

ASLPT Region

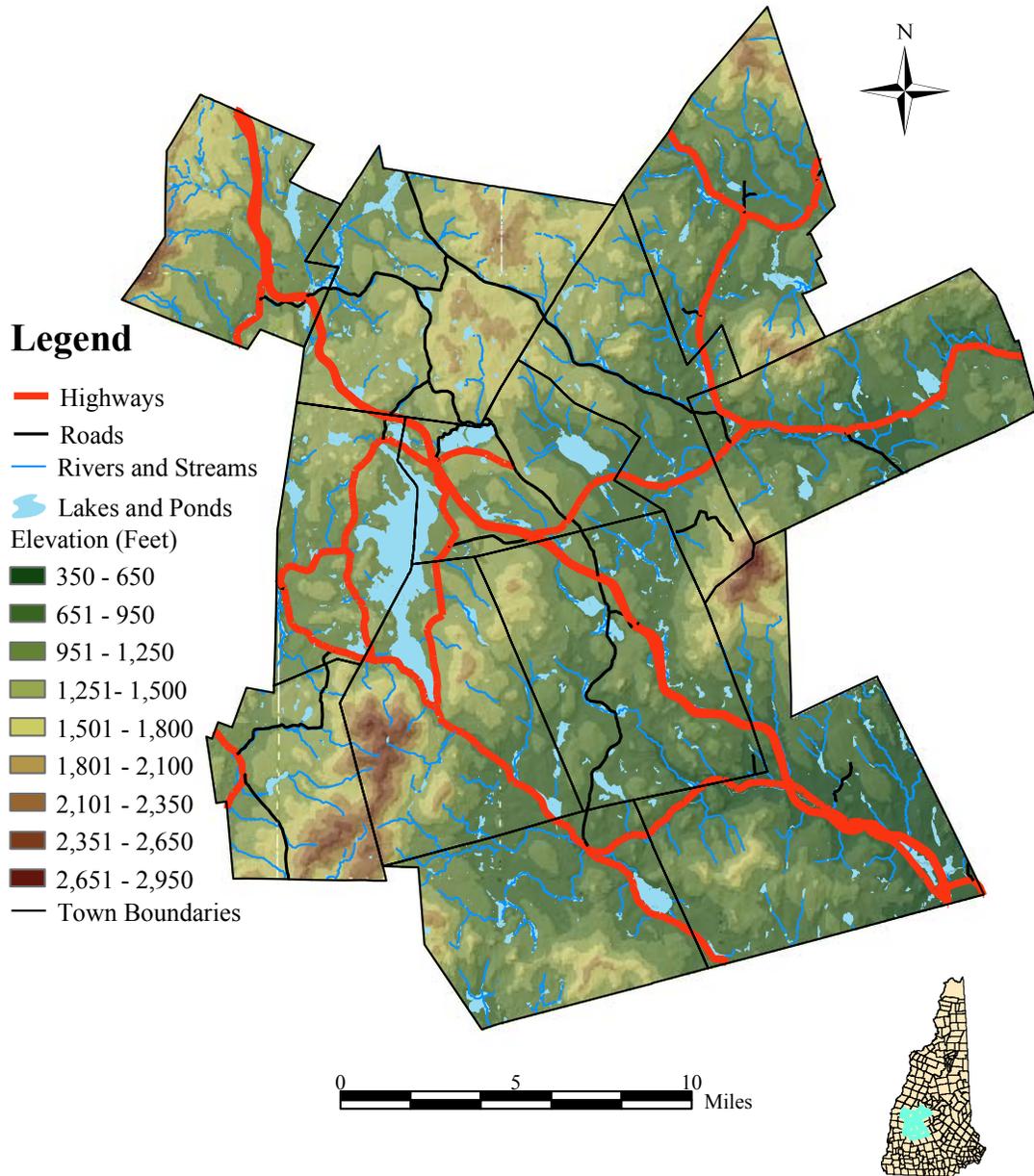
This is a map of the entire ASLPT region, shown topographically. The map shows the land features of the region in elevation at feet above sea level. Looking at the region this way shows graphically where the high points and low lying areas are located. Water bodies and stream networks were overlaid on the elevation layer, and their watersheds and flow direction can be predicted from the elevation data provided. Highways and main roads are shown as a way to orient the reader.

The twelve town ASLPT region contains approximately 273,400 acres, of which 10,125 acres (almost 4%) are lakes and ponds. The elevation ranges from about 300 feet to nearly 3000 feet, and would best be described as hilly, mainly forested, terrain. There are three mountains of significant size in the region: Mt. Sunapee in the southwest corner, Mt. Kearsarge in the middle of the region on its eastern border, and Ragged Mountain, which is to the north of Mt. Kearsarge in the southern portion of Danbury. There are several lakes in the region, the largest of which is Lake Sunapee, and many rivers and streams.

Source:

DEM (digital elevation model), water bodies, stream networks, and roads data layers were acquired from GRANIT. GRANIT is the New Hampshire repository for GIS data, and may be accessed at <http://www.granit.sr.unh.edu>.

ASLPT Region



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Conserved Lands

One of the goals of the *New Hampshire Everlasting* initiative is to have 25% of the land in each town conserved. The map shows conserved lands as of the latest available data layer, dated August 2004, obtained from GRANIT.

The table below is a summary of the conserved land by town for the ASLPT region. Half of the towns in the region are within 6% of reaching the 25% conserved lands goal, but it should be noted that towns with the highest percentages of conserved lands also have the highest percentage of state lands.

Looking at a conserved lands map for the region reveals at least three interesting items:

- 1) In general, there is very little conserved land around bodies of water.
- 2) High elevation ridgelines are mostly protected only when they fall within state lands.
- 3) There is evidence that in some cases conservation boundaries are the same as political (town) boundaries, rather than ecological boundaries, lending support for region-wide conservation efforts.

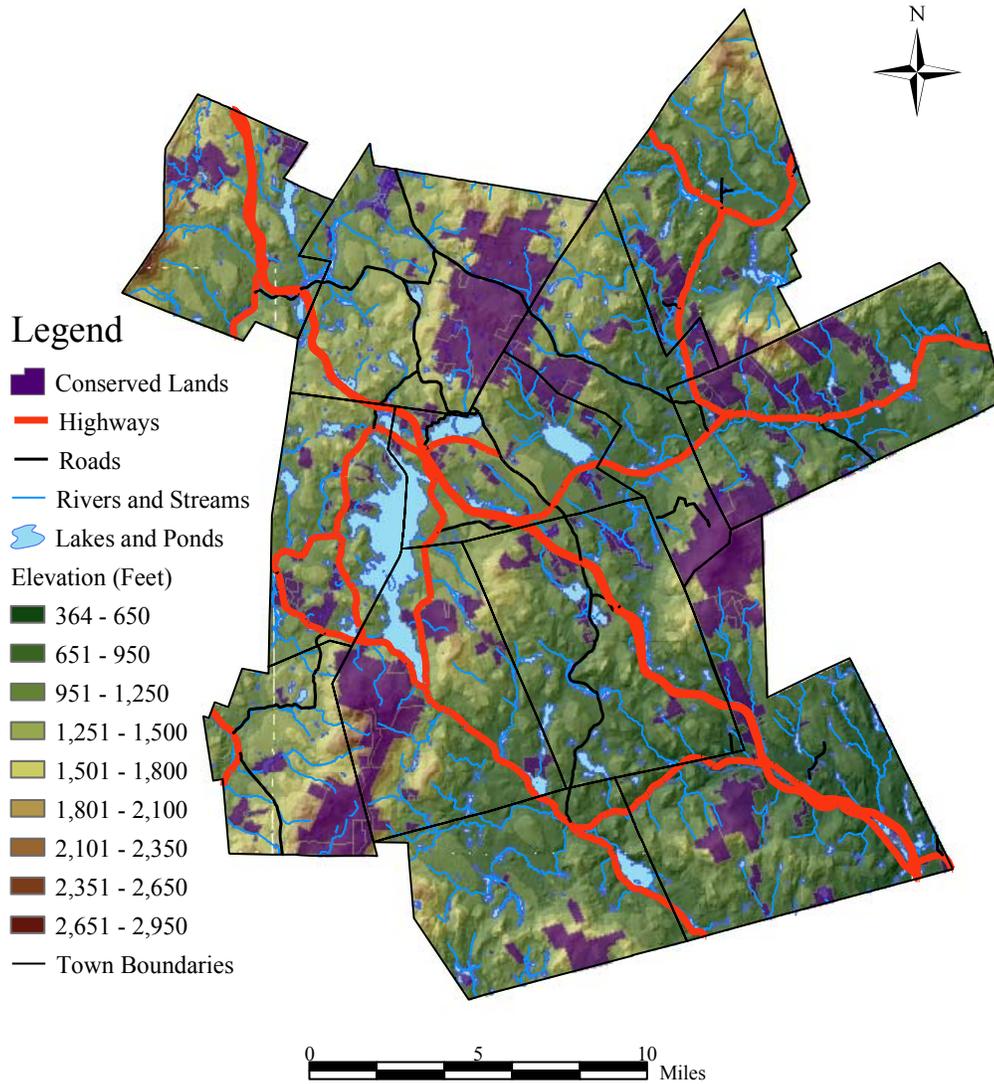
Towns	Total acres	Conserved acres	Percent conserved
Andover	26,272	5,560	22%
Bradford	22,994	1,533	7%
Danbury	24,343	2,135	8%
Goshen	14,420	3,091	22%
Grantham	17,951	1,796	10%
New London	16,268	2,523	15%
Newbury	24,383	5,841	24%
Springfield	28,479	8,174	29%
Sunapee	16,099	1,842	11%
Sutton	27,735	1,923	7%
Warner	35,502	6,774	19%
Wilmot	18,955	4,078	21%
Total	273,401	45,270	17%

Sources:

Data layers were obtained from the GRANIT website: <http://www.granit.sr.unh.edu>. GRANIT is the repository for New Hampshire data.

The New Hampshire Conservation/Public Lands data at 1:24,000 scale layer was updated in August of 2004.

Conserved Lands ASLPT Region



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Unfragmented Lands

One of the goals in the *New Hampshire Everlasting* initiative is to conserve working forests in order that we might grow more wood than we harvest and consume in New Hampshire. Currently that is the case, but as development spreads in the state, large parcels of contiguous forest become fragmented into smaller parcels as they are bisected by roads and subdivided. Care must be taken to conserve large unfragmented forests as they are crucial to the economic practicality of sustainably managing woodlands. The fixed costs associated with harvesting and transporting wood products to market are more easily spread over a larger volume of timber usually found on larger parcels. An additional benefit to conserving productive forests is that, in doing so, we help to ensure the viability of the forest products industry in the state.

Identifying managed forests in the ASLPT region is problematic because parcel data is not available in all twelve towns. There also is no record of parcels that are either managed as working forests or potentially harvestable forests. We determined that there were three methods by which we could examine potentially important forests as targets for conservation: determining where large unfragmented forests are located, examining current use documents in each of the towns, and examining tree farm records in the region.

