

2015

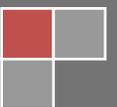


# Landscape-Based Forest Stewardship

in the Windham Region of  
Southeastern Vermont

Windham Regional Commission, Brattleboro, Vt.

3/25/2015



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## Photo credits

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# Introduction

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## The Importance of Forests to the Windham Region

Forests, in one form or another, dominate the landscape in the Windham Region. They have been an important driver in the historical development of the area, provide crucial resources today, and will continue to be an important asset in developing a prosperous and sustainable future. In spite of the prominent role that forests play in our communities, they may be overlooked or afforded minimal discussion in Town Plans, often lumped into an all-encompassing ‘Natural Resources’ section. With this project, the Windham Regional Commission (WRC) seeks to give our forest resources the attention they deserve by employing a “landscape stewardship” approach to planning for their continued vitality.

The purpose of landscape stewardship planning is to foster a comprehensive understanding of existing forest resources and then develop strategies that will support the overarching goal of “keeping forests as forests.” The first step in this process is to recognize that forests exist in a variety of different landscape settings. For instance, this region is home to vast unbroken woodlands in the Green Mountain National Forest, several large blocks of privately owned forest lands such as those in Windham, Grafton, Londonderry, Townshend, Marlboro, and Halifax, and prominent conservation projects such as those of the Windmill Hill Pinnacle Association and Putney Mountain Association. Interspersed with these are smaller woodlots and farmland in rural areas, and forested parcels in and around villages; these represent significant forest resources that are equally important, yet are valued for different reasons.



*birch and beech, Stratton Mountain*

A critical component to landscape stewardship planning is recognizing the variety of interest groups and viewpoints that have a stake in this region’s forests. An effective planning process must involve those stakeholders and incorporate the diversity of values and opinions represented. To this end, the Windham Region Forest Stewardship Steering Committee was created.

## Windham Region Forest Stewardship Steering Committee

The Forest Stewardship Steering Committee was comprised of individuals from across the region, all of whom are currently involved in forest-related work. The committee met several times in 2013 and 2014 to discuss what barriers our region faces in maintaining forested lands, and what

kinds of strategies we will need to enhance and sustain their health. Committee members also provided comments on this document. The committee was comprised of:

<b>Name</b>	<b>Organization</b>
Hal Himmelstein	Hogback Mountain Conservation Association
Lynn Levine	consulting forester - ForestCare
Andy Toepfer	WRC Natural Resources Committee
Bill Guenther	Windham County Forester
Ian Martin	consulting forester – Northwoods Farm & Forestry
Patti Smith	Bonnyvale Environmental Education Center
Pieter Van Loon	forester – Vermont Land Trust
Matt Hoffman	landowner
Dan Healey	forester – Long View Forest Consulting
Randy Naggs	Marlboro College
Craig Stone	small sawmill operator
Jack Caveney	Cersosimo Lumber Company
Logan Sears	forester – Long View Forest Consulting

Oversight and comments on this project were also provided by the WRC Natural Resources Committee; in particular, committee member John Whitman is acknowledged for this in-depth guidance and suggestions.

WRC had two staff members assigned to this project. Dinah Reed did the initial work on the project, while Jeff Nugent created the maps and did the final report writing.

The Windham Regional Commission, in the absence of county government, provides the essential link between local, state and federal government. The Commission is a public entity, constituted by law and required to meet statutory obligations. The WRC is an important resource to the 27 towns of the Windham Region in Windham, Windsor, and Bennington counties. Its mission is to assist towns in Southeastern Vermont to provide effective local government and work cooperatively with them to address regional issues. Towns choose to be members of the WRC.

# Objectives

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## Project Objectives

The objective of this project is not to prescribe any given solution or action to individual communities or landowners. Rather, the overall objective of this planning effort is to provide information and tools needed by both the public and private sectors to responsibly steward the region's forests. The following three specific objectives summarize the overarching goals of this project.

### **Identify Key Forest Resources and Constraints**

A necessary first step is to understand and describe the regional context of the forest resources in the Windham Region. The types of forest resources found in the region are discussed, along with an overview of prevailing land use patterns and demographic and economic characteristics, including the type and extent of existing forest-based land uses. The compilation and assessment of forest resource values was based on information derived from consulting the Forest Stewardship Steering Committee, existing local and State plans, and meetings with municipal Conservation Commissions and other interested parties. Those resource values were mapped at a regional scale using WRC's geographic information system. Mapping of these resources on a regional scale represents a departure from many past efforts related to forest stewardship. Forest resources have generally been mapped at statewide scale, which is too coarse to highlight important regional issues, or on a fine parcel level scale on which resources and values that cross property boundaries may not be evident, missing the proverbial forest for the trees. The intermediate regional scale provides a broader landscape level picture of the region's forest with a level of detail that can still be observed.

### **Support and Enhance Important Regional Forest Values**

The region's forests support a wide array of regional values, including their economic value to the forest products and outdoor recreation industries, the value of ecosystem services such as forest's role in cleaning air and groundwater, the value of wildlife habitat, and the intrinsic cultural value of forests. A major objective of this project is to strike a balance between these sometimes competing objectives that both satisfies the needs of various stakeholders and strengthens the long term health of the region's forests and the communities that depend upon them.



*Haystack Pond - Wilmington*

## **Develop Strategies to “Keep Forests as Forests”**

“Keeping forests as forests” does not mean that the Windham Region’s forests and their uses will not, or should not, change over time. A forested landscape is a dynamic system that is constantly changing. In fact, as discussed throughout this report, sound land management activities may actually improve the current health of region’s forests. Rather, “keeping forests as forests” means proactively addressing the challenges and limitations to sound forest management so that the forests may continue to support their important values. This report lists methods commonly used to support forest stewardship and ends with a list of suggested activities, or action steps, aimed at encouraging responsible forest stewardship into the future.

## **Project Components**

This forest stewardship project has three separate though integrated components.

### **Report**

One obvious component of this project is this regional forest stewardship report, which presents existing conditions, identifies threats to forest stewardship, discusses methods that support forest stewardship, and lists suggested action steps for the Windham Region.

### **Municipal Outreach**

In order to ensure that action takes place, this project has a municipal outreach component. For the Windham Region, the WRC is working with two towns, Guilford and Halifax.

Guilford has the third-highest amount of acreage in the Windham Region classified as “high forest stewardship potential.” It is close to Brattleboro and fragmentation is a concern. Particularly important is that the town is updating their town plan, which is set to expire in June 2015, making work with the town timely. Work will include assistance with town plan review and policies, landowner outreach, and trail planning.

Halifax is currently involved in a zoning bylaw update. It has the highest amount of acreage in the Windham Region classified as “high forest stewardship potential.” In the past, it has had issues with development on Class 4 town highways and legal trails. Work will include assistance with town plan review and policies, and strengthening their zoning bylaw to promote forest stewardship.

### **Web Mapping Interface**

Much of the information found on the maps in this report will be available through a statewide web mapping interface being development as part of this project. This work is being done by the

Vermont Agency of Natural Resources and coordinated by the Lamoille County Planning Commission. A web mapping interface will make this data easily accessible to natural resource professionals (including foresters), landowners, and policy makers. It allows a user to view any number of data layers in any combination, at a variety of scales, including a statewide, region-wide, or at the parcel level.



# Regional Characteristics

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## Land Use

The Windham Region is predominantly rural, with the vast majority of the land being undeveloped. Almost 86 percent of the total land area, or 516,000 acres, is forested, while only 6 percent is open. Less than 5 percent of the region falls into urban or built up areas that include residential, commercial, industrial, and public and semi-public uses. The remaining 3 percent is covered by water or wetlands.<sup>1</sup>

Map 1 - Landscape Classification, is created from data developed by the Vermont Department of Forests, Parks, and Recreation (VT FPR), which classifies the state into three landscape zones: urban, rural residential (further divided into forested and non-forested), and rural. The map shows the urban areas of Brattleboro and Bellows Falls, along with development associated with the ski resorts of Mt. Snow and Stratton Mountain. Rural Residential lands predominate in the towns along the Connecticut River, in the Deerfield Valley, and in the upper West River Valley. Smaller blocks of Rural Forestland are found in the central part of the region, while large contiguous blocks, much of it in the Green Mountain National Forest, are in the region's west.

Seventy-two percent of the region's forests are in private, non-industrial ownership, with industrial firms and Federal, State and local governments sharing the rest. The headwaters of the region's major streams and rivers are buffered by forestland, preserving soils and water purity at the source. Nevertheless, steady population growth, dispersed settlement patterns, and second-home development have increased development pressure in forested areas.<sup>2</sup>

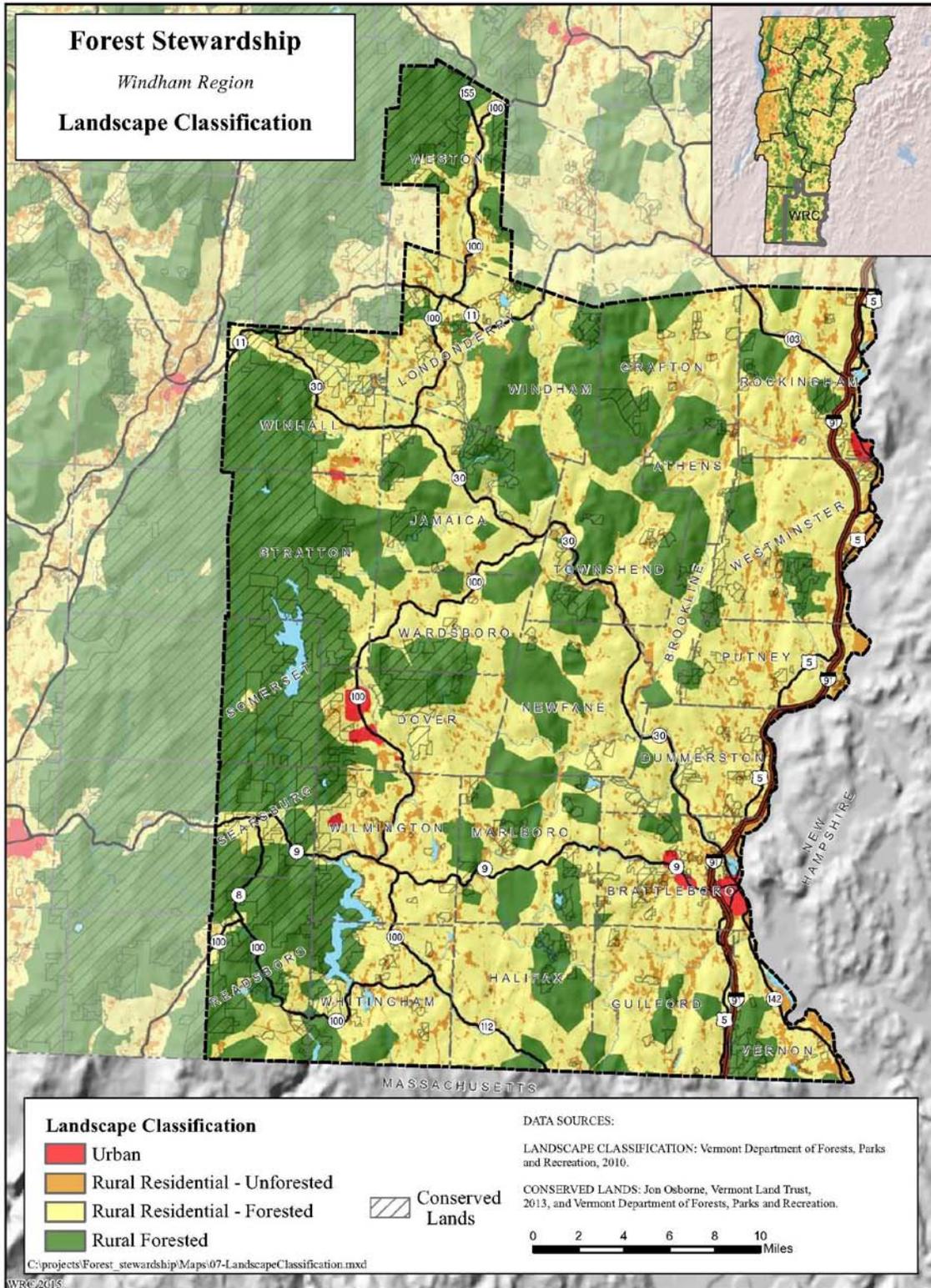
Roughly 22 percent of the land area in the region is conserved, either through conservation easements on public and private lands, through ownership by local, state and federal governments, or through preserves owned by conservation organizations. Many of the remote lands in the western part of the region are under some form of conservation protection, most notably as public lands in the Green Mountain National Forest. These federal lands represent the largest contiguous area of conserved lands in the region. Seventeen of the region's 27 towns own parcels of undeveloped land—mostly as municipal forests—used for watershed protection, recreation, and/or forestry.<sup>3</sup>

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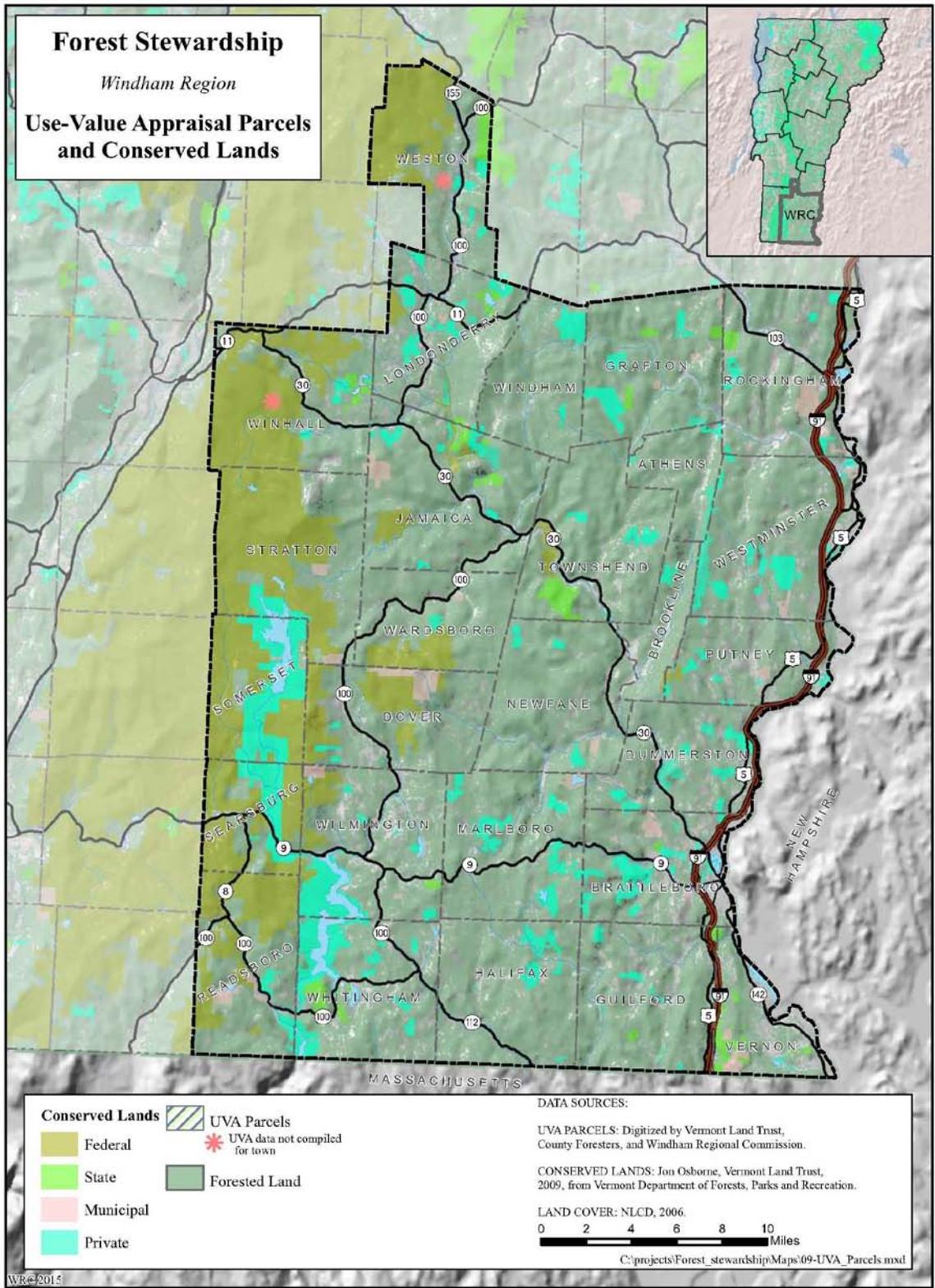
<sup>1</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 67.

<sup>2</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 141.

<sup>3</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 69.



Map 1 - Landscape Classification



Map 2 - Use Value Appraisal Parcels and Conserved Lands

Since its inception in 1980, the Current Use Program (more properly called “Use Value Appraisal”) has increased awareness of the value of conservative timber management by providing state funded tax relief for landowners who agree not to develop their land and to practice forestry according to state-approved forest management plans. At this time there are approximately 140,000 forested acres, or 27.6 percent of forests in the Windham Region, enrolled in the Use Value Appraisal Program. This constitutes nearly 50 percent of the land that is eligible.<sup>4</sup>

Map 2 - Use Value Appraisal Parcels and Conserved Lands, shows the locations of public conserved lands (i.e. publicly-owned), private conserved lands (generally a conservation easement on private land or land owned by a conservation organization), and parcels enrolled in Use Value Appraisal (conserved Lands are also shown on Map 1, and Map 5).

## Demographics

The population of the 27 communities that make up the Windham Region, as reported by the 2010 US Census, totals 46,720. Since 1950, the Windham Region has experienced uninterrupted population growth. The greatest population growth occurred from 1980 to 1990 with a 12.5% increase in population. The statewide growth during that same time period was 10%. From 1950 to 2000, the average ten year growth in population was 7.9%. However, the most recent decade has seen a substantial decrease in the rate of population growth. The decade from 2000 to 2010 saw only a 0.6% increase in population for the Region. No decade in the last seventy years had seen such a low rate of growth.<sup>5</sup>

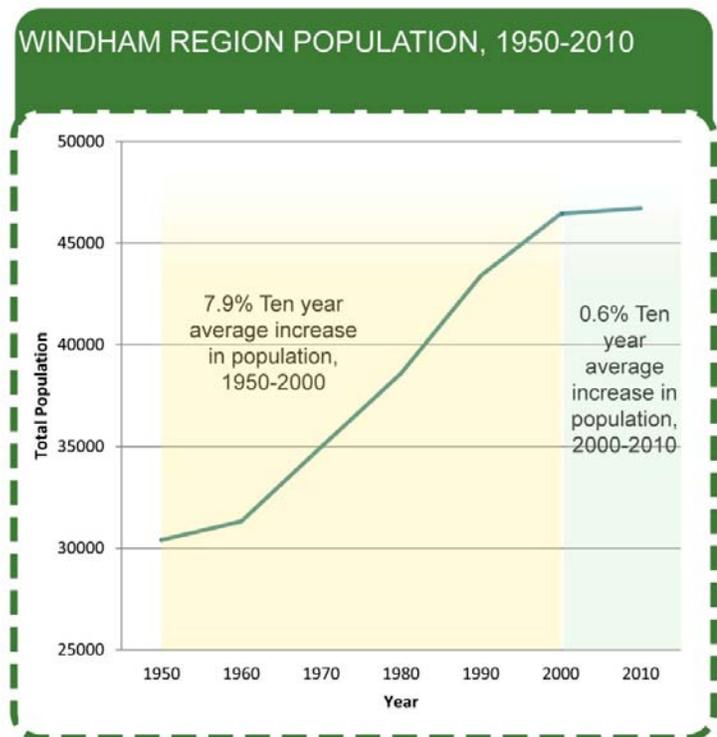


Figure 1- Windham Region Population, 1950-2010  
Source: US Census Bureau

<sup>4</sup> Windham Regional Commission, “Windham Regional Plan,” 2014, p. 69.

<sup>5</sup> Windham Regional Commission, “Windham Regional Profile,” 2014, p. 1.

Perhaps the most significant demographic trend for the Windham Region is its aging population. The population age groups from 0 to 44 years have all seen reductions in population over the last twenty years, while the age groups 45 years and older have seen increases. The fastest growing age groups since 2000 are 55 to 59 and 60 to 64, which continues the trend seen in previous years. The aging of the resident population and in-migration are contributing to the increases in these age groups. By contrast, the number of people aged 35 to 44 experienced a 30.5% decrease.<sup>6</sup>

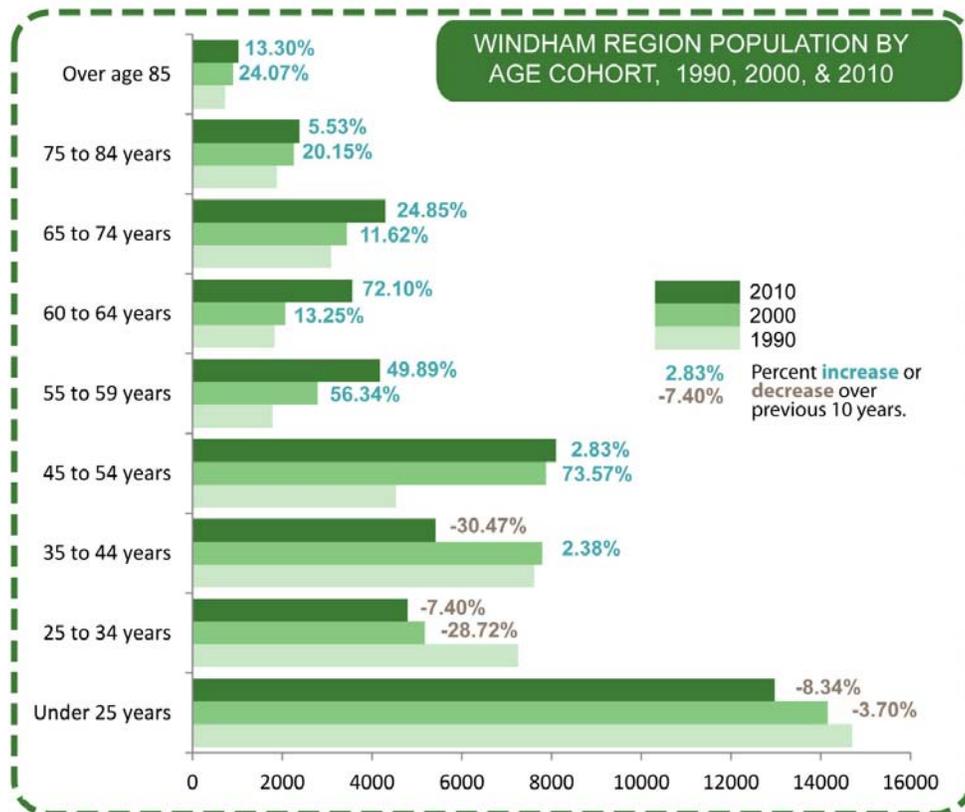


Figure 2 - Windham Region Population by Age Cohort, 1990, 2000, & 2010  
Source: US Census Bureau

In 2010, about 19.8% of the population was under the age of 18. The working age population, those aged 18 to 64, accounted for 63.7% of the population, and about 16.5% were senior citizens age 65 years and older. 2010 Census data show a significant dip in the population of residents ages 20 to 40 years old. It is believed that this trend indicates a substantial proportion of young adults leaving the area, to attend college or for other reasons, after completing high school.<sup>7</sup>

<sup>6</sup> Windham Regional Commission, "Windham Regional Profile," 2014, p. 6.

