A stylized, light blue illustration of a plant with a central stem, several large leaves at the top, and a cluster of small, round buds or flowers on a branch to the left. The illustration is set against a dark blue background on the left side of the slide.

TRACKING PARCELIZATION &
ADDRESSING FOREST
FRAGMENTATION –
TOOLS & STRATEGIES FOR
REVERSING NEGATIVE TRENDS
IN VERMONT

JAMEY FIDEL
GENERAL COUNSEL/
FOREST & WILDLIFE PROGRAM DIRECTOR
VERMONT NATURAL RESOURCES COUNCIL

Background

Approximately 75% of Vermont is forested, but forestland is actually declining in Vermont.

- Forest Service data estimates Vermont may have lost up to 75,000 acres of forestland between 2007 and 2013.
- Chittenden County experienced a 4.4% reduction in forestland between 1982-1997.

Development is responsible for this trend and forests are increasingly becoming fragmented across Vermont.



Photo: Alex Maclean

Forest Fragmentation – It Helps to Understand Subdivision and Parcelization

- Fragmentation is incremental. It usually starts with subdivision, the division of a parcel into two or more smaller lots.
- The result is typically an increase in the number of parcel owners, which leads to new housing and infrastructure development (roads, septic, utility lines, etc.)
- When this development occurs, it “fragments” the landscape and diminishes the economic and ecological viability of forests.