Using GIS we mapped the areas of land within the twelve towns that are not fragmented by roads. To create this map in GIS we put a one mile buffer around each town because unfragmented lands are not necessarily the same as the political boundaries. We buffered the roads by 500' which allowed us to account for the development along the roads. Unfragmented lands are areas that are not intersected by roads, housing, or any other type of human developments. The buffered roads and large bodies of water were erased from the map, leaving the unfragmented forest parcels. The next step was to sort the parcels by size. Generally larger parcels will support greater biodiversity.

New Hampshire's Current Use legislation was enacted in 1973 as a way to help farm and forest landowners afford property taxes on large parcels of land. Land classified as current use is taxed at a lower rate reflecting the income that can be realized from it as a farm or woodlot rather than its potential as developed land. As real estate prices have risen through the years, this option has allowed landowners to keep their land undeveloped because they afford the lower property tax rates offered under current use valuation.

The attached table illustrates the amount of land in current use in the twelve town region (n/a indicates information was not available). Landowners self-report their property for current use classification, and the only criteria is that there be at least ten acres in current use and that, in the case of the managed forest classification, documentation is provided detailing the management of the parcel. For this reason, it is impossible to correlate the current use documents with the unfragmented lands layer, as not all unfragmented lands are necessarily forest or in current use. It is useful, however, to look at the table as a way to compare the percentages of land in current use in each of the towns, and to view it as a supporting document for the possibility that the unfragmented lands are in fact forested lands that may be thought of as working forests by landowners.

The American Tree Farm system was established in the 1940's to promote the idea of sustainable forestry on private lands. In order to be designated as a Tree Farm, a landowner must own more than ten acres of forest, and manage the property with a written management plan that considers timber value, wildlife habitat, water quality, and soil conservation. In addition, the land must be protected from fire, insects and destructive grazing practices. Many certified Tree Farms also provide for public recreation.

The column in the table titled Acres in Tree Farm program was derived from a list provided by the administrator of the New Hampshire Tree Farm program. Like the current use classification, Tree Farm designation can not be correlated with either unfragmented forests map or the current use classification, although it is likely that Tree Farms are in current use. It does, however, provide support that the number of acres identified as Tree Farms are actively managed forested lands in each of the towns. It must be noted, however, that not all landowners of managed forest lands choose to be designated as Tree Farms, and in the list provided by the New Hampshire Tree Farm committee, there were approximately 8,000 acres of Tree Farms that could not be attributed to towns because they were a composite of acres in multiple towns, some of which were outside our twelve town region (e.g. Bradford and Hillsboro).

Town Name	Total acres	Acres of forest in Current Use	% of acres in Current Use	Acres in Tree Farm program
Andover	26271	15534	59.1	3358
Bradford	22944	n/a	n/a	952
Danbury	24343	15011	61.7	n/a
Goshen	14420	n/a	n/a	610
Grantham	17951	8064	44.9	n/a
New London	16268	2697	16.6	287
Newbury	24383	6616	27.1	2254
Springfield	28479	11355	39.9	1129
Sunapee	16099	4020	25	22
Sutton	27735	16793	60.5	824
Warner	35502	n/a	n/a	4102
Wilmot	18955	11182	59	1348

Reviewing the number of acres landowners have placed in Current Use indicates that a sizable percentage of forested land in the region is being managed for forestry. The map indicates that there are still parcels greater than 2500 acres in each of the twelve towns in the ASLPT region. Since managed forestry is typically permitted under the terms of a conservation easement, it might be prudent to focus some conservation efforts toward protecting some of the larger intact unfragmented forest parcels for the long term.

Sources:

“Current Use land under the “Forest Land with documented stewardship” category.”
Available from the New Hampshire Department of Revenue Administration
website at: <http://www.state.nh.us/tirs/2000/2000-004.htm>, March 9, 2005.

McCoy, Ann. Tree Farm Administrator for New Hampshire. “Tree Farms in the ASLPT
region” e-mail to students, October, 2004.

“New Hampshire’s Current Use Program” The Cornerstone of Forestland Conservation.”
Available from the New Hampshire Timberland Owner’s Association at
<http://www.nhtoa.org/nhcurrentuse.htm>, March 24, 2005.

“Overview of Current Use Assessment RSA 79-A.” Available from the University of
New Hampshire Cooperative Extension website:
<http://ceinfo.unh.edu/Pubs/ForPubs/cuse2002.pdf>, March 9, 2005.

“What is Tree Farming?” Available from the American Tree Farm System website at:
http://www.treefarmssystem.org/cms/pages/20_5.html, March 9, 2005.

Current Use summaries from each of the twelve towns:

Andover Current Use Document.

Danbury current use document.

Grantham current use summary.

Newbury current use summary.

New London current use summary documents.

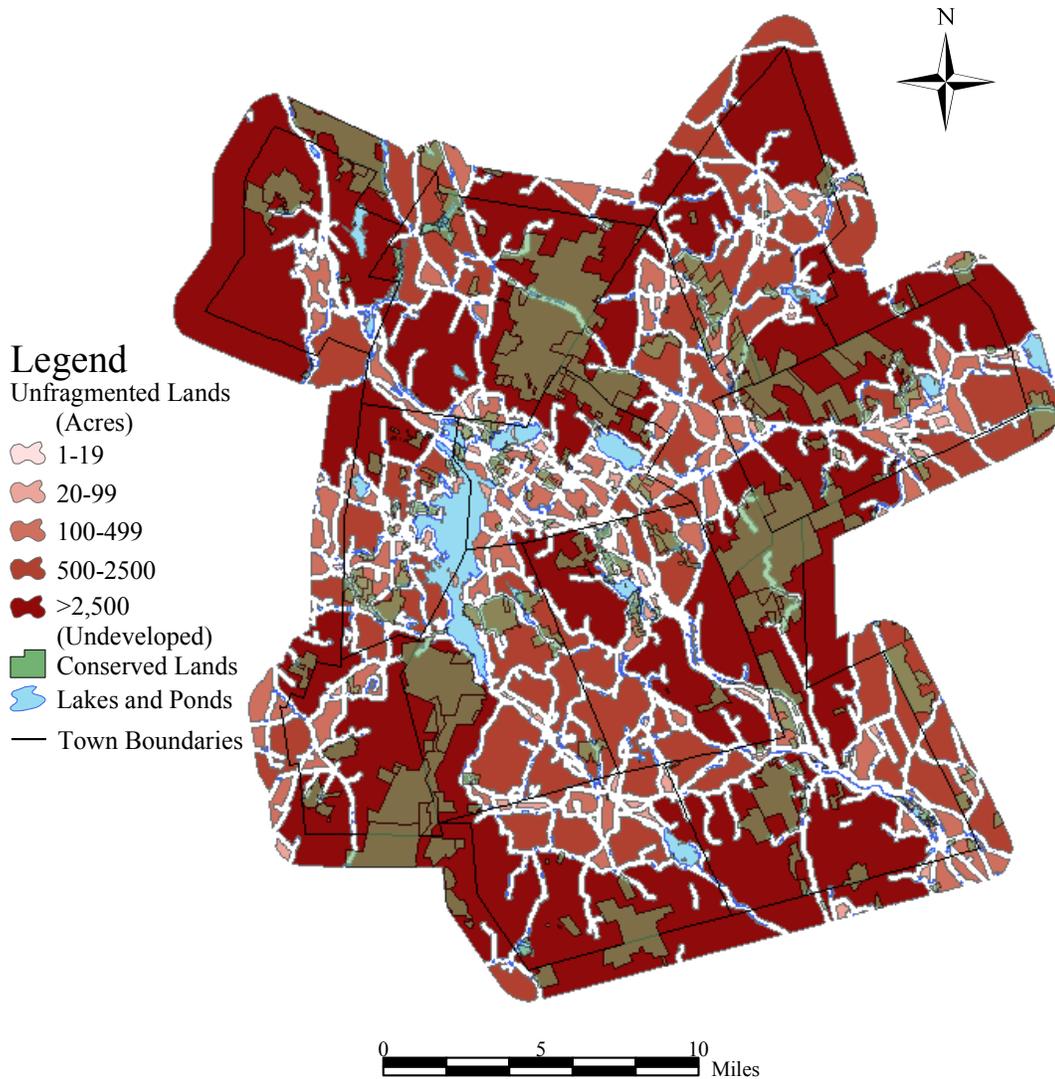
Springfield current use documents.

Town of Sunapee Current Use Summary.

Town of Sutton, NH Current Use Documents: E-mail from Elly Phillips,
administrative assistant, April 21, 2005.

Town of Wilmot, NH Current Use Documents.

Unfragmented Lands ASLPT Region



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Agricultural Lands

The *New Hampshire Everlasting* initiative points out that agricultural land always has been, and still is, very important to the people of New Hampshire both in terms of maintaining rural character, and in the practical matter of supplying local food. Agricultural lands are one of the most threatened types of land in the state because they are generally the most favorable building sites (relatively flat with good soils for construction). A greater percentage of the existing agricultural lands have been lost to development in recent years than the existing forested lands (*New Hampshire Everlasting*).

Just as identifying managed forests was problematic in the ASLPT region, so, too was the task of identifying agricultural lands. One difficulty in trying to identify agricultural lands was in defining them. While it is relatively easy to identify active farmstands and community-supported agriculture establishments, fields that are regularly mowed as pastures or grazed by animals are not as easily pinpointed. This task was accomplished by digitizing, from aerial photographs, open fields larger than ten acres. Following that exercise, students met with representatives from each of the twelve towns for assistance in determining whether those open spaces were mowed fields or simply large lawns or other open spaces. The map depicts the results of that collaboration.

Like forested lands, there is no requirement to declare agricultural management to either the town or the state. New Hampshire's Current Use legislation, enacted in 1973, as a way to help farm and forest landowners afford property taxes on large parcels of land. Land classified as current use is taxed at a lower rate reflecting the income that can be realized from it as a farm or woodlot rather than its potential as developed land. Electing to place farm lands in Current Use valuation is a voluntary measure, though, and therefore can not be used to identify all managed farm land. Having stated that limitation, checking the map against each town's records of farm lands in Current Use was employed as a way to double check the digitized calculations.

Not surprisingly, the map reveals that there is relatively little agricultural land in the ASLPT region. For this reason, all remaining agricultural lands should be prioritized for conservation efforts.

Town Name	Total acres	Farm acres in Current Use	% of acres in Current Use
Andover	26271	662	2.50%
Bradford	22944	n/a	n/a
Danbury	24343	575	2.40%
Goshen	14420	n/a	n/a
Grantham	17951	326	1.80%
New London	16268	1022	6.20%
Newbury	24383	41	0.20%
Springfield	28479	1189	4.10%
Sunapee	16099	729	4.50%
Sutton	27735	551	1.90%
Warner	35502	n/a	n/a
Wilmot	18955	640	3.30%

Sources:

Current Use summaries from each of the twelve towns:

Andover Current Use Document.

Danbury current use document.

Grantham current use summary.

Newbury current use summary.

New London current use summary documents.

