

# **New Hampshire's Changing Landscape**

## ***Population Growth, Land Use Conversion, and Resource Fragmentation in the Granite State***

*Prepared by:*

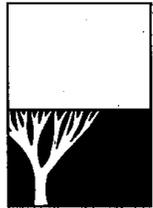
Dan Sundquist, *Science Director*  
**The Society for the Protection  
of New Hampshire Forests**  
54 Portsmouth Street  
Concord, N.H.

*and*

Michael Stevens, *Director of Science & Stewardship*  
**The New Hampshire Chapter of  
The Nature Conservancy**  
2½ Beacon Street  
Concord, N.H.

*October 1999*





Society for the  
Protection of  
New Hampshire  
Forests



Copies of this report may be purchased from the  
Forest Society for \$20.00 by contacting  
The Society for the Protection of N.H. Forests  
54 Portsmouth Street  
Concord, N.H. 03301  
or by telephoning (603) 224-9945.

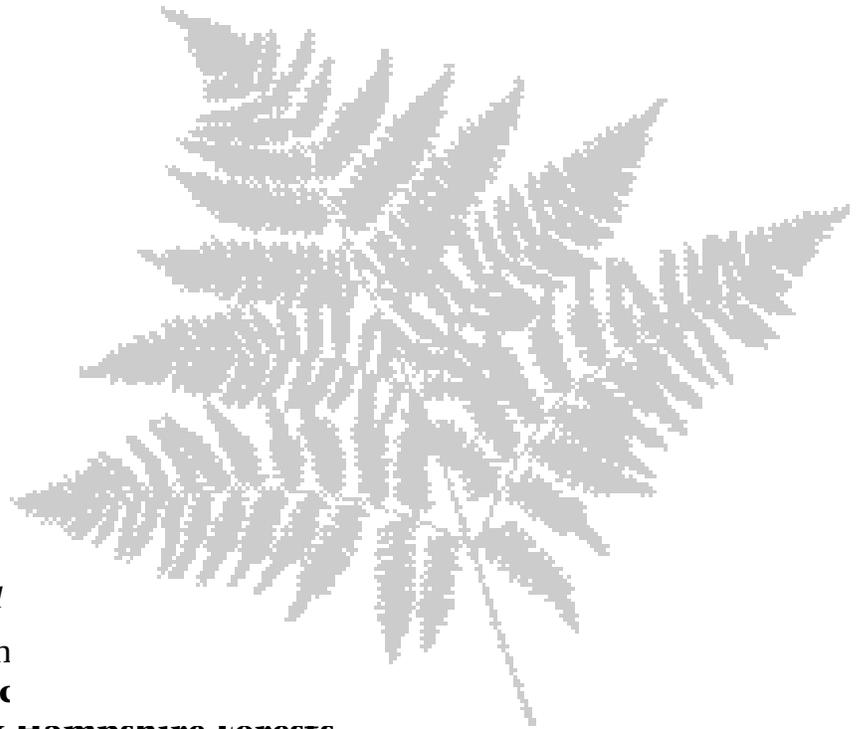
The report may also be viewed at the Forest Society website:  
[www.spnhf.org](http://www.spnhf.org).

Permission is required for reproduction of any part of this  
publication. Copyright 1999, SPNHF.

Design and Layout by Debbie K Graphics, Loudon, NH

# New Hampshire's Changing Landscape

*Population Growth,  
Land Use Conversion,  
and Resource Fragmentation  
in the Granite State*



*Prepared*

Dan Sun

**The Society  
of New Hampshire Foresters**

54 Portsmouth Street

Concord, N.H.

*and*

Michael Stevens, *Director of Science & Stewardship*

**The New Hampshire Chapter of  
The Nature Conservancy**

2½ Beacon Street

Concord, N.H.

*October 1999*



# Acknowledgements

*we wish to thank the many people who have contributed to the design and content of this study.*

## **OUR STUDY ADVISORY COMMITTEE:**

**Steve Blackmer**, *President*, The Northern Forest Center

**Richard Cook**, *Vice President for Conservation*, Audubon Society of New Hampshire

**Tom Duffy**, *Senior Planner-Data Management*, N.H. Office of State Planning

**Kate Hartnett**, *Executive Director*, N.H. Comparative Risk Project

**David Publicover**, *Senior Staff Scientist*, Appalachian Mountain Club

**Henry Tepper**, *Executive Director*, New Hampshire Chapter of The Nature Conservancy

**Sarah Thorne**, *Research Director*, Society for the Protection of N.H. Forests

*With special thanks for their continuing interest and contributions to the statistical analyses in this study:*

