



GRAND ISLE



Jens Hilke – Conservation Planner
VT Fish & Wildlife Department

The Vermont Fish & Wildlife Department

The mission of the Vermont Fish & Wildlife Department is the conservation of our fish, wildlife, plants and their habitats for the people of Vermont





Community Wildlife Program



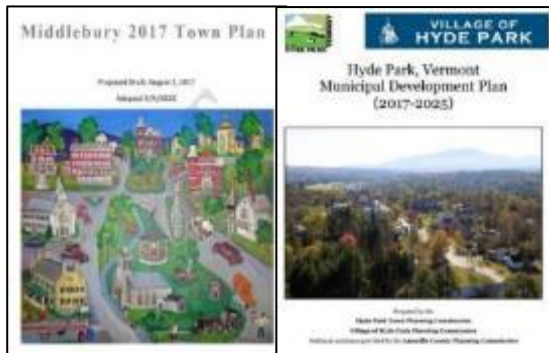
Presentations & Workshops



Support for Planning



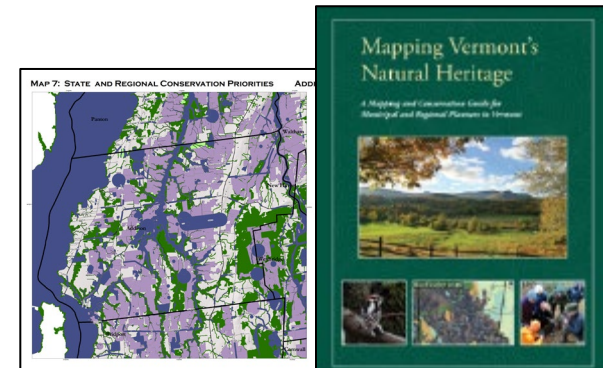
Support for Conservation



Connecting Communities to Each Other



Understanding Ecological and Community Context



Creation/Interpretation of Resources



Forest!

Economic benefits of
recreation and tourism

Prevent erosion and
reduce flooding

Provide working lands for
forest industry

Provide land for hunting,
fishing, wildlife viewing (and \$\$)

Benefits of Large Forests

Clean air &
water

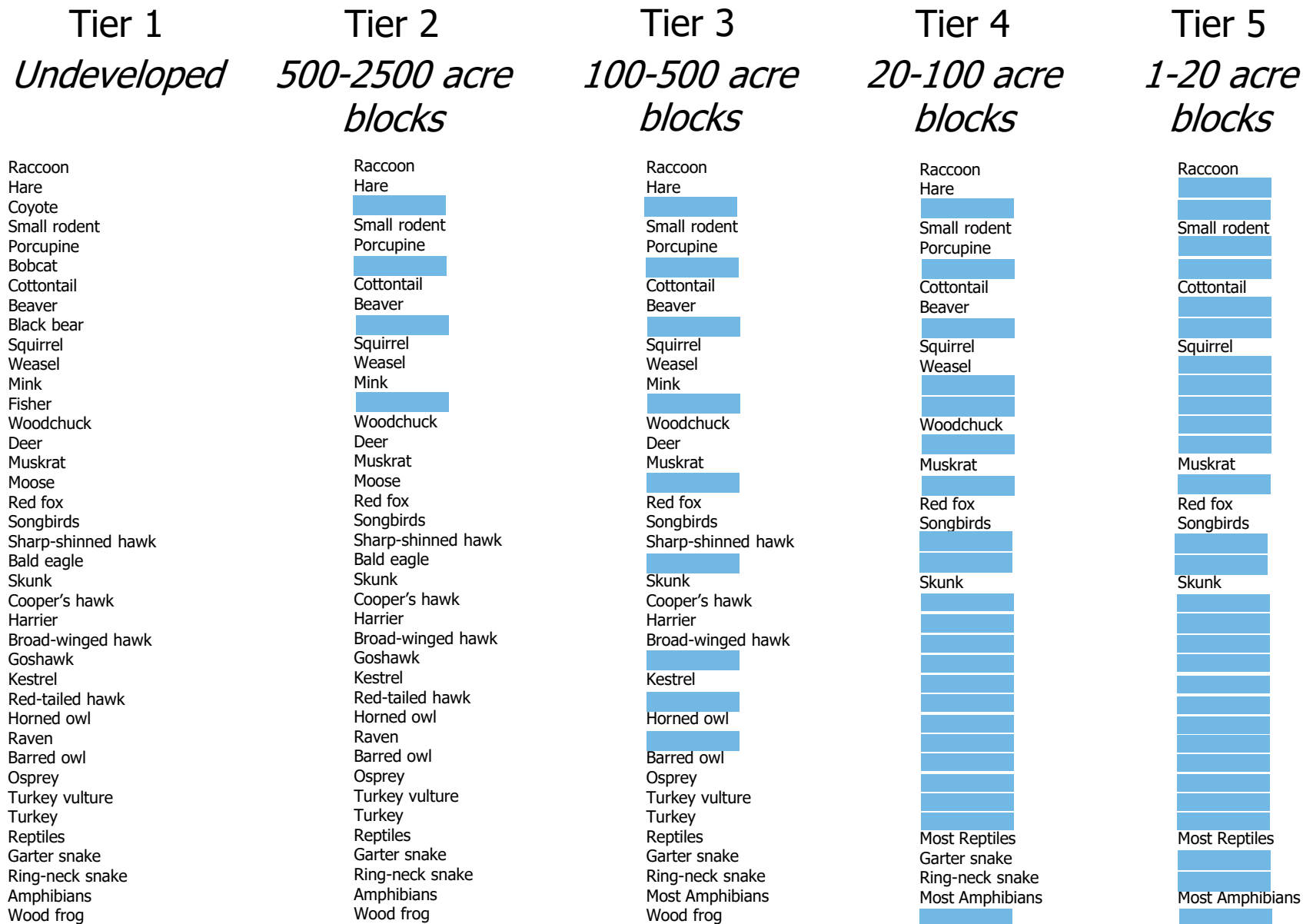
Transmit fewer tick-
borne illnesses

Scenery

Biological
diversity

Sequester carbon and
absorb harmful gases

Wildlife Present in Forest Patches



12% of Vermont's GDP
20,000 jobs.