Photo: A. Blake Gardner

How Forest Fragmentation Occurs



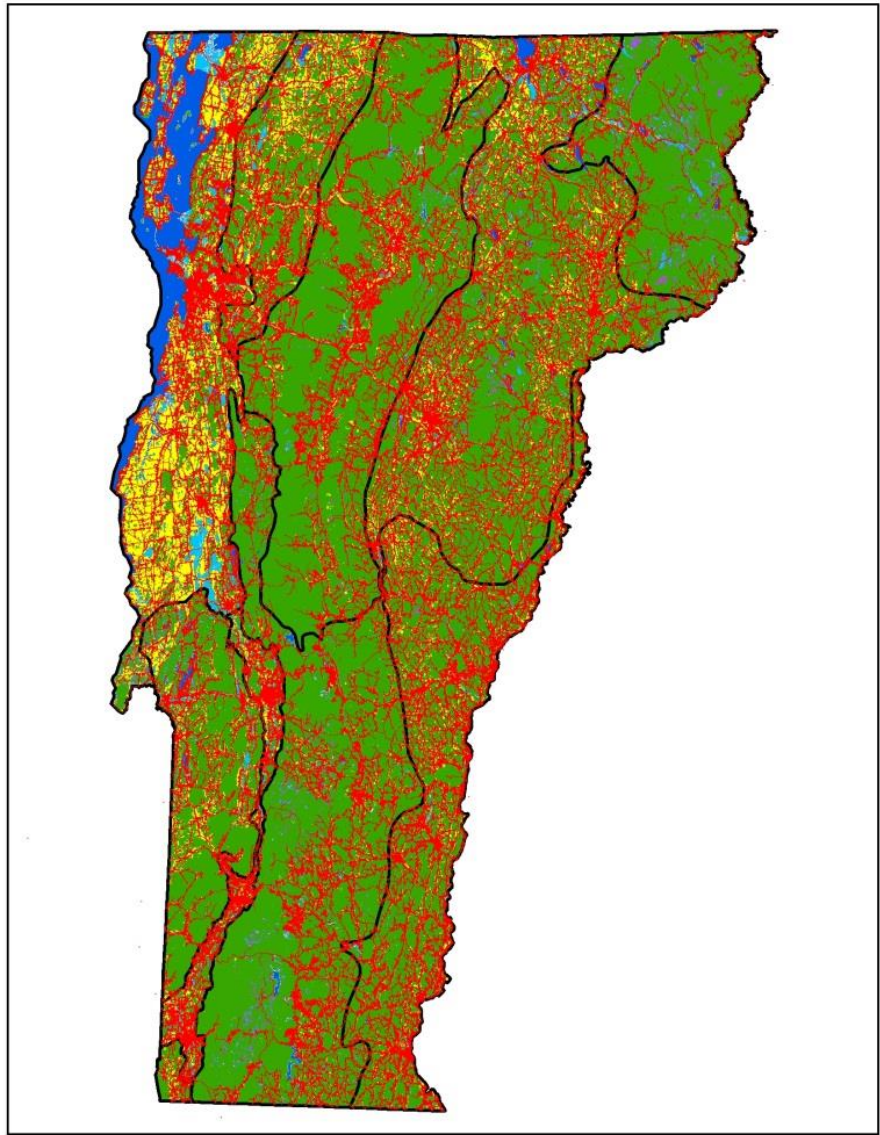
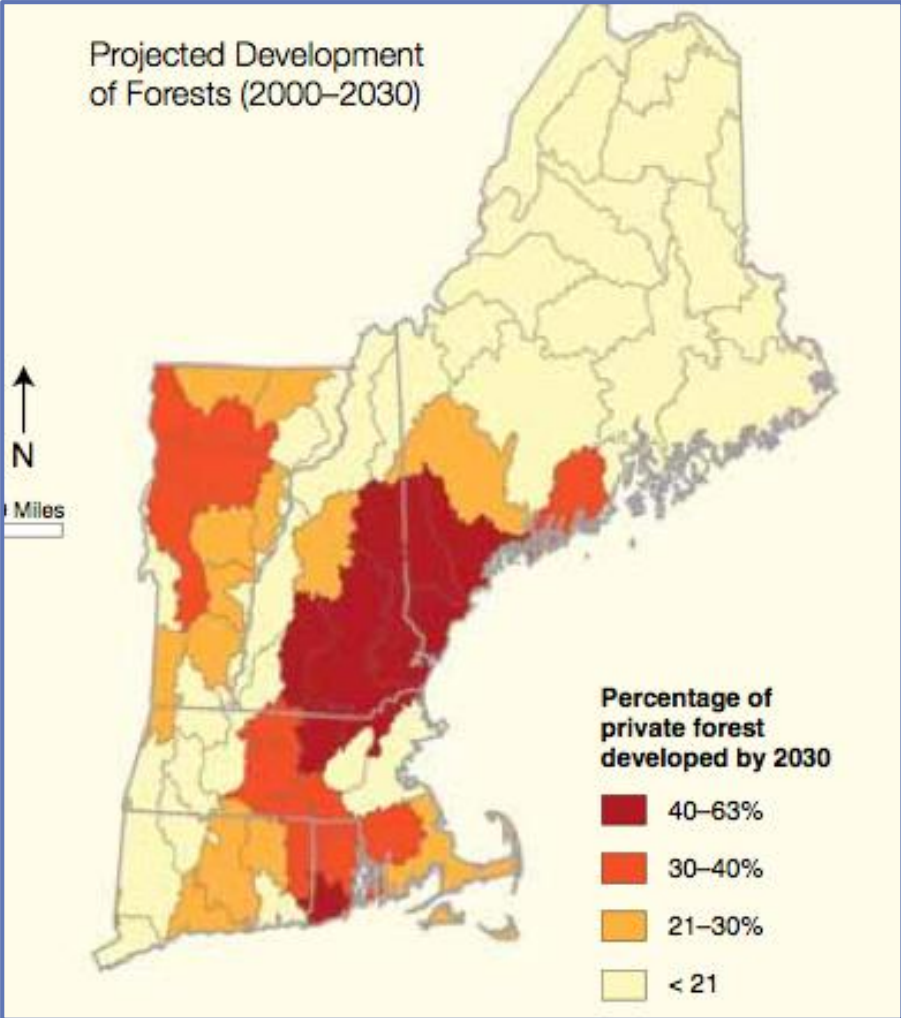
Background

- As a result of subdivision more parcels are being created in Vermont.
- The number of parcels increased from 61,900 in 1983 to 88,000 in 2008.
- Developed land increased from 180,000 acres in 1982 to about 302,000 acres in 2010 – a 67% increase over 3 decades.