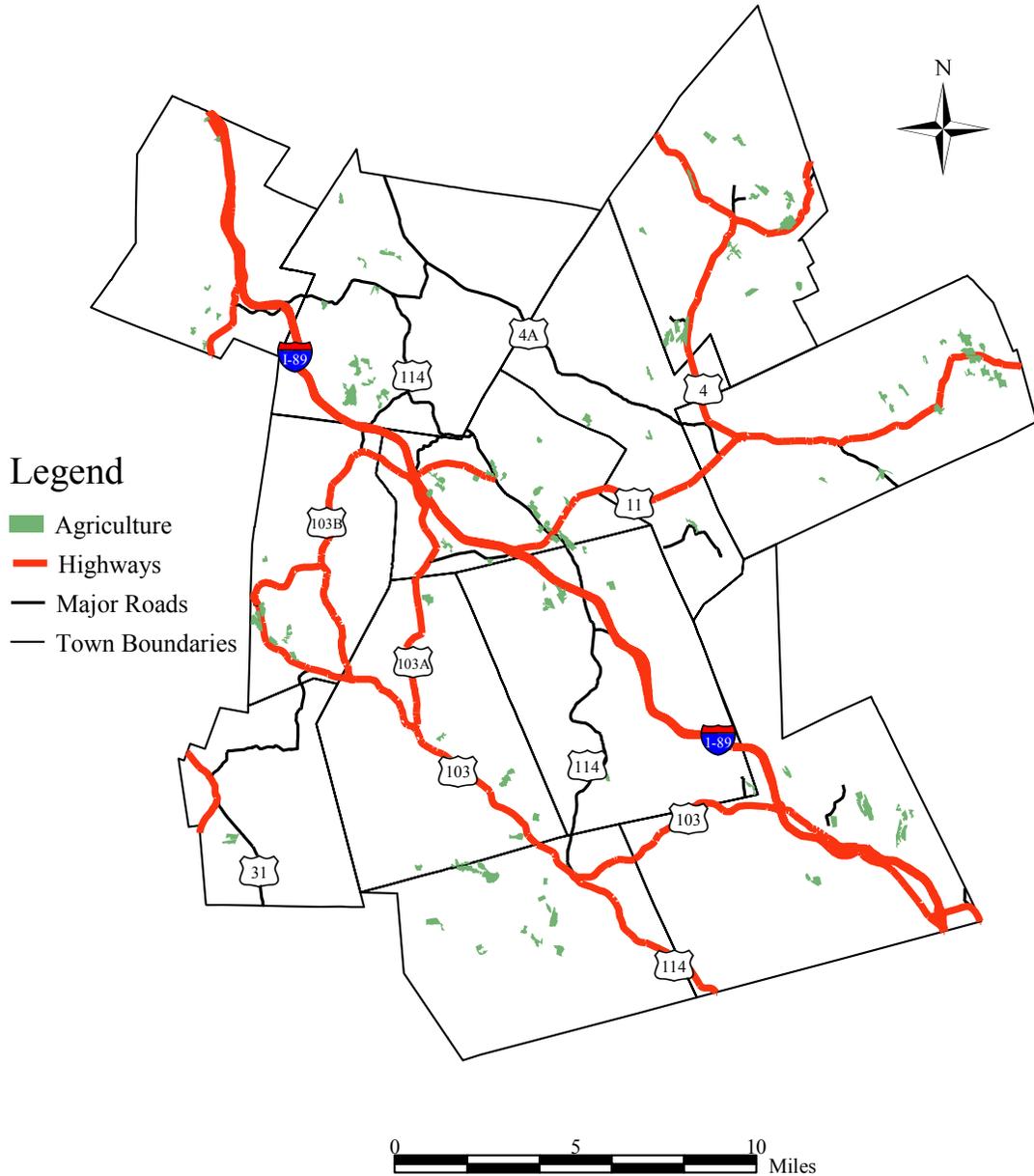
Springfield current use documents.

Town of Sunapee Current Use Summary.

Town of Sutton, NH Current Use Documents: E-mail from Elly Phillips, administrative assistant, April 21, 2005.

Town of Wilmot, NH Current Use Documents.

Agricultural Lands ASLPT Region



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Landcover

The New Hampshire Landcover Assessment data layer depicts the vegetation in the state in twenty three different cover classes. Satellite imagery, remote sensing, and ground-truthing were used to collect, interpret, and verify this information. The layer was created and made available in 2001. Development of the New Hampshire Land Cover Assessment was made possible by financial support from the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET), USDA Forest Service, NH Department of Resources and Economic Development, NH Department of Fish and Game, USDA Natural Resources Conservation Service, NH Space Grant, and UNH Cooperative Extension.

For three reasons, the twenty three available landcover classes were collapsed into seven classes for the purpose of illustrating vegetative cover in the ASLPT region. First, collapsing the twenty three cover classes into fewer classes increases its accuracy. This is because distinguishing between, for instance, row crops, hay/pasture, and orchards is more complex than combining them in the same category and naming them agricultural lands. Secondly, the resolution for this data layer is 30 meters and in the ASLPT region it is likely that some of the cover classes (for instance the ones named above) would cover a smaller area than 30 meters. Lastly, most people have difficulty distinguishing between more than seven colors, and this supported the decision to collapse the data layer into fewer cover classes.

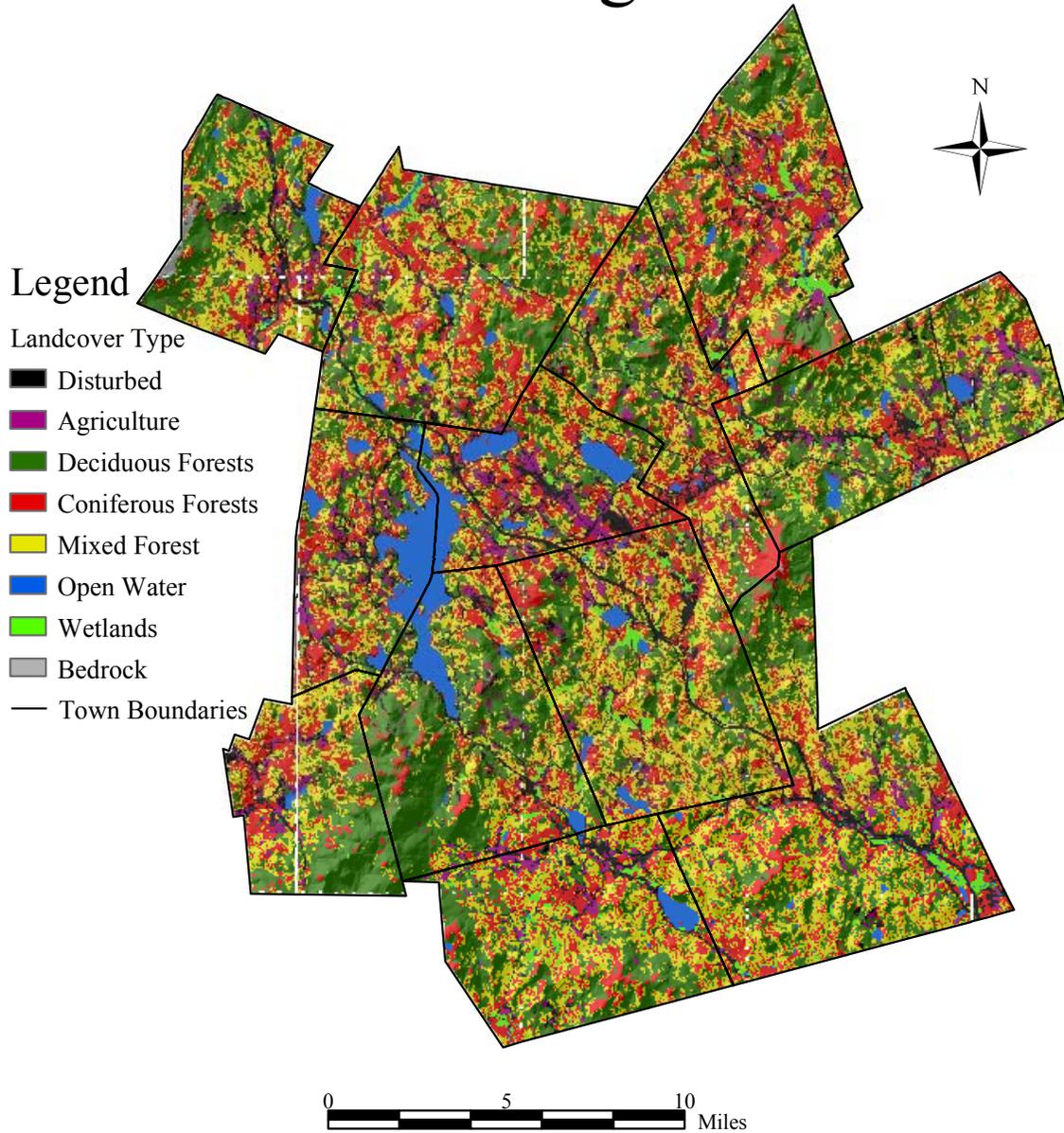
While it is not appropriate to use this data layer at the parcel level because of its resolution, it is useful for understanding the types of forest vegetation present in the ASLPT region. The map illustrates that the region is largely forested with a mixture of hardwood and coniferous forest. In addition, there are several wetlands in the region, and little agricultural land. Development is largely dispersed in the region and, as such, there is little land classified strictly in the disturbed category.

Sources:

Data layers were obtained from the GRANIT website: <http://www.granit.sr.unh.edu>. GRANIT is the repository for New Hampshire data.

The New Hampshire Landcover Assessment 2001 layer was published in January of 2002.

Landcover ASLPT Region



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Ecologically Important Lands

One of the main goals of the *New Hampshire Everlasting* initiative is to conserve ecologically important lands. Protecting these lands involves protecting prime habitat for native species, and in order to identify these lands, four methods were used; interior habitat, forest continuity index, corridors, and steep and south facing slopes.

Interior Habitat

Interior habitat represents the core habitat within each unfragmented parcel. Species that prefer to have little to no human interaction, such as bear, moose, and deer prefer core habitat, as it is more isolated from development and roads. Areas that provide favorable habitat for large animals will also provide habitat for species in the medium and small categories.

Within the ASLPT region, there are several large pieces of interior habitat around the outer borders of the region. These areas make ideal habitat for large mammals as well as several other species. Towards the western part of the region, there are very few patches of interior habitat. None seem large enough to be worthwhile conserving. Toward the eastern and southeastern parts of the region, there are several small to medium-sized parcels that might not allow for inhabitation of large mammals, but would make ideal habitat for smaller species.

Much of the conserved land within the ASLPT region covers areas containing interior habitat. This is evidence that the region is off to a good start in conserving prime wildlife habitat. Interior habitat is included in the ecologically important lands composite that is part of the co-occurrence calculation that appears later in this chapter.

Methodology: In order to map interior habitat, the unfragmented lands layer was manipulated by placing a 1000 foot buffer on the inside of each unfragmented parcel. The 1000 foot buffer was then clipped away, and the land remaining represents the interior habitat of a parcel.

Sources:

Lambert, Nancy. Mapping Wildlife Habitat using ArcView 3.2 and NH GRANIT Data. Durham: University of New Hampshire Cooperative Extension, 2004.

Data layers were obtained from the GRANIT website: <http://www.granit.sr.unh.edu>. GRANIT is the repository for New Hampshire data.