Fall foliage tourism is
25% of the tourist
income to Vermont

Forests Power Vermont's Economy

Forest products
add \$1.5 billion

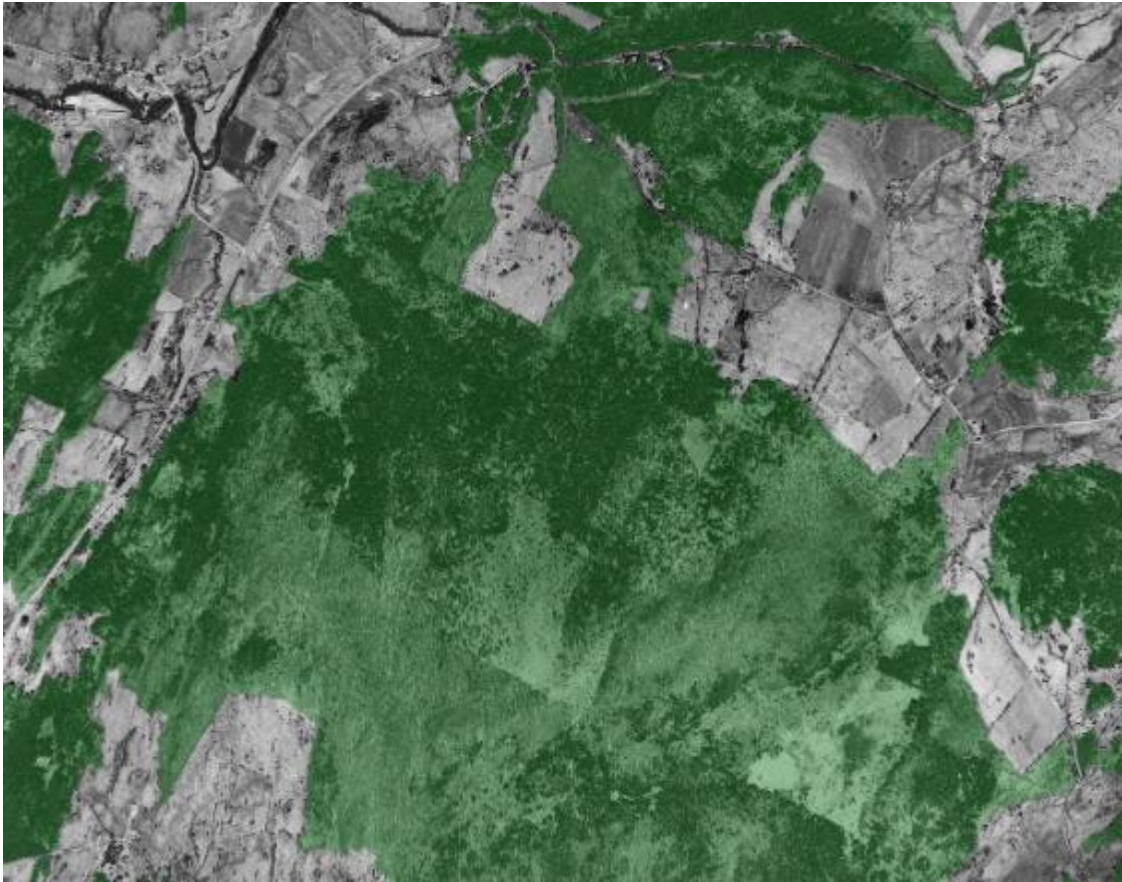
Hunting, fishing,
and wildlife
viewing = \$685
million

Forest recreation and
tourism provide \$1.9
billion to Vermont
annually

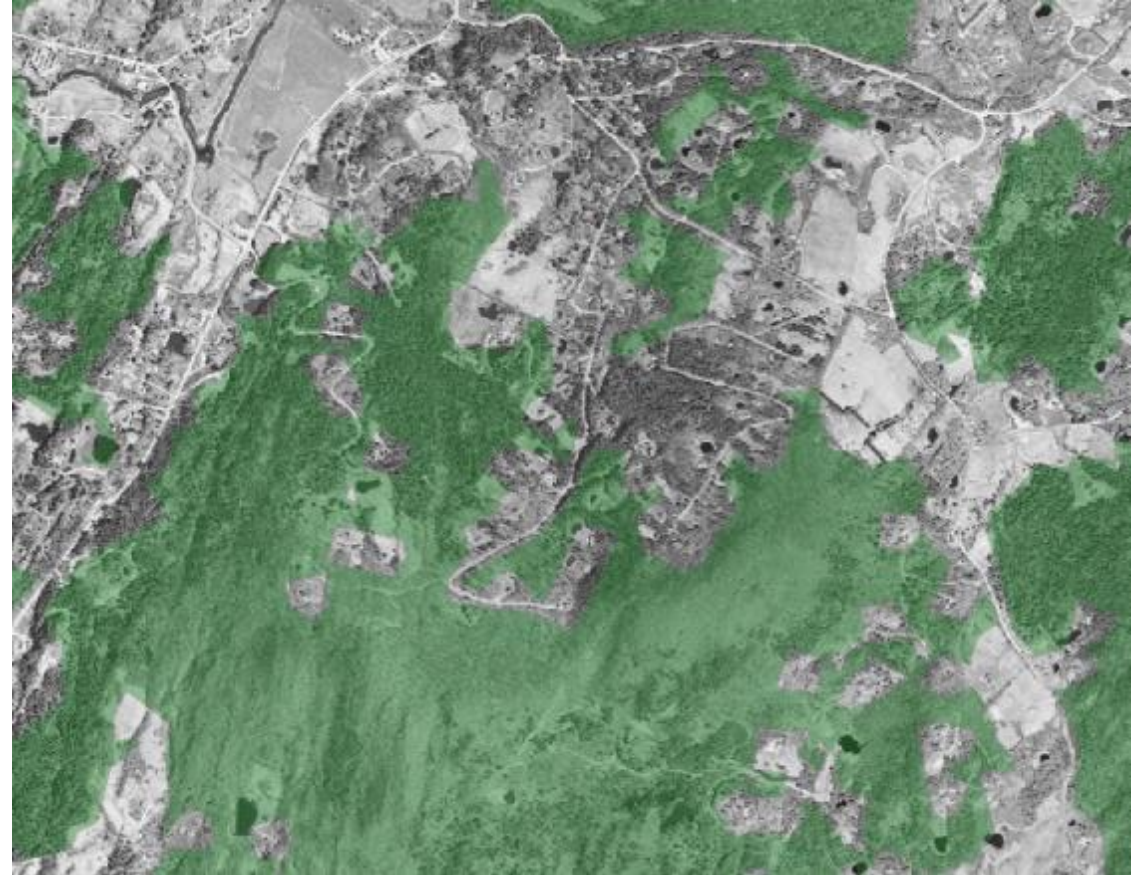
Intact wetlands and
riparian areas reduce
damage from floods