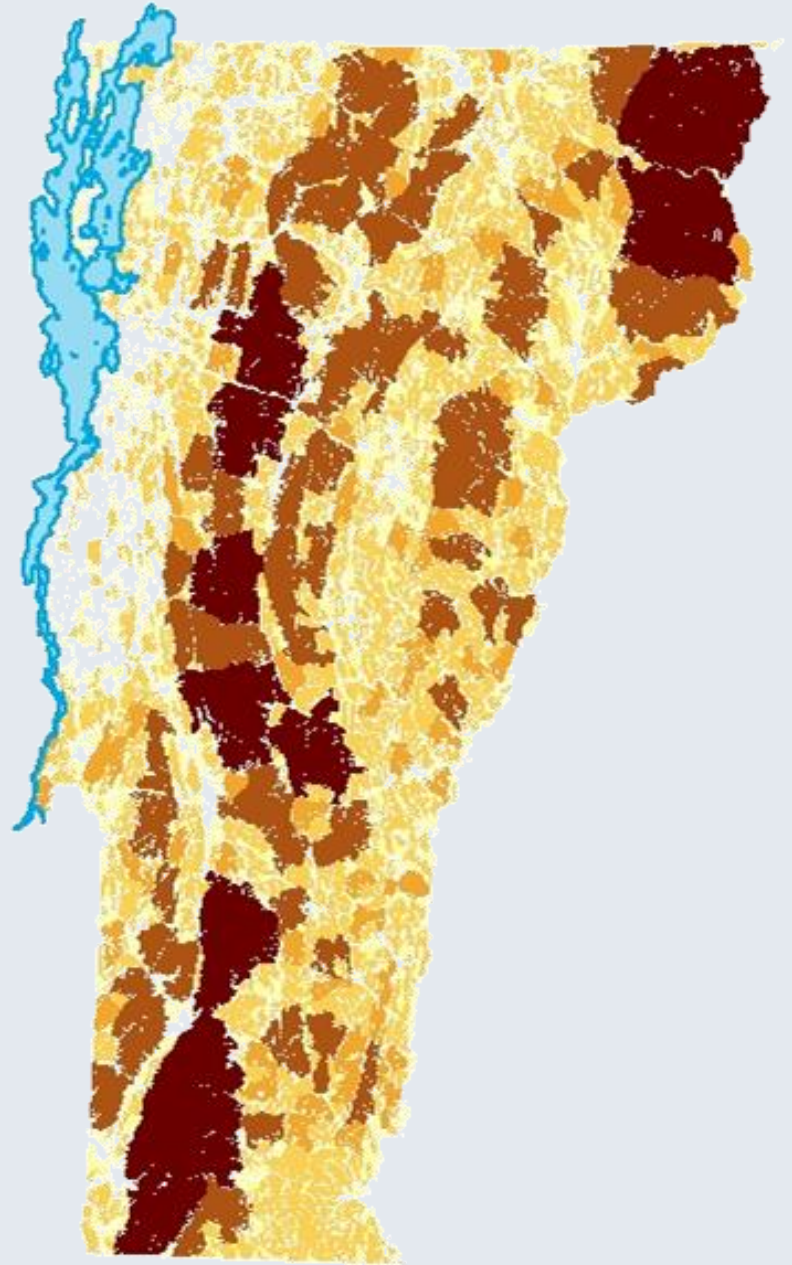
Photo: A. Blake Gardner

Development Impacts

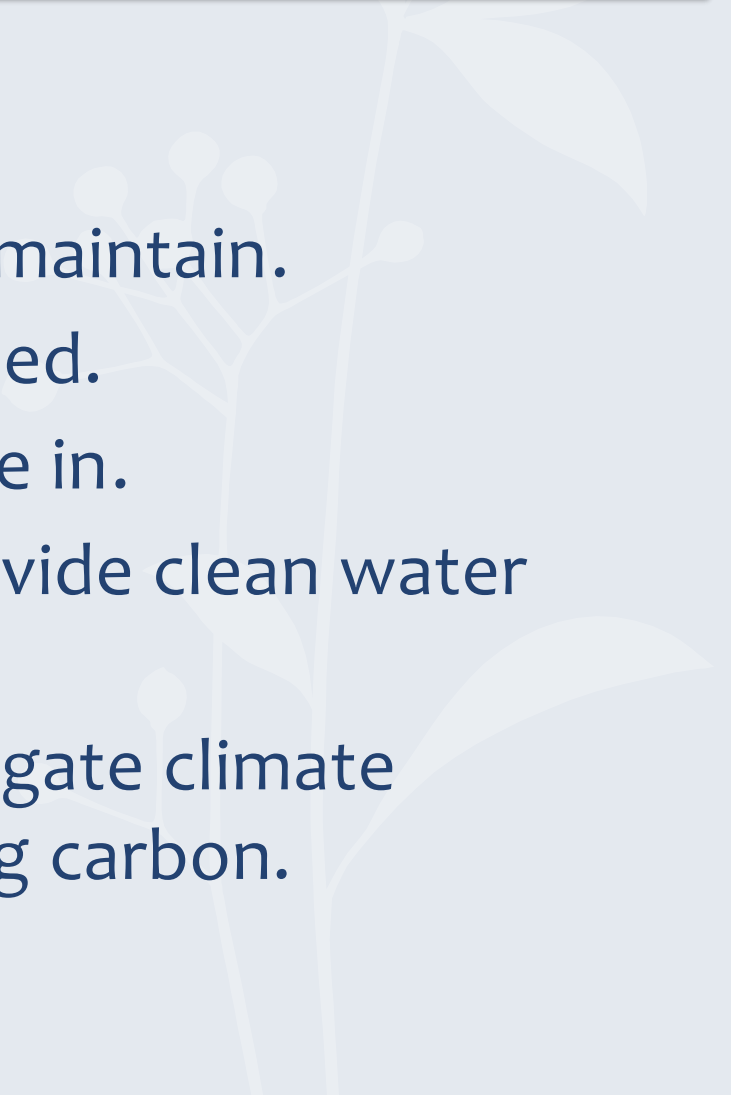


Forest Blocks

- Areas of natural cover surrounded by roads, development and agriculture
- Biggest block is over 150,000 acres
- Average block is 1,164 acres



What Happens When Forests Become Fragmented?

- Wildlife habitat is diminished.
 - Working forests are harder to maintain.
 - Recreational access is diminished.
 - Invasive or exotic species move in.
 - Forests lose their ability to provide clean water and mitigate floods.
 - Forests lost their ability to mitigate climate change by storing/sequestering carbon.
- 

Statewide Subdivision Trends Study: Phase 1