<sup>7</sup> Windham Regional Commission, "Windham Regional Profile," 2014, p. 5.

These demographic trends have implications on forest stewardship in the Windham Region. An aging population means a smaller pool of people to enter the forest products industry workforce. About 86% of Windham County's land is in private ownership, the vast majority being non-industrial, and according to Morin, (pg. 29), 95% are 45 years or older, 30% are over 65.<sup>8</sup> The children of these owners may not live locally and may not be interested in forest land ownership, or good forest stewardship. These issues are discussed in more detail in the Threats chapter.

## Economic Conditions

### The Regional Economy

The region's economy is influenced by many external forces such as conditions in the global marketplace, demographic trends, transportation infrastructure, local and state regulations, communications technology, and the cost and availability of energy. In the period between 2008 and 2012, the American Community Survey estimated that the median household income was 5.6 percent lower in Windham County (at \$51,113) than for the State of Vermont (\$54,168). Generally, average wages in Southeastern Vermont are lower than nearby markets.

The Windham Region's labor force decreased significantly from 2000 to 2010, similar to labor decreases across the country, as a result of the "Great Recession" that began in 2008, shrinking by 5.3 percent, or 1,369 people, during that period. This more than halved the increase the region experienced from 1990 to 2000, and put the 2010 labor force at only 661 people more than the 1990 labor force. In both 1990 and 2000, approximately 70 percent of the population over age 16 participated in the labor force, compared with 62.8 percent in 2010.

Unemployment statistics indicate job growth in the region, but the industry-specific statistics still show large losses across many fields.<sup>9</sup>

In 2011, *Service Providing* industries accounted for 70.6 percent of the region's employment, while *Goods Producing* industries (which includes forestry) accounted for 16.0 percent and the *Government* sector accounted for 14.0 percent. The region's continued long-term economic shift away from agriculture, natural resources and manufacture of durable goods to the service industries reflects a statewide trend that began in the 1970's.<sup>10</sup>

### Non-Industrial Economic Benefits

Though much more difficult to quantify than the forest products industry, the forests of the Windham Region directly and indirectly support many non-timber-based businesses. Tourism and

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<sup>8</sup> Morin, Doug, "The Forest Products Industry of Windham County Vermont: Status, Challenges, and Opportunities," completed as part of the University of Vermont Masters in Natural Resources program, 2012, p. 29.

<sup>9</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 127.

<sup>10</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 128.

second home ownership are both big in the region (33.4% of housing in the Windham Region is seasonal). The Leisure and Hospitality sectors of employment are significant, with much of it being supported by people who visit here. The rural character, public lands, recreational opportunities, and solitude are all big draws.

*The Economic Importance of Vermont's Forest-Based Economy, 2013*, a publication by the North East State Forester's Association, notes that a great deal of Vermont's outdoor recreation takes place primarily in the forest, and is vitally linked to the forest. But "the extent of that link and the specific contribution by the forest environment to recreation and tourism expenditures can be difficult to quantify." Still, the report notes Vermont's "forest-based recreation economy ... plays an important role, contributing nearly as many jobs and generating even more revenue than the wood-based economy." Fall foliage viewing, with a very strong link to the forest, accounts for nearly half of the State's forest-based recreation economic activity.<sup>11</sup>

## Overview of Regional Forest Characteristics

Forests play a major role in the ecological, economic, and social health of the region. As a major component of our landscape, forests form the environmental setting for human activity, furnish habitat for wildlife, contribute to water and air quality, and make a significant contribution to reducing climate change effects through carbon sequestration. They provide employment to foresters, loggers, truckers, artisans, and forest-product manufacturers, and also support a thriving recreation and tourism industry. In an increasingly populous and urban world, the region's forests offer reminders of Vermont's heritage and a traditional, rural lifestyle that appeal to residents and visitors alike.<sup>12</sup>

Forestland values include:

- Productive forest soils;
- Timberlands;
- Plant and wildlife habitats;
- Riparian areas and wetlands;
- Unique and fragile sites;
- Recreational opportunities;
- Scenic quality; and
- Historical/cultural/archeological sites (stone walls, foundations, stage roads, etc.).

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<sup>11</sup> North East State Foresters Association, "The Economic Importance of Vermont's Forest-Based Economy," 2013.

<sup>12</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 142.

## Biophysical Context

Vermont is divided into eight biophysical regions, each with a unique combination of climate, geology, topography, and vegetation. Two of these regions cover southeastern Vermont (see Map 3, Biophysical Regions with Land Cover). The Southern Vermont Piedmont occupies the eastern two-thirds of the Windham Region. It is characterized by rolling foothills and major river valleys, with oak, northern hardwood, and pine forests. The Southern Green Mountains covers the remainder of the region. The dominant topography is more of a broad plateau with a few prominent peaks. The climate here is cooler and wetter than in the Piedmont. Northern hardwood forests dominate the landscape, with spruce-fir at higher elevations and in the cooler valleys. Many wetlands are also found here.<sup>13</sup>



*softwoods on the summits and long waterways - Stratton*

## Land Cover

Vermont is one of the most heavily forested states in the country, and the Windham Region is heavily forested as well. Almost 86 percent of the total land area is forested. The region is one of the leading producers of timber in Vermont, especially of high quality northern hardwoods and white pine. Windham County also has the most standing timber in the State, at 3.46 billion board feet. Only 6 percent of the land area is open, and less than 5 percent of the region falls into urban or built up areas that include residential, commercial, industrial, and public and semi-public uses. The remaining 3 percent is covered by water or wetlands. (see Map 3 - Biophysical Regions with Land Cover)

Large tracts of core forests (some of the largest in the state), with scattered wetlands and ponds, are the dominant land use along the western edge of the Windham Region. There is limited development, and much of the land is part of the Green Mountain National Forest or owned by the utility TransCanada (and under a conservation easement). To the east are ski areas and their associated development, small villages and hamlets, forests, and some significant open lands in Londonderry, Wilmington, and Whitingham.



*West River and Bald Mtn. - Townshend*

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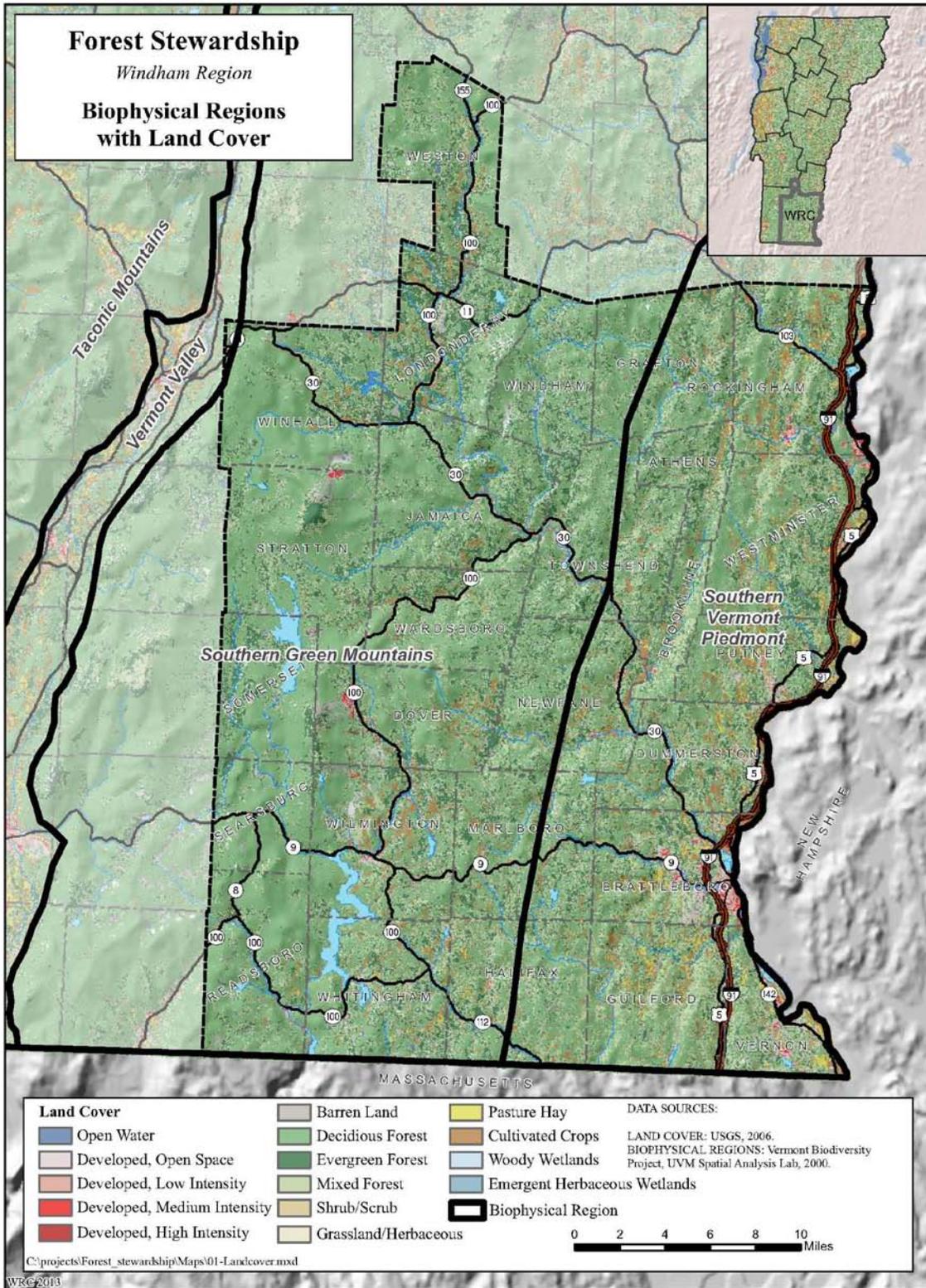
<sup>13</sup> Thompson, Elizabeth H., "Vermont's Natural Heritage: Conserving Biological Diversity in the Green Mountain State," a report from the Vermont Biodiversity Project, 2002, p. 24.

The central part of the region is heavily forested, but with low density development and some small openings of agricultural lands. The forested blocks here are of considerable size with many over 3000 acres, and eight blocks ranging from 5000 to 20000 acres. While not in the Green Mountains proper, the terrain here is often steeper than in the western-most part of the region.

The eastern portion of the region is part of the Connecticut River valley, where the largest urban centers of Brattleboro and Bellows Falls are found. Low to moderate density residential development, and the Region's most significant agricultural lands, are located here. Forests tend to be smaller, though timber harvesting is still common.



*Hardwood and softwood - Brattleboro*



Map 3 - Biophysical Regions with Land Cover

# Forest Resource Values

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## Forest Productivity

Windham County has the greatest standing volume of trees of any county in Vermont, at 1.4 billion cubic feet.<sup>14</sup> Map 4 – Forest Productivity and Timber Resources, shows lower and higher forest productivity forested blocks over 500 acres in size. Productivity was determined by considering geology, elevation, hardiness zones, landforms, slope, and precipitation.<sup>15</sup>

It is obvious that the western part of the region, with its thin rocky soils, higher elevation, and high precipitation, is much less productive than the central and eastern parts of the region. Land ownership in the west is comprised of larger parcels, often in public ownership or private ownership but under a conservation easement.

The central and eastern parts of the region have soils and climate more conducive to growing timber, and this area helps make Windham County arguably the leading county in the state for growth rates, timber production, and timber value.



*county forester measuring the state champion white ash – Westminster*

## Economic Values

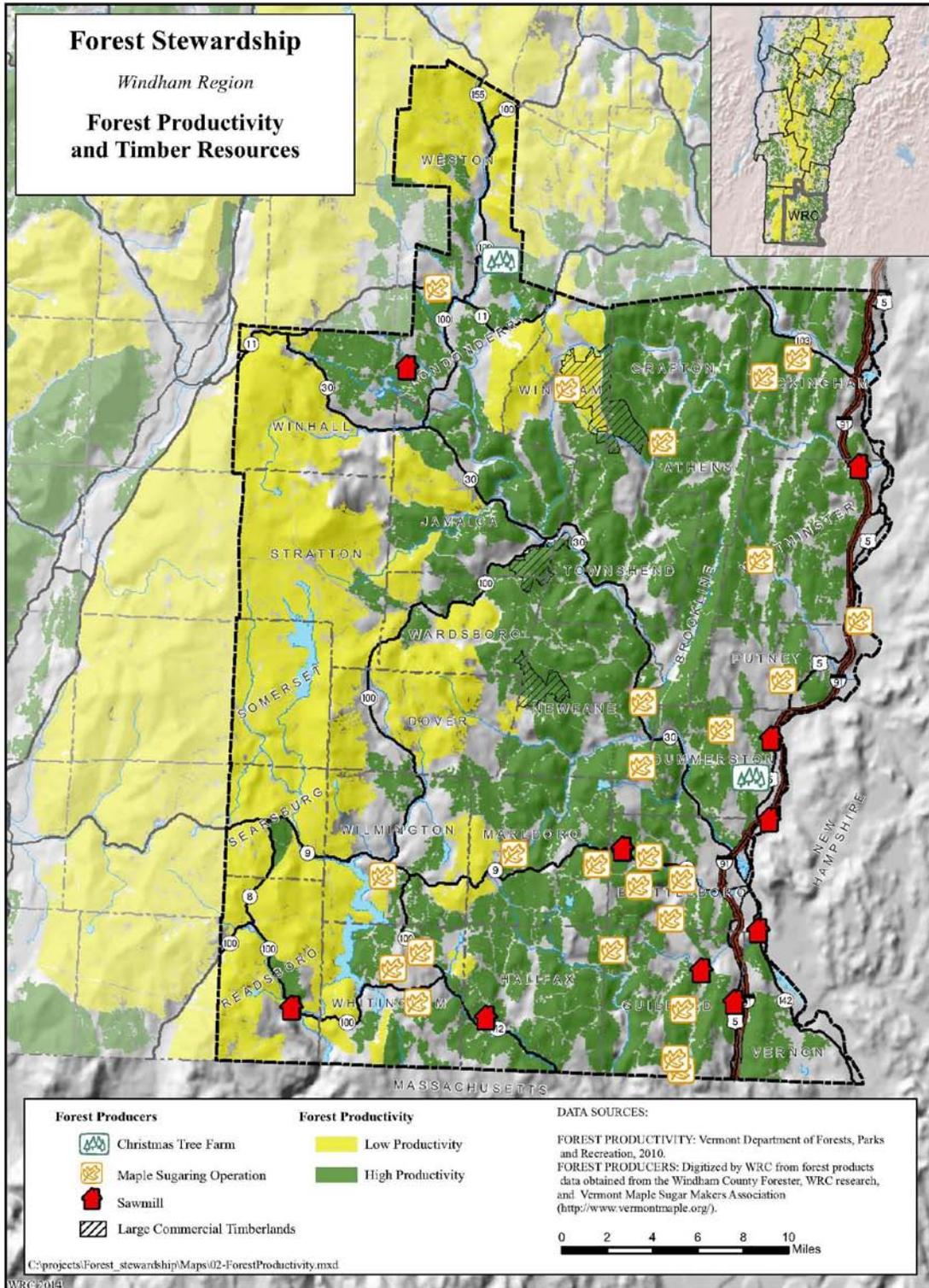
Forests are one of the region's most important economic resources. Approximately 86 percent of the region is forested. It has been estimated that annual tree growth in Windham County exceeds 20 million cubic feet. These forests provide a livelihood for many people through wood harvesting, wood products, hunting (which brings significant income to the region), and maple products.<sup>16</sup>

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<sup>14</sup> Morin, Doug, p. 16.

<sup>15</sup> Vermont Department of Forests, Parks and Recreation, Division of Forests, "2010 Vermont Forest Resources Plan," 2010.

<sup>16</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 130.



Map 4 – Forest Productivity and Timber Resources

## Forestry & Logging

Timber industries have played an important role throughout the region's history. The commercially important forest species in the region are sugar maple, white pine, white ash, red oak, and birch.

In 2008, property owners in Windham County earned at least \$3.8 million from the sale of forest products.<sup>17</sup>

It was reported that over 100 million board feet of hardwood lumber is produced in Vermont annually. In 2010, Windham County ranked first in the state for total sawlog and veneer log harvest with 22.996 million board feet. The county is typically ranked in the top four counties for overall sawtimber harvest, leading the state in 2010 in the harvest of red oak (2.807 million board feet) and second in the state in white pine (8.310 million board feet), two important species in terms of value and yield. (Vermont Department of Forests, Parks, and Recreation, *Vermont Forest Resource Harvest Summary, 2010.*)<sup>18</sup>

Based on data from the Quarterly Workforce Indicators (U.S. Census Bureau), between eight and 15 persons were employed in the forestry and logging subsector in Windham County between 2009 and 2013. These numbers seem very low, and suspect, however. Wages in 2013 were on par with those throughout the state.

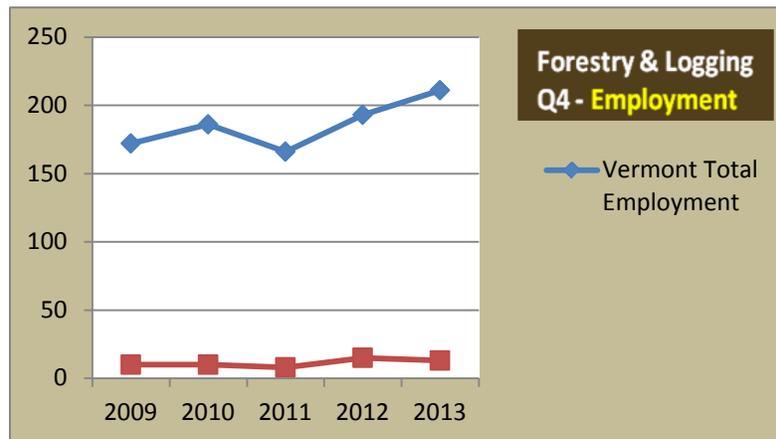


Figure 3 - Forestry and Logging Employment, 2009-2013

<sup>17</sup> Morin, Doug, p. 42.

<sup>18</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 131.

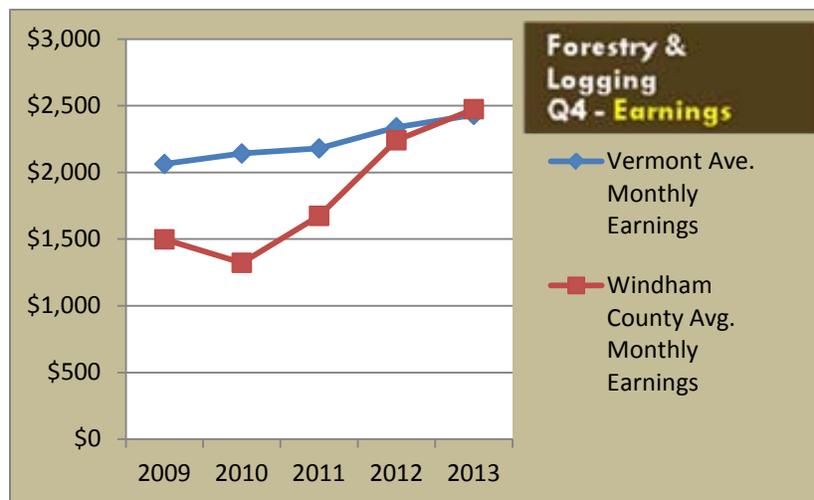


Figure 4 - Forestry and Logging Earnings, 2009-2013

## Sawmills

The Windham Region performs around a third of Vermont's milling (34% in 2008)<sup>19</sup>, most of which can be attributed to two very large sawmills, Allard Lumber (producing 5-10 million board feet) and Cersosimo Lumber (the only mill above 10 million board feet in the state). Sawmills are considered *primary* wood using industries.

Cersosimo Lumber Company was founded in 1947 by Anthony F. Cersosimo. From a modest beginning with a portable sawmill in Jamaica, Vermont, Cersosimo has grown to be one of the largest producers of high quality Northeastern Hardwood and Eastern White Pine lumber in New England. Headquartered in Vernon and Brattleboro, their operation includes three sawmills, grading and milling facilities, extensive kiln capacity, two custom kiln drying facilities, and an extensive network of foresters and log concentration yards.

Allard Lumber Company, the other major sawmill in the region, is owned by 7<sup>th</sup> generation Vermonters. Their mill site was part of the family farm on Old Ferry Road in Brattleboro. They started sawing timber in the 1970's with a 100-year-old hand set circular saw, and are still involved in every aspect of the operation. Now they work with 35 employees and buy from over 100 suppliers, using log yards as far away as North Haverhill, New Hampshire and New York State.