LOSING WILDLIFE HABITAT & WORKING FOREST

1962



2011



EFFECTS OF FOREST FRAGMENTATION

Forest products economy

Scenery, Fall Foliage, Tourism, and Recreation

Clean water and flood protection

Clean air and climate mitigation

Wildlife and biodiversity

Human health, quality of life, and cultural heritage



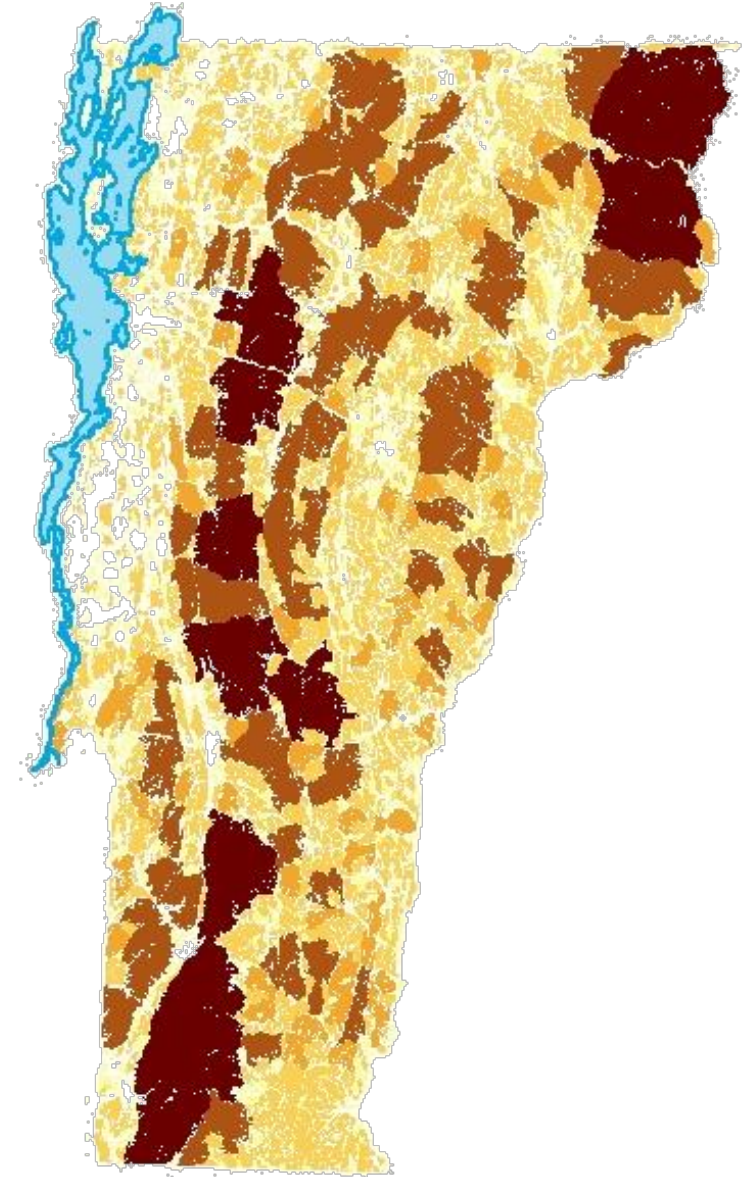
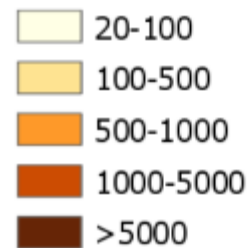
- Practicing forestry becomes operationally impractical, economically non-viable, and culturally unacceptable
- Degrades the recreational experience
- Less soil infiltration and water filtration & Increased water flow and erosive power
- Releases carbon stored in soils and vegetation & Reduced capacity to sequester and store carbon
- Mortality from vehicle collisions & Modification of animal behavior
- Reduces human health benefits from forests
- Loss of rural nature valued by Vermonters

FOREST/HABITAT BLOCKS

*Areas of
natural cover*

(no roads,
development or
agriculture)

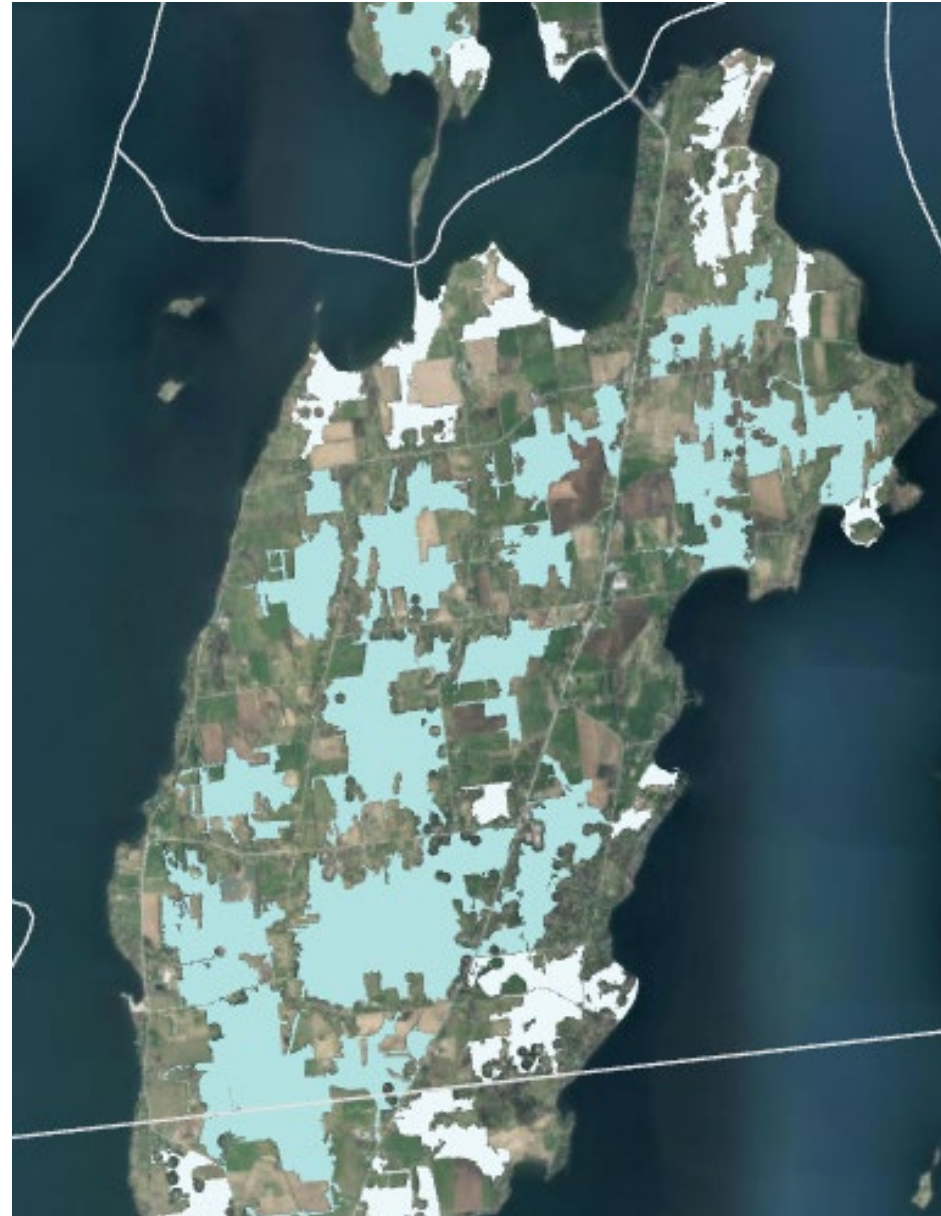
Habitat Block Size
(IN ACRES)