- Used Grand List data for all parcels of land in the state to learn how land changed from 2003-2009.
- Looked at:
 - How did parcel sizes change?
 - How many parcels had dwellings?
 - What's the status of large parcels?
 - How did land value change?

Informing Land Use Planning and Forestland Conservation Through Subdivision and Parcelization Trend Information



Authors:

Deb Brighton, Vermont Family Forests
Jamey Fidel, Forest and Biodiversity Program Director, Vermont Natural Resources Council
Brian Shupe, Sustainable Communities Program Director, Vermont Natural Resources Council

In Collaboration With:

Steve Sinclair, Vermont Department of Forests, Parks and Recreation
John Austin, Vermont Fish and Wildlife Department

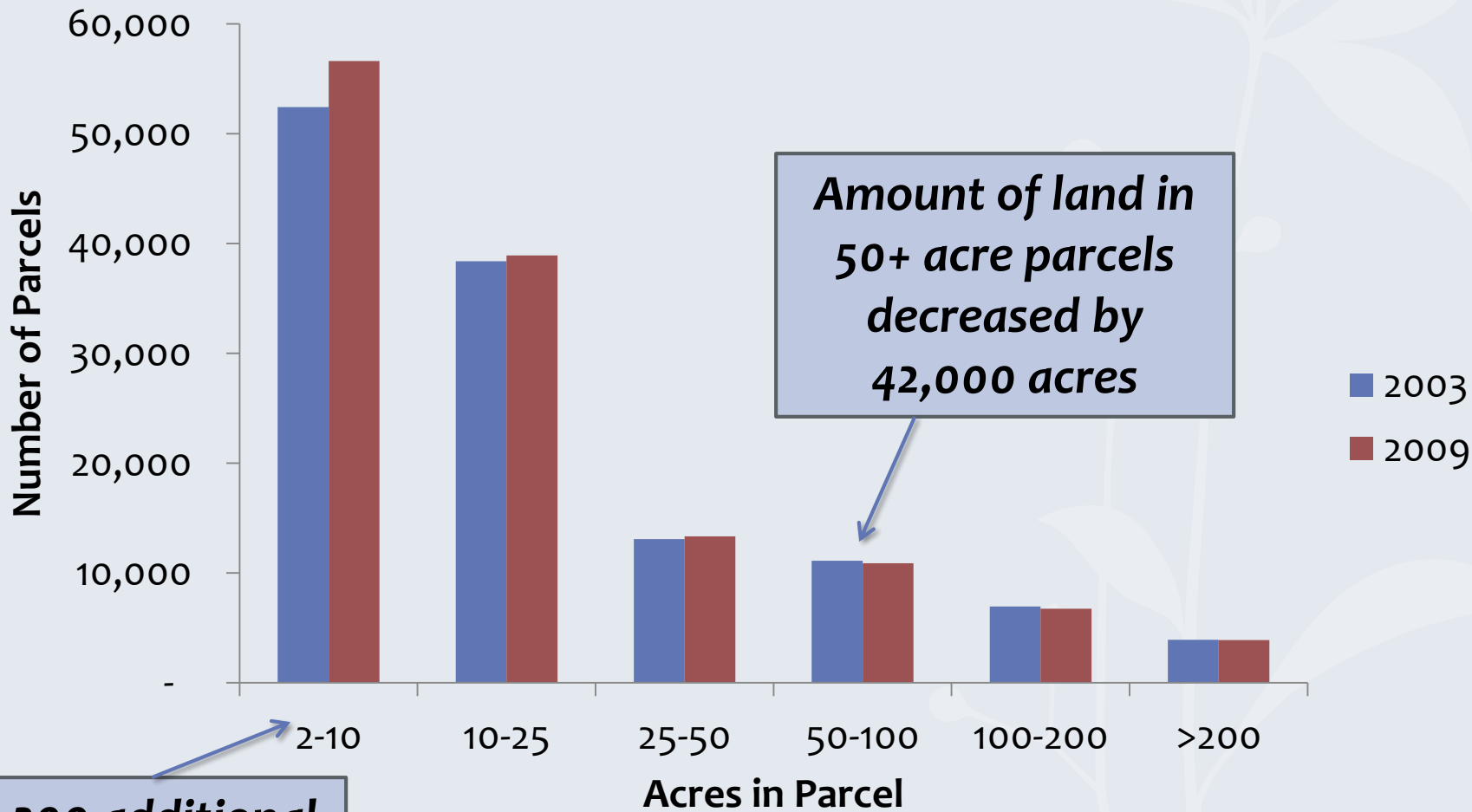
Funded By:

Northeastern States Research Cooperative
Vermont Natural Resources Council

September 2010

Statewide Subdivision Trends

Increase in small parcels, decrease in large parcels



4,300 additional parcels created from 2003-2009

Amount of land in 50+ acre parcels decreased by 42,000 acres

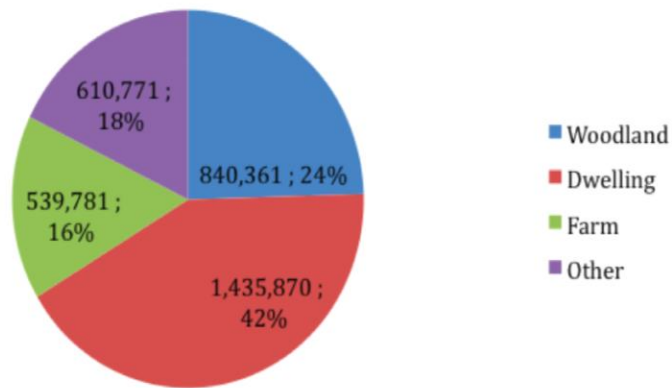
Statewide Subdivision Trends

Size of parcels matters

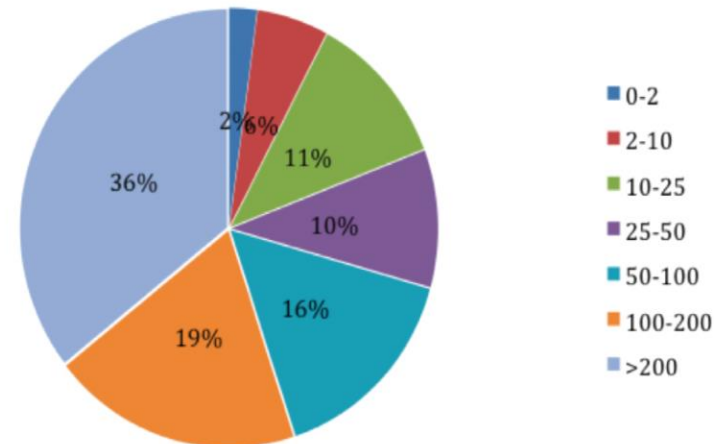
In 2009 there were roughly 3.4 million acres of private land in parcels 50 acres or larger.

In 2009, although the median parcel size was less than 2 acres, 71% of the land in Vermont was in parcels 50 acres or larger.