Interior Habitat ASLPT Region



Legend

 Conserved Lands

Interior Habitat

(Acres)

 1-19

 20-99

 100-499

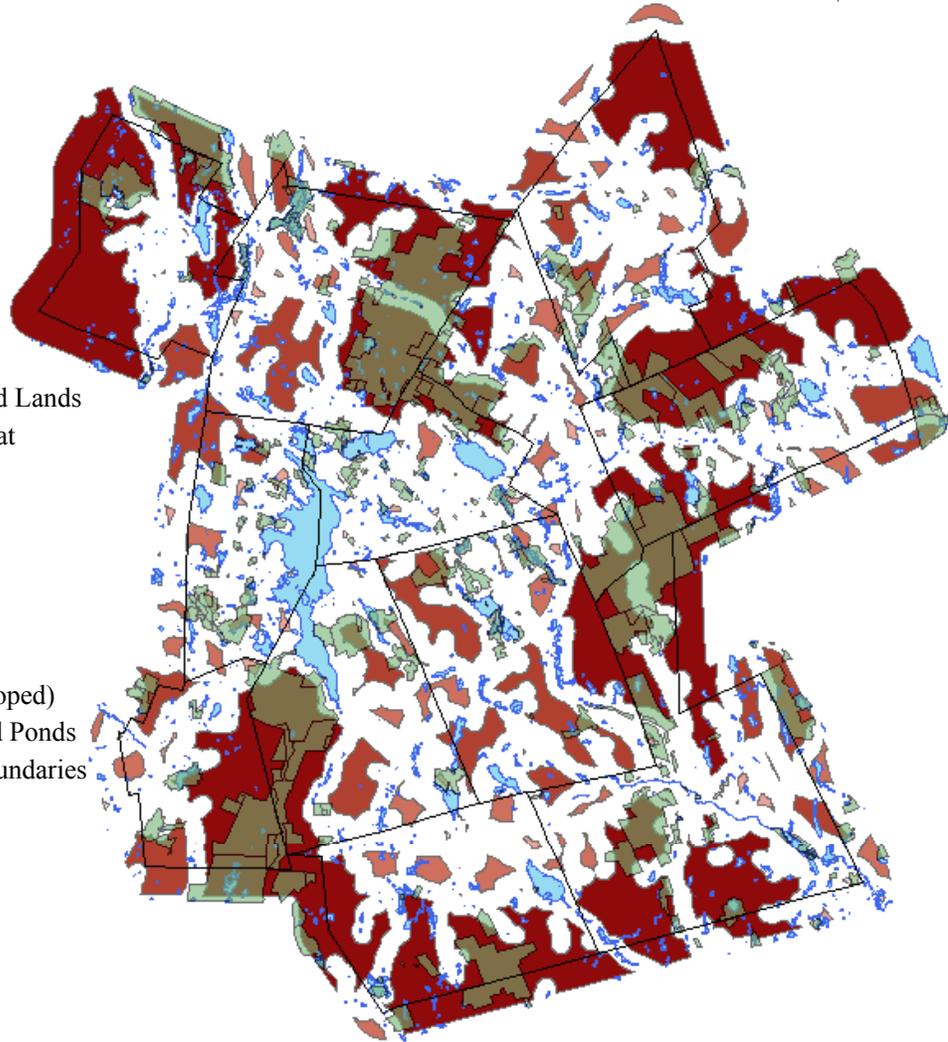
 500-2500

 >2,500

(Undeveloped)

 Lakes and Ponds

 Town Boundaries



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Forest Continuity Index

Forest continuity index (FCI) gives a measurement of how much habitat is infringed on by the edge effect. Edge effect refers to the impacts often related to habitat on the edge of development. Many species will avoid the edge of the habitat in order to stay away from potential human impacts. Certain parcel shapes provide more usable habitat, and therefore a better FCI, than parcels of the same area with a different shape. A circle has the maximum amount of usable habitat. Therefore parcels with a rounder shape will have a better FCI and more usable habitat than long parcels, or parcels with jagged edges. A circle has an FCI of one. Any other shape would have an FCI greater than one. The closer to one an FCI is, the more usable habitat there is within the parcel.

Within the ASLPT region, there are several parcels with FCI's close to one. These, unfortunately, are very small parcels. All of the larger parcels in the region have fairly high FCI's due to their unusual shapes. This, however, does mean they should not be conserved. These large parcels could provide ample habitat for a number of species regardless of the FCI. On the other hand, some smaller parcels with high FCI might also be worthwhile conserving. The round shape of these smaller parcels gives them a large amount of usable habitat for their small size.

Most of the conserved land in the ASLPT region is located in parcels with fairly high FCI rankings. This means that they are located in parcels that have somewhat high levels of edge effect. In order to provide habitat with the least amount of edge effect, it might be wise to conserve land that has lower FCI rankings. FCI is included in the ecologically important lands composite that is part of the co-occurrence calculation. Parcels with an FCI closest to one were rated highest in rank over five categories.

Methodology: In order to calculate the FCI's for each parcel in the ASLPT region, the unfragmented lands layer was manipulated. The FCI of a parcel is equal to:

$$\frac{\text{Perimeter (feet)}}{2\sqrt{(\pi\text{area[sq feet])}}}$$

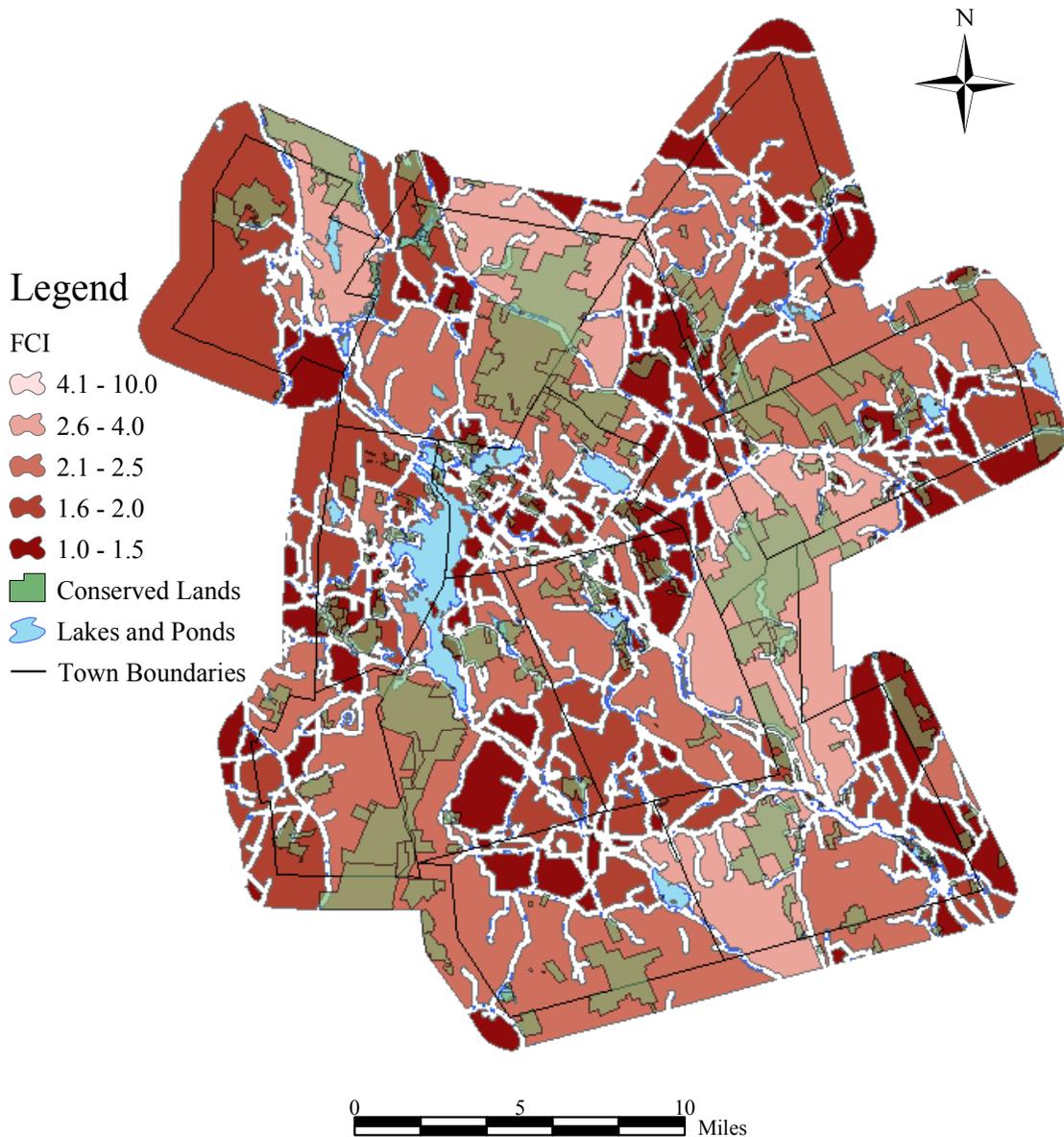
This formula was entered into the GIS program, and FCI value for each parcel was calculated. These values were then used to color-code the parcels according to FCI.

Sources:

Lambert, Nancy. Mapping Wildlife Habitat using ArcView 3.2 and NH GRANIT Data. Durham: University of New Hampshire Cooperative Extension, 2004.

Data layers were obtained from the GRANIT website: <http://www.granit.sr.unh.edu>. GRANIT is the repository for New Hampshire data.

Forest Continuity Index ASLPT Region



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Corridors

Corridors are pieces of undeveloped land that connect unfragmented parcels. The connectivity created by the corridors is significant because it allows for interaction between populations in separate parcels. This is an integral aspect of maintaining ecological stability because by allowing interaction between populations, breeding between populations is made possible. Breeding between populations leads to a greater level of diversity, which is essential to sustaining healthy wildlife populations. The best way to allow for interaction between populations is to have large unfragmented parcels, but if this is not possible, corridors can reduce the isolated conditions that are typical of small parcels.

Corridors were derived by buffering streams and ridgelines by 300 feet, and selecting those that connect unfragmented parcels. Within the ASLPT region, there are several small, unfragmented parcels towards the center of the region. These parcels are connected by a number of corridors which allow for travel between parcels. Around the edges of the region, there are a number of patches of medium-sized parcels. These parcels show an even greater amount of connectivity than the small parcels, allowing for a greater amount of interaction between populations, thus a greater level of diversity. The remainder of the region is covered by large unfragmented parcels which already allow for a sizable amount of interaction between populations.

Very few corridors, either riparian or ridgeline, are protected at this time. Corridors are factored into the co-occurrence map as part of the ecologically important lands composite.