The region's forest industry is threatened by a number of trends. The industry is becoming less economically viable due to global market competition, including the outsourcing of furniture production and to rising business costs. This has contributed to the 43 percent decline in the

<sup>19</sup> Morin, Doug, p. 53.

number of sawmills in Vermont from 185 in 2002 to 105 in 2008. (Vermont Council on Rural Development. *Investing in Our Farm and Forest Future*. September 2011. ) Windham and Windsor Counties have the highest number of sawmills in the state, with 15 each. (Vermont Department of Forests, Parks, and Recreation, *Vermont Forest Resource Harvest Summary, 2010*. )<sup>20</sup> Doug Morin, in his extensively researched report *The Forest Products Industry of Windham County Vermont: Status, Challenges, and Opportunities*, however, notes 30 primary mills.<sup>21</sup> A few of the larger mills are shown on Map 4 – Forest Productivity and Timber Resources.

Increasingly, hardwood is exported as a raw material, causing a loss of jobs in value-added manufacturing. The timber industry in Vermont is part of a worldwide market. This resource, coupled with a vigorous Canadian market for softwood and hardwood sawlogs, has placed Windham Region forestland owners in a tempting position to harvest and send substantial volume of logs out of the region and Vermont to wood processors elsewhere. With about 30 million board feet of sawlogs and veneer logs harvested annually, the regional economic effect is significant.<sup>22</sup>



Sawmill - Readsboro

Based on data from the Quarterly Workforce Indicators (U.S. Census Bureau), in 2013 Windham County employed over 40 percent of the total statewide employment in the sawmill and wood preservation industry group. The earnings are slightly above the state average.

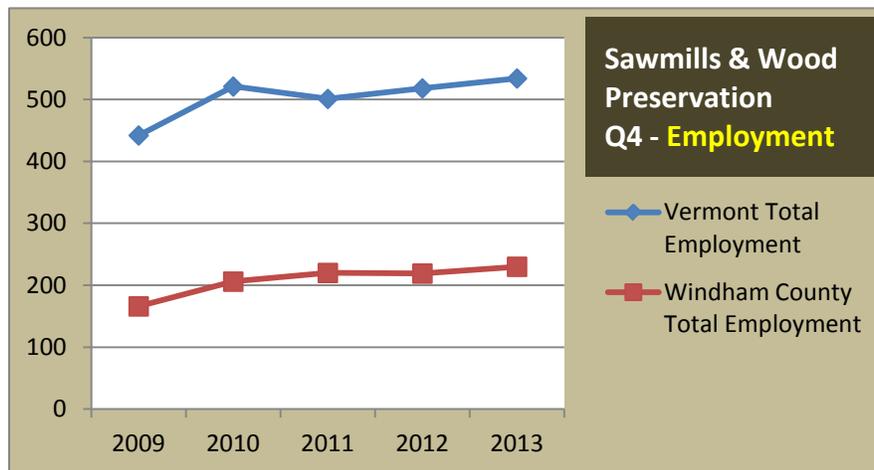


Figure 5 - Sawmills and Wood Preservation Employment, 2009-2013

<sup>20</sup> Windham Regional Commission, “Windham Regional Plan,” 2014, pp. 130-131

<sup>21</sup> Morin, Doug, p. 53

<sup>22</sup> Windham Regional Commission, “Windham Regional Plan,” 2014, p. 142.

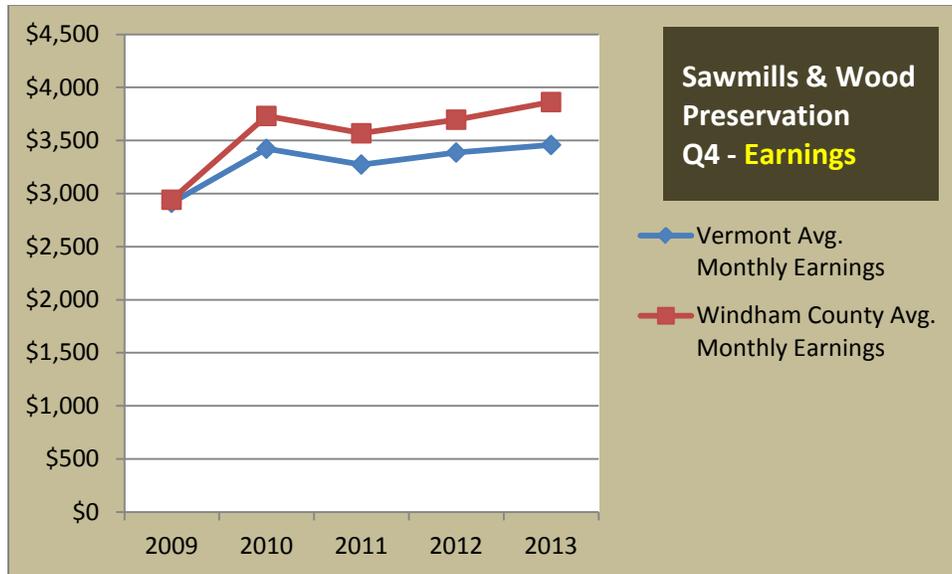


Figure 6 - Sawmills and Wood Preservation Earnings, 2009-2013

### Wood Product Manufacturing

A number of secondary wood-related industries including construction materials, furniture and toy manufacture, cabinetry, boat building, woodenware, carvings, boxes, and musical instruments are located in the region. Some manufacturers use locally grown wood, while others tap wood supplies from outside the region and overseas. One example is the Cooperman Fife and Drum Company. They are a family-owned business that makes handcrafted musical instruments, but they also have their own mill to process logs harvested from the region and beyond. They epitomize manufacturing “from tree to market.” Other examples include the local artisans and craftspeople who create and sell their wares locally.

Based on data from the Quarterly Workforce Indicators (U.S. Census Bureau), between 59 and 72 persons were employed in the Other Wood Products Manufacturing industry group in Windham County between 2009 and 2013. Wages in this sector lag behind those throughout the state. (note: the North American Industry Classification System’s “Wood Products Manufacturing” subsector contains several industry groups, two of which contain the majority of employment. These industry groups are “Sawmills and Wood Preservation,” and “Other Wood Products Manufacturing.” For this report, we are using data from the “Other Wood Products Manufacturing” industry group to serve as an information source for secondary wood products manufacturing.)

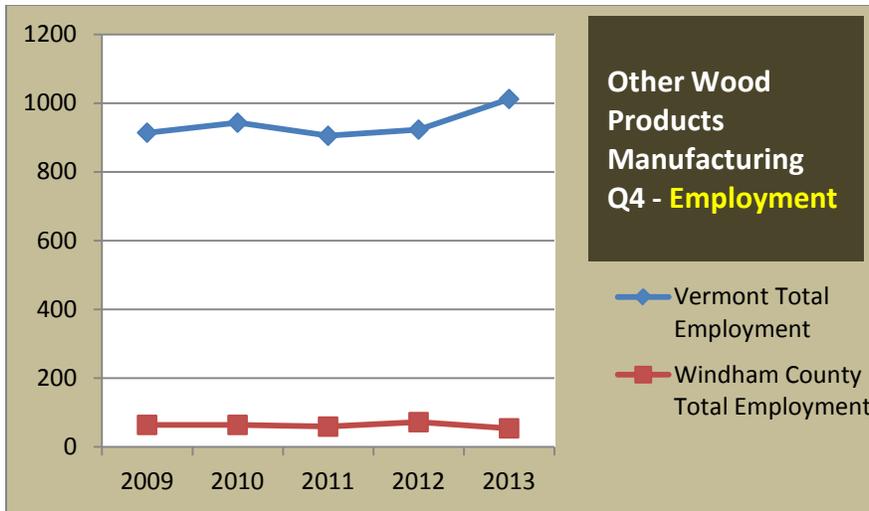


Figure 7 - Other Woods Products Manufacturing Employment, 2009-2013

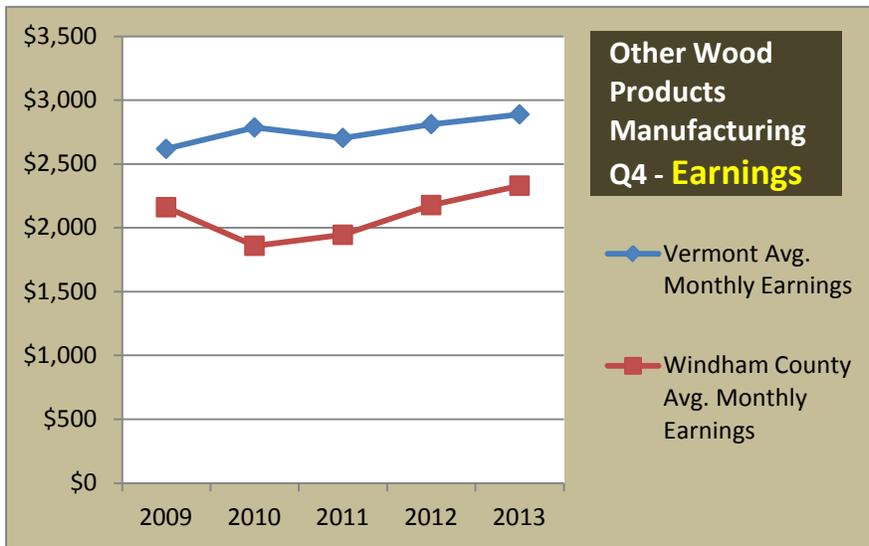


Figure 8 - Other Wood Products Manufacturing Employment, 2009-2013

### Sugar Maple Products

The Windham Region is home to many people that produce sugar maple products. They range from large commercial producers with thousands of taps to individuals who may tap a few trees in their yard and boil the sap on their stove. The larger commercial operations are shown on Map 4 – Forest Productivity and Timber Resources.

Some producers sell their products wholesale, while many more sell from their home or at farmers markets. Products include not just maple syrup but candy, cream, sugar, and so on. Many retail locations may also offer related but non-maple items such as pancake mixes or local crafts. To further promote their product, some operations have open houses at their sugar houses during the March sugaring season.



*Sugar house - Dummerston*

### **Low-grade wood**

The Forest Stewardship Steering Committee discussed added economic values that could be generated by expanding markets for low-grade wood. Good markets for low-grade wood (for example, pulp mills) are far away. Cersosimo Industries, a major lumber producer based in Brattleboro, recently brought online a wood chipping facility to produce wood chips for heating use. Firewood operations are a good outlet for low-grade wood, though statistics on these operations are lacking.

There may be opportunities to expand on the use of low-grade wood for energy. While paper mills have declined in the region, there has been a growing demand for heat and electricity production from biomass. Presently, about half of the homes in the Windham Region have a wood-based heating system, including woodstoves, fireplaces, and furnaces.<sup>23</sup>

The Steering Committee felt a biomass plant would help with creating a market for low-grade wood, but ideally a co-generation plant (making electricity and heat/hot water for nearby buildings/businesses) would likely be the most responsible way to go. Biomass plants that produce just electricity are only about 30% efficient, while co-generation plants (electricity and heat) are more like 85-90% efficient. The committee felt that our forest resources, even low value cordwood, need to be used as efficiently as possible. Such efficient use would not include using wood solely for electricity generation. A chip-based co-generation plant that heated parts of a neighborhood like downtown Brattleboro or Bellows Falls, while producing a little energy on the side, would be a good project example.

A number of schools in the region heat with biomass, and there soon could be more. Vermont's Clean Energy Development Fund has mostly focused on solar installations, but in November 2014 put out a proposal for \$1.6 million to develop a wood-pellet heating industry in Windham County. The efforts will focus on systems installed in schools and public buildings. The Fund's director notes that a "locally sourced, low emission wood heat program would benefit the environment and the region's economy."<sup>24</sup>

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<sup>23</sup> Windham Regional Commission, "Windham Regional Plan," 2014, pp. 130-131.

<sup>24</sup> Vermont Public Radio, new section of website, November 21, 2014.

## Promotion

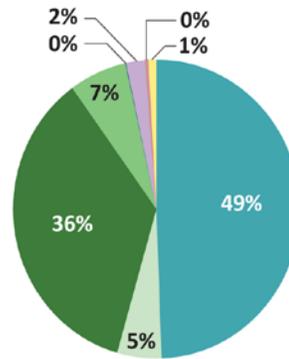
Much like the promotion of the localvore movement, the marketing and selling of value-added forest products has garnered interest and discussion among professionals planning for regional economic development. Regionally there are small operations that use wood for building custom furniture, musical instruments, and arts & crafts. Creating a tourist map or mobile app of where these shops can be found could be a goal to promote woodworking artisans.<sup>25</sup>

The Windham Regional Commission has formed a Forest Economy working group to explore ways to promote the forest products industry. Similar to the Farm to Plate or Localvore marketing movement in the state, marketing forestry and forest products in our region is the goal, with the purpose of building the forest economy.

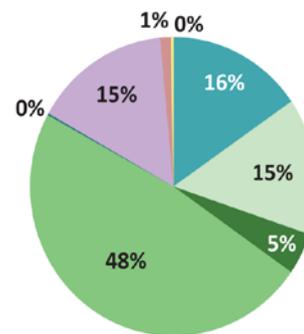
## Energy

Fuel oil is the heating source for 48% of Vermont homes, and for nearly 60% of Windham County homes. Compared with other options, this is a fairly expensive fuel source for heating homes. As natural gas is not an option for homeowners in the region, the only other attractively priced alternatives to oil are pellets or wood. This fact is somewhat expressed in the relatively high number of homes in the region currently heating with wood as compared to the State and Country.<sup>26</sup>

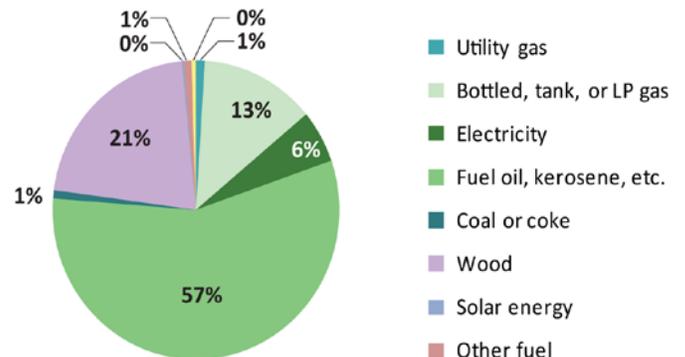
## Comparison of House Heating Fuels



U.S. House Heating Fuels



Vermont House Heating Fuels



Windham Co. House Heating Fuels

Figure 9 - Comparison of House Heating Fuels, 2009-2011

<sup>25</sup> Edwards, Rachel, Anna Fialkoff, and Jessica Orkin, "Woodlands of the Windham Region: Our Working Landscape," The Conway School, Conway, Mass., 2013.

<sup>26</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 95.

In Vermont, biomass power accounted for an estimated 9.4% of energy consumed in 2010, and the majority of renewable energy consumed (53.7%). Cord wood and pellet fuels, which are classified as types of biomass, were the least expensive fuel sources for heating in Vermont as of January 2013. The relatively low costs of these fuels are reflected in the high percentage of homes in Windham County using wood as a primary heating fuel – an estimated 21% in 2010.<sup>27</sup>



*firewood - Brattleboro*

As of June 2013, there were five existing woody thermal facilities (i.e. facilities with wood or pellet heating) in the Windham Region: Brattleboro Union High School, Whitingham Elementary School, Westminster Center School, Leland and Grey Union High School, Putney Central School and the Keith Dewey site. There was also one CHP (combined Heat and Power) facility in the Region at the Cersosimo Lumber Company in Brattleboro. There are also several wood chip/pellet suppliers around the Region.<sup>28</sup>

## Education

Forests are valued because they provide the setting for place-based learning as children explore the sciences in school, at camp, and with their families and friends. Both children and adults gain an increased appreciation, understanding, and use of forestland, which is enhanced by a variety of educational program, such as those offered by the Bonnyvale Environmental Education Center of Brattleboro, the Southern Vermont Natural History Museum of Marlboro, and the Nature Museum of Grafton. Many other local non-profit organizations sponsor educational field trips on the forested lands of the region. Numerous nature trails, such as those on the Retreat Lands in Brattleboro, the Windmill Hill Pinnacle Association lands, and in state parks, introduce people to a variety of nature and environmental topics.

Windham Regional Career Center in Brattleboro offers educational programs for credit to high school students interested in learning skills-related knowledge in Forestry and Natural Resources. Classes focus on tree identification, insect and pest identification, invasive plants, soils, and maple sugaring (stringing sap lines, and how to boil and work with sugar bushes). Students learn basic skills such as managing a Christmas tree farm, and safely operating chain saws, bulldozers, skidders, and forwarders. They leave the program with a certificate in the “Game of Logging” and many go to college seeking forestry or natural sciences degrees.

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<sup>27</sup> Windham Regional Commission, “Windham Regional Plan,” 2014, p. 117.

<sup>28</sup> Windham Regional Commission, “Windham Regional Plan,” 2014, p. 117.

The education of woodland owners in the Windham Region has been enhanced by the requirements of the state's Use Value Appraisal program and by the continued efforts, over 50 years, of the regional Woodland Owners' Association (now the Windham Region Woodlands Association). Woodland owners have become more aware of management options that combine timber improvement and utilization with enhancement of wildlife habitat through educational programs sponsored by statewide Vermont Coverts and other organizations, and by cooperation between woodland neighbors. Public interest has increased due to the actions of Vermont policy makers to begin some regulatory efforts to improve forest management practices. Professional programs for loggers and other forest workers (for example, the Logger Education to Advance Professionalism program and the Game of Logging program) have increased safety levels and improved practices.

## Recreation, Cultural, and Social Values

The region's forests offer a rich selection of recreational options. Skiing and snowboarding, snowmobiling, mountain biking, hiking, hunting and fishing, wildlife observation and photography, and foliage appreciation all are popular in their seasons. Many people view forestlands as valuable as a precious natural environment and a source of solitude, as well as a host for recreation and forest-based employment. The resource accommodates and satisfies this wide range of values, although some competing uses may at times be in conflict. State and Federal public lands offer opportunities for a backcountry wilderness experience that individual private lands in smaller block sizes cannot match, and they also support the most concentrated commercial recreation in the form of ski resorts. In spite of this, private lands do dominate the forested landscape, and their contribution to recreation and aesthetics is essential. As such, it is important to work with landowners to help preserve the value their important resource adds to the region. Attempts should be made to try to develop strategies to keep as much private land as possible open to public recreation.<sup>29</sup>

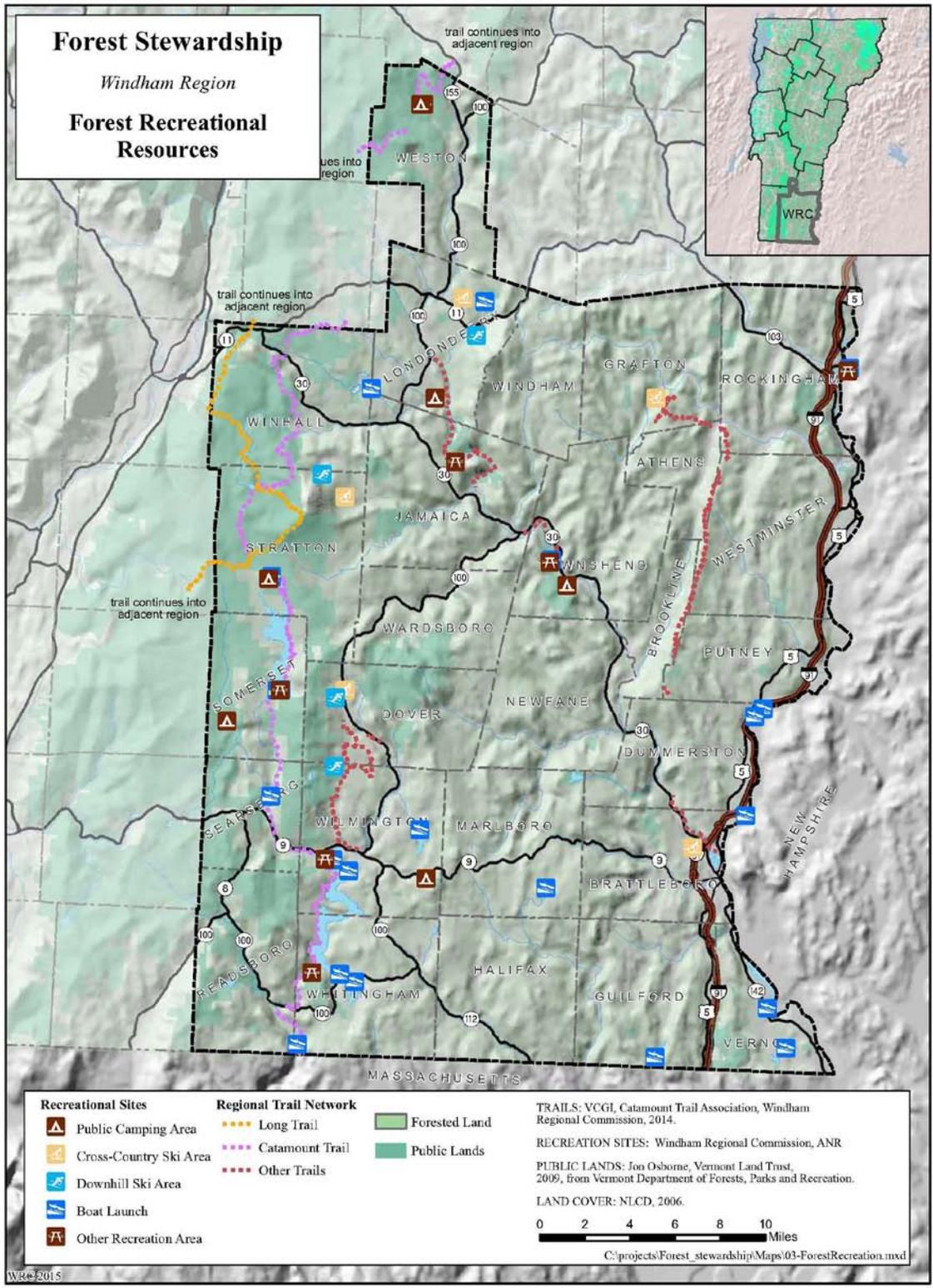
Map 5 – Forest Recreational Resources, shows some of the major recreation resources in the region. Two trails running the length of the state pass through the Windham Region: the Long Trail (which locally coincides with the Appalachian Trail), used primarily for hiking, and the Catamount Trail, a cross-country ski trail. Snowmobile trails, some a part of the Vermont Association of Snow Travelers system but all maintained locally, are found in nearly every town, and form a statewide network. Other major non-motorized trail systems include the Valley Trail, West River Trail, and Windmill Ridge Nature Reserve.



