OUTDOOR RECREATION OPPORTUNITIES AND LAND USE CHANGE IN VERMONT'S LAKE CHAMPLAIN BASIN

John J. Lindsay

Associate Professor, University of Vermont, George D. Aiken Center for Natural Resources, Burlington, VT 05405

Outdoor recreation resources are eroding in Vermont's Lake Champlain Basin due to urban expansion. This study measured urban growth in the Basin and identified critical areas for open space protection. The study's hypothesis, that there was no difference between the Champlain Basin and other parts of urbanizing New England that have lost outdoor recreation resources, was accepted.

Problem

Vermont's Lake Champlain Basin is the fastest growing region in Vermont. Its population increased 11 percent during the past decade from 331,125 persons in 1980 to 368,172 in 1990 (USDC 1980-90). This population growth and accompanying economic development creates a demand for rural open space surrounding the Basin's cities and suburbs. This conversion of rural to urban land destroys both outdoor recreation resources and the public's access to them.

Study Hypothesis and Objectives

The study hypothesis was that there is no difference between Vermont's Lake Champlain Basin and other parts of New England that have urbanized and lost outdoor recreation resources as a result of the urbanization process. One might assume that because of Vermont's historically rural nature and long standing environmental protection laws that this region would not succumb to the intensity of urbanization that has affected major portions of southern New England, Maine, New Hampshire, and other parts of the northeast for the past several decades. The study was designed to test this assumption. Its objectives were: (1) to measure the urban consumption of rural lands in Vermont's Lake Champlain Basin and (2) to identify critical outdoor recreation resources for protection from urban encroachment.

Vermont's Lake Champlain Basin

Vermont's Lake Champlain Basin is 55 miles wide and 120 miles long. The Lake itself is 109 long, has a maximum width of 11.2 miles, and a 587 mile shoreline. The Green Mountains form the eastern boundary of the Lake's watershed, and together with rural open space represent the Basin's major outdoor recreation and tourism resources. Six major rivers drain the Basin and with their associated wetlands provide an abundance of recreation opportunities for outdoor enthusiasts (New England River Basins Commission 1975).

Basin dairy farming has been declining in rapidly urbanizing counties like Chittenden. Many farms have been subdivided for residential, commercial, and industrial purposes stimulated by profits taken from increasing land values and the costs incurred from rising property taxes (State of Vermont 1992). In this rural to urban conversion process, privately owned open space, which has often provided free public recreation, is eliminated as an outdoor recreation resource (Table 1).

Table 1. Decline in the number of Vermont dairy farms in Vermont's Lake Champlain Basin, 1991-1993.

County	1991	1992	1993	% Change
Addison	381	184	170	-7.0
Caledonia	177	184	170	-4.0
Chittenden	113	106	101	-12.0
Franklin	515	508	498	-3.0
Rutland	181	177	180	-0.6
Washington	90	87	85	-6.0

Source: Vermont Department of Agriculture

Method

The study included 133 towns in Vermont's Lake Champlain Basin which were divided into five study areas of 24 to 30 towns each. Two towns in each of the 5 planning areas, having the highest and lowest populations, were further studied for growth rate impacts on remaining open space. Land use in each of the 5 planning areas was studied using GIS generated maps (State of Vermont 1986). Three socioeconomic characteristics of the population were used to measure urban expansion: population growth, school enrollments, and new housing permits (State of Vermont and the Vermont Rural Studies Center 1993). Three other socioeconomic characteristics of the highest and lowest populated towns were studied to determine if population migrations were occurring from towns of high population density to towns of low population density. They included residents' age, household income, and occupation. Thirty students enrolled in an outdoor recreation planning course at the University of Vermont's School of Natural Resources collected and analyzed the data.

If a town showed more than average growth in population, school enrollments, and new housing starts it was classified a "high growth" town. If two out of these three elements showed above average increases for the decade a town was classified as a "medium growth" town. If only one element showed above average growth the town was considered a "low growth" town. Some towns actually showed zero or negative growth in one or more variables.

Results

The population of the Basin and its five planning areas, as defined by this study, averaged 11 percent over the past decade from a low of 9 to a high of 13 percent (Table 2). Almost all of this growth took place in communities surrounding established city centers and extended outward towards the rural towns. School enrollments paralleled population growth increases with central city schools showing no growth or declining enrollments, suburban towns showing rapid growth, and most outlying rural towns currently maintaining level enrollments. As expected, new housing permits coincided with the first two growth indicators with the greatest number of new housing starts located in the satellite communities. Using the procedure described in the method section growth indicators were computed for each of the 5 basin planning areas, and the results shown in Table 3.

The planning areas containing the cities of Burlington and Rutland (Planning Areas 2 and 5) had the largest percentage of towns, 38 percent and 39 percent, with high growth rates. Medium and high growth towns accounted for 66 percent and 91 percent of the communities located in these same two planning areas. The remaining three planning areas contained a lower percentage of high growth towns but still registered 16 to 17 percent. The high, medium, and low growth towns were then plotted on a map of the basin to determine if any growth patterns were evident.