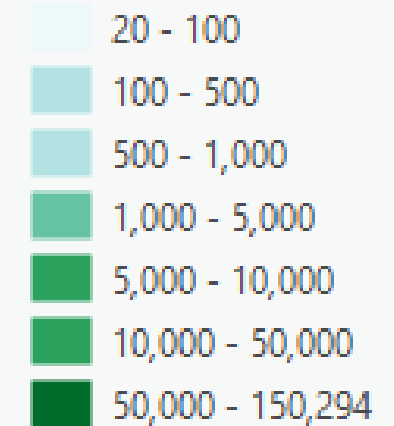
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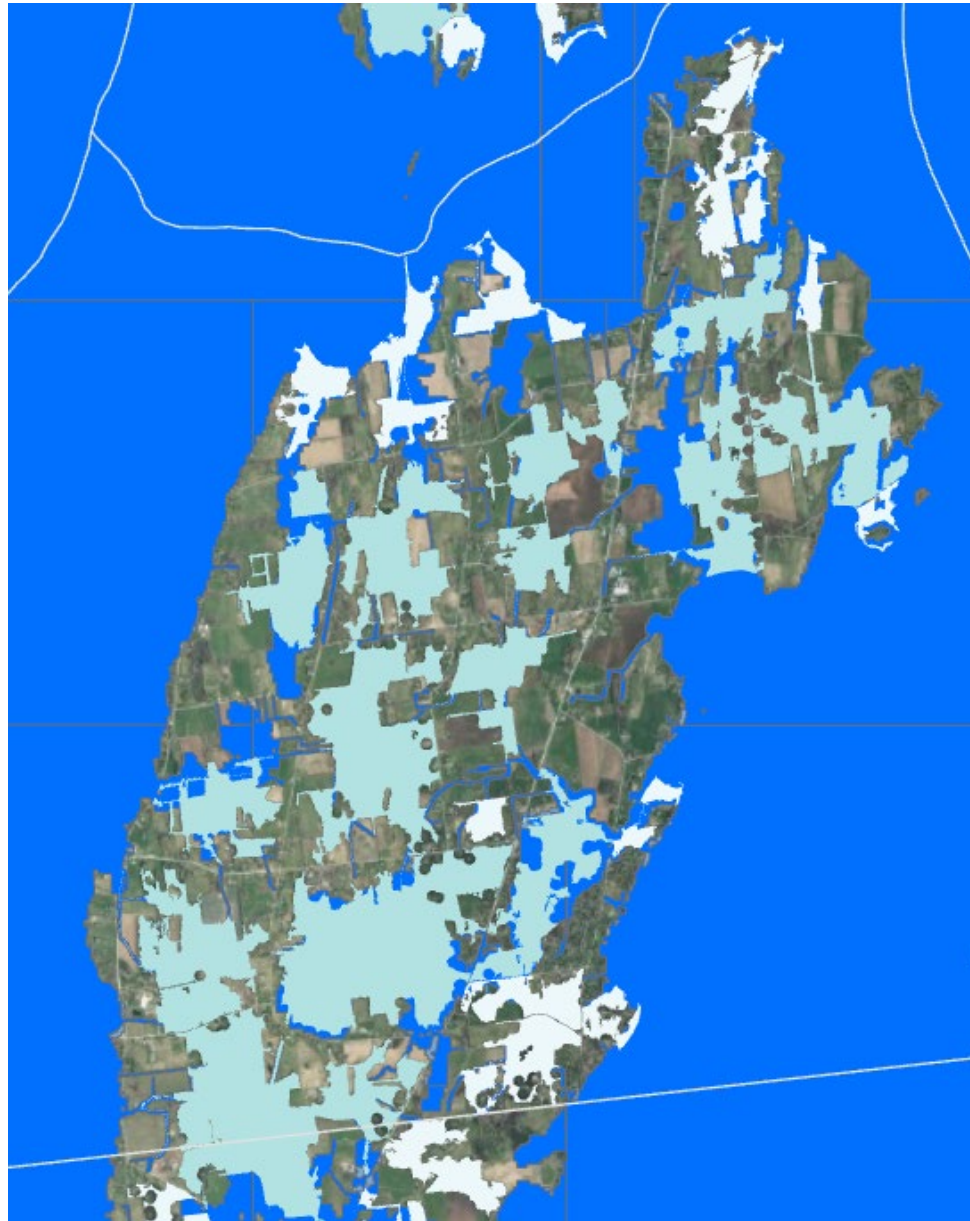
habitat_block_area_acres