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<sup>29</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 143.

Green Mountain National Forest, state parks, town forests, conservation organization lands, and private lands all provide recreational opportunities. This include hiking, camping, nature study, skiing (both downhill and cross-country), snowmobiling, hunting, and fishing.



Map 5 – Forest Recreational Resources

## Wildlife Habitat

The Windham Region is rich in areas of high ecological value, as shown on Map 6 – Forest Ecological Resources.

Eastern black bears require forest territory for survival. Stands of oak and beech trees are especially important in that these trees produce nuts for food in summer and fall. Bears also need wetland forest habitat, where they get food in spring. Because bears use different habitats seasonally, they must also have a way to move between them. Bears travel through "corridors" to move across roads or through developed areas from one habitat area to another.

Bears are large animals, and they require large, unbroken areas of habitat. Habitat fragmentation causes many problems for bears by restricting their movement within their home ranges, by reducing food supplies, and by increasing the chance of collisions with automobiles. It also increases the frequency of contact with humans, a situation that often ends badly for the bears. Fragmentation of bear habitat should be minimized and bear travel corridors should be protected.<sup>30</sup>

Deer wintering areas or "deer yards" are a critically important habitat type for deer to survive through the winter. Only 7-8 percent of Vermont's forests make up such wintering areas. An important part of a deer yard is the evergreen trees that catch the snow in their branches, thus reducing snow depth underneath and making deer travel easier and less energy intensive when food is relatively scarce. The trees also provide thermal cover that gives the deer protection from the wind. Deer may move 10 to 15 miles to go to a yard and stay in the protection of the area all winter.<sup>31</sup>

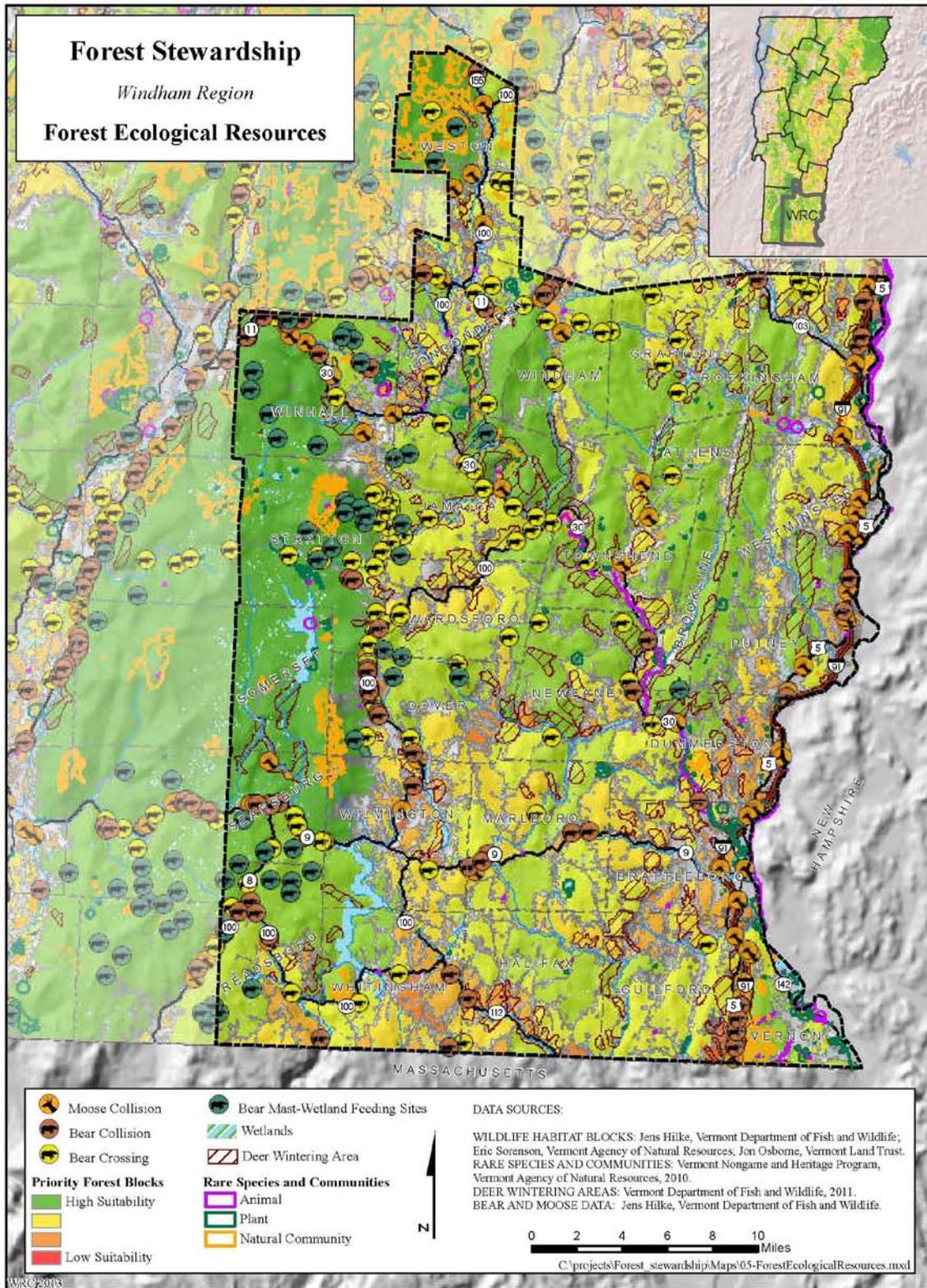
Most of the region's rivers and streams provide important cold-water fish habitats. Shaded stream banks, clean gravel and rocky bottoms, and clean, cool water are necessary to maintain these cold-water fisheries (e.g. brook trout). Vegetated stream buffers and corridors provide important wildlife travel corridors, help maintain cooler water temperatures and stabilize stream banks from erosion. Additionally, connectivity both laterally and vertically is important for the ecologically health of the waterway.<sup>32</sup>

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<sup>30</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 172.

<sup>31</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 172.

<sup>32</sup> Windham Regional Commission, "Windham Regional Plan," 2014, pp. 172-173.



Map 6 – Forest Ecological Resources

The mountainous, forested landscape remote from community centers is the stronghold and haven for the region's large mammals, including black bear, moose, deer, bobcat, fisher, coyote, otter, and beaver. Large populations of deer and coyotes can also be found in the less remote areas. Completing the forest ecosystem are the smaller mammals, reptiles, amphibians, game birds, raptors, and



*coyote - Marlboro*

many valued songbirds, insects and a network of plants, fungi, mosses and micro-organism working together to create a diverse forested landscape. A critical State and regional issue is the maintenance of large tracts of connected forestland to support these species. Certain deer wintering areas, bear habitat and wetland complexes are regionally necessary wildlife habitat (those habitats needed for a species to continue to thrive within that area). For wintering deer, low-lying softwood stands with southern exposures provide critical shelter from deep snow and cold temperatures. Stands of mature beech and oak, accessible wetlands, and newly regenerated soft mast areas provide important feeding habitats for the black bear. Bear travel corridors supply a necessary link between feeding and breeding areas. These areas are particularly important since food sources and supplies vary from season to season and from year to year. New roads, guardrails, and construction of homes and other forms of development, as well as indiscriminate timber cutting, outbreaks of tree disease and replacement of native vegetation with invasive plant species, endanger both the quantity and quality of these important wildlife habitats.<sup>33</sup>

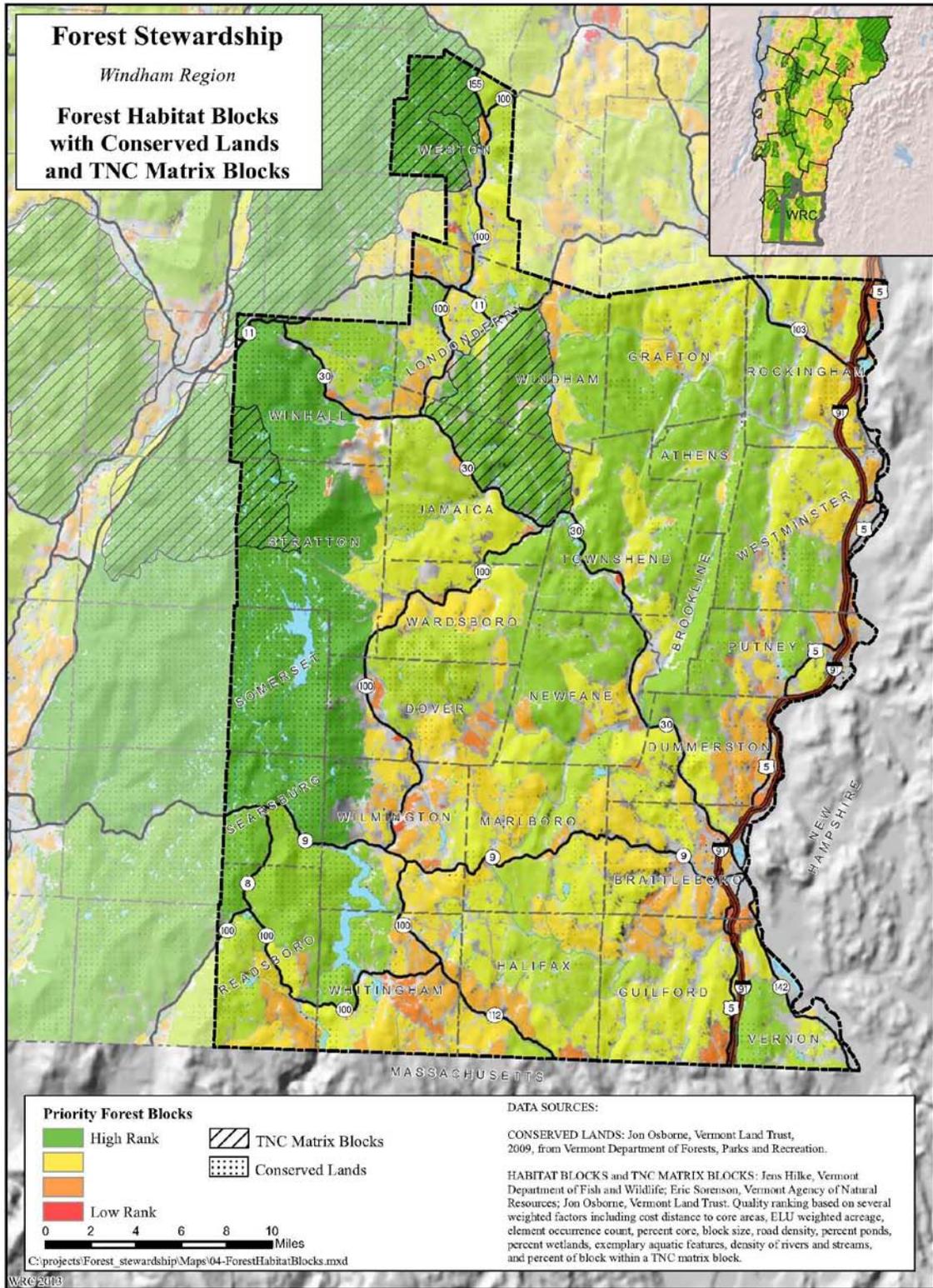
Map 7 - Forest Habitat Blocks with Conserved Lands and TNC Matrix Blocks, shows habitat blocks 20 acres and greater and ranks them for their biological and conservation value.



*moose - Stratton*

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<sup>33</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 173.



Map 7 - Forest Habitat Blocks with Conserved Lands and TNC Matrix Blocks

## Water Resources

Surface waters are prominent landscape features that throughout the region have often determined both the location and form of regional settlement. Surface waters include lakes and ponds (both natural and impounded), rivers and streams (permanent and intermittent), vernal pools, and wetlands. See Map 8 - Water Resources.

The majority of the Windham Region is located within the Connecticut River basin with small portions located in the Hudson River and Lake Champlain basins. Within the watersheds of the Windham Region, there are 33 lakes and ponds over 20 acres in area.

Rivers and streams are critical waterways provide vital breeding, resting, and feeding areas for fish, birds, and other wildlife species as well as critical habitat for plants, including rare, threatened, and endangered species. Rivers and streams provide water for drinking and domestic use, for generating electricity, for powering machinery, for irrigating crops, and for transporting goods. They enhance the beauty of the landscape and the quality of scenic



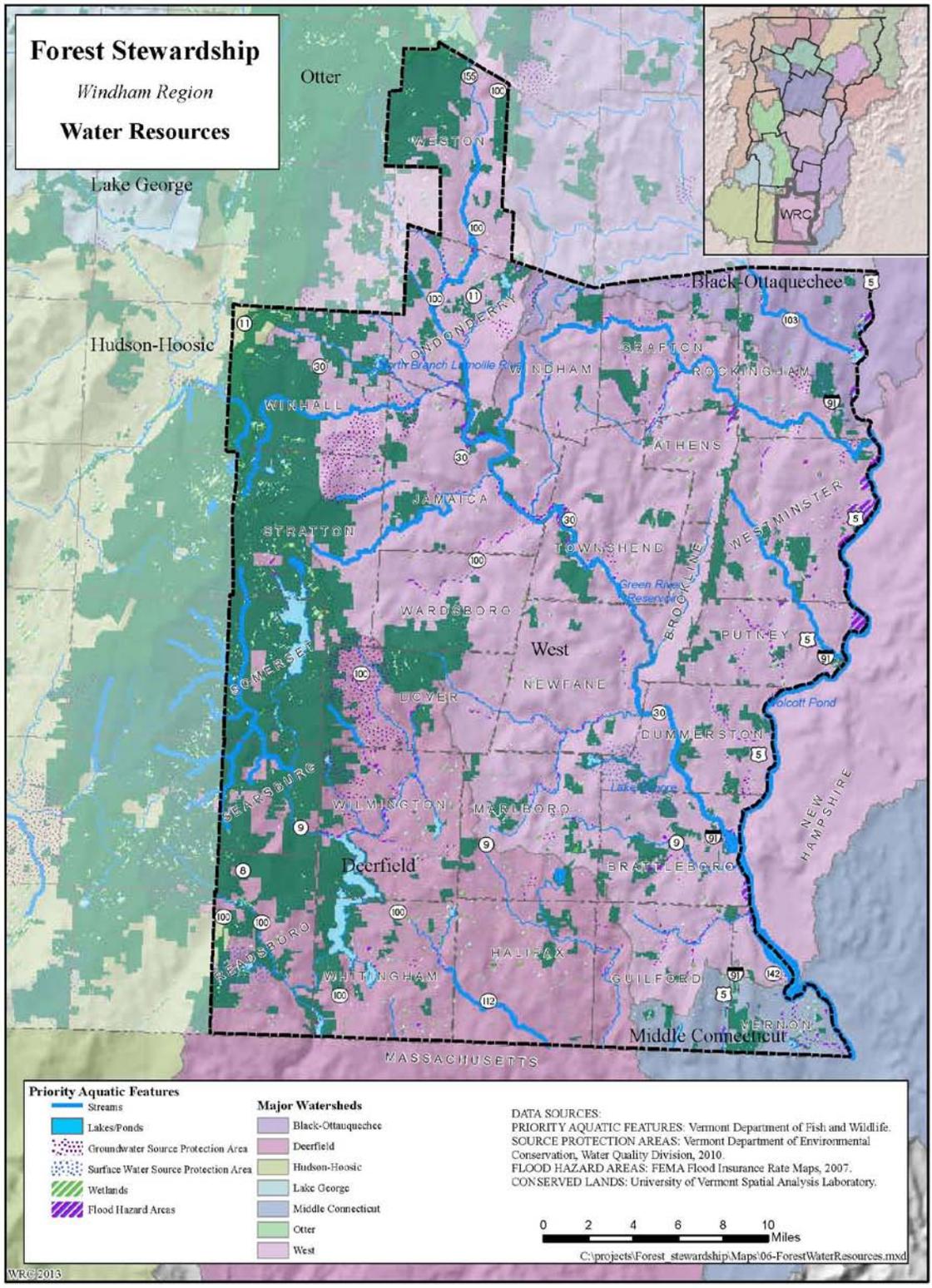
*West River - Jamaica*

and recreational experiences in the region. Healthy rivers and streams also provide vital ecological services such as helping to purify water, transport water and nutrients through the region, and moderate floods and droughts.<sup>34</sup>

The Windham County Natural Resources Conservation District has developed the Windham County Trees for Streams program (TFS) to assist landowners with planting vegetated buffers along rivers and brooks in Windham County that were affected by Tropical Storm Irene. The goal of the program is to improve water quality and restore aquatic habitat by preventing erosion and providing shade along damaged water bodies. For TFS-funded projects, the landowner is required to contribute 20% of the costs for supplies or provide site preparation and/or labor, while agreeing to maintain the buffer for at least 10 years.

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<sup>34</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 155.



Map 8 - Water Resources

The program was highly successful in 2012 and 2013, with 11 completed projects and a total of over 4,150 linear feet of stream bank vegetation restored. Additionally, native shrub propagation workshops were held throughout the County to further riparian buffer expansion efforts. Workshops instruct landowners on how to properly identify, harvest, propagate, and transplant native shrubs. Funding for the Windham County Trees for Streams program was generously provided through the Vermont Department of Environmental Conservation's Watershed Grants Program. The WCNRCDC has requested additional funding to continue the program.

Vernal pools are small wetlands resulting from the persistence of standing water for a portion of the year, characterized by a lack of vegetation, though they may support some herbaceous wetland species. Vernal pools and the organisms that depend on them are threatened by activities that alter pool hydrology and substrate, as well as by significant alteration of the surrounding forest. Adjacent timber harvesting can have significant effects on vernal pools, including alteration of the vernal pool depression, changes in the amount of sunlight, leaf fall, and coarse woody debris in the pool, and disruption of amphibian migration routes by the creation of deep ruts.<sup>35</sup>

The region's wetlands are vital for their role in recharging groundwater, regulating and filtering surface water flow, storing water, mitigating floods, and providing significant aquatic and wildlife habitat. For example, several Windham Region wetlands are host to a federally listed endangered plant species, the northeastern bulrush. Consequently, they require careful protection.<sup>36</sup>

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<sup>35</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 159.

<sup>36</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 159.

# Threats, Barriers, and Limitations to Sustaining Forests and Forestry

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A number of factors affect our ability to maintain the healthy forests that currently provide a wide variety of benefits to residents of and visitors to the Windham Region. Map 9 - Forest Resource Constraints: Human and Environmental, shows areas of forest decline, areas of high sensitivity of acid deposition (few in our region), an housing density.

The 2014 Windham Regional Plan notes that “the forestry industry is threatened by reduced economic viability due to global competition, the fragmentation of woodlots due to development and subdivision, rising property values, invasive species, browsing by deer and moose, and climate change.”<sup>37</sup>

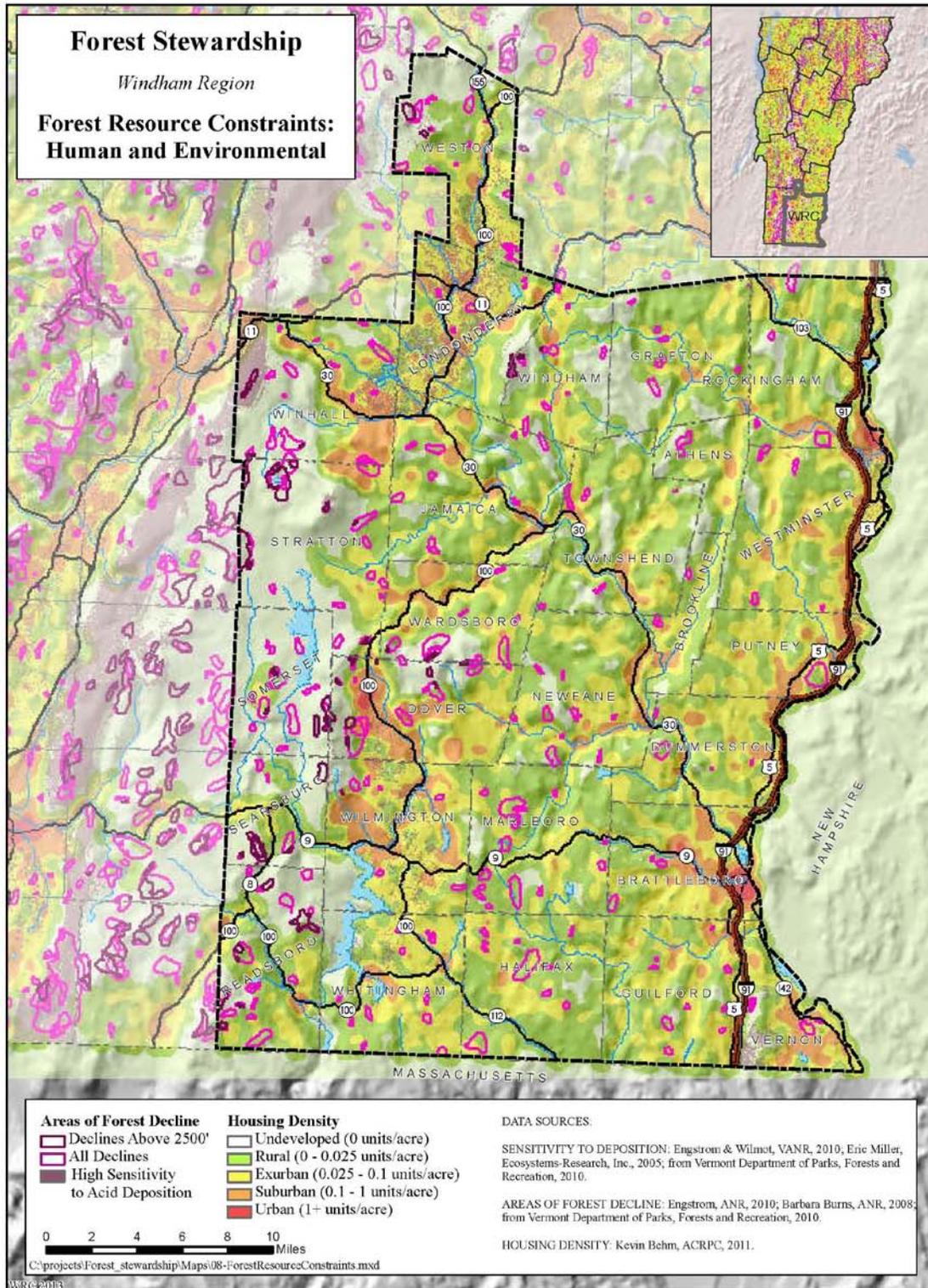
Many of these threats are not unique to our region alone, and some are in fact global in nature. The Region’s Forestry Stewardship Steering Committee has identified several significant factors they feel threaten both the economics of forestry and the sustainability of keeping forest land as forest land.