Land in parcels > 50 acres by type of parcel

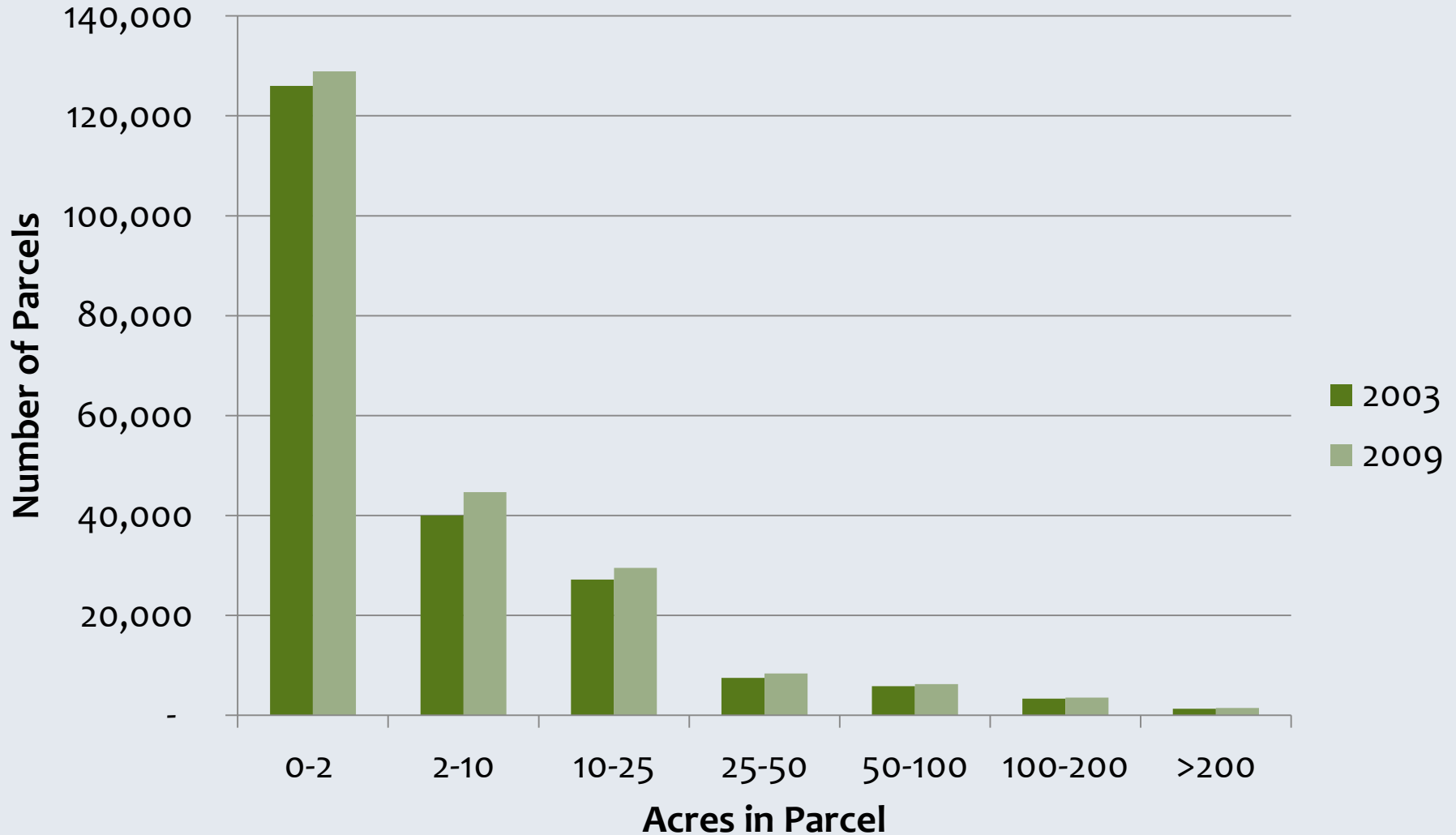


Acres by parcel size, 2009



Statewide Subdivision Trends

of parcels with dwellings, by parcel size



Statewide Subdivision Trends

There is less woodland in parcels over 50 acres



Land values for large lots increased significantly

- The value of land in parcels 50 acres or larger appreciated significantly:
 - \$930, on average per acre in 2003
 - \$1,615 in 2009.

Future research will look at what has happened since 2009.

VNRC Subdivision Study – Phase 2

- Reviewed records of subdivisions in 22 case study towns
- Total subdivision activity, by zoning district, from 2002 through 2009
- When land is subdivided...
 - How many lots are created?
 - What size are the lots created?

Informing Land Use Planning and Forestland Conservation Through Subdivision and Parcelization Trend Information



Authors:

Deb Brighton, Vermont Family Forests
Jamey Fidel, Forest and Biodiversity Program Director, Vermont Natural Resources Council
Brian Shupe, Sustainable Communities Program Director, Vermont Natural Resources Council

In Collaboration With:

Steve Sinclair, Vermont Department of Forests, Parks and Recreation
John Auson, Vermont Fish and Wildlife Department

Funded By:

Northeastern States Research Cooperative
Vermont Natural Resources Council

September 2010

How many lots are created?

Finding:

On average, each subdivision resulted in 2-4 lots.

What does this mean?

