

# Vermont Forestland Current-use Value Tax program: Measures of Success

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- No significant differences in stand characteristics between forest survey plots in the Current-use program and those not enrolled
- Harvested plots in the Current-Use program showed evidence of forest management compared to harvested plots not enrolled

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<http://www.uvm.edu/envnr/nsrc/>

# Project Summary

In 1989 we published a study comparing timberland in Vermont's Use Value Appraisal (UVA) Property Tax Program with timberland not enrolled in the program based on forest inventory data collected in 1983 by the USDA Forest Service (Sendak and Dennis 1989). We concluded that timberland enrolled in the program mirrored Vermont timberland in general. We hypothesized that future forest inventories should begin to show evidence of forest management on UVA enrolled timberland since the program requires active forest management but we assumed that a large proportion of non-UVA timberland would not be actively managed.

The first opportunity to test this hypothesis was the forest inventory conducted in 1997 (Frieswyk and Widmann 2000). Our objective was to compare plots enrolled in UVA to eligible plots not enrolled in the program using the 1997 survey data provided by the USDA Forest Service. We examined differences in key plot variables between the two enrollment categories that might constitute evidence of active forest management.

We found no significant differences ( $\alpha = 0.05$ ) between UVA and non-UVA plots for all live trees ( $\geq 5$ -in. DBH) for trees/ac, basal area/ac, gross and net sawtimber volume, and gross and net growing stock volume. The same result held when we tested subsets of the data based on the most predominant forest types—northern hardwoods, white/red pine, and spruce/fir. Similarly, there were no significant differences between UVA and non-UVA plots for harvested trees and mortality for trees/ac, basal area/ac, and volume by the three forest types.

However, on plots that were recently harvested (since the 1983 inventory) it was clear that UVA plots had significantly greater basal area and volumes prior to harvest. Analysis of weighted tree grade also indicated significantly higher grade for white pine on UVA plots. Differences in species composition, although not tested, did reveal greater numbers of trees of desirable species that could be the result of active forest management.

We conclude that based on Forest Service forest inventory data, forestland in the UVA property tax program in Vermont shows evidence of purposeful forest management activity, especially on plots that were recently harvested (between 1983 and 1997). The most important goal of the UVA program is to prevent the accelerated conversion of enrolled lands to more intensive use by property taxes incompatible with the productive capacity of the land. Our results are encouraging in that they show measurable benefits to forest management under UVA.

# Background and Justification

- Property taxes based on current land use such as forestry as opposed to potential “highest and best” use offer an opportunity to conserve forest land and encourage good forest management in Vermont
- Vermont’s current-use tax law has been in operation since 1977

- There have been no measures of success of the program in achieving its stated goals of improving forest management and protecting the natural ecosystem
- Without such measures, the efficiency of such programs in meeting these goals can not be fully assessed

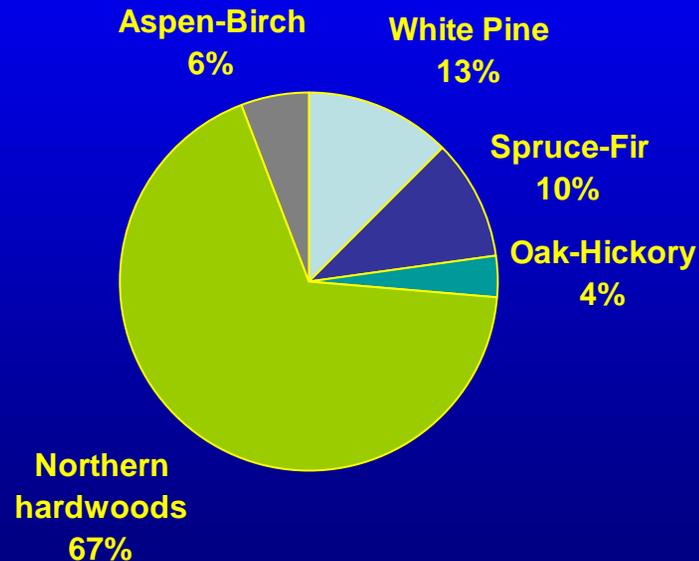
- Two forest surveys have been conducted in Vermont, in 1983 and 1997, by the USDA Forest Service
- We hypothesize that plots enrolled in the tax program should begin to show measurable evidence of improved forest management activity after 20 years
- We proposed that such evidence may be detectable at the scale of statewide forest inventories