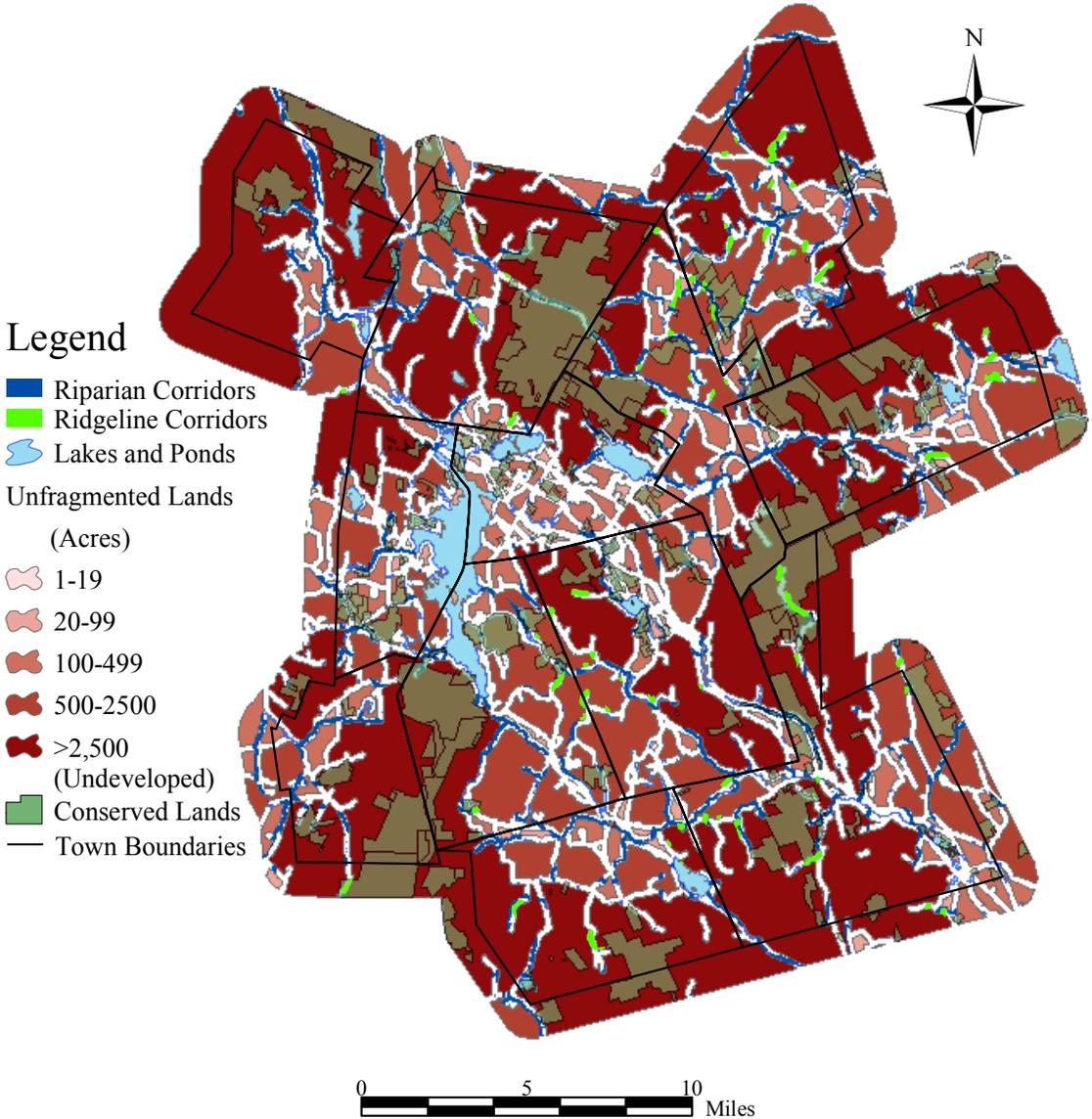
Methodology: In order to identify corridors, all rivers and perennial streams were located within the region. Additionally, a line was digitized along undeveloped ridgelines. Each of these layers was buffered by 300 feet to account for development adjacent to these areas. The buffered corridors were clipped by the unfragmented lands layer, and those that connected unfragmented parcels were identified as corridors.

Sources:

Lambert, Nancy. Mapping Wildlife Habitat using ArcView 3.2 and NH GRANIT Data. Durham: University of New Hampshire Cooperative Extension, 2004.

Data layers were obtained from the GRANIT website: <http://www.granit.sr.unh.edu>. GRANIT is the repository for New Hampshire data.

Corridors ASLPT Region



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Steep and South Facing Slopes

Steep and south facing slopes provide unique habitats on which a number of species depend. South facing slopes provide a warmer habitat, and can support plants and animals that favor those conditions. An example of an animal that utilizes this habitat is white-tailed deer, especially during the winter season. Steep slopes provide ideal habitat for animals that prefer rocky substrate and soil that is low in nutrients. These areas support bobcats, peregrine falcons and several other species that require cliff-like, and warmer habitats.

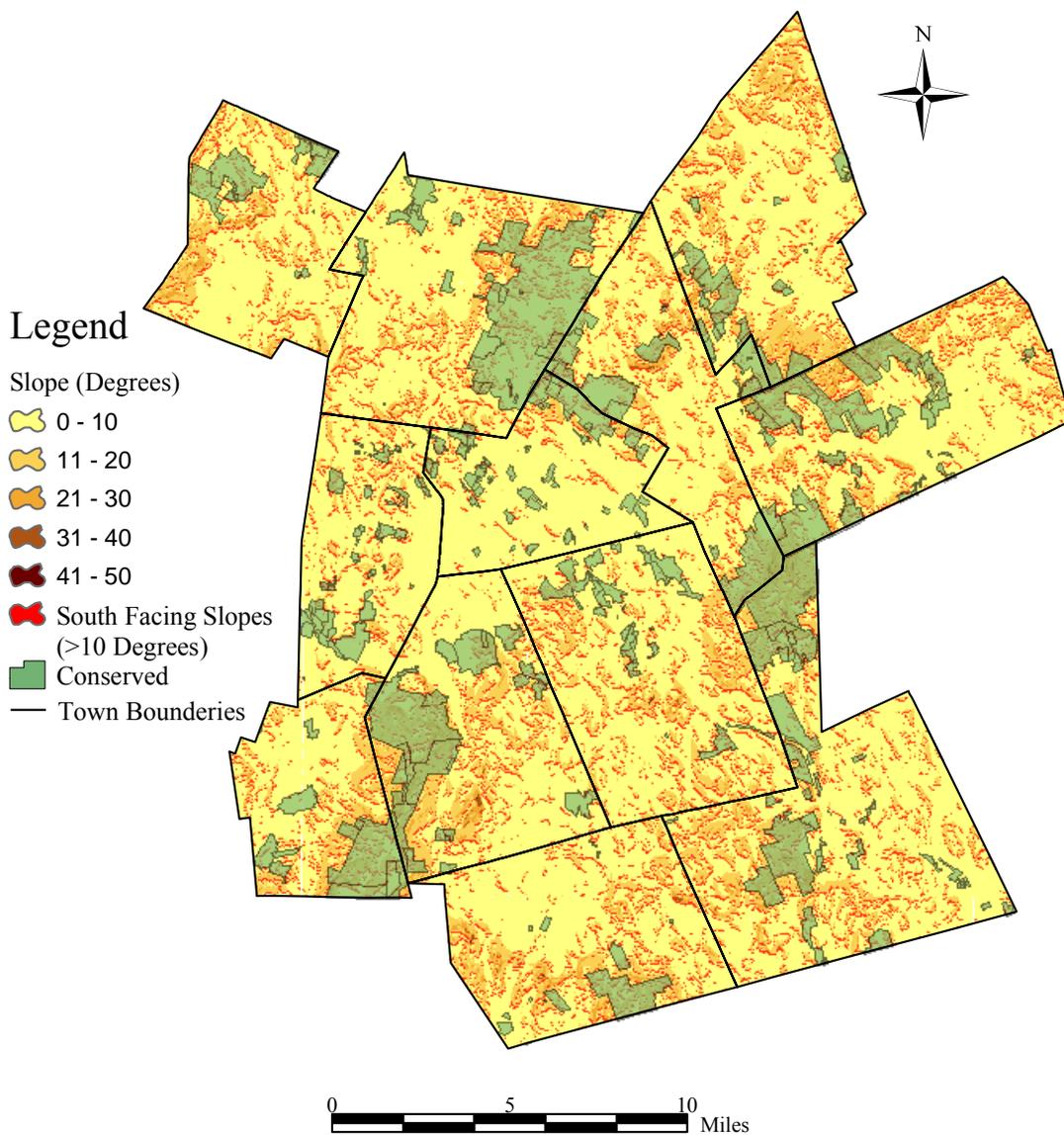
Within the ASLPT region, there are several south facing and steep slopes. Since a south facing aspect is often a favorable criterion for development, it seems prudent to consider protection for these areas for wildlife habitat. It comes as no surprise that there are many south facing slopes in the region, given the mountainous terrain. Steep and south facing slopes are included in the ecologically important lands composite that is part of the co-occurrence calculation that appears later in this chapter.

Methodology: The aspect was calculated, using the Spatial Analyst tool in GIS, for all of the terrain in the ASLPT region based on the digital elevation model. Aspects delineated as southeast, south, and southwest were highlighted and classified as south facing slopes and illustrated on this map in red. Slope was also calculated over the entire region using the Spatial Analyst tool in GIS. Those slopes 10% and greater were selected and shown on the map.

Source:

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Slope ASLPT Region



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Threatened and Endangered Species

Threatened endangered species play key roles in local ecosystems. In order to maintain healthy and intact ecosystems, it is important to protect the rare species that inhabit them. Areas that contain endangered species often represent unique habitat types that might also be important to several more common species.

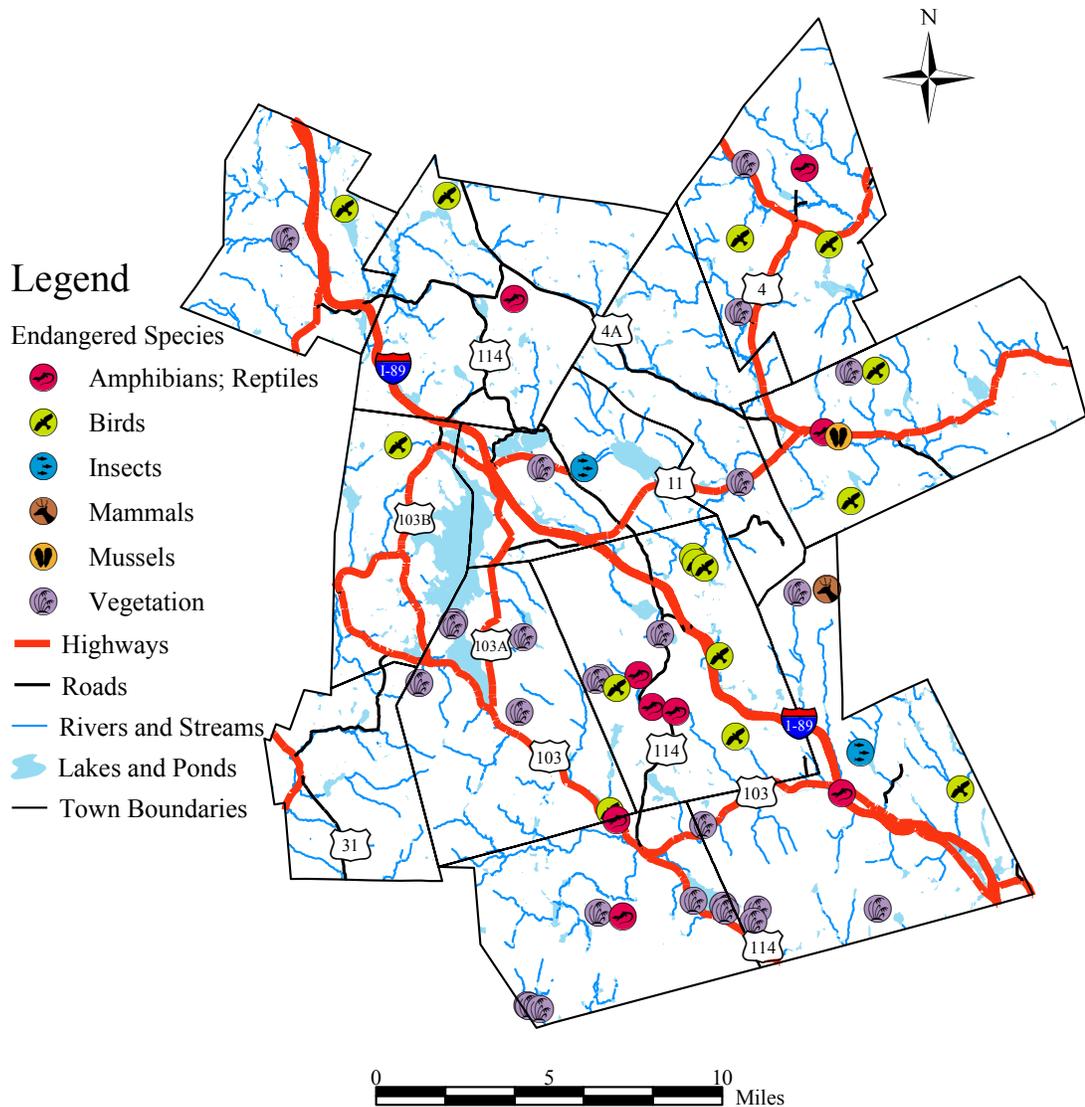
The New Hampshire Natural Heritage Bureau maintains a database of threatened and endangered species in the state including the species name, its status (how rare) and the date the species was reported. Information regarding threatened and endangered species may be obtained from the Natural Heritage Bureau with the following limitations: 1) data does not state the exact species found but, rather, states whether the endangered species is a plant, reptile, amphibian, bird, mammal, etc. 2) the icon representing the threatened or endangered species is offset in a random direction and measurement within a 500 foot circle for protective purposes.