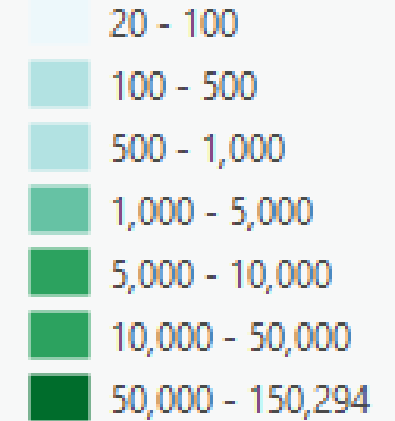
FOREST/HABITAT BLOCKS

&

SURFACE WATERS

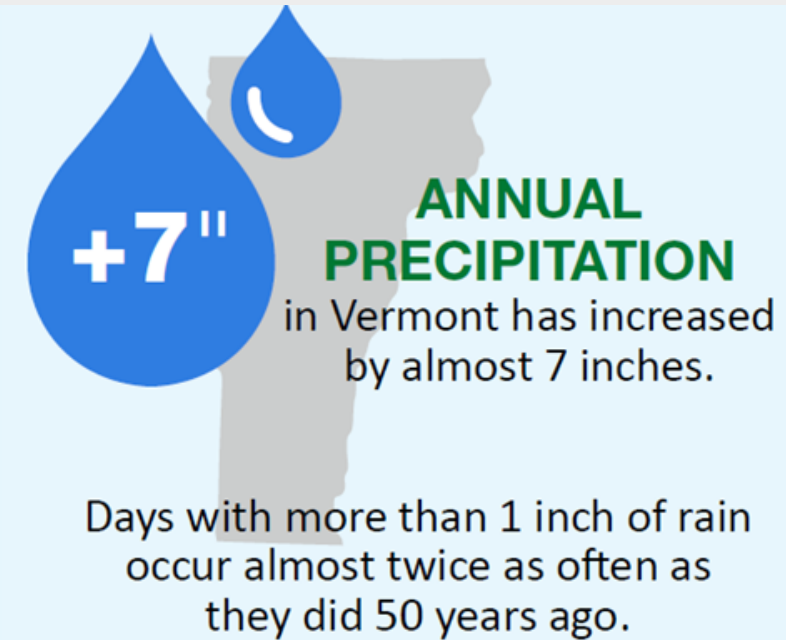
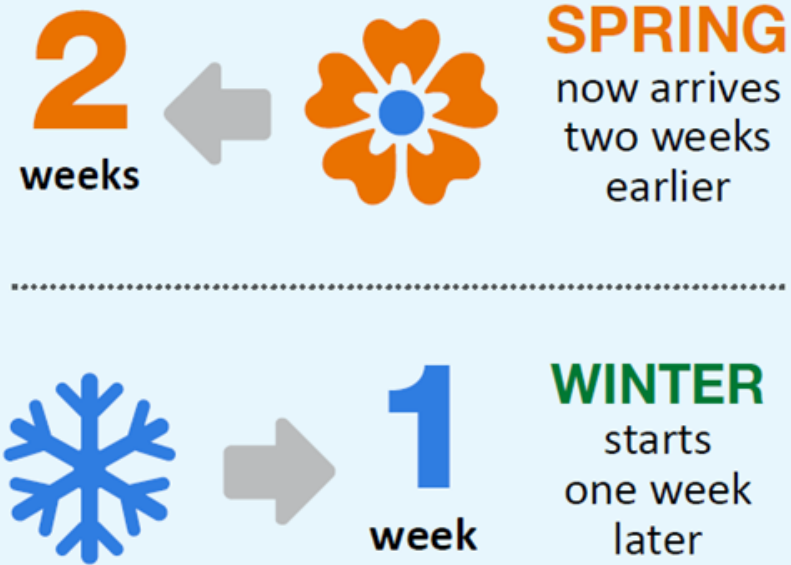
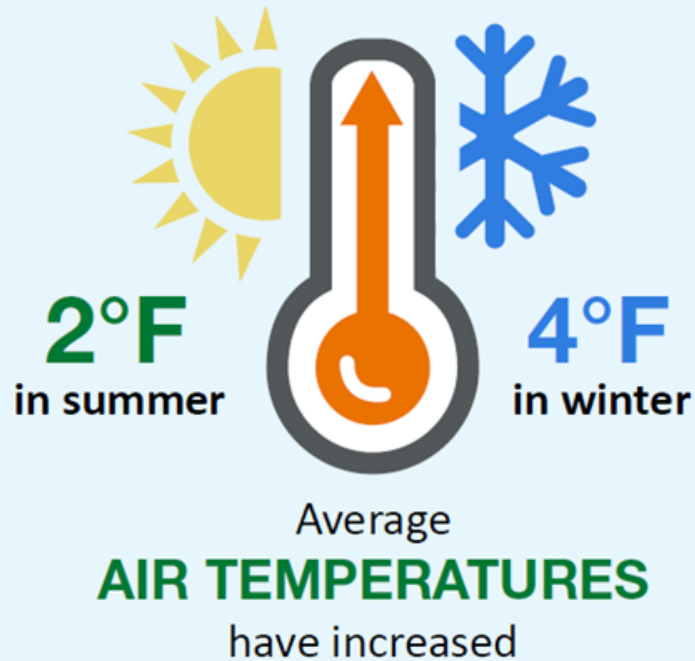


habitat_block_area_acres

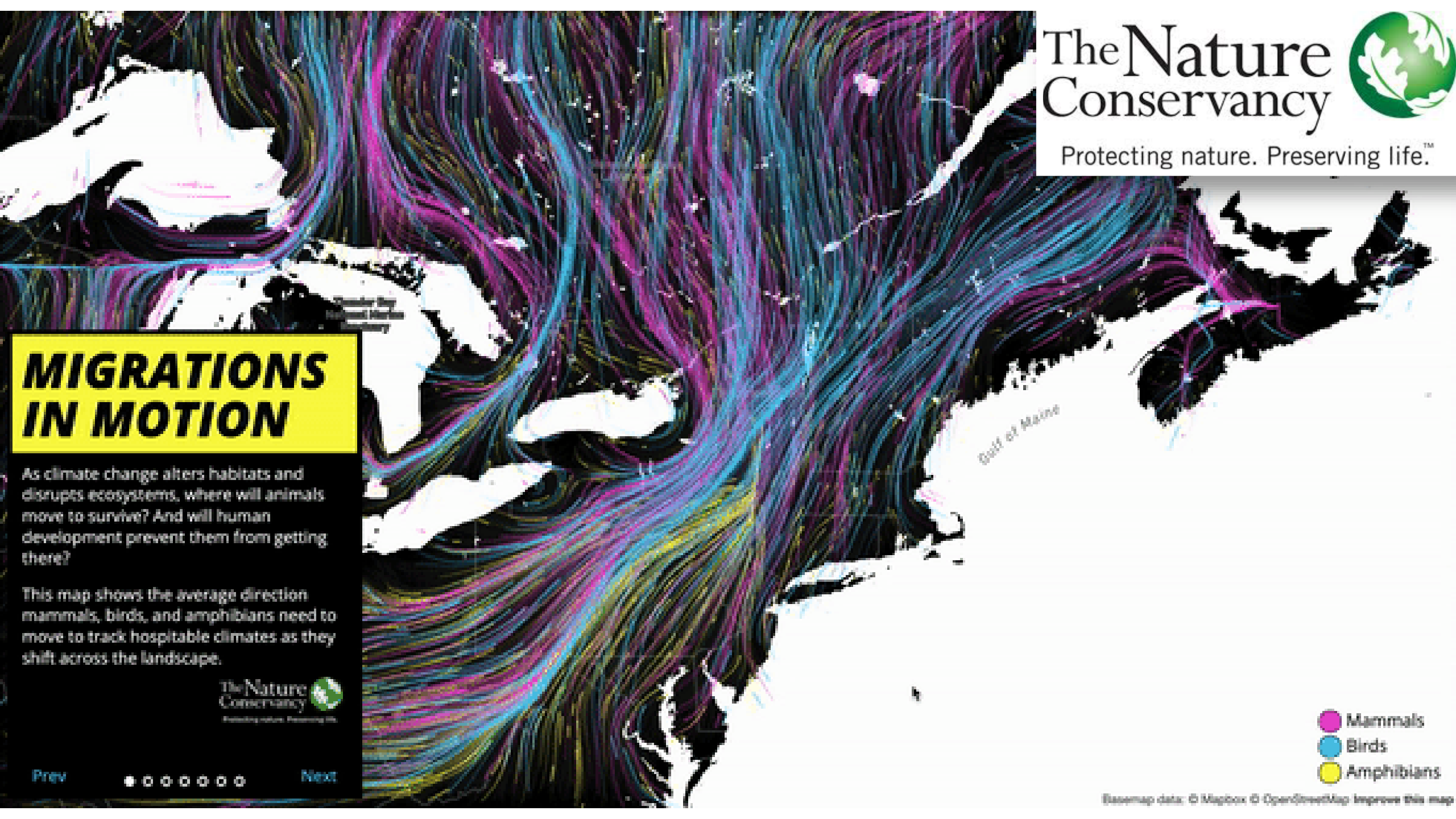


Climate Change in Vermont

More rain and flooding, changes to agriculture, different forests



 *Not everyone is impacted equally*



MIGRATIONS IN MOTION

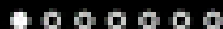
As climate change alters habitats and disrupts ecosystems, where will animals move to survive? And will human development prevent them from getting there?

This map shows the average direction mammals, birds, and amphibians need to move to track hospitable climates as they shift across the landscape.



Protecting nature. Preserving life.