- Subdivision is happening in small increments.
- The majority of subdivision is not triggering Act 250.
 - Only 1% - 2% of subdivisions in the case study towns were large enough to trigger Act 250.
- Local regulations play a major role in guiding subdivision patterns.

What size are the lots that are created?

Findings

- Median lot sizes: 2.4 – 12.15 acres
- Size of original lot (“parent parcel”) matters

Size of original parcel	Subdivisions resulting in at least one 50+ acre parcel
100+ acres	97%
50-100 acres	57%

What does this mean?

- Resulting parcels may be too small to support long-term forest management goals.
- Multiple owners can lead to fragmented land management.

Where are lots being created?

Finding:

Most land subdivision is taking place in rural areas, though conservation districts provide some protection.

	In Rural Res. districts	In Natural Resource districts
% of total subdivisions	79%	15%
% of total acres	84%	22%

What does this mean?

- Natural resources in “default” districts – where most subdivision is happening – may be more vulnerable unless these districts include protections.
- Opportunity for improved site design and subdivision configuration in these areas

Phase 3 – Developing a Statewide Database

Project objectives include:

- Quantifying the change in acreage of developed and undeveloped land by parcel size between 2003 and 2014 and identifying areas of rapid conversion within the state.
- Enabling the comparison of new parcelization data to remote sensing estimates of forest fragmentation/conversion for a finer scale assessment of patterns in parcelization.
- Documenting and investigating parcel-level changes in land ownership and value over time.
- Providing profiles of these changes at multiple spatial scales (e.g. town, county, RPC, statewide) and an interactive map interface for data exploration and dissemination.
- Automate data processing and enable annual updates to the database.

Phase 3 – Developing a Statewide Database

Research questions:

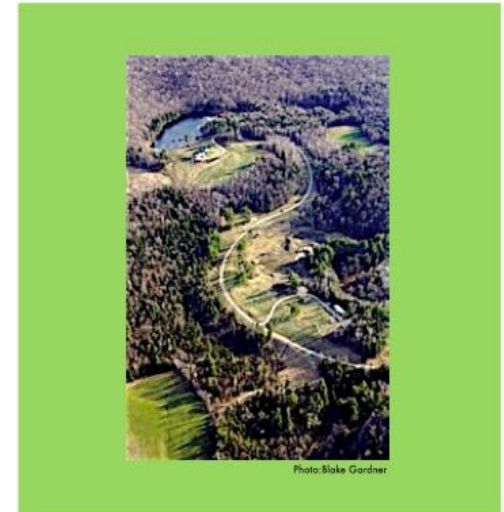
- Are there patterns to the observed parcelization trends, including declines in viable working forestland and core forest blocks over the last decade at the municipal to regional scales?
- How do municipalities compare in maintaining forested parcels that are potentially large enough to be economically viable and ecologically productive?
- Has the proportion of in-state to out-of-state land ownership changed over time, and is the development of second homes contributing to parcelization and declines in working forests?
- Has there been an increase in the creation of 27-acre parcels in response to incentives such as the use value appraisal program, and have program management costs increased as a result?
- Is there a correlation between land subdivision and land value?

Strategies

VNRC Forest Fragmentation Action Plan

- A roadmap for implementing nine priority strategies for reducing forest fragmentation and parcelization.
- Outlines concrete action steps for planning and zoning, conservation, education and advocacy strategies at the local, regional and state level.

Forest Fragmentation ACTION PLAN



Why Vermont Needs a Forest Fragmentation Action Plan

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.

Fragmentation doesn't happen all at once - in fact, it's incremental, which is why it's so hard to notice on a day-to-day basis. It usually starts with subdivision, the division of a parcel into two or more smaller lots. The result is typically an increase in parcel owners, which leads to new housing and

infrastructure development (roads, septic, utility lines, etc.). When this development occurs, it "fragments" the landscape and diminishes the economic and ecological viability of forests.

Subdivision activity in Vermont does not look like that commonly seen in other parts of the country and usually portrayed by the media. Indeed, the term "subdivision" usually conjures up images of suburban neighborhoods with identical houses situated side-by-side. Because of the discrepancy between how the public collectively imagines subdivision and the reality, Vermonters are susceptible to thinking that subdivision is not a problem.

But subdivision and other types of land development are cumulatively impacting the viability of Vermont's forests. This is why we need a coordinated land use plan to reduce forest fragmentation, and it needs to occur at the local, regional, and state levels.