Because the information gleaned from this Bureau depends on a self-reporting system (several of which were older sightings), and the locations are offset for protection purposes, the data layer was not included as part of the co-occurrence mapping for the region. The information is included in this report, however, as a reference for the general locations of reported threatened and endangered species, and as a reminder to be vigilant about looking for rare species.

Source:

Data layers were obtained from the GRANIT website by permission from the NH Natural Heritage Bureau : <http://www.granit.sr.unh.edu>. GRANIT is the repository for New Hampshire data.

Threatened and Endangered Species ASLPT Region



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Deer Yards

Deer yards are ecologically important lands. They are the potential areas in which deer congregate during the winter months. According to wildlife biologists, deer conserve their energy during the winter months by congregating in softwood cover, or "deer yards," to avoid deep snow, high winds and extreme cold (NH Fish and Game). In these areas, deer move around very little, using a network of trails that disperses them and reduces competition for natural food. "Deer yards are very important to the winter survival of the herd," says wildlife Biologist Karen Bordeau. Anywhere the snow is over 18 inches deep for an extended time, deer need yards.

Deer yards are almost always located in coniferous forests greater than 10 acres. The reason for this is that the total snow accumulation under coniferous trees is much less than in hardwoods; this makes it easier for deer to move through the woods.

From the map we can see that every town has the potential for deer yards, some of the largest yards are located in Springfield and Danbury because this is where some of the largest areas of unfragmented land in the region. In term of conserved lands, Winslow State Park and Gile State Forest provide significant areas for deer yards. However, other large parcels of conserved lands such as Mt. Sunapee and Pillsbury State Park do not provide significant area for deer yards. This is because of different forest types and development from skiing in the area.

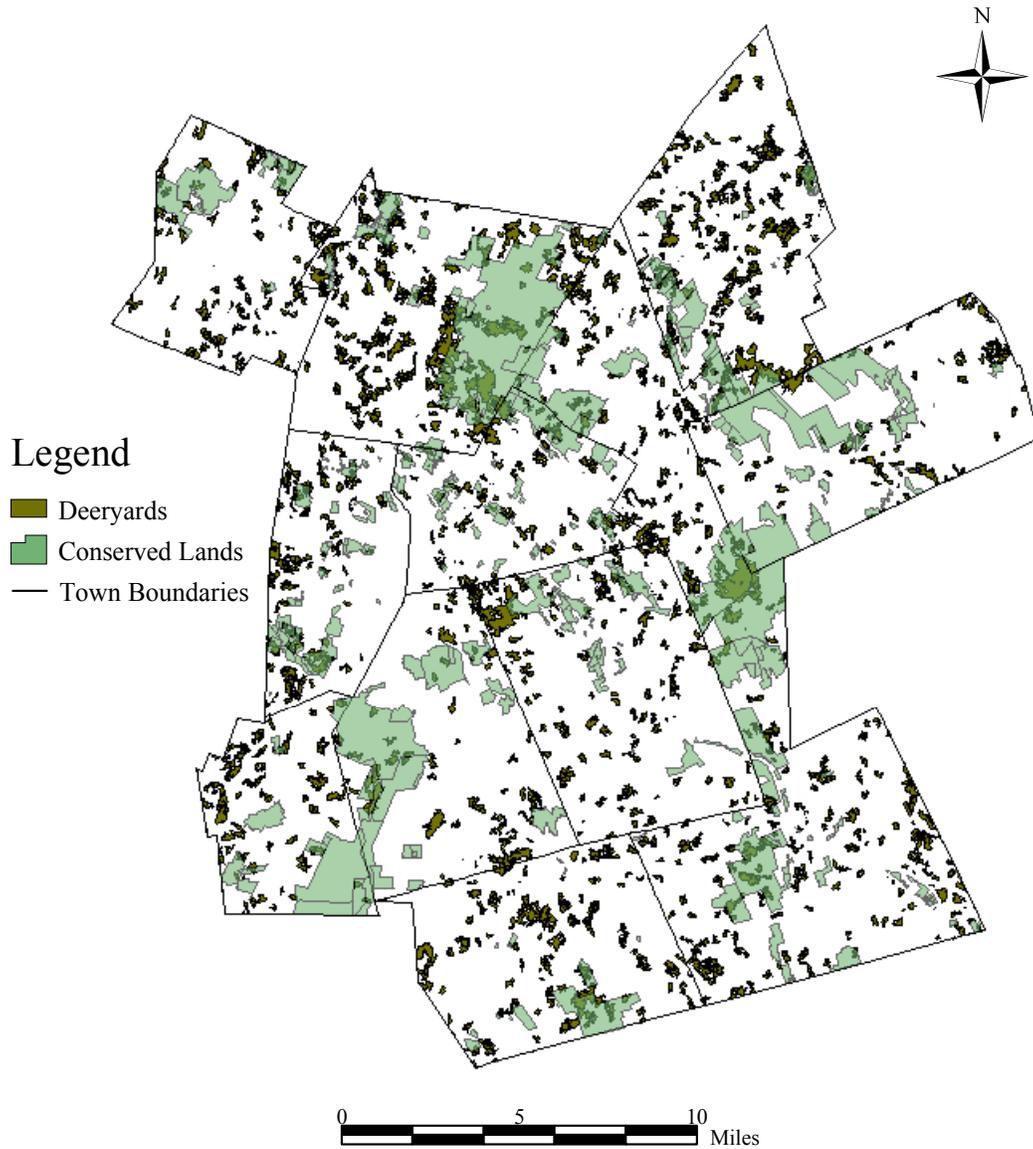
Because of the abundance of white-tailed deer in the ASLPT region, and the other methods already incorporated to identify wildlife habitat that would favor deer habitat, deer yards were not included in the co-occurrence mapping that appears later in this chapter.

Methodology: Following a standard established by NH fish and Game we determined the location of deer yards by utilizing land cover data to identify all the coniferous forests and parcels greater than ten acres. Those areas were digitized as a data layer and mapped.

Source:

Orff, Eric . "Wildlife report from N.H. Fish and Game." Monthly wildlife report.
18 Mar. 2005. New Hampshire Fish and Game. March 28, 2005
http://www.nhfishandwildlife.com/monthly_wildlife.htm.

Deer Yards ASLPT Region



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Water Resources

The water resources map is comprised of aquifers, lakes and ponds, rivers, and streams, with conserved lands overlaid on top of the water data layers. There is an abundance of surface water resources in the ASLPT region, and they are utilized for recreation, habitat for aquatic species, drinking water, and scenic resources. In addition, wetlands serve important ecological functions as filters for nutrients and pollutants, habitat, and groundwater recharge areas. Aquifers are an underground bed or layer of earth, gravel, or porous stone that yields water.

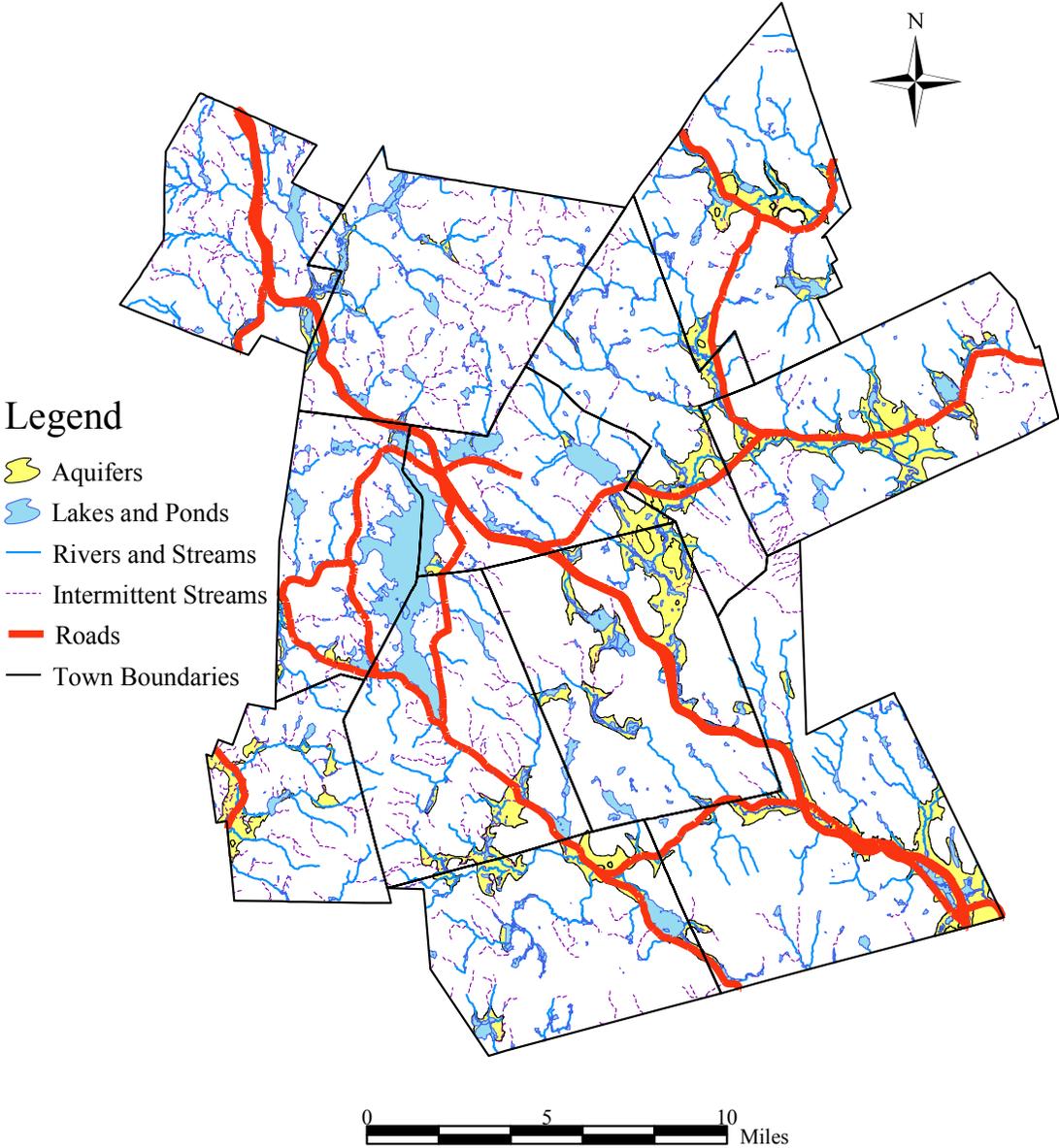
As abundant as water resources are in the ASLPT region, this map depicts the proximity of those resources to development, specifically road development. Wherever roads are located, development will be found. Development brings the potential for polluting the water resources through increased runoff created by impervious surfaces (buildings, parking lots, and roads), and by spilling pollutants into the water resources, either intentionally or accidentally.