**Dr. Thomas Lee**, *Professor*, Department of Plant Biology, University of New Hampshire

**Dr. James Taylor**, *Professor*, Department of Zoology, University of New Hampshire

*And to the many others who provided the data on which this study is based and offered excellent comments and suggestions as the study developed:*

**Charles Bridges**, *Administrator*, Habitat & Diversity Programs, N.H. Fish and Game Department

**Delayne Brown**, *Biological Technician for GIS*, N.H. Fish and Game Department

**Meade Cadot**, *Executive Director*, Harris Center for Conservation Education

**Sara Cairns**, *Data Manager/Biologist*, N.H. Natural Heritage Inventory

**David Capen**, *Professor & Director*, Spatial Analysis Laboratory, University of Vermont

**Kathy Fallon-Lambert**, *Director*, Hubbard Brook Research Foundation

**Carol Foss**, *Consulting Biologist*

**John Kanter**, *Coordinator*, Non-Game & Endangered Wildlife Program, N.H. Fish & Game Dept.

**John Lanier**, N.H. Fish and Game Department

**Fay Rubin**, *GIS Manager*, Complex Systems Research Center, University of New Hampshire

**Dr. Mark Okrant**, *Professor/Coordinator of Geography*, Plymouth State College

**Dan Spurduto**, *Senior Ecologist*, N.H. Natural Heritage Inventory

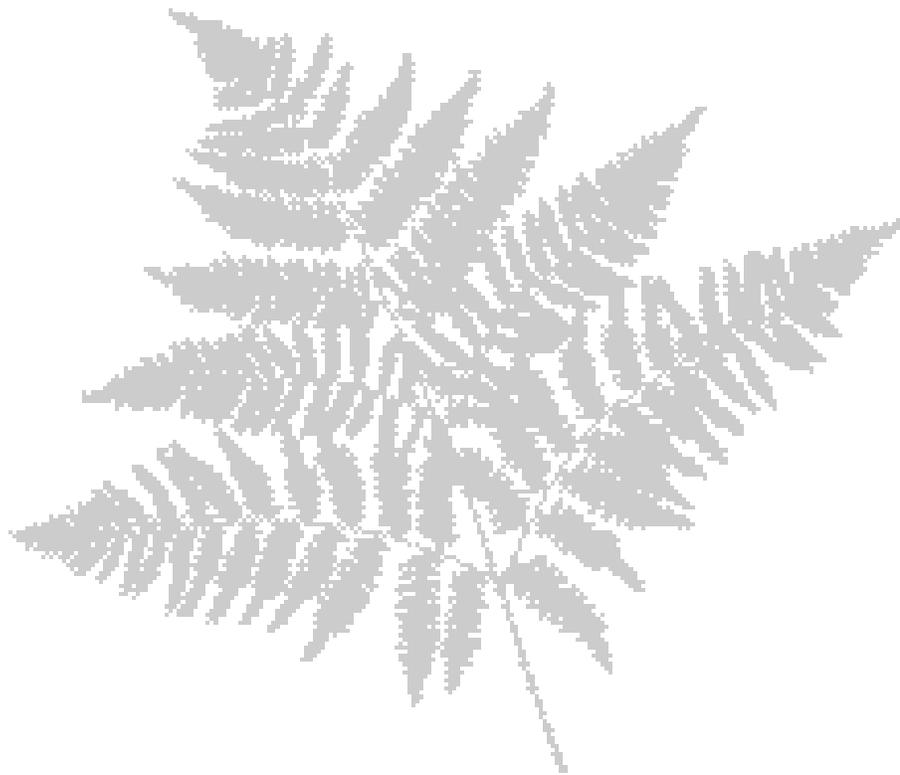
**Marc Tosciano**, *Deputy Director*, New England Agricultural Statistics Service

**David Van Luven**, *Coordinator*, N.H. Natural Heritage Inventory

**David Williams**, *GIS Specialist*, Spatial Analysis Laboratory, University of Vermont

---

*This research was made possible by a grant from the U.S. Environmental Protection Agency, Region 1.*



# *Executive Summary*

**N**ew Hampshire is blessed with an extraordinary and diverse natural environment that has shaped our history, our economy, and our way of life. We justifiably pride ourselves on the farms, forests, rivers, lakes, and mountains that give our state its unique character, provide for a high quality of life, and sustain some of our most important industries. But the fabric of our natural and rural landscape is at risk due to sustained, high levels of population growth and development.

This study uses the latest scientific information to identify the extent and distribution of some of the most critical natural resources that make up New Hampshire's landscape. Whether these resources are large blocks of forest land, productive farm soils, plant, and animal habitat, or drinking water supply lands, they are strategically valuable to our human community. As such, changes in their status need to be well understood. It is the intent of this study to document current baseline conditions for the most critical natural resources in New Hampshire, and to foster research to monitor and analyze future trends.