Table of Contents

Drivers of Forest Fragmentation	2
Top Strategies	2
Recommended Actions	5
Obstacles & Next Steps	14

Planning Process

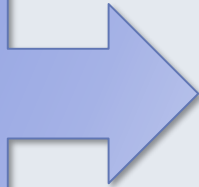


This plan was developed by the Vermont Natural Resources Council (VNRC) with input from many partners including local planning and conservation commissions, selectboards, regional planning commissions, the VT Dept. of Forests, Parks and Recreation, the VT Fish and Wildlife Dept., the VT Dept. of Housing and Community Development, the VT Planners Association, and UVM Extension.

More than 36 individuals participated in a statewide workshop in Randolph, and more than 63 individuals participated in three regional workshops that took place in Craftsbury, Brandon, and Westminster. VNRC gathered feedback on different conservation strategies from the participants through discussion, ranking exercises, voting, and comment cards.

Priority Strategies

Planning &
Zoning



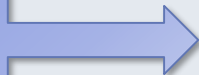
1. Map and inventory natural resources related to forests and wildlife; use these to develop local plan maps and policies.
2. Improve the quality of existing zoning and subdivision regulations.
3. Incorporate specific standards into existing zoning and subdivision regulations to reduce forest fragmentation.

Conservation
Programs



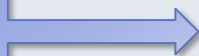
4. Increase the acreage of lands permanently protected from development through conservation easements.
5. Increase acres enrolled in the Use Value Appraisal program (“Current Use”) or a local tax stabilization program.

Education



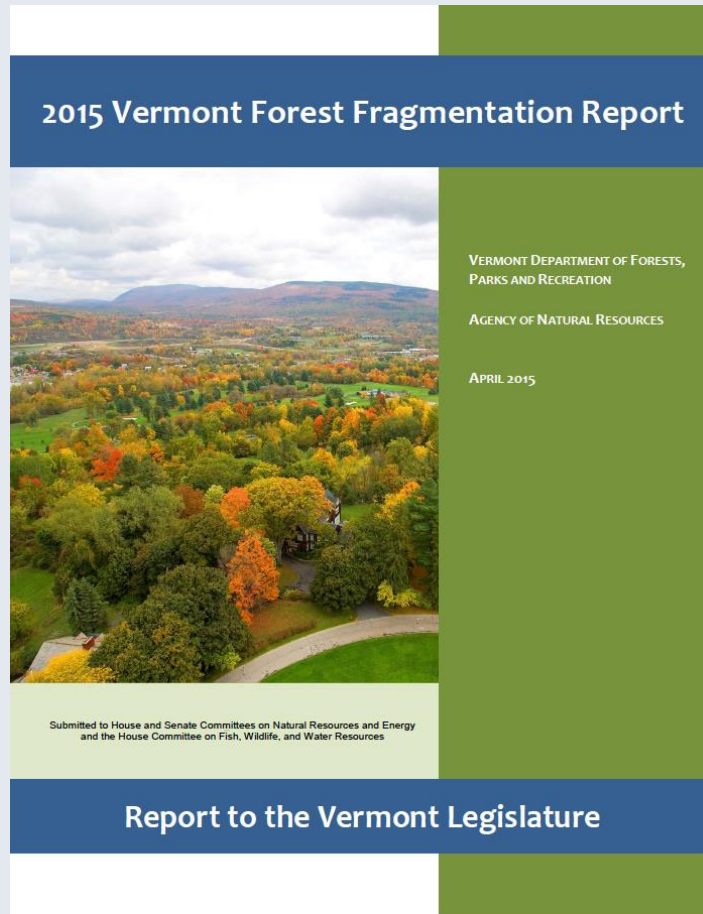
6. Provide education and training for local board members.
7. Educate private landowners and the general public.
8. Promote landowner estate/successional planning.

Advocacy



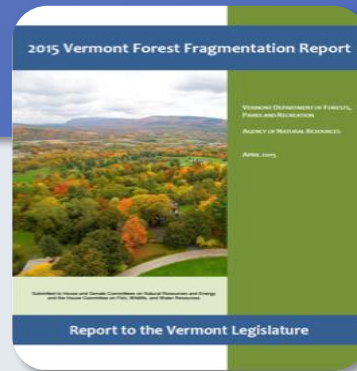
9. Pursue legislative changes at the state level.

2015 Forest Fragmentation Report



2015 Forest Fragmentation Report

Commissioner Snyder and Agency of Natural Resources releases 2015 Forest Fragmentation Report.



The Vermont Legislature passes Act 61 calling on Commissioner Snyder to collect stakeholder input and report back by January 15, 2016 on regulatory and non-regulatory strategies and legislation for maintaining forest integrity.