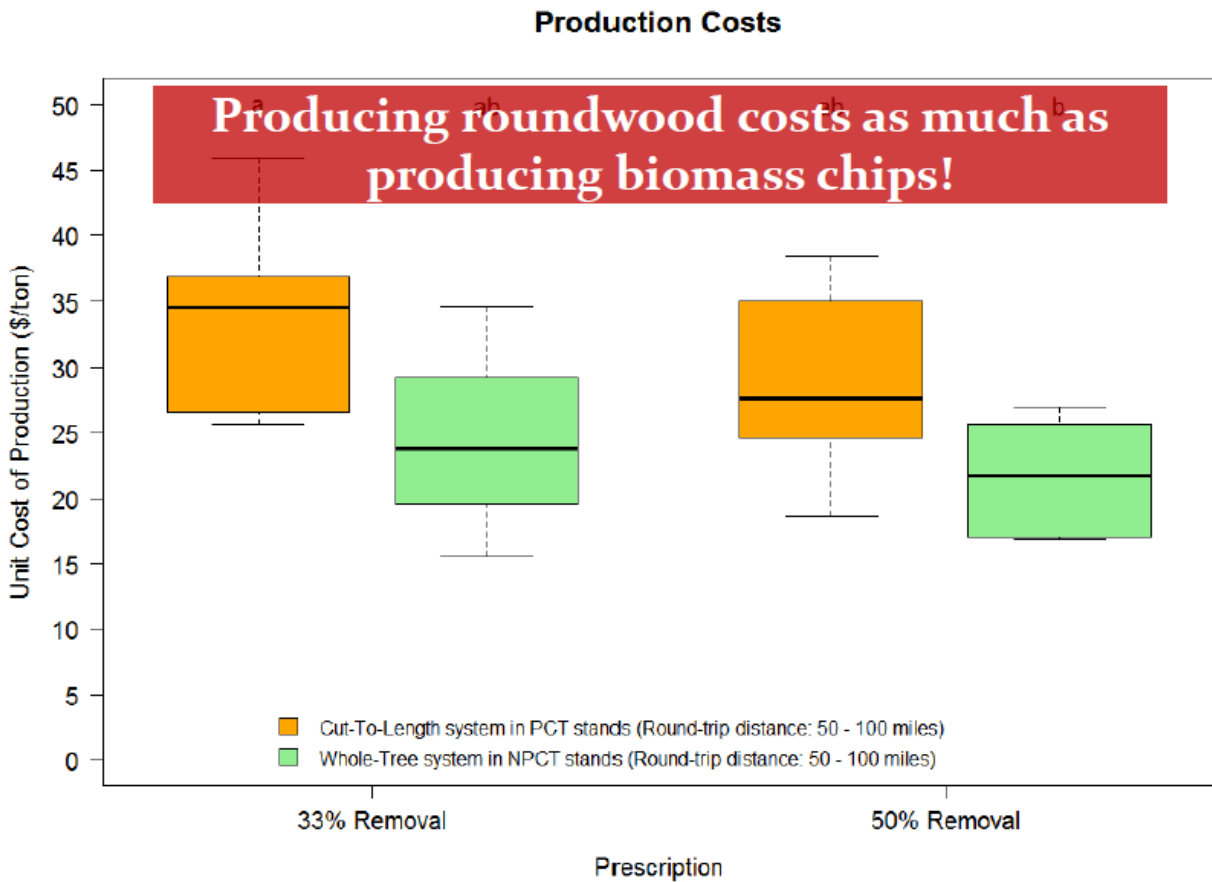
Treeline participated in & data presented here

## PCT/non-PCT Study: Austin Pond - A Case Study -

Patrick Hiesl, Jeffrey G. Benjamin, and Brian E. Roth

Hiesl, P, J.G. Benjamin, and B.E. Roth. [in press]. Evaluating Harvest Costs and Profit on Commercial Thinnings in Softwood Stands in West-Central Maine: A Case Study. The Forestry Chronicle.

# This CFRU slide displays Production Costs <\$25/ton



(NERCOFE Workshop 2015)



## Our data echoes CFRU's findings

### Typical Treeline Cost:

Harvesting		
Skidding		
Pull Thru Delimbing		
Chipping		
		\$27.50
<u>Hauling 20 miles or less</u>	<u>\$6.00/ton</u>	
Total	\$33.50	

**AT 2015 MILL DELIVERED BIOMASS  
RATES**

**“YES”**

*You can AFFORD to invest in your forest*

## **CFRU Bullet Point 1 & 4**

### Take Home Message

- Unit cost of production is similar for roundwood and biomass chips within each prescription
- Profits are similar across both prescriptions for PCT and NPCT plots (including PCT costs)
- PCT allows for sawlog production in shorter period of time, but does not result in a financial gain or loss in this study
- The proposed whole-tree system can economically thin high density stands

**So why not?**

**It's the right thing to do**





*Thank You*