In this report, we describe the growth New Hampshire has already accommodated and what the effect of growth and development over the next 20 years will be on the state's landscape. We hope this report will serve as a compelling catalyst for informed conservation action by the people of the Granite State.

**Population growth and development: how much is New Hampshire likely to change?**

- New Hampshire is the fastest growing state in the Northeast, with a 6.8% population gain from 1990 to 1998.
- Between 1998 and 2020, New Hampshire's population will grow by more than 342,800 people.
- The state's population has doubled since 1950 and will have tripled by 2020.
- The average statewide population gain from 1980 to 1998 is about 13,000 people per year. Half the growth is due to the birth rate exceeding the death rate; half is due to net domestic in-migration.
- 85% of the growth from 1998 to 2020 will be concentrated on 33% of the land area of the state, principally in the southeastern counties.
- The number of housing units in the state grew by 55% between 1980 and 1998.
- 110,000 new single-family homes have been built since 1980; nearly 5,000 were built in 1998 alone.

Growth and development is inevitable and essential for many aspects of economic opportunity. But the pace, location and types of growth that New Hampshire is likely to experience in the next 20 years will have profound and irreversible impacts on the character, economic diversity, and environmental health of the state. Our work and other recent research points to the following disquieting trends:

**The predicted growth of the next 20 years will have negative impacts on New Hampshire's farms and forests in the state.**

- Forest cover in New Hampshire has dropped for the first time in decades, falling from a high this century of 87% in 1983 to 83% in 1993.
- By 2020, forest cover is predicted to decline to 80% of the state's land area, with a total loss between 1993 and 2020 of 144,000 acres.
- The greatest loss of forest land will occur in southeastern New Hampshire, with about 60,000 acres lost in Rockingham, Hillsborough, and Strafford Counties; this could accelerate the demise of critical forest-based

economies in these areas, and undermine recreational opportunities.

- Farm land declined 20% from 1974 to 1997 with over 83,800 acres lost to other uses. Our most productive crop lands declined by 24% in the same time period.

### **How much land in New Hampshire has already been protected?**

- 22% of New Hampshire's land base is currently protected through ownership by public or private conservation agencies, conservation easements, or other form of permanent protection.
- 56% of all the protected land in the state consists of the White Mountain National Forest.
- More than 70% of all protected land in New Hampshire is located in the northern half of the state.
- 50% of the 259 municipalities and unincorporated places in the state have 10% or less of their lands protected.

### **Why do we need to protect more land?**

- Large blocks of forests and wetlands are crucial for providing wildlife habitat and sustaining critical ecological processes. They are the fabric that holds together New Hampshire's natural environment. They are also the basis for New Hampshire's forest, recreation, and tourism industries.
- Of all the forest blocks in the state bigger than 500 acres, only 22% are currently protected. Outside of the White Mountains, only 11.7% of forest blocks greater than 500 acres are protected. Not only will many New Hampshire towns, especially those in the southeastern part of the state, lose total forest cover, but there will also be a loss of the large blocks due to building of new roads and residential development.
- Just 22.2% of all the high-value wetlands in the state are currently protected.
- The current system of conservation lands does not adequately protect more than three-quarters of known rare animal species, at least three-quarters of known rare

plant species, and close to 60% of classified rare natural community types.

- The vast majority of conservation land is concentrated in the northern half of the state; more land needs to be protected near population centers to assure future water supplies and to provide easy access to outdoor recreation opportunities.

### Rapid and poorly planned growth is not good business.

- Open space and associated economic activities, such as recreation, tourism, development of second homes, agriculture, and forestry, directly and indirectly contributed \$8.2 billion to the New Hampshire economy in 1996/97. *This amounts to over 25% of New Hampshire's gross state product.*
- Study of 8 New Hampshire towns has shown that a town's tax base is eroded by high rates of residential development; residential development cost the towns an average of \$1.09 for every \$1.00 of tax revenue.

### What needs to be done?

New Hampshire citizens can act at many levels to conserve the most valuable components of our landscape. Improved local land use regulations and infrastructure planning can create incentives for “smart growth” and thus slow sprawl. Continued inventorying of our natural resources and scientific research can help identify the lands most important for permanent protection—“smart conservation.” Willing landowners can work with land conservation groups to find the right protection options to suit their needs.

To do all this, a statewide, permanent, state-funded conservation program that will systematically address the conservation needs of the state is urgently needed. We need to reach beyond individual ownerships with well-founded, visionary plans for our communities that protect and conserve those resources that transcend property lines—our extensive forested areas, our rivers and lakes, our drinking water supplies, and habitat for rare species and natural communities—resources that enable our human communities to flourish.