# Methods

- Acquired Vermont forest inventory data from the USDA Forest Service for 1983 and 1997 surveys
- Identified plots in the Vermont UVA Forestland Tax Program
- Compared key stand metrics on UVA plots with non-UVA plots

# Results

- There were no differences in the proportion of plots in major forest-type groups between UVA and non-UVA plots



- There were no statistically significant differences in key stand metrics in 1997 either by all plots or by forest type (not shown)

	UVA plots (n = 98)	Non-UVA plots (n = 408)
Trees per acre	195	197
Basal area (ft <sup>2</sup> /ac)	107	102
Gross sawtimber volume (bf/ac)	6,388	5,804
Net sawtimber volume (bf/ac)	5,685	5,102
Gross growing stock volume (ft <sup>3</sup> /ac)	2,657	2,510
Net growing stock volume (ft <sup>3</sup> /ac)	2,292	2,160

- About a third of plots, UVA and non-UVA had evidence of harvest activity, but there were no differences in removals: number of trees, basal area, and volume removed per acre

	UVA plots (n = 33)	Non-UVA plots (n = 150)
Trees per acre	62	62
Basal area (ft <sup>2</sup> /ac)	39	47
Gross sawtimber volume (bf/ac)	2,773	3,116
Net sawtimber volume (bf/ac)	2,408	2,669
Gross growing stock volume (ft <sup>3</sup> /ac)	993	1,206
Net growing stock volume (ft <sup>3</sup> /ac)	835	903

- UVA plots prior to harvest had significantly larger trees and greater volumes per acre ( $p \leq 0.05$ )

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	UVA plots (n = 33)	Non-UVA plots (n = 150)
Trees per acre	185	175
Basal area (ft <sup>2</sup> /ac)	116	92
Gross sawtimber volume (bf/ac)	6,691	5,041
Net sawtimber volume (bf/ac)	5,854	4,340
Gross growing stock volume (ft <sup>3</sup> /ac)	2,900	2,250
Net growing stock volume (ft <sup>3</sup> /ac)	2,315	1,873

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- Mean tree grade, weighted by value, differed for pine ( $p \leq 0.05$ ) but not other species between UVA and non-UVA plots; however grade was higher on UVA plots (the lower the number the higher the grade)

	UVA plots	Non-UVA plots
White pine <sup>1</sup>	2.11	2.78
Sugar maple	2.64	2.82
Red maple	2.82	2.85
Birch <sup>2</sup>	2.72	2.89
Northern red oak	1.96	1.97

<sup>1</sup> Pine sawtimber  $\geq 9.0$ -in. DBH; hardwood  $\geq 11.0$ -in DBH.

<sup>2</sup> Includes white and yellow birches.

The most important goal of the UVA program is to prevent the accelerated conversion of enrolled lands to more intensive use by property taxes incompatible with the productive capacity of the land. Our results are encouraging in that they show measurable benefits to forest management under UVA.

# Implications to the Northern Forest region

- All states in the Northern Forest region have some form of modified property tax assessment for forestland
- All recognize that property taxation at “highest and best” use often can be an obstacle to forest management and keeping forestland undeveloped
- Current use taxation of forestland is one method of slowing the rate of conversion from working forest to development

# Future directions

- A more detailed analysis of a smaller sample of UVA properties that have a Forest Service inventory plot
- The results of forest management activity can be monitored more frequently now that the sample design for forest survey plots has been standardized and the annual inventory procedure has been adopted
- Compare the performance of current-use programs across the 4-state region

# List of products

- A research paper is planned to present the results of the study