The Emerald Ash Borer is a wood-boring insect from Asia that attacks and kills all native ash species. The larvae feed in the cambium between the bark and wood, producing S-shaped galleries that girdle and kill branches and trees. Ash is one of the ten most common trees in Vermont, so this insect will have a major impact if it becomes established in Vermont. The closest infestations to the Windham Region are in Dalton, MA, less than 25 miles from Readsboro, and Concord, NH, less than 50 miles from Bellows Falls. Purple panel traps, frequently seen in the area hanging from ash trees, as well as visual surveys, are part of an aggressive detection effort.<sup>38</sup>

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<sup>37</sup> Windham Regional Commission, “Windham Regional Plan,” 2014, p. 22.

<sup>38</sup> Vermont Department of Forests, Parks, and Recreation website, <http://www.vtfpr.org/protection/eabupdate.cfm>.



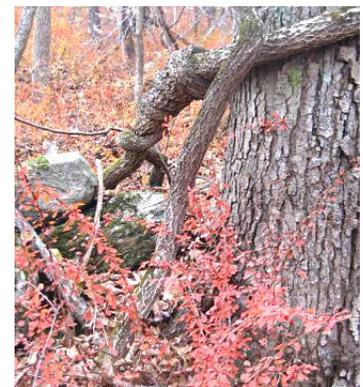
Map 9 - Forest Resource Constraints: Human and Environmental

To combat the spread of these invasive insects, Vermont is pushing a public awareness campaign telling people “Don’t Move Firewood.” The Green Mountain National Forest and Vermont State Parks both restrict the use of non-local firewood. Many public presentations concerning this invasive threat, some sponsored by town conservation commissions, have been held in the past few years.

## **Invasives - Plants**

Vermont is now home to many invasive exotic plant species. A few are particularly noteworthy for their impact on the Region’s forests, as they can replace native species, interrupt natural succession, decrease forest regeneration, disrupt the food chain of native wildlife, degrade habitat, and hasten erosion.<sup>39</sup>

Most invasive plants are found in the eastern portion of the Windham Region, with the heaviest infestations in the Connecticut River Valley. Higher elevation areas in the central and western portions tend to have fewer invasive plants. Honeysuckle, common and glossy buckthorn, bittersweet, Japanese barberry, garlic mustard, wild chervil, and burning bush are all noted as species that can outcompete regenerating native species. Japanese knotweed is all too common along the riverbanks, where it outcompetes native riparian vegetation. Tropical Storm Irene in 2011 caused a massive increase in the region’s knotweed problem.



*Japanese barberry in bittersweet - Dummerston*

## **Climate change**

While climate change is a global issue, its effects will be felt, and are likely already apparent, here in the Windham Region. The warming climate is one factor often cited for the spread of invasive insects and plants. As warming continues, we can expect to see more of these invasives, as well as other forest pests and diseases, take hold. As previously noted, warmer winters and wetter springs can even have an impact on the ability to access the woods to harvest trees and transport logs.

As the climate warms, the composition of our Region’s forests are expected to change. Globally, it’s often stated that the effects of climate change are first being felt, and are presently most obvious, in the Arctic and other cold regions. The same could be said for the coldest regions of Vermont, where researchers found that between 1964 and 2004, the lower limit of the montane

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<sup>39</sup>Vermont Invasives website, <http://www.vtinvasives.org/plants/impact-invasives/forest-health>.

spruce-fir forest advanced about 100 meters upslope.<sup>40</sup> Long term models favor fewer softwoods and more hardwoods in our area.

The potential effects on Vermont's iconic species, the sugar maple, have many worried. With sugar maple being the State's most prevalent tree,<sup>41</sup> timber harvesting, maple sugaring, and fall foliage tourism will all be affected. Some maple syrup producers already recognize their season is starting earlier each year. Research shows the maple sugaring season may become shorter and more erratic, especially at southern edge of sugar maple's range, and that the sugar content of sap may decrease.

### **Other Environmental Factors**

While invasive species and climate change get much attention for their treats to the Region's forests, there are other environmental factors that can affect our forest's health. Overbrowsing by deer is noted as a problem as it limits native regeneration and impacts the native non-timber vegetation, lowering species diversity. It also impacts shrubs, wildflowers, and other plants in the forest understory. Deer browsing can significantly limit the regeneration of red oak, white ash, and sugar maple.<sup>42</sup> Some believe that overbrowsing by deer, limiting sugar maple regeneration, may have a greater and more immediate affect than climate change on the maple syrup industry.

Some have mentioned that hay-scented and New York fern, raspberries, blackberries, striped maple and American beech, though native species and not formally considered invasive, can be tenacious nonetheless at establishing themselves in recently harvested areas, potentially crowding out more valuable timber species. Their success is, in part, due to overbrowsing by deer.

Increased temperatures and rainfall seem to have brought on an increase in foliar fungal diseases causing additional stress in the forest ecosystem.

## **Changing Land Use and Demographic Patterns**

### **Landowner Issues**

The Sustaining Family Forests Initiative, combing through data of the National Woodland Owner Survey, has identified four landowner types based on their reasons for owning woodlands. Their work is part of a project called "Tools for Engaging Landowners Effectively." These landowner

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<sup>40</sup> Beckage et al., "A Rapid Upward Shift of a Forest Ecotone During 40 Years of Warming in the Green Mountains of Vermont," 2008.

<sup>41</sup> Warton et al., "The Forests of the Green Mountain State," USDA Forest Service, Northeastern Research Station, Resource Bulletin NE-138, 2003.

<sup>42</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 145.

types are presented here as each landowner type may face differing threats to continued forest ownership and management.

One landowner type is “Woodland Retreat” owners, constituting 45% of all woodland owners in Vermont. These are people who own land primarily for its beauty and recreational value.

“Working the Land” owners (44% of all owners) value both lifestyle and financial reasons for owning woods. “Supplemental Income” landowners are a very small segment of all owners (1%), and own land for investment and income purposes. Lastly, “Uninvolved Landowners,” at 9%, give low importance ratings to all the reasons for owning woods.<sup>43</sup>

Woodland Retreat owners might not be interested in forest management on their property, and might even see logging as ecologically harmful (see “Lack of Connection to Rural Life” below). Landowners may not make a substantial profit on a timber sale, and so with little economic incentive to harvest trees, the priority might not be to manage their land for timber, or for wildlife for that matter, as this can often involve cutting and/or harvesting of trees.

On the other hand, Woodland Retreat and Working the Land owners often don’t have financial interests as their primary goal for owning forest land, and so forest management or a timber sale that’s marginally profitable, or not profitable at all, might not be a major concern. From this type of management, wildlife, as well as forest products industry workers (foresters, loggers, and truckers), might benefit.

The National Woodland Owner Survey found that the top reason for Vermonters owning forest land (as identified by 74% of respondents) was privacy.<sup>44</sup> Some landowners, particularly new arrivals from almost anywhere else, find land in the Region very inexpensive compared to the place from which they have come. This can encourage the purchase of large, rural parcels even when there is no compelling interest in the forest resource other than more privacy and seclusion. As such, forest stewardship may suffer.

Lack of knowledge about sources of advice and incentive programs was cited as one barrier to improving forest management.<sup>45</sup> One example of such a program is Vermont Coverts and Audubon Vermont’s Foresters for the Birds programs. It works to inform landowners about the benefits of actively managing their land. After introduction to these resources, some otherwise reluctant landowners may be enticed to conduct a timber harvest. Structured programs such as these are lacking, but advice can be gained from local consulting foresters, the County Forester, and, on conserved land, from Vermont Land Trust’s stewardship forester.

Town grand list data from 2013 show that over forty percent of landowners who own 50 acres or more live out of state. Outreach to out of state landowners is important, but may be difficult.

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<sup>43</sup> <http://www.engaginglandowners.org/new-landowner-research/sffi-landowner-types> .

<sup>44</sup> data accessed at <http://www.engaginglandowners.org/profile/state/vermont/overview/50?selection=Vermont>.

<sup>45</sup> Morin, Doug, p. 31.

Living far away from the region may limit a landowner's time and involvement in stewarding their land, and their awareness of local forest issues.

Morin's interviewees also noted that more than half of landowners wouldn't manage their forest lands if they weren't enrolled in the Use Value Appraisal program, and that UVA enrollment also resulted in higher quality silviculture.<sup>46</sup> In short, without programs like UVA, both the forests and our local forest industry would suffer. Thousands of acres of forestland could be subdivided and sold. This would result in an exponential increase in parcelization and fragmentation and a huge loss in land available for timber harvest. The rural character of the region would also change, which would likely result in losses in tourism-related commerce.

It is important to note that landowner needs may change over time, and so their visions of forest stewardship may shift. In addition, as pointed out in the "Intergenerational Transfer" section below, a change in ownership means that the values of a landowner do not stay with the land forever. Landowner issues are multi-generational.

## **Land Transfer**

As noted in the Regional Characteristics chapter, one of the most significant demographic trends for the Windham Region is its aging population, and this has implications on forest stewardship in the Windham Region.

The steering committee noted that the next couple of decades will see a large shift of land ownership in Vermont. What are referred to as "legacy forests"—forests that have been in one's family for several generations—are at the cusp of being split up as the baby boomer generation leaves these large tracts of land to their heirs. Splitting up of a family's land during an intergenerational transfer sometimes happens for economic reasons. At a transfer, it may be that subdivision is economically necessary to pay taxes immediately due, or to equitably compensate multiple heirs. And all too often, these heirs have no current connection to, or interest in, the land.

It is apparent to consulting foresters who work with some of these long-time landowners that the ownership value and objectives of the current owner, and the generations before them, are different than those of the younger generation. Of course this is on a case-by-case basis, but in general the trend of the younger generation is to sell the land for development. Even if the land isn't sold, a lack of interest in the land can result in a lack of stewardship of the land. Some note that involving the younger generation in local forestry is critical to continuing the social, economic and historical value of living in our forested region.

It is not only intergenerational land transfers that can affect forest stewardship. After a death, the surviving spouse may not be interested in, willing to, or able to, care for the land which he or

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<sup>46</sup> Morin, Doug, p. 61.

she now owns. Management may be neglected, or the land may be sold. The Windham County Forester noted that many people get into trouble when they inherit or purchase land enrolled in the Use Value Appraisal program, but fail to understand the management requirements.

## **Forest Fragmentation**

“While close to 80% of the state is forested, for the first time in over a century, forests are declining in Vermont. Development is responsible for this trend and forests are increasingly becoming fragmented across Vermont.”<sup>47</sup> So begins Vermont Natural Resources Council’s *Forest Fragmentation Action Plan*.

Fragmentation is most often brought on by subdivision or parcelization, terms used to describe the breaking up of larger parcels of forested land into smaller parcels. And this, in turn, can be brought on by the landowner issues discussed above, many of which are economic in nature. Regardless, the smaller the parcel, the less viable it is for timber management; Morin states that “25–50 acres is the textbook minimum size.”<sup>48</sup>

But it is not only forest management that is affected. Or as Morin states, parcelization affects not only the economy, but also the ecology. Parcelization is often followed by development, which permanently alters the land, fragmenting wildlife habitat and reducing core forests. As people build homes farther into the forest, traditional uses like forestry, hunting, and recreation can be impacted. Many landowners may not want these activities near their homes, or anywhere on their property. While not all landowners are bothered by such activities, the presence of many different landowners in an area will likely result in many different land management objectives, whether those be for timber, wildlife or recreation. And dealing with multiple landowners can be burdensome.

The Vermont Natural Resources Council has been studying subdivision trends in Vermont. In one study, they found that in the Town of Marlboro, from 2002-2010 there were 29 subdivisions involving 1783 acres of land, resulting in the creation of 69 new lots with an average lot size of 25.8 acres and a median lot size of 10.1 acres. None of the subdivisions were subject to Act 250 review.<sup>49</sup>

Marlboro’s character is decidedly rural, and its population climbed above 1000 only as of the 2010 census. But for a town with less than 700 total lots, 69 new lots in less than ten years is a significant number. New homes on the landscape, or large increases in population, are things that often raise alarm about forest fragmentation. Parcelization, on the other hand, is essentially

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<sup>47</sup> Vermont Natural Resources Council, “Forest Fragmentation Action Plan,” 2014, <http://vnrc.org/wp-content/uploads/2014/05/Final-Forest-Fragmentation-Action-Plan.pdf>.

<sup>48</sup> Morin, Doug, p. 50.

<sup>49</sup> Vermont Natural Resources Council and Vermont Family Forests, “Informing Land Use Planning and Forestland Conservation Through Subdivision and Parcelization Trend Information,” Phase II report, 2014.

invisible compared to new homes, and its statistics are over overshadowed by those regarding population, yet parcelization itself negatively affects forest stewardship, and often serves as a precursor to new development, fragmentation, and population increase.

VNRC's 2010 report provides information on parcel size throughout the state. In the Windham Region, there are seven towns where parcels larger than 50 acres comprise less than 60% of the town's total acreage (Brattleboro, Putney, Whitingham, Wilmington, Dover, Londonderry, and Winhall). In other words, much of the land in these towns is made up of smaller parcels. Bennington County's numbers are similar (though that region has fewer towns). The only region with more towns having a good deal of their land base in small parcels is Chittenden County (along with several adjacent towns in Washington, Lamoille, and Franklin, and Grand Isle counties); Bennington County's numbers are close. Looking at this another way, more of Windham and Bennington County's land base is comprised of parcels less than 50 acres than anywhere else in Vermont except the area around Chittenden County. See Map 10 - Percent of Total Land Base in Parcels Larger than 50 Acres.

Towns with a high percentage of their land base in parcels larger than 50 acres include Somerset (96%), Searsburg (86%), Grafton, (80%), and Windham (79%); the first two towns have significant US Forest Service and power utility landholdings. Another informative map is one showing "Loss of Acres in Parcels Greater than 50 Acres From 2003 to 2009." This map shows what percentage of each town went from being part of a parcel greater than 50 acres to a parcel of less than 50 acres. Seven towns—Vernon, Brattleboro, Putney, Rockingham, Wardsboro, Londonderry, and Weston—saw three percent or more of their area go from being in parcels greater than 50 acres in size to parcels less than 50 acres in size. See Map 11 - Loss of Acres in Parcels Greater than 50 Acres from 2003 to 2009. (map from the VNRC report).<sup>50</sup>

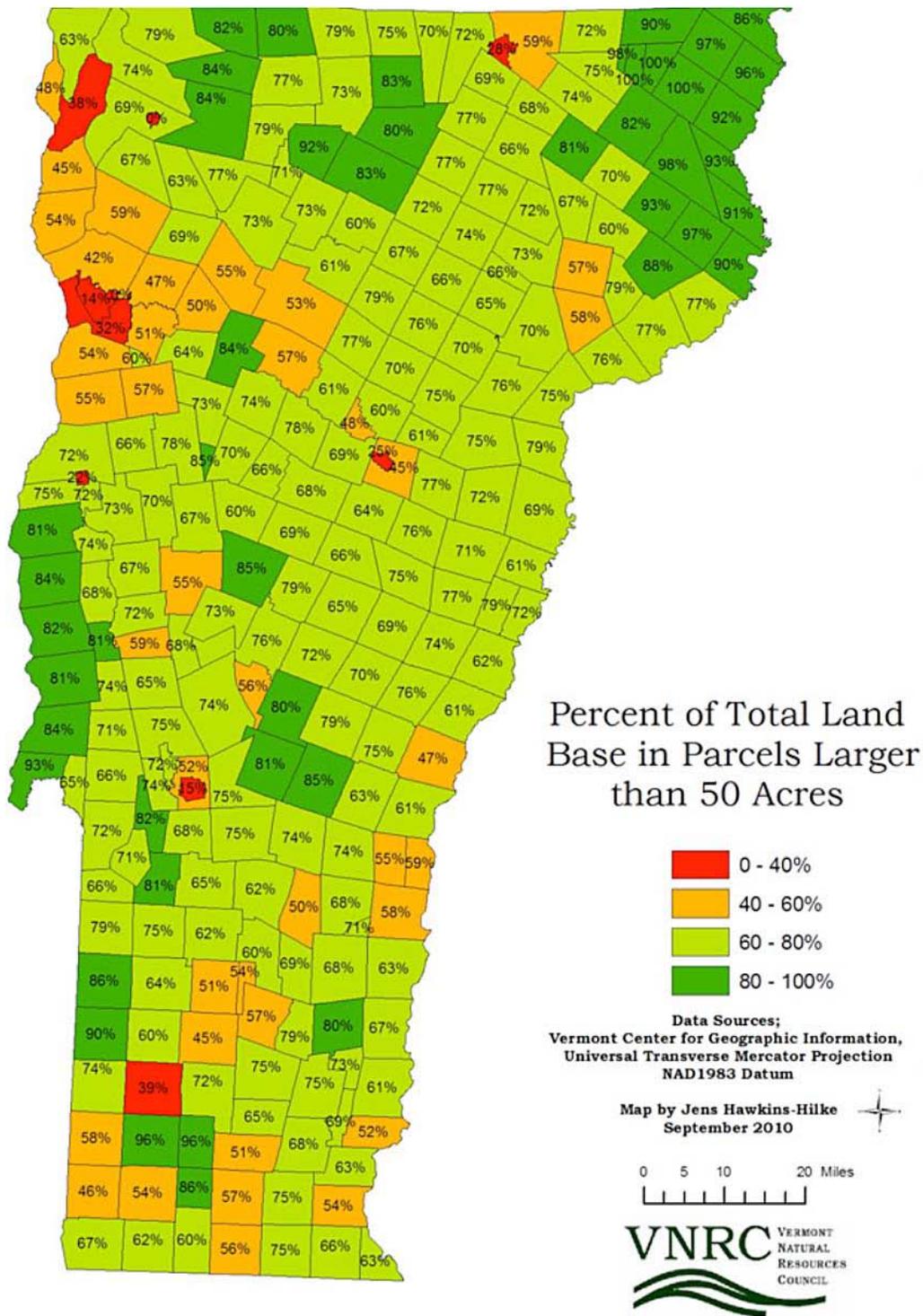
Morin interviewed many people for his report on Windham County's forest products industry. His section on parcelization is worth quoting directly:

"Many interview subjects said increasing parcelization was the ultimate long-term threat to the forest land base, but responses were divided on its present impact. About half of the foresters and mill operators interviewed said they were watching the threat for the future but were not currently experiencing a shortage of large lots, while the other half reported their businesses were already constrained by the added time and effort of dealing with many small landholders. There was general agreement, however, that adjacent landowners managing their properties together is beneficial for forest industry operators."<sup>51</sup>

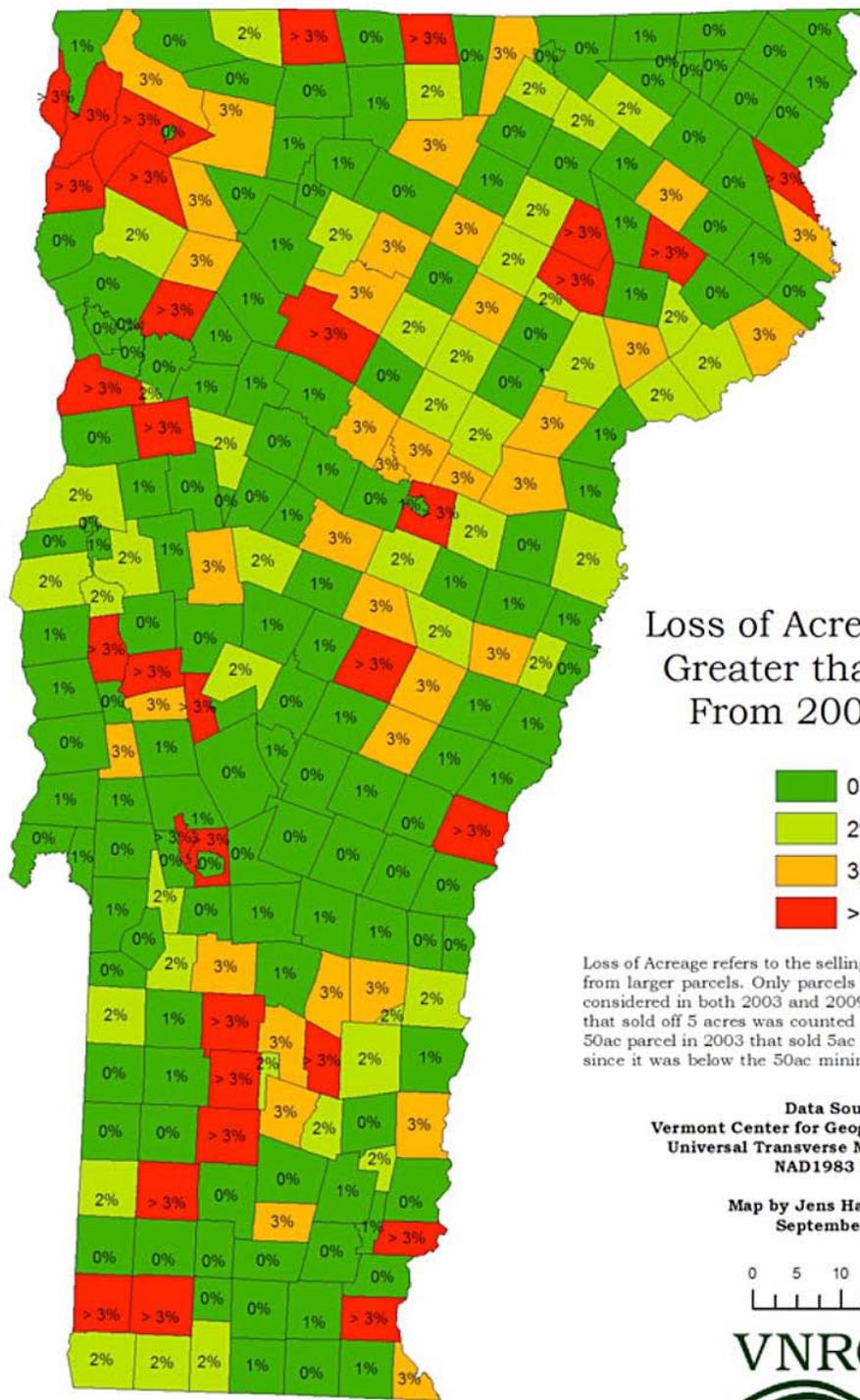
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<sup>50</sup> Vermont Natural Resources Council and Vermont Family Forests, "Informing Land Use Planning and Forestland Conservation Through Subdivision and Parcelization Trend Information," Phase I report, 2010.