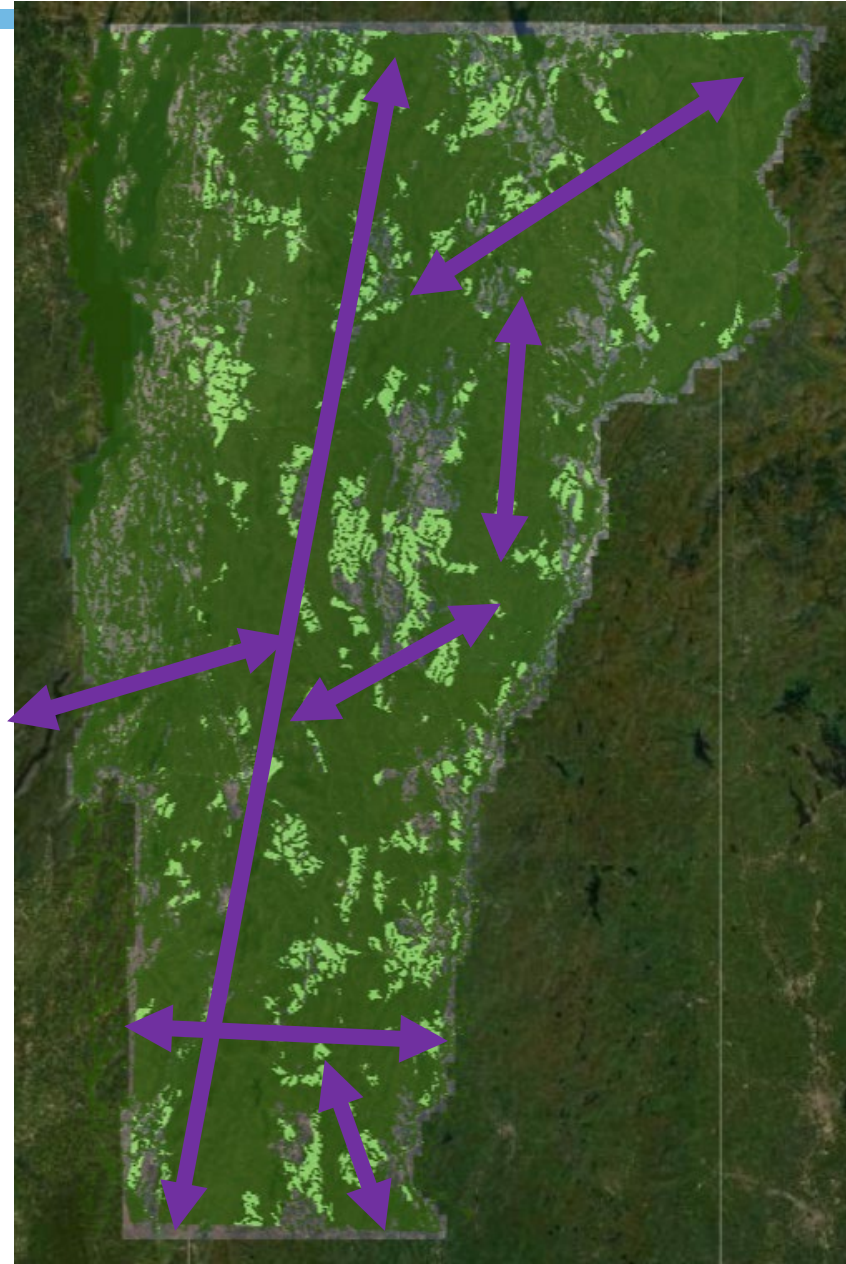
[Prev](#)



[Next](#)

-  Mammals
-  Birds
-  Amphibians

WILDLIFE ON THE MOVE



Black Bear

30+ square miles



Moose

2-20 square miles



Newark

Perry

River Otter

15-30 linear miles



Bobcat

27 square miles





Male Bear M0063

October 11 2017 – November 11 2017

Approximately 140 km.

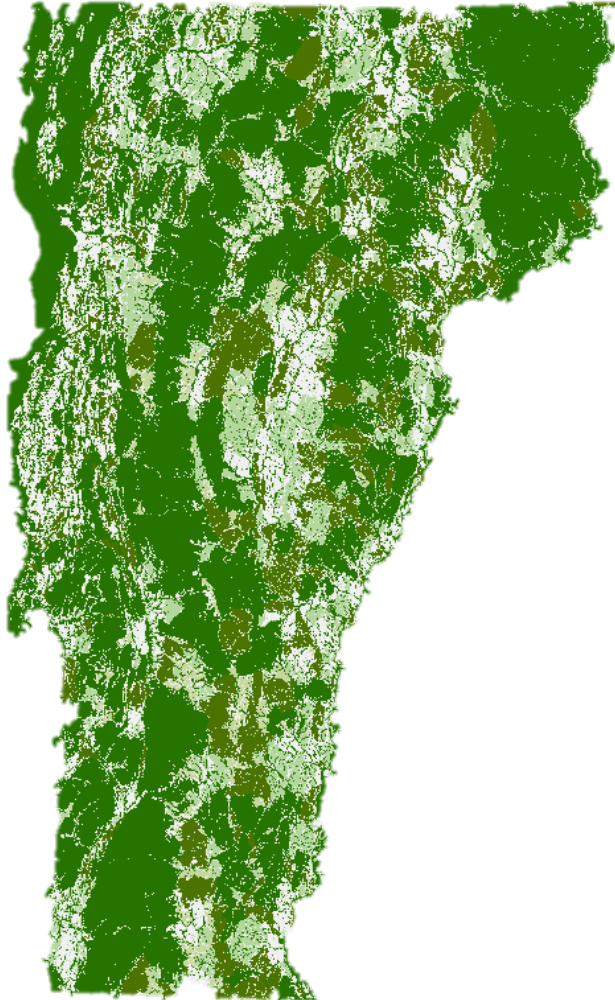


ADAPTATION

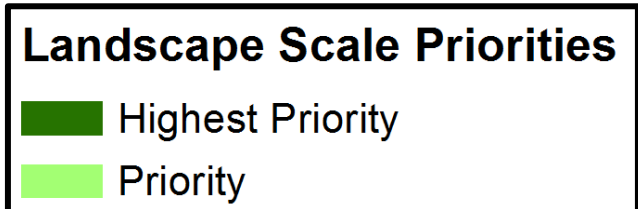
- Forest fragmentation creates a “pattern” that is difficult for wildlife movement and threatens viability of our wildlife populations
- Wildlife are on the move in response to climate change
- Adapting to a climate reality means ensuring we have a land use pattern that allows for plant & animal movement



