



Does Money Really Grow on Trees?

The Economics & Ecology of Timber Stand Improvement



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BACKGROUND

- Timber stand improvement (TSI) is a forest management technique that enhances future timber volume and value
- White pine (*Pinus strobus* L.) is a major targeted New Hampshire species for TSI
 - Log prices declined after the TSI work was done at the research site
- TSI also produces dead wood in the form of snags or coarse woody debris (CWD), which provide ecological services



Objectives:

- 1.) Determine if TSI work creates a positive return on investment by enhancing timber value.
- 2.) Determine if the value of ecological services provides additional value to the return on investment.

FIELD METHODS

- 127 fixed-radius plots (r=37.5ft.)
- All live trees tallied
- All snags (standing dead wood) tallied
- CWD (lying dead wood) tallied using line-intercept method

DATA ANALYSIS

- Groups: 30 Control plots vs. 97 TSI plots (all years)
 - 5 subgroups (1 Control, 4 TSI by year of treatment)
- Used NED3 forestry computer software for biometrics and timber value (\$)
- Calculated return on investment with interest rate sensitivity (2%, 4%, 6%)

RESULTS–BIOMETRICS CONTROL VS TSI

- Control plots have higher basal area (Table 1)
 - This is expected since they were not treated
- Both TSI and Control plots are predominantly white pine (Figure 1)

Table 1. Total basal area (ft.²/ac.) values.

	Control Plots	TSI Plots
All Species	169.3	159.3
White Pine	64	88.9

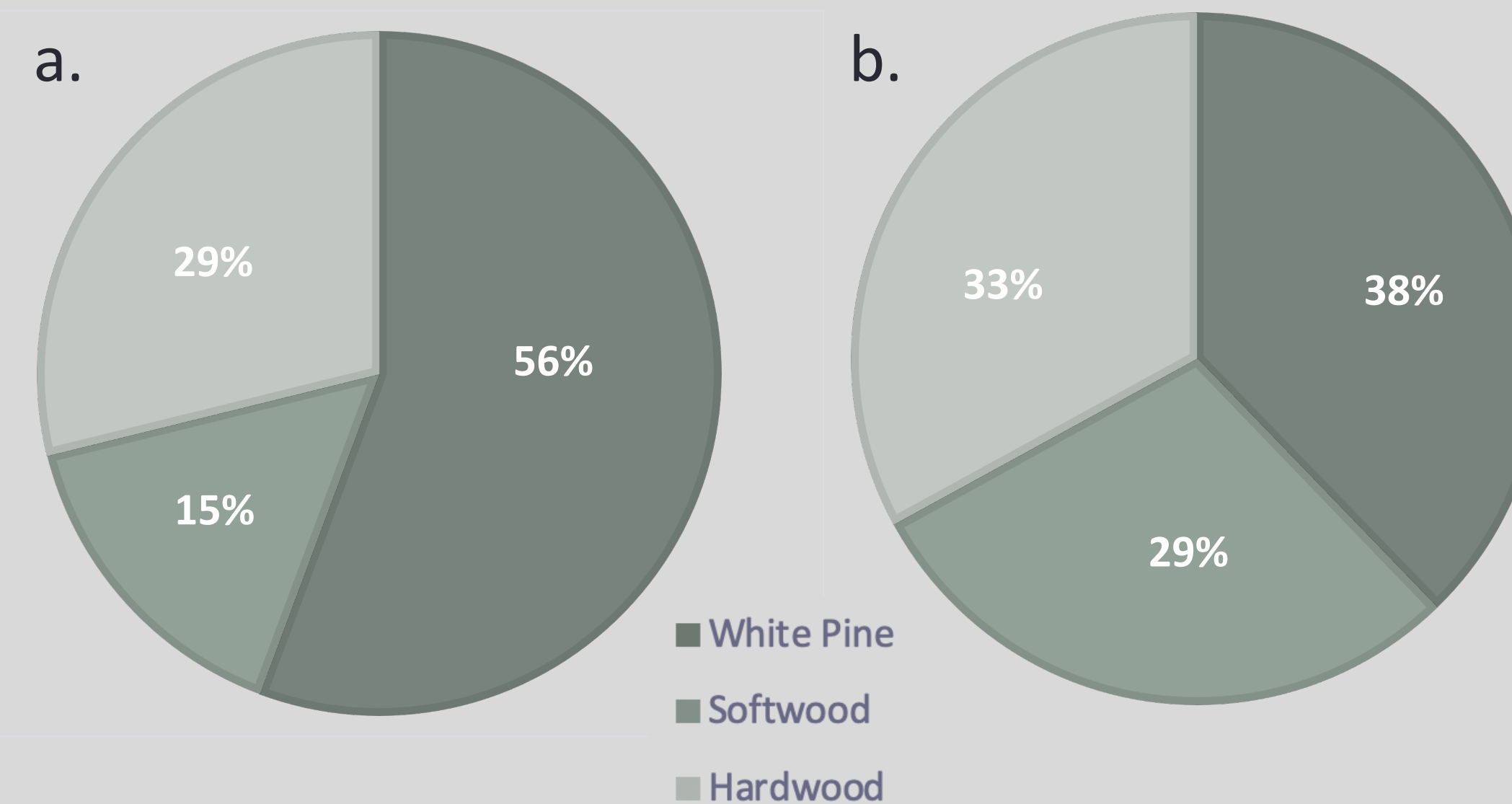


Figure 1. Basal area (ft.²/ac.) by species for a.) all Control plots and b.) all TSI plots.

RESULTS–FINANCIAL ANALYSIS BY GROUP

- Some TSI groups are valued slightly higher than the Control group (Table 2)
 - Group 4 contains less white pine, so values are low
- Of the 6 years we have data for, most see a positive return on investment when considering interest rate sensitivity (Table 3)
 - Once TSI cost is above \$90 we see a negative return on the investment
 - When calculating net return on investment we get a negative value

Table 2. Total log values (\$/ac.) by group with treatment years. Groups 1-4 contain TSI plots, Group 5 contains all Control plots.

	Group 1 ('89-'91)	Group 2 ('92-'94)	Group 3 ('95-'99)	Group 4 ('00-'03)	Group 5 Control
All Species	\$1,290.67	\$1,886.33	\$1,772.17	\$1,228.22	\$1,503.80
White Pine	\$1,123.76	\$1,350.86	\$1,242.19	\$424.87	\$957.24

Table 3. Results of interest rate sensitivity calculations for TSI plots for the 6 years we currently have cost data for using values from Table 2. A "+" denotes positive return on investment and a "-" denotes negative return on investment for that year.

	1992	1993	1994	1998	2002	2003
Average TSI Cost (\$/ac.)	63	73	86	90	100	100
All Species at 2%	+	+	+	+	-	-
White Pine at 2%	+	+	+	+	-	-
All Species at 4%	+	+	+	+	-	-
White Pine at 4%	+	+	+	+	-	-
All Species at 6%	+	+	+	-	-	-
White Pine at 6%	+	+	+	+	-	-

CONCLUSIONS & FUTURE DIRECTIONS

- Based on current data, differences in timber value appear to justify TSI at low interest rates.
- Additional questions:
 - What, if any, extra value can be added from snags and CWD?
 - How would financial results look like if log prices had continued an upward trend?

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