<sup>51</sup> Morin, Doug, p. 60.



Map 10 - Percent of Total Land Base in Parcels Larger than 50 Acres.



Map 11 - Loss of Acres in Parcels Greater than 50 Acres from 2003 to 2009.

## Lack of Connection to Rural Life

The Windham Region Forestry Stewardship Steering Committee felt that an overall lack of connection to rural life was a threat to long-term forest stewardship. The Committee mentioned that new arrivals to the state are often from more urban or metropolitan areas, and even the younger generation who grew up here may be more removed from traditional rural culture than previous generations. This can impact forest stewardship whether these populations are forest landowners or just residents of the Windham Region.

Morin cites one concern expressed by the people he interviewed was that people don't think much about forestry. "Without strong connections in people's lives, forestry is largely ignored by the public."<sup>52</sup> Forest management, timber harvesting, and stewardship may be overlooked, and even be viewed as being destructive by some due to public misperceptions about forest health and/or underestimations of the importance of managing lands. Lynn Levine, a Dummerston consulting forester, says she spends a good deal of time educating landowners about the timber harvesting process and the fact that the unpleasant aesthetic impacts that accompany a logging operation are temporary and lead to overall positive outcomes.

Downed tree tops to feed the soil and protect regeneration understory from deer browse.

Openings in canopy and regenerating understory.

Dead snags for bird and other wildlife habitat.

Nurse logs for new seedlings.



*To the untrained eye, this image can look like a disaster struck the forest. It looks messy and not cared for, but there is a lot more going on that first meets the eye. Here's what the trained eye of a forester, ecologist, or logger might see. – From "Woodlands of the Windham Region," by Rachel Edwards, Anna Fialkoff, and Jessica Orkin, The Conway School, Conway, Mass., 2013.*

In addition, the forest industry has been less successful than their colleagues in agriculture in making people understand the value of buying local products. People now understand the importance and value of buying local food and supporting local farms, but they are not clear on the value of buying local wood products for building and heating that are sourced from local woodlots and generated by local processors. Improved education of the general public may

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<sup>52</sup> Morin, Doug, p. 60.

create greater demand and spawn new enterprises and new market opportunities for landowners and wood processors.

Committee members noted the long tradition of not posting private land in Vermont. Much private land in Vermont is open to the public for hiking, hunting, wildlife viewing, and the like, but this may be changing. As noted above, one survey found that the top reason for Vermonters owning forest land was privacy. Landowners may be less likely to know those who are using their land, and may not be a part of the outdoor community of hunters, hikers, anglers, or snowmobilers. As a result, the community values fostered by keeping one's land open to the public might not be recognized.



*hunter - Whitingham*

The Committee felt another reason for landowners posting their property was a lack of understanding of Vermont's landowner liability law. The law states that a landowner is not responsible for accidents incurred by the public recreating on their land, as long as there is not malicious intent by the landowner. Many landowners, however, fear legal action if someone is injured while recreating on their land.

## Economic Conditions

### Economics of Being in the Logging Business

The Steering Committee cited the economic difficulties experienced by loggers. In general, wages are low. The costs of fuel, equipment, insurance, and workers compensation are significant. The cost of workers' compensation can trump the benefits of hiring additional employees to expand a logger's work. Windham County Forester Bill Guenther estimates that worker's compensation could be as much as 40-45% of a logger's payroll cost for employees. As such, many loggers are, and often remain, one person operations. In 2012, 60% of logging businesses in Vermont were owner-operated with no other employees.<sup>53</sup>

At the same time, logging is becoming more mechanized. Using mechanized harvesters are safer than hand felling, or other "out of cab" work, but are very expensive. Such is the conundrum: mechanization can be safer, but one must incur higher equipment costs. A logger can employ fewer people, so lowering their individual expenses, but reducing employment opportunities overall.

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<sup>53</sup> North East State Foresters Association, "The Economic Importance of Vermont's Forest-Based Economy," 2013, p. 5.

Loggers who tend to be the most successful are “jacks of all trades” and very independent. They know how to write the business plan to get the loans, and they also have mechanical knowledge to fix their own equipment. As the practice becomes more mechanized, with very efficient high caliber equipment, there is a need to hire only a few select people, and these people must be highly skilled, and multi-skilled.

One way loggers have expanded their business is by offering additional land management services to clients, such as land clearing, trail building, firewood cutting, and general property maintenance. One sector of the wood product business that remains prosperous as a side business, though, is the small processors of firewood. Many of these are father and son operations.

The lifestyle of working as a logger is dwindling. Most loggers are now middle-age, and have been logging their whole life. Often they learned their craft from their father who logged his whole life. It is often family members who are inspiring and training young loggers. The Trust To Conserve Northeast Forestlands (TCNF) notes that “Like farming and ranching, the timber harvesting profession is often a family run business where the practice and techniques (are) passed down from generation to generation. Timber harvesting operations are similar to family farms with sophisticated and expensive harvesting equipment that requires young men and women to learn how to run the business, including equipment operation and maintenance.”<sup>54</sup> Yet some are not recommending the profession to their children. One factor could be that nationally, the logging profession has one of the highest fatality rates of any occupation, according to the Bureau of Labor Statistics.

Safety is certainly a concern in the logging profession, and a number of logging safety and training efforts are available in Vermont (see the Forest Industry Associations section of the Strategies section).

Environmental factors can also affect the bottom line of a logging operation. Morin notes constraints from not only the rough, rocky ground in our area, but also the warm winters and wet springs that we experience. Logging is often done in the winter, when the ground is frozen. Dry or frozen ground is especially necessary as harvesting equipment becomes larger and heavier. As our winters become shorter, and rain storms more frequent and intense, logging operations could be slowed more in the future.<sup>55</sup>



*log landing - Stratton*

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<sup>54</sup> Trust to Conserve Northeast Forestlands, June 2014 newsletter, <http://masterloggercertification.com/uploads/newsletters/JuneTCNFNewsletter2014.pdf>.

<sup>55</sup> Morin, Doug, p. 59.

## Other Economic Factors Affecting the Forest Products Industry

In contrast to the economic factors affecting the logging profession, those affecting the overall forest products industry tend to be more influenced by regional, national, and even global forces. Those influences can be seen right here in the Windham Region. Watching a truck with Quebec license plates full of logs and heading north on Interstate 91, while carloads of Canadian-milled lumber head south on the New England Central Railroad, causes one to wonder why those logs can't be processed locally. If only it could be that simple.

A recent article in Northern Woodlands magazine states, "Following a truck loaded with logs down a highway in rural New Hampshire only to have another truck loaded with seemingly identical logs pass you going in the opposite direction can leave you shaking your head."<sup>56</sup> That scene can just as easily be played out on Main Street in downtown Brattleboro.

Professionals use the term "wood flow" to describe how wood moves from woodlot to mill to market. And it has to do with economics, and a bit of geography as well. It's "what's in demand, where it's cut, and what local prices are compared to those elsewhere."<sup>57</sup>

Wood markets can be unpredictable and volatile. Not only do prices fluctuate, but so do product and species preferences.<sup>58</sup> And when timber prices fall, it means less money, and less profit, for the landowner, logger, trucker, and sawyer.

The market for low grade timber in the Region is not strong, and brings little profit to landowners, loggers, or mills. There is no pulp mill in the area (the closest are in Glens Falls and Ticonderoga, NY., and the low value of pulp logs make it financially unfeasible to truck the product long distances. The value of timber for biomass energy is even lower than for pulp; using wood for electric generation is quite inefficient, and trucking wood to a facility like Burlington Electric's McNeil generating station does not make economic sense.

One local consumer of low grade timber is the Cersosimo Lumber Company's chip plant. The chip plant produces "paper quality" clean chips from a variety of low grade hardwood and softwood species. In addition, there are numerous local firewood operations to process low grade wood,



*log landing - Halifax*

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<sup>56</sup> Rankin, Joe, "Where the Wood Flows North (And south. And East. And West.); Northern Woodlands magazine, Spring 2014.

<sup>57</sup> Rankin, Joe, 2014.

<sup>58</sup> Morin, Doug, p. 62.

though actual numbers are unknown as firewood producers and their production can be difficult to track.

Windham County leads the state in saw log and veneer log harvests, and is far ahead of every other Vermont county for demand by primary mills.<sup>59</sup> However, once processed, much of the resulting lumber from these mills is exported from Vermont as raw material, resulting in a loss of opportunity to add value through local manufacturing. The Region's large mills rely heavily on the wholesale export market, with much of their sales going to foreign markets. It's estimated that over 40% of Windham County's hardwood is sold overseas.<sup>60</sup>

Furniture manufacturers require a steady supply of high quality hardwoods, a product for which Windham County is known. Many manufacturers in the Northeast and the rest of the US, however, have closed or moved overseas. Furniture makers that do operate in Vermont and Windham County tend to be high-end. They are by and large very small or one person operations, and as such have a low overall demand.<sup>61</sup> It is often the smaller sawmills that fill this demand.

### **Economic Factors Affecting Landowners**

As discussed in the previous sections of this chapter, economic factors can affect peoples' ability to own and property manage their land. While enrollment in the Use Value Appraisal program can lower one's property taxes, it is still expensive to own land.

Some landowners may be forced to sell all or part of their land due to financial strain, and this can lead to parcelization, fragmentation, and conversion of forestland to other uses. Others, due to financial issues or simply ignorance, may maximize profit from a timber sale at the expense of their forest's long-term health. And still others, with more financial resources, may be able to acquire large parcels of forest land for privacy or seclusion, often ignoring forest management or timber harvesting.

In short, many of the threats noted above often have their root cause in economic factors.

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<sup>59</sup> Vermont Department of Forests, Parks and Recreation, 2011, utilization data, <http://www.vtfpr.org/util/documents/rpt11.pdf>.

<sup>60</sup> Morin, Doug, p. 54.

<sup>61</sup> Morin, Doug, p. 40.

# Forest Stewardship Methods

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## Existing Forest Conservation Measures

### Conserved Land

Outright purchase of a property (fee ownership) by a public entity or conservation organization, or purchase of the development rights of the property (a conservation easement), are perhaps two of the strongest methods available to conserve land. Nearly one-quarter of the land in the Windham Region is considered “conserved,” either by fee ownership of a conservation organization or governmental entity (if it is used for conservation, open space, resource management, recreation), or is privately owned but under the protection of a conservation easement.

Fee ownership allows for strong control of the property by the owner. Fee ownership conservation land is often owned by a federal or state agency, a town, or a conservation organization. Note that in some cases, simply owning the land, no matter how well intentioned, doesn’t ensure permanent conservation. Some lands can be sold or developed, or management priorities can change due to influence by agency leaders, voters, or organization membership. For example, ridgetop commercial wind turbines are proposed for US Forest Service land in Readsboro and Searsburg, land which many would consider “conserved”; forest fragmentation and destruction of bear habitat are issues for this project.

A conservation easement, often but not always on privately-owned land, puts use restrictions on the property—primarily by restricting or prohibiting development. Sometimes easements are applied to government-owned lands or conservation organization lands to legally ensure specific uses and activities in perpetuity. For example, easements are in place on some lands owned by the Windmill Hill Pinnacle Association to ensure the land is never developed, no matter what happens to the organization itself.

### Federal land

Federally-owned land makes up nearly 14 percent of the land in the Region. Over half of all conserved land in the region is in Federal ownership. Nearly all this land is part of the Green Mountain National Forest (GMNF), managed by the U.S. Forest Service, with the remaining lands managed by the U.S. Army Corps of Engineers or the U.S. Fish and Wildlife Service. The GMNF, encompassing the very largest blocks of forested land in region, is mostly west of Rte. 100. GMNF acreage is increasing, with significant additions in the past decade in Readsboro, Wardsboro, and Jamaica. Management of the Forest is guided by the GMNF Land and Resource Management Plan, last revised in 2006. Management areas in the Forest range from federally-designated Wilderness areas through diverse forest use to alpine ski areas. Because of its size,

the GMNF provides recreation resources and ecological benefits not available on other smaller lands in the Region.<sup>62</sup>

### State land

State Parks, State Forests, and Wildlife Management Areas, all managed by the Vermont Agency of Natural Resources, represent 1.5 percent of the Region, or six percent of all conserved lands. State Parks and Forests are managed by the Department of Forests, Parks, and Recreation, while Wildlife Management Areas are managed by the Department of Fish and Wildlife. Most tracts are small to medium sized (one to five hundred acres). Like the GMNF, state lands provide a variety of benefits. The Agency has been developing management plans for state-owned lands in the Region.<sup>63</sup>



*state park - Townshend*

### Town land/town forest

Towns-owned land considered “conservation land” for the purposes of this report includes traditional town forests, but also watershed lands, and school forests. Like state lands, town lands represent 1.5 percent of the Region, or six percent of all conserved lands. These lands provide many benefits to their community, but in some towns the lack of a management plan or developed recreational facilities may mean these lands are underutilized or undervalued. Seventeen of the region’s 27 towns own some form of conservation land.<sup>64</sup>

Town of Vernon’s J. Maynard Miller Town Forest exemplifies the multiple benefits town forests can provide their communities. One portion of the Forest contains hiking trails around an ecologically significant black gum swamp. Away from the swamp, firewood cutting by town residents is allowed by permit. This program began on land aquired in 1973 during the energy crisis, and a well-developed road system has been established for access.

The Town of Putney developed management plans for each of their town-owned parcels, emphasizing both timber harvesting and recreation. The Putney Town Forest provides access to the summit of Putney Mountain, a popular hiking destination, while two other parcels are managed designated preserves. The Putney Central School Forest has an extensive trail network that is actively used by their after-school program.

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<sup>62</sup> Windham Regional Commission, GIS analysis of 2013 conserved lands data.

<sup>63</sup> Windham Regional Commission, GIS analysis of 2013 conserved lands data.

<sup>64</sup> Windham Regional Commission, GIS analysis of 2013 conserved lands data.

Town forests offer a way to to introduce the community to forests, offer recreational opportunities, and potentially expose the public to the many concepts of forest stewardship. This last benefit may be especially valuable to those in the community who aren't forest land owners.

### Conservation Organizations, fee-ownership

Fee ownership of land by conservation organizations cover less than one percent of Region, though acreage of this conserved land category is increasing. These lands are typically unique in some way, generally ecologically or culturally, with these organizations having a specific land conservation mission, and acquisition occurs to fulfill a defined goal.<sup>65</sup>

One noteworthy conservation organization effort is the Windmill Ridge Nature Reserve and Trail, a project of the Windmill Hill Pinnacle Association and Putney Mountain Association. These associations have been acquiring land to preserve a prominent ridgeline in the eastern part of the region and to develop an extensive non-motorized trail network. The WHPA management plan does not allow for timber harvesting on their lands.

A sampling of other organizations includes The Nature Conservancy, which preserves rare ecological habitats on several parcels of land in the Region, the Vermont River Conservancy, which preserves primarily floodplain forest, and the New England Forestry Foundation, whose mission is to promote the conservation and sustainable management of forests. NEFF owns a parcel of land in Guilford.

### Conservation Easements

Conservation easements involve one entity—often a conservation organization, land trust, or the government—holding the development rights (or other rights) on a piece of property that is owned by another entity. Often, but not always, the property is privately-owned, and existing uses such as forestry and agriculture are allowed to continue. Since holding the development rights restricts or prohibits development of a property, it helps ensure it will remain in the same or similar state in perpetuity, often continuing traditional forestry and/or agricultural uses.

A significant amount of the Windham Region—seven percent—is under conservation easement, and it is a common tool for conserving land, accounting for just over one-quarter of all conservation lands.<sup>66</sup>

Most conservation easements in the Region are held by the Vermont Land Trust and involve private lands. Much of the acreage is forested. A number of easements in the Connecticut River Valley exist to preserve agricultural land, but many working farms contain forest lands, and forest products can be a component of a farm's operations. Many properties are in the small to

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<sup>65</sup> Windham Regional Commission, GIS analysis of 2013 conserved lands data.

<sup>66</sup> Windham Regional Commission, GIS analysis of 2013 conserved lands data.

medium-size range (50-500 acres). They may be isolated parcels, or may be adjacent to other conservation properties, forming a large block of conserved land. Other groups holding conservation easements on forested land in the Region include The Nature Conservancy, Connecticut River Watershed Council, and the Northeast Wilderness Trust.

The largest conservation easement by far in the Region is one held on land owned by TransCanada, a utility with over 16,000 acres in the Deerfield River watershed. This extensive holding is almost entirely forested and encompasses two large reservoirs. Much of this land is bordered by the Green Mountain National Forest.

### **Local UVA participation**

Vermont's Use Value Appraisal (UVA) program, commonly known as "current use," allows land to be valued and taxed based on its use for forestry or agriculture, instead of its fair market, or development value. The State of Vermont attaches a permanent lien to the deed of the land enrolled, which effectively limits development on the land. It lowers the tax burden, allowing many lands to remain as forests. The development limitations aren't permanent—a landowner may drop out of the program and financial penalties could be involved—but overall the UVA program helps keep forests as open lands and promotes working forests.

Another requirement for enrollment in the forestland portion of UVA is that the land must be managed according to a long-term forest management plan that is approved by the county forester. Often, but not always, this plan is developed by a consulting forester. Some level of timber harvesting is usually required. Having a forest management plan helps ensure that sound forest management practices are employed, and thus the UVA program is one way to promote such practices.

Approximately 140,000 acres, or 27.6 percent, of forest land in the Windham Region are enrolled in UVA.<sup>67</sup> Lands enrolled in UVA are privately owned, though some conservation organizations do enroll their lands (generally timber harvesting is not required on these lands). UVA lands may also be under a conservation easement. The 140,000 acres of UVA lands, therefore, are not necessarily in addition to the above-mentioned conserved lands; there is some overlap.

The current 140,000 acres of UVA enrollment in the Windham Region represents slightly less than half of all lands that are eligible to be enrolled (a nominal 25 acre minimum parcel size is a principal enrollment eligibility requirement for the forestland portion of the UVA program). All parcels enrolled in UVA in the Windham Region, with the exception of those in the Town of Weston, have been digitized into a GIS database.

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<sup>67</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 147.

Morin notes that “Most interview subjects believed a large portion (as much as 50% by one estimate) of owners enrolled in UVA would not manage their forests if they were not in the program—‘[landowners] get into it to save on taxes, not because they love forest management,’ as one interviewee said.”<sup>68</sup> Some may object to the timber harvesting requirements of the program, which could be in conflict with a more “hands-off” approach to land management that some landowners wish to follow. Others believe that the management plans that are a part of UVA result in better quality silviculture, including improved landowner education and essentially mandating a long-term view of forest management.

### **Conservation by Deed**

There are parcels in the Windham Region where their deeds explicitly prohibit development, or contain other restrictions that could help with conserving forest land. Since these prohibitions and restrictions aren’t tracked by anyone, figures on the acreage under deed restrictions are not available. A deed restriction needs to be enforced, and often there is not an entity in place to do this. Conservation by deed, it could be argued, is not as strong as fee ownership conservation lands, where the public or a board of directors can monitor activities, or a conservation easement, where the easement holder regularly monitors the land.

## **Regulatory and Non-Regulatory Land Use and Forestry Policies**

### **Regional Plan**

The current version of the Windham Regional Plan was adopted in September 2014. The Plan contains a section in the Natural Resources chapter devoted to Forest Resources, while other chapters in the Plan, namely the Regional Economy and Land Use chapters, address forest-related issues directly or indirectly.

#### Natural Resources Chapter

The Forest Resources section of the Natural Resources chapter acknowledges that “forests play a major role in the ecological, economic, and social health of the region.”<sup>69</sup> From an economic standpoint, the Plan notes the Region’s significance within Vermont: the Region leads the State in growing stock and standing timber, lumber manufacturing, and kiln drying. But it also recognizes that wages in the forest products industry lag behind those of other industries in the manufacturing sector.

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<sup>68</sup> Morin, Doug, p. 61.

<sup>69</sup> Windham Regional Commission, “Windham Regional Plan,” 2014, p. 142.

The Plan notes several issues facing the Region's forests. These include fragmentation, diminished ecological diversity, and changing demographics. It notes several natural resource protection tools available to towns to retain the Region's woodland legacy, including designating a forest zoning district, requiring large lots in forest districts, requiring new developments to have smaller road setbacks, small lot sizes, and clustered development, encouraging development in existing growth centers, enacting overlay districts to restrict development, and developing subdivision bylaws.

The Plan contains the following policies regarding forest resources:

1. Maintain a high-value, forested landscape in the region composed of large, contiguous parcels by supporting programs such as Use Value Appraisal and encouraging the use of conservation subdivision models, conservation easements, and purchase and ownership of lands for conservation purposes by land trusts, state and local government, or other similar organizations.
2. Support the harvest and use of lower grade timber to ensure full use of the forest resource and help protect the region from the threat of wildfire destruction.
3. Encourage public, industrial, and private landowners to maintain and enhance forest resources on their lands, and to follow sustainable forest management practices that provide habitat for diverse natural species, avoid high grading of timberlands, and follow Acceptable Management Practices.
4. Support the management and eventual eradication of invasive species in the region through activities such as provision of education materials, sponsorship of workshops on best management practices, encouraging the involvement of community organizations, and requiring the eradication or mitigation of invasive species as a condition on permits for development where the introduction or spread of invasive species is likely.
5. Maintain the Vermont tradition of public access to forested lands by encouraging preservation of historic access points and promoting public access connections in development proposals.
6. Continue to support the Vermont Use Value Appraisal (Current Use) Program—a program critical to the forest resource in the region—on a fully funded basis.
7. Support organizations and educational programs that teach or demonstrate sustainable forestry and Acceptable Management Practices, to facilitate understanding and appreciation of the environmental, economic, and recreational benefits offered by the region's forest resource.<sup>70</sup>

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<sup>70</sup> Windham Regional Commission, "Windham Regional Plan," 2014, p. 31.