This map can be used to quickly locate the water resources in the ASLPT region available for human and animal species. The next map addresses more specifically the drinking water resources for the human population in the region.

Source:

Data layers were obtained from the GRANIT website: <http://www.granit.sr.unh.edu>.
GRANIT is the repository for New Hampshire data.

Water Resources ASLPT Region



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Public Drinking Water

One of the goals of the *New Hampshire Everlasting* initiative is to protect drinking water supplies. Throughout much of the ASLPT region, drinking water is obtained from private wells, and some households utilize area lakes for their water supply. Since most of the water supply is stored underground, protecting areas where aquifers exist that might be favorable for large wells (presently or in the future), wellhead areas, and buffering areas around larger streams would be prudent measures to consider.

Digital data layers were obtained from the New Hampshire Department of Environmental Services depicting public water supply sources, drinking water wellhead and surface water protection areas (WHPA and SWPA, respectively), and large volume favorable gravel well areas (FGWA). In addition, third order and higher streams and rivers (listed in Good Forestry in the Granite State) were selected and buffered by 300'. These data layers together form the drinking water composite in the co-occurrence map.

The map displays digital water resource data available from New Hampshire Department of Environmental Services (NHDES) in March 2005. Documentation from NHDES reports that the drinking water protection area was revised in January 2004 and updated quarterly, and the public water supply sources are updated monthly. These data are to be used for planning or educational purposes only.

Public water supply sources and treatment facilities/pump houses are those registered with the NHDES, Water Supply Engineering Bureau. Wellhead protection areas depict community and non-community, non-transient public water systems. Examples are schools, recreation areas (such as Mt. Sunapee), condominiums, and municipal water precinct supply locations covered under the Groundwater Protection Act, RSA485-C. The protection area is the area from which water is likely to flow toward and reach a water supply source. Wellhead protection areas are delineated by NHDES in accordance with methodology described in publications by NHDES and listed under "sources" below. In the case of surface water protection areas, the entire region can be delineated into a protection area, as all land is in a watershed, so this data layer was left out of the analysis. Expanded delineation efforts are underway by NHDES for both wellhead protection and surface water protection.

The computerized FGWA analysis process involves the buffering of various features that represent potential or known sources of contamination to a source well. These include surface water features, urban features such as roads, and NHDES known and potential contamination sites. These buffered features are then "erased" from the extent of the stratified drift aquifer, leaving the "potentially favorable" areas.

The buffers used to identify the FGWA areas on this map do not guarantee protection from well contamination. Source water protection areas may be revised as more site-specific hydrogeologic information becomes available. The FGWA information provided in this map was developed by the NH Dept of Environmental Services. Development of these databases is ongoing and this map may not contain all existing and potential threats to groundwater. NHDES, ASLPT, and Colby-Sawyer College are not responsible for the use or interpretation of this information, nor any inaccuracies in site names, locations, projected yields, or groundwater flow direction. All information is subject to verification.

Because drinking water resources are so important, and there is so little protection in the state for drinking water resources, every location identified as a current or potential drinking water resource was given a factor in the drinking water composite. That composite was rated a four in importance on a scale of one to five, with five being the most important.

For further information, please refer to: “A Guide to Identifying Potentially Favorable Areas to Protects Future Municipal Wells in Stratified-Drift Aquifers,” NH DES, Publication NHDES-WD-99-2.

Sources:

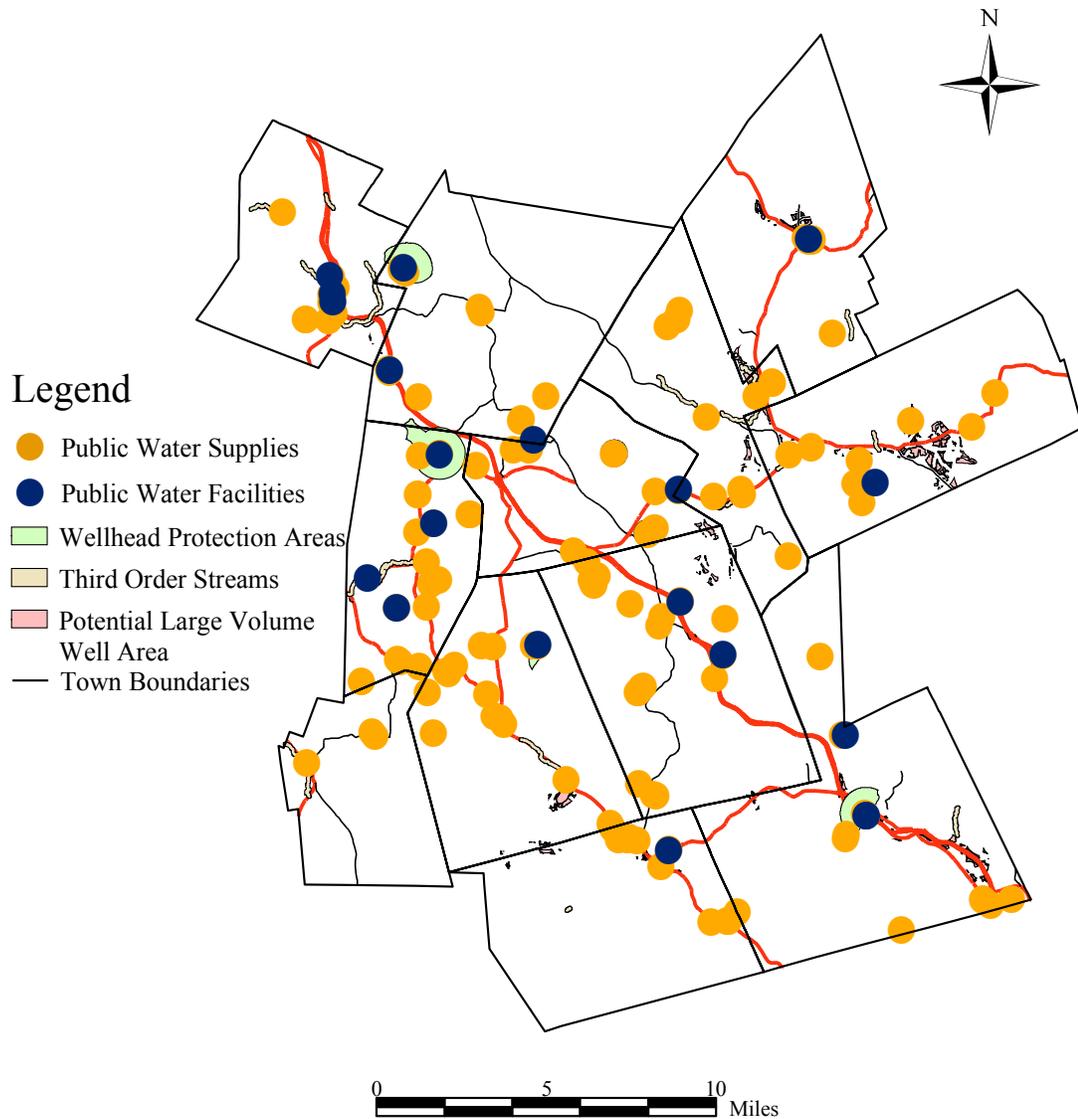
New Hampshire Department of Environmental Services. 1999. “WD-WSEB-22-12. Using Stratified-Drift Aquifer maps to plan for potential future community wells.” Available at: <http://www.des.state.nh.us/factsheets/ws/ws-22-12.htm>, April 1, 2005.

New Hampshire Department of Environmental Services Water Supply Engineering. *Environmental Fact Sheet: Declining Wellhead Protection Areas*. 2003. www.des.state.nh.us/factsheets/ws/inc/12-2.html.

New Hampshire Department of Environmental Services Water Supply Engineering. *Environmental Fact Sheet: Performing an Inventory for Drinking Water Supplies*. 2003. www.des.state.nh.us/factsheets/ws/inc/12-3.html.

New Hampshire Division of Forests and Lands, DRED, and the Society for the Protection of New Hampshire Forests. Good Forestry in the Granite State. “3rd Order and Higher Streams & Rivers in New Hampshire”. 1997. Sant Bani Press, NH.

Public Drinking Resources ASLPT Region



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Recreation

In the *New Hampshire Everlasting* initiative, the importance of public recreation areas are stressed, citing health benefits to people as well as the economic benefits in tourism. While it might feel as though there are an adequate number of recreation opportunities presently, unless they have been protected through conservation measures, that situation can change. Change in ownership of lands often brings with it changes in land use. Recreation is an important aspect in every town, and each of the towns has many recreational activities to choose from, mostly in the form of non-motorized recreation. Newbury and Danbury offer unique activities with alpine skiing operations in those towns.

Mapping each of the trails and recreational activities for the entire ASLPT region was a bigger task than there was time to accomplish in this project. Additionally, the details of the individual trail systems wouldn't be distinguishable over the entire region, making such a map difficult to interpret. Instead, icons were placed in the general area of recreation opportunities and labeled by type.

Because of the generalized placement of icons, and the plethora of recreation opportunities available in the ASLPT region, this data layer was not included in the co-occurrence map. The map is included as a way to simply visualize the variety of recreational opportunities available throughout the region. Many towns have detailed maps available depicting recreational activities within their town.

Sources:

Cross Country skiing:

"Trail Map." NORSK. NORSE Cross Country Ski. February 2, 2005
<<http://www.skinorsk.com/>>.

Hiking Trail maps:

Sunapee-Ragged-Kearsarge Greenway, Mt. Sunapee hiking trails, New London Conservation Commission, The Fells, Fishersfield Park, Mount Kearsarge Hiking Trails. NH Division of Parks & Recreation . 07 Mar. 2005
<<http://www.nhstateparks.org/pdf%20Maps/kearsarge.pdf>>.