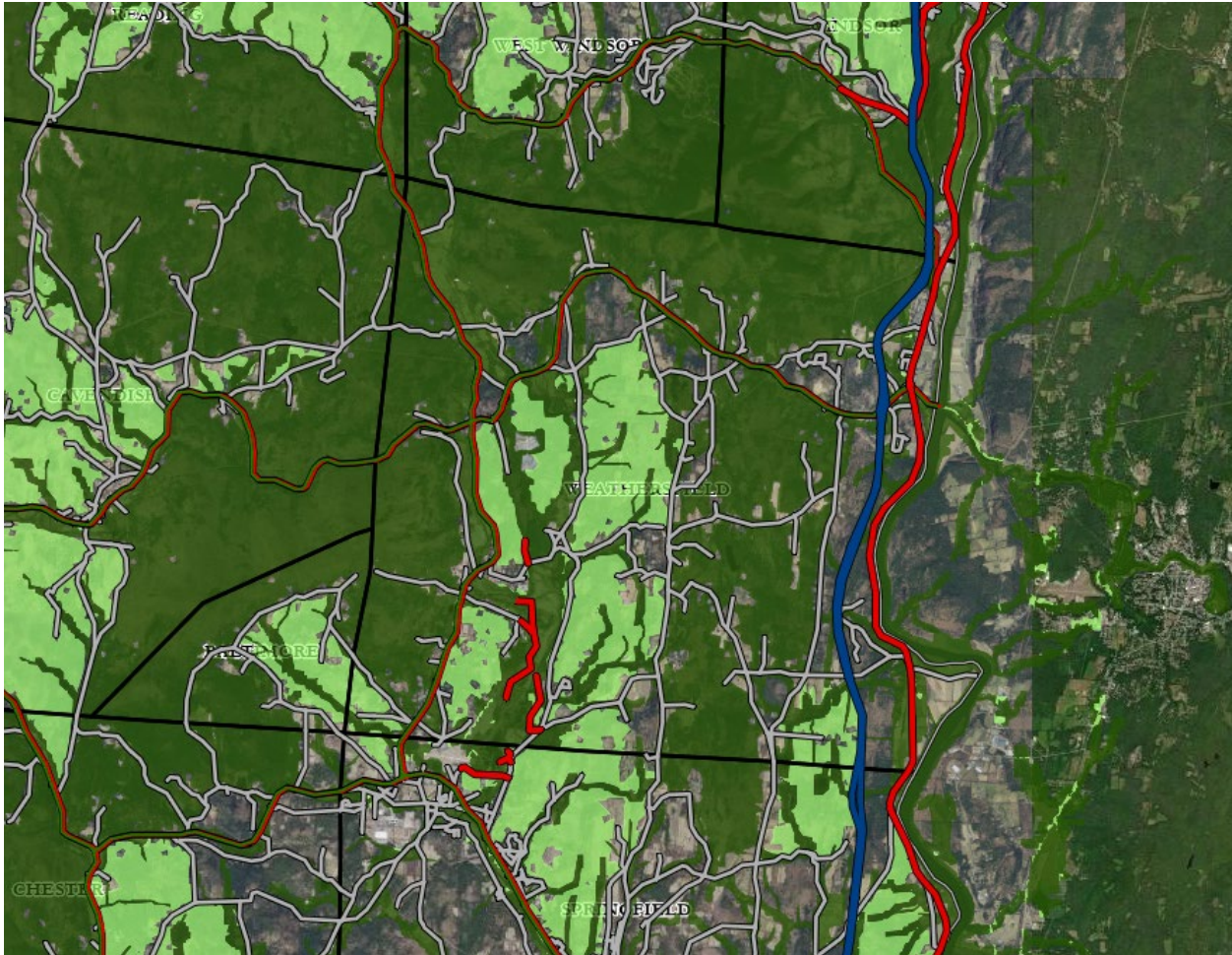
VERMONT CONSERVATION DESIGN




most important lands and waters for
maintaining ecological function now
and into the future




VERMONT CONSERVATION DESIGN

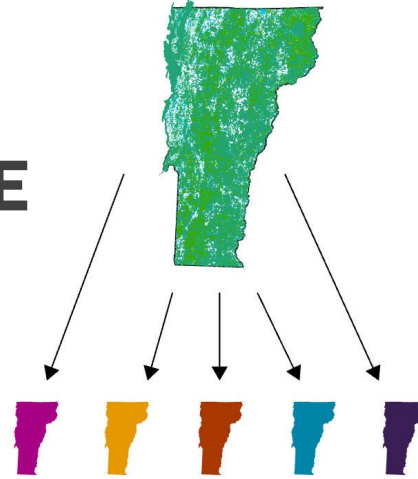


Landscape Scale Priorities

 Highest Priority

 Priority

THE ECOLOGICALLY FUNCTIONAL LANDSCAPE



The components below are added together to create the Ecologically Functional Landscape

INTERIOR FOREST

Highest Priority

The largest forest blocks in each biophysical region. These are areas of contiguous forest and other natural communities and habitats (such as wetlands, ponds, and cliffs) that are unfragmented by roads, development, or agriculture.

CONNECTING FOREST

Highest Priority

The network of forest blocks that together provide terrestrial connectivity at the regional scale (across Vermont and to adjacent states and Québec) and connectivity with surface waters and areas of geological diversity.

GEOLOGICAL DIVERSITY

Highest Priority

A set of forest blocks that reflect the full diversity of Vermont's bedrock, soils, elevations, and landforms (features such as slopes, ridges, flats, and coves). Diversity in the physical landscape is linked to biological diversity, and places that contribute to physical diversity will be important for biological diversity even as the climate changes.

SURFACE WATERS & RIPARIAN AREAS

Highest Priority

The network of all lakes, ponds, rivers, and streams, their associated riparian zones, valley bottoms, and river corridors in which geophysical processes occur.