The plan states that WRC will continue to support the State’s Use Value Appraisal program and will encourage preservation of forested land tracts through either enrollment in this program or through utilization of conservation easements.

Land Use chapter

The Windham Regional Plan has long worked towards supporting the State of Vermont’s primary land use planning goal of maintaining the historic settlement pattern of compact village and urban centers separated by rural countryside. The 2014 Plan proposes nine land use areas that trend along a spectrum (with some overlap) from undeveloped to densely developed. It is not only those land use areas with lower development densities that affect and support forest stewardship; strong policies relating to concentrating growth in hamlets, villages, regional and resort centers, and commercial areas indirectly effect, and it is hoped ultimately support, forest stewardship and a strong forest-based economy.

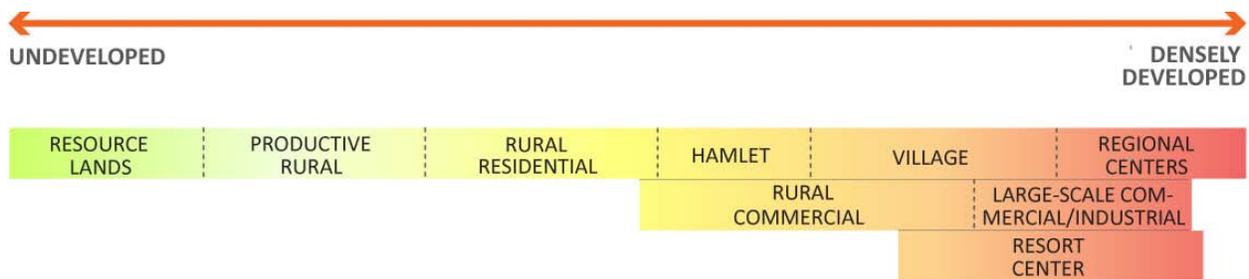


Figure 10 - Windham Regional Plan Proposed Land Use Designations Development Spectrum  
Source: Windham Regional Plan, page 70

Resource lands are noted as requiring special protection, and “should be preserved and protected to the greatest extent possible. The most appropriate uses for Resource lands are conservation and management of natural resources and limited, low impact, very low-density rural uses.” The 2014 Plan creates, though does not yet identify and map, a new designation of Critical Resource Areas, which are a subset of Resource lands. These sites need the highest level of protection.

Productive Rural Lands are the working landscapes of the Windham Region, and require a high level of stewardship. Recognizing the need to support both working forests and the forest economy, the Plan also notes that small-scale industries related to forest resources (e.g. sawmills) may be compatible with, and most appropriate in, this land use category.

Rural Residential areas are already committed to residential development or in proximity to already developed lands. As such, they are less likely to have larger working forest lands (for example, these areas contain little land enrolled in the Use Value Appraisal program). Still, small scale forest management, and especially firewood harvesting, exist, and the Plan calls for growth to be placed to avoid diminishing the Region’s rural character, and when subdivision occurs, setting aside lands reserved for forestry.

Similar to the Natural Resources chapter, the Land Use chapter specifically states WRC will continue to support the State's Use Value Appraisal program and will encourage preservation of forested land tracts through either enrollment in this program, or through utilization of conservation easements. It notes WRC will complete a comprehensive Open Space Plan for the Windham Region to target conservation efforts that will provide the maximum amount of public benefit.

Further, the Plan contains the following Land Use policies that relate directly to forestry:

10. Provide guidance and training on regulatory and non-regulatory tools for open space and resource protection available to towns for use in town plans and regulations. Encourage implementation of tools such as conservation subdivision, clustered development, and variable lot size in all subdivision development, and especially within rural residential and productive rural lands.

11. Use open space plans and resource protection techniques to protect agriculture, forest, mineral, and Resource Lands from development and fragmentation. Encourage town open space planning and help coordinate those planning efforts through the development of a regional Open Space Plan.

12. Require all major projects reviewed under Act 250 to mitigate any loss of prime agricultural and/or forest land as a result of the development.

13. Promote critical resource areas by educating towns and the public on the importance of preserving exceptional natural resources. Preserve critical resource areas by identifying key sites and by assisting towns in incorporating provisions in their town plans and land use regulations to protect them (and, as appropriate, restore them).

14. Strongly discourage all development in Resource Lands for purposes other than forestry and agriculture. Any development proposed within critical resource areas shall provide evidence as to why the development cannot be avoided, and shall provide mitigation for natural resources impacted by the development.<sup>71</sup>

### Regional Economy chapter

Forestry is recognized as one of the economic sectors in the Windham Region. The chapter notes that not only is the Region ranked high in Vermont in terms of timber harvesting and processing (primary wood processing), but that a number of secondary wood-related industries including construction materials, furniture and toy manufacture, cabinetry, boat building, and musical instruments are located in the region. It also notes an opportunity to expand on the production of low-grade wood for energy.

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<sup>71</sup> Windham Regional Commission, "Windham Regional Plan," 2014, pp. 13-14.

The Plan states that “the WRC will promote socially responsible and environmentally sound opportunities for local residents to utilize the region’s abundant natural resources through land-based industries, including outdoor recreation, tourism, agriculture, and forestry.” To this end, the Plan contains the following Regional Economy policies that relate directly to forestry:



*lumber operation - Readsboro*

8. Encourage development of land-based industries, focusing on the production, distribution, and marketing of agricultural and forestry products and programs from within the region in a manner that maximizes the sustainable use of these resources, minimizes and repurposes waste, and promotes the economic, physical, and environmental well-being of our communities and their residents.

9. Promote the economy through tourism activities that emphasize the character of the region itself: its beauty, culture, history, wildlife, and outdoor recreation.<sup>72</sup>

## **Local Plans and Land Use Regulations**

### Town Plans

Twenty-four of the 27 towns in the Windham Region have an adopted town plan. Town plans are visionary documents that guide local policy decisions, and can serve to guide land use regulations such as zoning. Town plans, in short, are where a town’s work to promote forest stewardship should begin. Windham Regional Commission has worked with many towns over the decades to help them create strong town plans that address Vermont’s planning and development goals. Policies and goals related to forest stewardship are most often found in a town plan’s Land Use or Natural Resources chapters.

A number of towns, in the land use chapter of their town plan, have identified large areas of unconserved and/or private forested land for which the priority land use goal is conservation. These towns include Grafton, Windham, Jamaica, Townshend, Newfane, Guilford, Whitingham, and Marlboro; the last three have established these extended conservation areas within the past ten years. (Other towns have extensive conservation areas, but these often coincide with existing public lands which are essentially already conserved.)

Eight Windham Region towns (Dover, Dummerston, Marlboro, Putney, Rockingham, Stratton, Wardsboro, Windham, and Winhall) have forest or conservation land use districts which set a target minimum lot size of 25 or 27 acres (a parcel needs to be greater than 25 acres, or 27

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<sup>72</sup> Windham Regional Commission, “Windham Regional Plan,” 2014, pp. 23-24.

acres with a house lot, for forestry enrollment in Vermont's Use Value Appraisal program). These are thought of as "large" lots in the realm of town plans and zoning bylaws, and are proposed under the premise that the district should remain predominantly forested. Some, however, criticize that 27 acres is actually a small lot size when it comes to forest management and preserving wildlife habitat. They believe that such lot sizes allow for parcelization of much larger forested parcels, and even promotes parcelization because any new lot created, even those for strictly residential purposes that might only require one or two acres, must take up at least 27 acres of forested land.

An example of a town plan that does explicitly promote forest stewardship is the plan for the Town of Windham. While many large blocks of forested land are covered by land use districts named Conservation, Resource, or Rural, Windham has a Forest District. The four Forest District blocks "are located in areas of steep slopes and contiguous forest. The land is characterized by the absence of development or improved roads." Many towns' conservation-priority districts focus on wildlife habitat and open space, while not directly addressing forestry. The purpose of Windham's Forest District "is to provide for forestry uses while protecting large, contiguous areas of timber and wildlife resources. Appropriate uses in the Forest Districts include agriculture, commercial forestry, other forest uses (i.e. education, research, etc.) and seasonal camps. Uses such as single family dwellings, non-intensive recreation, and land extractions may be allowed after careful review to ensure that the viability of the timber resources or wildlife habitats will not be jeopardized."<sup>73</sup>

Jamaica's town plan has a Forestland section, with associated policies and several paragraphs specifically devoted to contiguous forests.<sup>74</sup> The plan identifies several large blocks of forested land on their Existing Land Use map. In addition, the plan identifies and maps a number of Areas of Special Interest, including scenic hillsides and ridgelines, scenic waterfalls or gorges, and important wildlife habitats, and contains policies associated with these natural areas.<sup>75</sup>

### Land Use Regulations

Zoning is one important regulatory tool used to manage growth and development. Eighteen of the 27 towns in the Windham Region have a zoning ordinance. Zoning ordinances are developed in conformance with the town plan, and so many town's zoning districts mimic their land use plan districts.

Ten towns have zoning districts with large lot sizes, often named Conservation Districts. The large (often 25 or 27 acre) minimum lot sizes ensure that newly-formed lots would be eligible for Use Value Appraisal enrollment, but again, there are perceived drawbacks to this.

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<sup>73</sup> Windham Town Plan, 2008, p. 48..

<sup>74</sup> Jamaica Town Plan, 2012, pp. 20-24.

<sup>75</sup> Jamaica Town Plan, 2012, pp. 24-25.

The Town of Windham, in keeping with the goals of their town plan, has a Forest Zoning District, which covers 8267 acres, or 49 percent of the town. All of this is private land, and at the time of the District's creating, virtually none of the land was conserved. In this district, the only permitted uses are agriculture, forestry, and seasonal camps. Other uses, including single family dwellings, are a conditional use, or are prohibited. The minimum lot size is 27 acres. While no other town in the region has a Forest Zoning District, some towns' Conservation Districts are nearly as restrictive as Windham's Forest Zoning District in terms of use. However, many of these districts coincide with existing public and/or conserved lands, meaning they do little to further conservation efforts.

Overlay districts are one component of the Town of Dover's zoning regulations. A Sensitive Wildlife Resource overlay district "contains areas that have been identified as either a travel way or containing important food sources used by bears in Dover. It is not the Town's intention to prevent development in these areas but rather to encourage development that will minimize and mitigate the impacts on the sensitive wildlife resources."<sup>76</sup> A Transfer of Development Rights (TDR) overlay district provides a mechanism for transferring development rights between zoning districts. A parcel in the area from which development rights are transferred (the sending area) has a Conservation Easement Agreement placed on it, limiting use to agricultural or other open space purposes.

The Vermont Natural Resources Council states "While zoning defines the land uses allowed in different areas throughout town, subdivision regulations guide the *pattern* of development for the community (i.e. the division of a parcel of land for sale, development, or long-term lease)."<sup>77</sup> Less than a dozen towns in the Windham Region have subdivision regulations.

Conservation Subdivisions are being promoted as a way to preserve large areas of open space without the parcelization that can result from large-lot zoning. If a parcel of land is to be subdivided, a conservation subdivision allows the same number of lots (homes) as is permitted in a conventional large-lot subdivision, but those homes are grouped onto smaller lots with the resulting area being retained as open space. Conservation subdivisions are similar to a "cluster subdivision," but conservation subdivision requirements may be much stricter. Among other requirements, conservation subdivisions can include a much higher percentage of the original parcel (generally 50 percent or more) be retained as open space, and may fall under a higher level of review.

VNRC has produced "Community Strategies for Vermont's Fish and Wildlife: A Guide for Local Action," which provides details on many of the regulatory tools that can be used to enhance forest stewardship.

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<sup>76</sup> Town of Dover Zoning Bylaw, amended March 7, 2007, p. 52.

<sup>77</sup> Vermont Natural Resources Council, "Community Strategies for Vermont's Forests and Wildlife: A Guide for Local Action," 2013, p. 54.

## **Language Pertaining to Act 250 or Section 248 Proceedings**

Development or subdivision proposals under Act 250 Review are evaluated under 10 different criteria. Several of these criteria relate to forest stewardship. Criterion 8 states the project must not have an undue adverse impact upon natural areas, among other things, and subcriterion 8(A) addresses necessary wildlife habitat and endangered species. Criterion 9 states the impacts on productive forest soils must be considered, and criterion 10 states the project must be in conformance with municipal and regional plans.

Act 250 regulates the construction of improvements for commercial, industrial or residential use above the elevation of 2,500 feet, thus helping to preserve high elevations forests and related resources. There are many projects lying below 2,500 feet, however, that do not reach statutory thresholds and thus do not trigger Act 250 review. In addition, there are numerous statutory exemptions that limit the purview of Act 250 review. For example, 10 V.S.A. § 6081(q) limits review of power line extensions to only the immediate impacts of the poles, wires, and subsidiary facilities and prohibits assessment of the impacts of the actual development the power line serves.

Section 248 requirements state that in regards to energy and utility projects, due consideration must be given to the recommendations of the municipal and regional planning commissions, the recommendations of the municipal legislative bodies, and the land conservation measures contained in the plan of any affected municipality.

One key factor in these state-level reviews is examination of the municipal and regional plans, and the consideration given to forest stewardship topics is at least partially dependent upon how these plans address forest stewardship. In other words, clear, strong, and specific language in a municipal or regional plan with regard to natural areas, sensitive wildlife habitats, land conservation measures, and other forest stewardship goals can have an impact on the outcome of a project's review, and ultimately help to insure the longevity of a town's and region's forests.

### **Mitigation for Development**

Mitigation for development can be a tool for land conservation. It has led to the conservation of at least one large parcel in the Region. The Turner Hill Wildlife Management Area came into existence when a utility was required to mitigate the loss of wetlands from a transmission line project. The utility purchased a parcel of land with high ecological value and turned ownership over to the State of Vermont (The Nature Conservancy owned an adjacent parcel that is now also part of the Area).

Mitigation does happen in the Act 250 process, and has happened at the town level as well. The Town of Brattleboro acquired about 16 acres of land for their Living Memorial Park forest as part of the High Point development project.

## Conservation Organizations

### Organizations Working in the Region

While many conservation organizations do work in the Windham Region, a few call the Region home and focus their efforts in our area. Two notable groups are the Windmill Hill Pinnacle Association and the Putney Mountain Association, both of which have had a long history of success conserving through fee ownership about 2500 acres of forested land along a ridgeline in eastern Windham County (their lands are also under conservation easement). While neither organization permits timber harvesting, they are both active stewards of their land. Both groups monitor their acreage for invasive species, monitor vernal pools, and offer educational programs and hikes. Their extensive well marked and maintained trail network offers recreational opportunities on their lands, and include interpretive nature trails. Students from Antioch University New England have used their lands for environmental research. In 2014, goats were used on the Putney Mountain summit for vegetation management; the goal is to keep the summit open and to control invasive buckthorn.

The Hogback Mountain Conservation Association is a group with a similar mission. Its focus is the nearly 600 acre Marlboro Town Forest. The Association also sponsors educational programs and maintains trails. In addition, it is involved in establishing and maintaining Early Successional Habitat (ESH) under the guidance of Audubon Vermont. This work creates and maintain an early stage of forest regeneration on the abandoned ski slopes now owned by the town.

Other conservation organizations doing work in the Region have a broader geographic focus. Both The Nature Conservancy (TNC), a national organization, and the statewide Vermont Land Trust (VLT), hold conservation easements (TNC is also a landowner), and also provide and support educational programs. TNC's efforts tend to focus on lands with important biological values, and they also undertake planning efforts centered on preserving biodiversity. VLT's conserved forest lands include both large blocks and smaller parcels that provide a variety of benefits. Many are working forests that will likely continue to be managed for forest products. VLT also does a great deal of one-on-one landowner outreach, and is beginning to host more "on the land" events open to the public. Another statewide organization is the Vermont Rivers Conservancy; they have conserved several parcels in the Windham Region containing riparian and floodplain forest.



*soil scientist speaks at an event -  
Brattleboro*

The Conservation Fund is a national environmental organization whose Vermont director leads the Windham Region Working Forests Initiative. This effort is looking to secure conservation easements through the U.S. Forest Service's Forest Legacy Program. At present, the Initiative is

seeking funding in a Fiscal Year 2016 application for easements on 8875 acres of working forest lands on 12 parcels owned by nine landowners in central Windham County.<sup>78</sup> Federal funds are allocated to states, who hold the easements. Forest management and public access are a required component of land management for parcels under a Forest Legacy easement.

Several organizations have provided financial support for stewardship projects in the Windham Region. The efforts of the Windham Foundation, based in Grafton, Vermont, cover many disciplines, but in terms of forests, it has provided financial support for many stewardship projects. In addition, it owns over 1600 acres of forest and farmland in Grafton, and 475 acres in Brattleboro. The Vermont Housing and Conservation Board also has been a dominant player, providing money for fee acquisition of land.

The Open Space Institute (OSI), originally focused on protecting significant landscapes in New York, has expanded its geographic focus. Its Resilient Landscapes Initiative helps “land trusts and public agencies across the eastern United States respond to climate change.”<sup>79</sup> OSI notes that all four of its Resilient Landscape areas in the eastern U.S. contain unprotected climate resilient landscapes. It seeks to help conserve such landscapes through capital grants, outreach, and education.

One of the four areas OSI has identified is the “Middle Connecticut River,” an area west of the Connecticut River in Vermont and Massachusetts; it covers much of the eastern two-thirds of the Windham Region. This focus area contains a high percentage (85%) of above average resilient sites. OSI defines a resilient landscape as “natural strongholds that are potentially resistant to drought, flooding, rising temperatures and other threats associated with climate change, providing habitat for a variety of plants and animals and benefits, such as clean water, for humans.”<sup>80</sup>

## **Regional Conservation Partnerships**

Regional Conservation Partnerships “are generally informal networks of people representing private and public organizations and agencies that work together to implement a shared, long-term conservation vision across town and sometimes state boundaries.”<sup>81</sup> RCPs have grown in popularity over the past decade, and are well-suited to tackling conservation efforts in the Northeast where in any given area there is a patchwork of (often small) public and private ownerships, as well as multiple municipalities, counties, and even states.

There are two Regional Conservation Partnerships with projects in the Windham Region. They include the Friends of the Silvio O. Conte National Fish and Wildlife Refuge, covering all of the

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<sup>78</sup> Andy Toepfer, personal communication, January 23, 2015

<sup>79</sup> Open Space Institute web site, [http://www.osiny.org/site/PageServer?pagename=Issues\\_Resiliency\\_NE](http://www.osiny.org/site/PageServer?pagename=Issues_Resiliency_NE).

<sup>80</sup> Open Space Institute, Resilient Landscapes Initiative, Middle Connecticut River – Massachusetts and Vermont fact sheet, [http://www.osiny.org/site/DocServer/OSI\\_MidConnRiv\\_MA\\_VT\\_factsheet\\_finalRED.pdf?docID=12845](http://www.osiny.org/site/DocServer/OSI_MidConnRiv_MA_VT_factsheet_finalRED.pdf?docID=12845).

<sup>81</sup> Woodlands and Wildlands web site, <http://www.wildlandsandwoodlands.org/rcpnetwork>.

Connecticut River Watershed in New England, and the MA-VT Woodland Partnership, covering all of the West and Deerfield River watersheds in the two states. The activities of the Woodlands Partnership, which are centered around outreach to landowners, are:

1. Train in strategies used to engage different types of landowners;
2. Explore information about existing landowners in each pilot project area;
3. Develop an action plan for implementing and evaluating up to three landowner engagement tools, techniques, or programs (“strategies”);
4. Implement the strategies; and
5. Report on implementation: results, issues, lessons.

## Education and Outreach

### Local Conservation Commissions and other Conservation Organizations

#### Conservation Commissions

Twelve towns in the Windham Region have Conservation Commissions: Brattleboro, Dover, Dummerston, Guilford, Londonderry, Marlboro, Newfane, Putney, Rockingham, Westminster, Weston, and Windham. Conservation Commissions are advisory bodies within a municipality, and are established by the municipality. The Association of Vermont Conservation Commissions’ website, [vtconservation.com](http://vtconservation.com), provides more information on Conservation Commissions.

Conservation Commissions are established by the town, and their members are appointed by the selectboard. They are an advisory board only, and may assist and advise the planning commission and selectboard on conservation-related issues.

The work of Conservation Commissions in the Windham Region is broad and varied, and includes education, developing management plans for town lands, natural resource inventories, vernal pool mapping and monitoring, building and maintaining trails, involvement in town plan and zoning work, and oversight of town forests. Conservation Commissions can be an excellent vehicle to directly promote forest stewardship at the town level.

One of the more active Conservation Commissions in the Region is in Dummerston, and its activities serve as an example of the work in which other commissions around the Region take part. It hosts several programs and hikes each year on topics such as vernal pools, the black bear, wildflowers, and geology, as well as serving as a clearinghouse for promoting other events of interest in the area. Some programs have focused on invasives, in collaboration with the Guilford Conservation Commission, and members of the Commission actively participate in monitoring. The Commission is fortunate to have several members who are or have been professionals in the natural resources field, and thus are able to work on a biodiversity inventory of the town. The Commission also

maintains a web site rich with information on their work, resources about conservation issues, and a blog with over one hundred posts a year of sightings from the natural world.

## **Forest Industry Associations**

Numerous groups support the industry side of forestry, including foresters, loggers, producers of forest products, and industrial and private forest land owners.

The mission of the *Vermont Forest Products Association* is “to promote and defend the interests of our members,” who include all aspects of the forestry community (though it is more focused on the forest products industry than on private, non-industrial forest owners). The *Vermont Forestry Foundation* is the educational and outreach arm of the VFPA. It offers trainings and workshops on a wide range of industry topics primarily focused on foresters and loggers, and sponsors many of the workshops and events of the Vermont organization Logger Education to Advance Professionalism (LEAP).