Mountain biking: Webb Forest trails

Ski area trail maps for:

Mt. Sunapee available at:<http://www.mountsunapee.com/mountaininfo/map3.html>
Ragged Mountain Resort. Ragged Mountain . April 6, 2005 <<http://www.ragged-mt.com/>>.

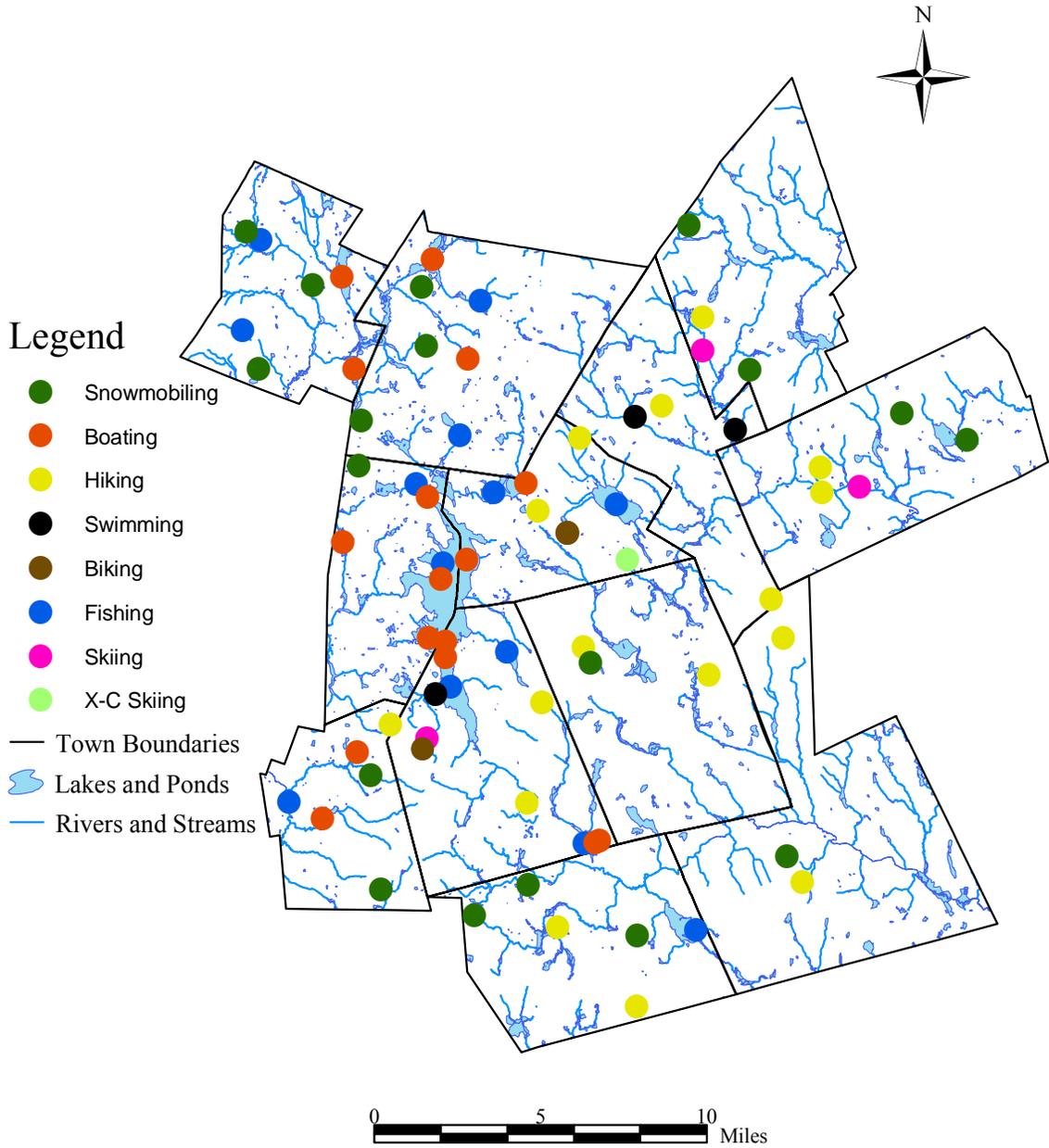
Snowmobile maps:

New Hampshire Snowmobile Trail Map, Keim Publications, Weld, ME.
Kearsarge Trail Snails Snowmobile Club, Inc.. 8 Dec. 2004
<<http://www.kearsargetrailsnails.com/default.htm>>Kearsarge Trail Snails,
Lake Sunapee Snowmobile Club map

Swimming:

Wadleigh State Park,
Mt. Sunapee State Park
Most towns also have beaches for their residents.

Recreational Resources ASLPT Region



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Scenic Views

Scenic resources are important because they provide places that people might reflect on and appreciate the aesthetic, cultural, or rural heritage in their place. Protecting areas that residents treasure as scenic resources can insure that these places remain in their current state.

Defining ‘scenic’ is problematic as it is subject to the taste and values of the person being asked what he or she would label scenic. Some people might choose natural landscapes over developed ones, wetlands over mountains, historical over more modern culture, etc. If the residents of the ASLPT region were polled, there would likely be greater than one hundred places named that people value as part of the rural heritage of the region.

In order to identify some of the scenic resources, students asked members of the conservation commission in each of the twelve towns to identify the scenic resources in their town. Some towns had already grappled with defining scenic views as part of their master planning process, and others had some difficulty naming any scenic resources in their town. Those places identified as scenic were entered into GIS and a viewshed analysis was performed. The viewshed analysis uses elevation data to determine line of sight from a particular point. A five mile radius parameter was set for the analysis, as this seemed a reasonable distance for visibility in most weather conditions. It is important to keep in mind that a viewshed analysis can not account for tree cover, and therefore assumes no tree cover – either at the view point or in the viewshed. Because of the subjectivity of scenic views, they were given a low rating on the co-occurrence map, but they are important enough to weigh in as a factor in the conservation efforts.

Perhaps bringing a group of residents in each of the towns or, better yet, region-wide, and asking them to develop a list of scenic resources would be a way that a conversation could be initiated about land conservation.

Source:

Andover: Nancy Teach, ASLPT Board member and Andover resident, April, 2005.

Bradford: Eldridge, Anne. “Bradford Scenic.” E-mail to Peter Craven. April 14, 2005

Danbury: Danbury Town Office, April, 2005.

Goshen: Beatrice Jillette, Goshen Conservation Commission November 7, 2004.

Grantham: Jeremy Turner, Grantham Conservation commission, March 21, 2005.

Newbury: Newbury Conservation Commission. Natural Resource Inventory for the Town of Newbury. : 2001.

New London: Stanley, Peter. Conservation Commission Member (New London).

Personal Communication, March 29, 2005.

Springfield: Laura Hummel, Springfield Conservation Commission, November 15, 2004 and March 21, 2005.

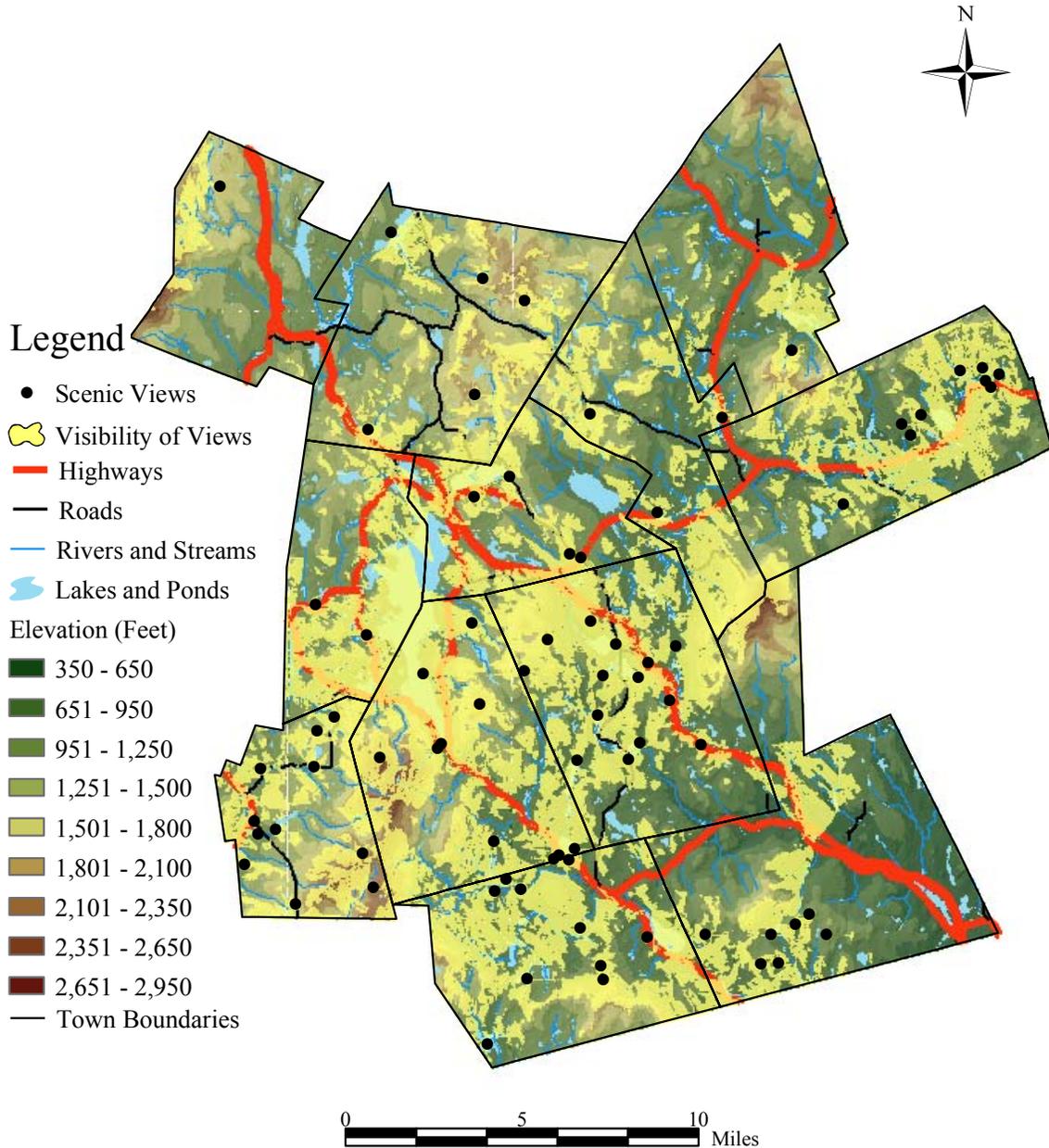
Sunapee: Bruce Burdett, Sunapee Conservation Commission, November 17, 2004.

Sutton: Town of Sutton, NH. February, 2005 <<http://www.sutton-nh.gov/>>.

Warner: McLaughlin, Jim. "Scenic Views in Warner." E-mail to Mike Carbone. March 21, 2005.

Wilmot: Faughnan, Brian. Wilmot conservation commission. Written data acquired from Teach, Nancy March 25, 2005.

Scenic Views ASLPT Region



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