Table 2. Planning area population changes, Vermont's Champlain Basin, 1980-1990.

Planning Area	1980	1990	% Change
1	50466	55883	11
2	129681	146652	13
3	71476	78120	9
4	27697	31183	13
5	51805	56334	9
Total Basin	331125	368172	11

Source: 1980-1990 U.S. Census Bureau

Table 3. Lake Champlain basin growth centers, 1980-1990.

Planning Area and Central City	Percentage of Towns in Growth Category		
	High	Medium	Low
1 St. Albans	17	38	28
2 Burlington	38	28	34
3 Barre	14	41	45
4 Middlebury	16	40	44
5 Rutland	39	52	9

We had assumed that urban growth in the Champlain Basin might approximate concentric circles radiating out from the Basin's urban centers. This assumption was incorrect. The pattern that did emerge was rather than growth being evenly distributed among communities surrounding urban centers it followed the major state highway corridors connecting the urban centers to other parts of the planning areas (Figure 1).

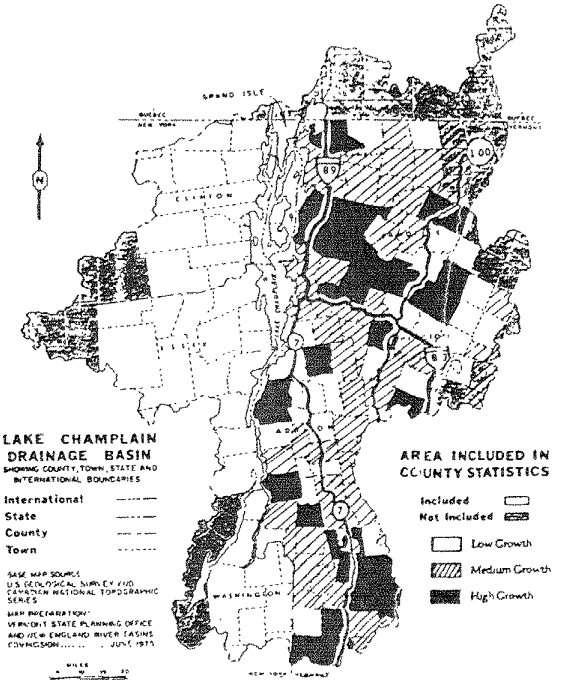

Figure 1. Growth towns and their geographical relationships in major highways in Vermont's Lake Champlain Basin.

The Basin's urban centers have consumed most, if not all, of their open space for development purposes. Outdoor recreation space protection opportunities are few. We found these to be mostly located along stream banks, wetlands, and on undeveloped, steeply sloped lands. The medium and high growth satellite communities had sufficient open space but growth pressures had resulted in high land prices and the ongoing consumption of open space primarily for residential purposes. The rural communities had ample, remaining open space and several options for outdoor recreation resource protection.

Conclusion

The study hypothesis was accepted that there was no difference between Vermont's Champlain Valley and other parts of New England that have gone through the urbanization process and lost valuable outdoor recreation space to urban expansion. All five Lake Champlain Basin planning areas have experienced significant population growth during the last decade that averaged 11 percent. This growth has been accompanied by significant land use change where the classic conversion of rural to urban land uses has occurred at a rapid rate. The communities most affected by urbanization are those closest to established cities like St. Albans, Burlington, Middlebury, and Rutland and tourist centers like Stowe. Rural land conversion is most rapid in those communities adjacent to major transportation routes including Interstate 89, Routes 7, 15, and 100.

The 133 basin towns studied were classified as those that have been urban for decades, those that are peripheral to the urban-suburban cores, and the rural towns not yet effected by growth and development. The urban centers are restricted as to the amount of open space still available for protection. What ever open space is left is primarily not suitable for other land uses. The growth towns had ample amounts of remaining open space but its value is rapidly increasing due to the demand for development space. These communities are at high risk of loosing their open space resources and must respond quickly in they wish to protect quality outdoor recreation opportunities. Finally, the rural towns, while not yet threatened by growth, are probably in the best position to plan their future land use. They have time, lower land values, and a diversity of open landscapes in their favor.

Several regions of New England have gone through the rural to urban land use change syndrome as their economies have expanded resulting growth has occurred, and rural lands consumed. Along with the economic benefits associated with growth and development these regions have, in most cases, suffered the loss of potential public open space. Vermont's Lake Champlain Basin is experiencing similar growth patterns but still is in the envious position of being able to protect selected portions of its rural, open space past for public enjoyment. The regional and municipal planning commissions, with state financial and technical assistance programs can make the Basin's future different from most metropolitan centers in the New England region that have lost the opportunity to protect valuable natural heritages.

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