The purpose of the *Vermont LEAP* program is to promote a professional approach to logging by providing the knowledge necessary for loggers to work safely, efficiently, and in an environmentally conscientious manner while harvesting timber in Vermont. LEAP certification is a formal training program for loggers, which includes practice courses in managing and using forest ecosystems, professionalism in forestry, and equipment handling and safety.<sup>82</sup> Vermont’s Wood Utilitation Forester considers LEAP to be the primary logger training organization in Vermont, though the number of loggers going through the program has decreased in recent years.

Another logger and chainsaw training program popular in Vermont is the *Game of Logging*. A national program focusing on both chainsaw safety and productivity (minimizing damage to wood products during harvesting), Game of Logging trainings are held throughout Vermont, sponsored by a variety of organizations, and attract professional loggers, forest landowners, and those individuals who may use a chain saw around the home for firewood cutting or general maintenance.

The *Vermont Wood Manufactures Association* is an organization with a membership of more than 120 primary and secondary wood processors. “VWMA’s mission is to support the industry in Vermont and promote its long-term viability by expanding members [sic] presence in the marketplace, ensuring a sustainable supply of raw materials, increasing workforce skill and acting as responsible employers and community members.”<sup>83</sup> Accordingly, the VWMA maintains a website on which its members can post profiles of their company and wood products. They also helped publish “The Essential Buyer’s Guide” to wood products manufactured in Vermont. Additionally, the VWMA offers educational workshops and discounts on events throughout the

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<sup>82</sup> Lamoille County Planning Commission, “Landscape Based Forest Stewardship: Lamoille County, Vermont,” 2012, p. 60.

<sup>83</sup> Vermont Wood Manufactures Association web site, <http://www.vermontwood.com/>.

state. Finally, the VWMA sponsors the annual Vermont Fine Furniture & Woodworking Festival in Woodstock, VT. At the festival, woodworkers can show off their forest products or art, and demonstrations of woodworking are offered at the Marsh-Billings-Rockefeller National Historic Park.<sup>84</sup>

*Vermont WoodNet, Inc.* is a non-profit organization established to address the needs of small scale Vermont wood product businesses that produce "Vermont Made" products by creating opportunities for education, joint manufacturing, joint marketing, and increased access to materials and services. Vermont WoodNet provides an online directory which connects wood product businesses with other Vermont businesses which provide services they may need (for example kiln drying and tool and equipment suppliers). Vermont WoodNet also provides a list of Vermont companies that produce and sell Forest Stewardship Council Certified products.<sup>85</sup>

### **Other Landowner Associations**

*The Woodland Owners Association, Inc. of Windham County* "is a non-profit association of woodland owners and managers, members of the wood products industry, and other interested parties in the Windham County Region who advocate both sustainable management practices and the enjoyment of forests and their ecosystems."<sup>86</sup> It offers educational opportunities to its members and the public. Being an organization based in Windham County, it can help further forest stewardship by introducing landowners to their friends and neighbors who also have an interest in good forest management. It has approximately 400 members. Note: the Woodland Owner's Association recently changed its name to the *Windham Regional Woodlands Association* so as to not imply it is solely an organization for which land ownership was required for membership.

The *Vermont Woodlands Association* is a private non-profit organization with over one thousand members—both landowners and those from the professional community (e.g. foresters)—whose objectives "are to communicate the benefits of working forests, recognize exemplary actions of woodland owners and managers, provide educational opportunities, and to represent its membership before governmental bodies." VMA has an accredited consulting foresters program, and sponsors the Tree Farm Program in Vermont (the American Tree Farm System is the Nation's oldest certifier of privately-owned forestland, and recognizes landowners whose forest management plan meets specific standards for certification). The VMA also has an extensive education program focused on forest management, including Woodland Retreat workshops (their

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<sup>84</sup> Two Rivers-Ottaquechee Regional Commission, "Landscape Based Forest Stewardship: Two Rivers-Ottaquechee Region, Vermont," 2012, p. 63.

<sup>85</sup> Lamoille County Planning Commission, p. 61.

<sup>86</sup> Woodland Owners Association web site, <http://www.woodlandownersassociation.org/misson/>.

“Forestry School”), monthly Walk In The Woods tours in conjunction with the Vermont Department of Forest, Parks, and Recreation, woodland tours, and other workshops.<sup>87</sup>

*Vermont Coverts*, whose tagline is “Woodlands for Wildlife,” is “dedicated to educating landowners in sound forest management practices and the principles of stewardship for the enhancement of wildlife.” Vermont Coverts hosts a Cooperator Training Program that includes several 3-day seminars on forest and wildlife management, and also puts on one-day Forest Stewardship Workshops. One unique aspect of the Vermont Coverts approach is that those who are trained are encouraged to return to their communities and share their knowledge with other landowners. This type of “neighbor to neighbor” outreach can be highly effective.<sup>88</sup>

### **Advocacy Organizations and Associations**

The efforts of many advocacy organizations may benefit forest stewardship in the Windham Region. The Vermont Natural Resources Council has a strong Forests and Wildlife program which addresses conservation planning, forest and habitat fragmentation, provides technical assistance to communities, and convenes the Vermont Forest Roundtable. Organizations such as The Nature Conservancy, U.S. Forest Service, and Vermont Agency of Natural Resources have funded specific VNRC projects.

VNRC has initiated many studies examining fragmentation and subdivision throughout Vermont, and created documents such as “Wildlife Considerations In Local Planning,” and “Community Strategies for Vermont’s Fish and Wildlife: A Guide for Local Action.” Their efforts through community outreach have included the Windham Region, where VNRC worked with Marlboro on a wildlife crossing overlay zoning district. VNRC also convenes a statewide “Forest Roundtable” several times a year. The Roundtable serves as a venue for exchanging information related to Vermont’s forests.

### **Estate Planning**

As discussed in the Threats chapter, the passing of forest land from one generation to the next can lead to conversion of forest land to other uses if the new owners do not have an interest in, or the resources to support, forest ownership and management. The Vermont Natural Resources Council has created a Resource Toolkit to help landowners plan for the future of their forest lands and their land’s ownership. The U.S. Forest Service’s Northeastern Area State and Private Forestry office has information available through an Estate Planning Options for Family Forests section of their website (<http://www.na.fs.fed.us/stewardship/estate/estate.shtml>).

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<sup>87</sup> Vermont Woodlands Association web site, <http://www.vermontwoodlands.org/>.

<sup>88</sup> Vermont Coverts web site, <http://www.vtcoverts.org/>.

The MA-VT Woodlands Partnership, a project of the North East State Foresters Association, looked at ways to bring land management and conservation information to family forest owners.<sup>89</sup> The project explored landowner outreach strategies in six towns in the Windham Region and six towns in adjacent Franklin County, Massachusetts. The project found that, whether trying to promote estate planning or forest land stewardship in general, it was very important for outreach efforts to target the audience, and in fact target specific landowners. The effort also tested terminology on how to raise awareness of long-term forest stewardship, and noted that one barrier to raising awareness is the fact that nearly half the landowners in the study area were from out-of-state, which can limit their time, interest, and awareness.

## Additional Forest Stewardship Strategies

### Municipal Conservation Funds

No town in the Windham Region has a municipal conservation fund for forest land, though several towns have one for agricultural land. Many towns in New Hampshire, however, do have a fund. Chesterfield, N.H., directly across the Connecticut River from Brattleboro, has contributed to a number of land conservation efforts through its fund. This fund is replenished, up to a maximum of \$25,000 per year, with proceeds from the Land Use Change Tax, which are funds collected when land enrolled in New Hampshire's Current Use Program goes from open space into development.

### Working Lands Enterprise Initiative

In 2012, the Vermont Legislature passed the Working Lands Enterprise Initiative, which created the Working Lands Enterprise Fund (WLEF) and the Working Lands Enterprise Board (WLEB). "The Board is an impact investment organization whose mission is to grow the economies, cultures, and communities of Vermont's working landscape by making essential, catalytic investments in critical leverage points of the Vermont farm and forest economy, from individual enterprises to industry sectors."<sup>90</sup> The Board provides grants for enterprise investments, service provider investments, and capital and infrastructure investments.

While the majority of the grants are for agriculture, a number of grants have been forestry based. Grants specific to Windham County include one for a facility upgrade to a solar pre-dryer, enabling drying and testing of native lumber at a Brattleboro design/build firm that also saws native timber used in its construction projects, and another to expand markets of Vermont made furniture by building a destination shopping experience in Vernon.

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<sup>89</sup> <http://highstead.net/conservation/initiatives.shtml> - Priorities Landscape Initiative section

<sup>90</sup> Working Lands Enterprise Initiative web site, <http://workinglands.vermont.gov/node/633> .

## Mapping and Inventorying

Vermont Natural Resources Council's Forest Fragmentation Action Plan,<sup>91</sup> released in 2014, lists nine strategies for reducing forest fragmentation. These strategies were developed based on feedback from a series of workshops. One of the strategies is "Map and inventory natural resources related to forests and wildlife; use these to inform local and regional policies." While VNRC states that the strategies are not ranked in any particular order, at one of the workshops where over 20 strategies were developed and vetted, mapping and inventorying was one of the highest ranking of those strategies.

Mapping and inventorying can be done by volunteers in a town, by trained professionals, or by a combination of the two. There is even an extensive amount of information already available, usually in the form of statewide datasets developed by the Vermont Agency of Natural Resources and others. These datasets can serve as valuable sources of information on their own, as well as the starting point for further inventory. Wildlife tracking, vernal pool monitoring, and invasive species detection are but some of the activities popular with volunteers. This so-called "citizen science" not only helps with data collection, but also engages residents about forestry issues in their town.



It is important to recognize that maps and inventory data by themselves will do nothing to promote forest stewardship. That information must be incorporated into town plan policies, regulatory bylaws, and action plans to carry out such efforts as land conservation, invasive species removal, landowner education, and the like.

## Forest Certification

Forest Certification programs are typically nationwide efforts, but may be regional or statewide in nature. Many were created in response to reactions over poor forest management, illegal logging, and the growth of imported lumber from other countries. There was also the hope of creating a value premium on certified forest products. One Region woodland owner feels that the effort hasn't moved very far in that direction at least partly because most or all of the competing or overlapping certification standards are inaccessibly costly for the Region's small landowners and forest workers. However, there may be options for some sort of certification program (or at least a recognition program) that could support locally harvested wood from land that is managed to a certain standard, and where best management practices are followed during harvests.

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<sup>91</sup> <http://vnrc.org/wp-content/uploads/2014/05/Final-Forest-Fragmentation-Action-Plan.pdf> .

## Recommendations and Potential Action Steps

In this report, the characteristics and forest values of the Windham Region are presented, the threats, barriers, and limitations to sustaining forests and forestry have been identified by the project's steering committee, and forest stewardship methods are discussed. What are the next steps?

In meetings with the project steering committee, Windham Regional Commission's Natural Resources Committee, and WRC staff, strategies and action steps to help promote forest stewardship were identified. Many centered around education, with town conservation commissions playing a vital role. Promoting and strengthening Vermont's Use Value Appraisal program was also a common topic. Steering committee members, planners, natural resource professionals, and planners all agree that UVA is an important and valuable tool for promoting forest stewardship, with one steering committee member, a professional forester, going so far as to say that that UVA was "absolutely critical."

The action steps listed below are presented as suggested potential activities by stakeholders working to enhance forest stewardship in the Windham Region. Efforts certainly should not be limited to only those listed, however. One notable resource for additional strategies and action steps is the Vermont Natural Resource Council's (VNRC) Forest Fragmentation Action Plan. Another is VNRC's "Community Strategies for Vermont's Forests and Wildlife: A Guide for Local Action." A third is the 2010 Vermont Forest Resources Plan, which includes over 60 strategies to implement the Plan's 19 goals. These documents are great resources to consult not only for additional strategies and action steps, but also for additional information on forest stewardship topics in general.

### Education and Outreach – Landowners

Landowner outreach is key to sustaining and expanding forest stewardship in the Windham Region. The majority of the region's forested land is in private ownership, and management decisions on these lands usually rest with the landowners. Many landowners do not live in the area; over forty percent of region's private landowners who own 50 acres or more live out of state. Some landowners are opposed to any kind of management, even that which could benefit native flora and fauna, or might not understand the rural culture that includes hunting and public access to private lands. Many landowners are unsure where to turn for information on how to manage their land.

Possible activities to address these issues include:

- create and make available to landowners a list of consulting foresters working in the region; the list should include a very short (2 sentence) management philosophy statement

- create a document of questions landowners should ask when hiring a consulting forester
- encourage landowners and sportsmen’s groups to work together on issue of deer overbrowsing (one aspect being to encourage landowners to allow hunting on their land)
- promote “stewardship visits” to forest landowners by the county forester, Vt. Coverts volunteers, or members of the Woodland Owners Association/Windham Regional Woodlands Association (especially important for those not participating in UVA)
- promote a “woods forum,” which would include a short presentation by foresters and then a discussion; target people who recently purchased or inherited UVA land but are unfamiliar with the program
- create a program to provide landowners with resources on how to manage their land (use the MA-VT partnership project as a model for targeted outreach)

## Education and Outreach – General Public

Some in the forest industry believe the general public simply doesn’t think much about forestry, and therefore are not aware for forest issues and the economic and social values of forests. They may be opposed to forest land management, whether for timber, wildlife, or invasives control, or for the need to reduce overbrowsing by deer. There is interest in making local forestry as valued as local agriculture has become in the past decade or so.

Possible activities to address these issues include:

- engage in outreach to people in the region about how important the forests are, and make them proud of their resource; outreach could be done through the local newspapers and other media sources and perhaps profile the job of a logger
- make forestry more visible; take the Conway Report (Woodlands of the Windham Region; Our Working Landscape) on a “road show”
- collaborate with other organizations such as Strolling of the Heifers to promote our forests as an important regional resource
- make people aware that deer overbrowsing is a major issue (that it is a bigger immediate threat to maple sugaring than climate change)

Other opportunities for public outreach are in the Forest Economy and Forest Industry section, and in the Education and Outreach – Youth section.

## Education and Outreach - Youth

With the region’s population aging, there may be fewer young people in the area who are choosing a career in the forest industry. As land gets transferred from older to younger generations, the new owners may not have a strong connection to their elders’ land (possibly

because they don't live in the area), or may not value forest stewardship. The younger generation has less connection to rural lifestyles, including logging, hunting, and public access to private lands, and therefore might be less likely to allow these activities on their land.

Possible activities to address these issues include:

- investigate ways to educate and involve youth in forest stewardship, including promoting forest-based careers
- re-establish “conservation field days,” which used to be held in Windham County for 6<sup>th</sup> graders

## Education and Outreach – Towns (including conservation commissions)

Town conservation commissions were identified as a vital group to engage, and possibly carry out many of these action steps. Conservation commissions need training and access to resources to do this. Important planning efforts, and developing land use regulations, occur at the town level. Planning commissions, conservation commission, select boards, and zoning administrators all need training on how to effectively do their job, how to maximize collaborative efforts with other boards, and on how to incorporate forest stewardship into their work.

Possible activities to address these issues include:

- convene a series of summits (regular, quarterly? yearly?) for Conservation Commissions in the region, to include short presentations on various topics followed by plenty of discussion and networking opportunities
- promote the establishment of conservation commissions in all towns
- look at ways to involve conservation commissions in the work of planning commissions, such as municipal plan and bylaw development and update, plan implementation, and site plan review
- educate select boards and planning commissions on how conservation commissions can assist in supporting effective town government
- promote technical training of conservation commissions for on-the-ground projects and landowner outreach, similar to the Coverts model (one priority: outreach to landowners on how to manage invasive species)
- encourage town open space planning
- educate towns and the public on the importance of preserving exceptional natural resources (such as Critical Resource Areas as defined in the Windham Regional Plan)

- identify Critical Resource Areas (as defined in the Windham Regional Plan) and assist towns in incorporating provisions in their town plans and land use regulations to protect them

## Education and Outreach – Professionals

Landowner outreach through professionals (e.g. foresters, real estate agents) can be an effective strategy. Often, however, real estate agents may not fully value the importance of forest stewardship in maintaining the rural character that attracts many buyers to this area, nor the resources and opportunities that are available to land owners. Greater awareness and information could be distributed on what resources are available to help landowners, or the details (and especially the requirements) of the Use Value Appraisal program. Professional foresters and other natural resource professionals are well aware of forestry issues in the region, but may need additional opportunities for information sharing and dialog.

Possible activities to address these issues include:

- provide information to real estate agents, perhaps through a workshop, on forest land management, the work of consulting foresters, and land preservation programs such as conservation easements and the Use Value Appraisal program; develop brochures and outreach materials and encourage agents to pass this information on to new forest land owners
- create a clearinghouse of information for professional foresters
- provide training to consulting foresters and other land managers on how to use GIS tools (e.g. Forest Stewardship web mapping being developed as part of this project)
- improve collaboration between natural resource groups working in the region by convening a meeting for them to discuss their work (WRC convened such a meeting several years ago)

## Mapping and Inventorying

The Vermont Natural Resources Council's Forest Fragmentation Action Plan identifies Mapping and Inventorying as one of nine top strategies for combating forest fragmentation. Mapping and inventorying are valuable tools for forest stewardship beyond just forest fragmentation, however. They are vital for land management and planning. Lack of easily accessible information can lead to poor decision making and inefficiency.

Possible activities to address these issues include:

- encourage towns to keep their parcel data up-to-date, and to make their parcel data available digitally
- work with conservation commissions to inventory parcels with deed restrictions or covenants that provide for conservation
- provide towns and conservation commissions with maps of forest stewardship-based data
- educate people to use GIS tools (e.g. Forest Stewardship web mapping being developed as part of this project) – also under Education and Outreach - Professionals
- continue to maintain GIS data on parcels enrolled in Use Value Appraisal; include information on the owner's forester or land manager
- support the maintenance of Vermont's Conserved Lands database

## Forest Economy & Forest Industry

Forests are an important economic resource in the region. A harvested tree can provide income to a full supply chain of people: a landowner, forester, logger, trucker, sawmill owner, and those who processes lumber into a finished product. Yet the processing of logs is affected by issues far outside the Windham Region, and local loggers and truckers face increasing economic hurdles. Still, there are things that can be done locally to strengthen the forest economy.

Possible activities to address these issues include:

- continue the work of the Windham Regional Commission's Forest Economy workgroup
- promote the use of locally based loggers and truckers
- create incentives for loggers to process lumber locally
- determine the infrastructure gaps that encourage or even force industry to process wood outside of Vermont
- begin a 'buy local' campaign that promotes a range of wood related products ideal for daily use or as gifts using Vermont branding
- encourage applications to the Working Lands Enterprise Fund that come from, or enhance, the forest industry; engage in outreach specifically to the logging community
- create a tourist map or mobile app highlighting places where forest products are created and/or sold (similar to what is done for agricultural products and artisans)

## Land Management

With 86 percent of the region's lands in forest, effective management and retention of those forested lands is vitally important to the health and character of the region, whether or not a landowner's goal is timber production. Use Value Appraisal is a valuable program to keep forests as forests and promote good forest management. However, the program has certain

requirements that may limit enrollment, including an acreage minimum and a timber harvesting requirement. Some landowners may be opposed to land management of any kind, overlooking the benefits to native plants and wildlife. Management is usually done at the individual parcel or landowner level, which can limit a broader, landscape-level view.

Possible activities to address these issues include:

- adopt a goal of getting more land under professional management, regardless of enrollment in UVA or if a landowner's goal might not include timber harvesting (promote general forest land management, not just timber management)
- investigate a “tiered” payment program for Use Value Appraisal to promote certain management decisions (e.g. encouraging landowners to not post their land by having reduced payment for landowners choosing to post their land)
- investigate options for Use Value Appraisal where timber harvesting isn't required (similar to NH or CT)
- investigate ways to allow multiple contiguous owners of parcels less than 25 acres to enroll jointly in Use Value Appraisal
- encourage joint management of contiguous parcels of land
- promote forest land management for wildlife (including species such as grouse, hare, etc.), including creating more upland openings and early successional habitat (this is planned for as part of the Green Mountain National Forest's “South of Route 9” project)
- investigate ways to compensate landowners for the societal values they provide through good land management

## **Economic Forces Affecting Private Forest Land Ownership**

With nearly three quarters of forested lands under private, non-industrial ownership, land management decisions for much of the region's acreage rests with individuals—many individuals. No matter how well intentioned those individuals may be, their management decisions ultimately will be driven by economic factors.

Many action steps in this report center on education, but landowners will need more than simply education or encouragement for them to keep their forests as forests. At the same time, while regulations or restrictions may limit conversion of forest lands, they are not a solution that necessarily directly supports, or furthers, private forest land ownership and stewardship. The financial factors surrounding land ownership cannot be ignored, and while it is acknowledged that there are no easy or immediate solutions, the conversation should at least be started to make a broader audience aware of the financial implications, and often hardships, of forest land ownership.

Possible activities to address these issues include:

- examine the economic factors that drive the decision of individual private landowners to—reluctantly or otherwise—subdivide forested parcels or convert them to non-forest uses
- consider alternatives to the traditional practice of assessing a parcel at its “highest and best use,” thus favoring development over forestry
- consider changes to allow property assessments to reflect the reduction in value that results from lands with a permanent conservation easement
- investigate methods in addition to the UVA program to lessen the property tax burden of forest land owners

## Invasives

Invasive species are seen by steering committee members as one of the biggest threats to forests in the region. Invasives are given their own category in this chapter, with some previous action steps repeated below, to give the issue more emphasis. Invasive insects threaten the health of over half the individual trees in Vermont, with the emerald ash borer, the hemlock woolly adelgid, and the Asian long-horn beetle being the insect species of greatest concern. Invasive plants can crowd out native species, interrupt natural succession, decrease forest regeneration, disrupt food availability for native wildlife, degrade habitat, and hasten erosion.

Possible activities to address these issues include:

- investigate establishing an invasive plant control programs (could use Cooperative Weed Management Areas or the Adirondack Regional Invasive Plant Program as a model)
- provide technical training for conservation commissions for on-the-ground projects and landowner outreach, similar to the Coverts model (one priority: outreach to landowners on how to manage invasive species)
- encourage landowner visits and education by professionals regarding detection, assessment, and management of invasive species