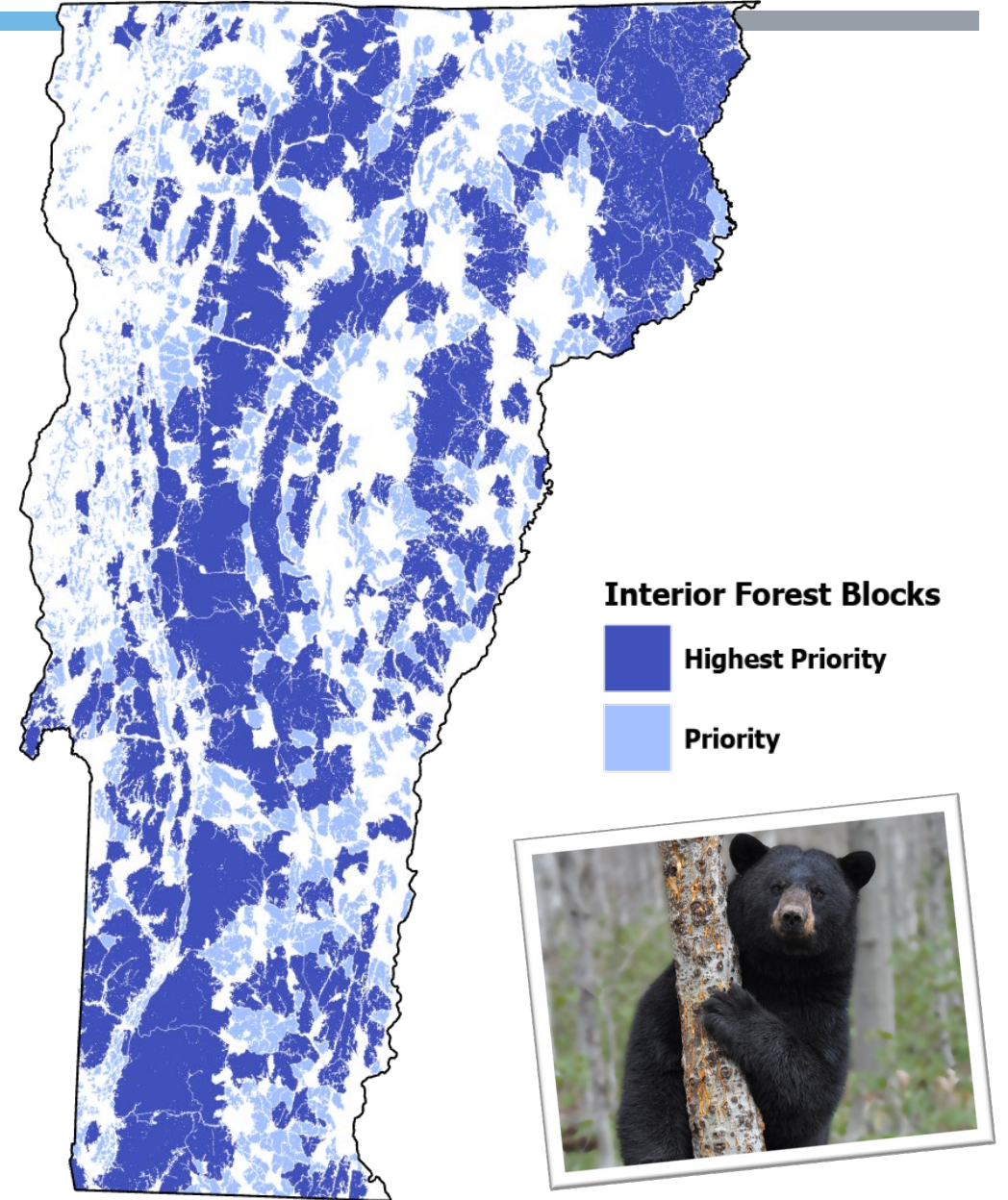
NATURAL COMMUNITIES, HABITATS & SPECIES

Highest Priority

All the mapped community and species scale components: Natural Communities, Aquatic Habitats, Vernal Pools, Wetlands, Wildlife Road Crossings, and Rare, Threatened & Endangered Species.

INTERIOR FOREST BLOCKS

- The largest habitat blocks in each biophysical region provide the best **interior forest conditions**
- These are places with minimal external disturbance effects from forest fragmentation
- The minimum size threshold varies by region:
 - smaller blocks are selected at lower elevations
 - greater fragmentation
 - higher biodiversity
- Size is the determining factor in block priority

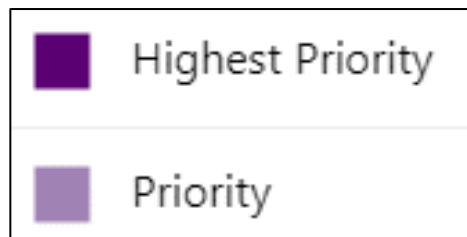


INTERIOR FOREST BLOCKS

Ecological Function Supports:

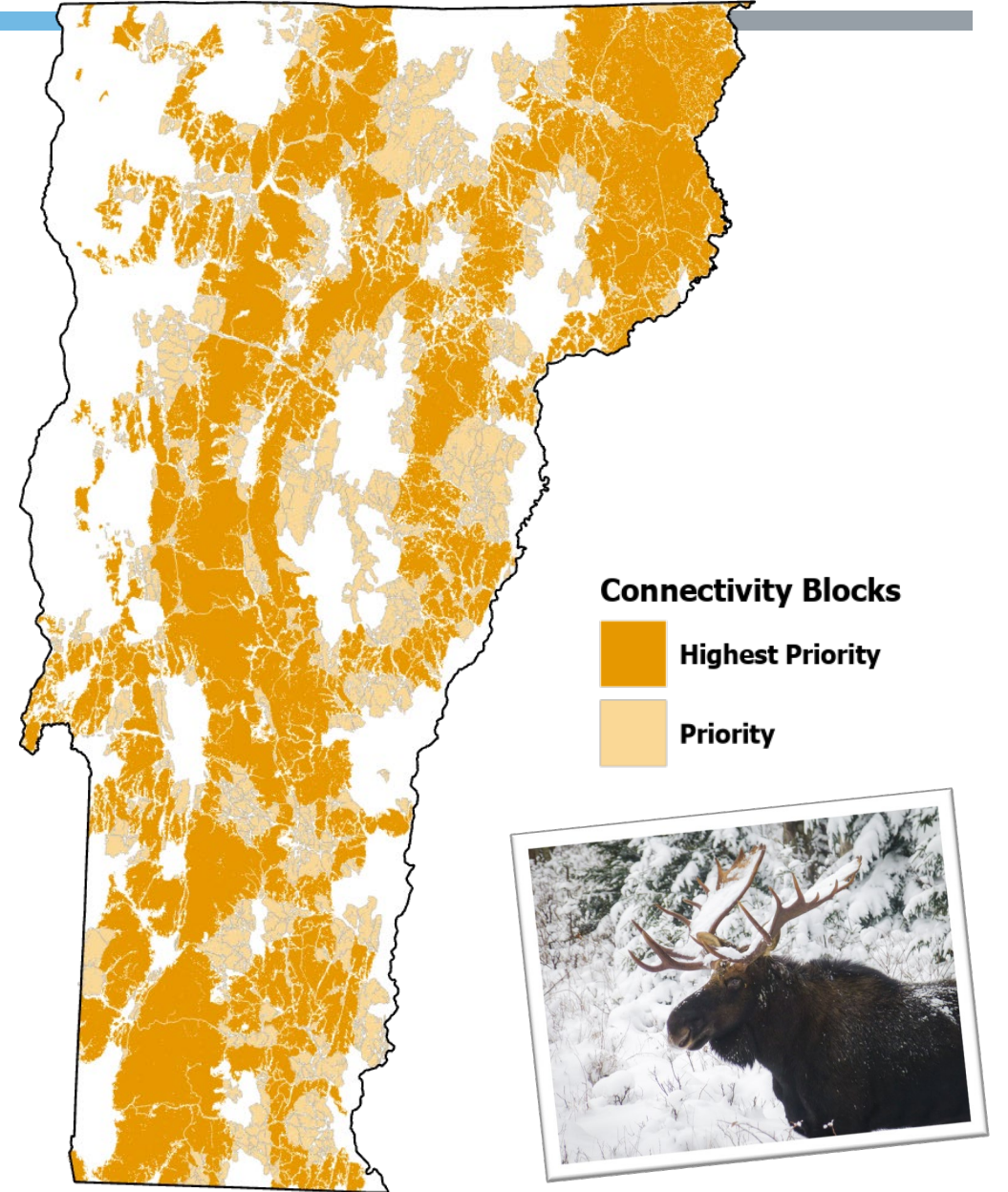
- Habitat for forest species;
- Air and water quality protection;
- Climate change resilience.

Subset of the Habitat Blocks



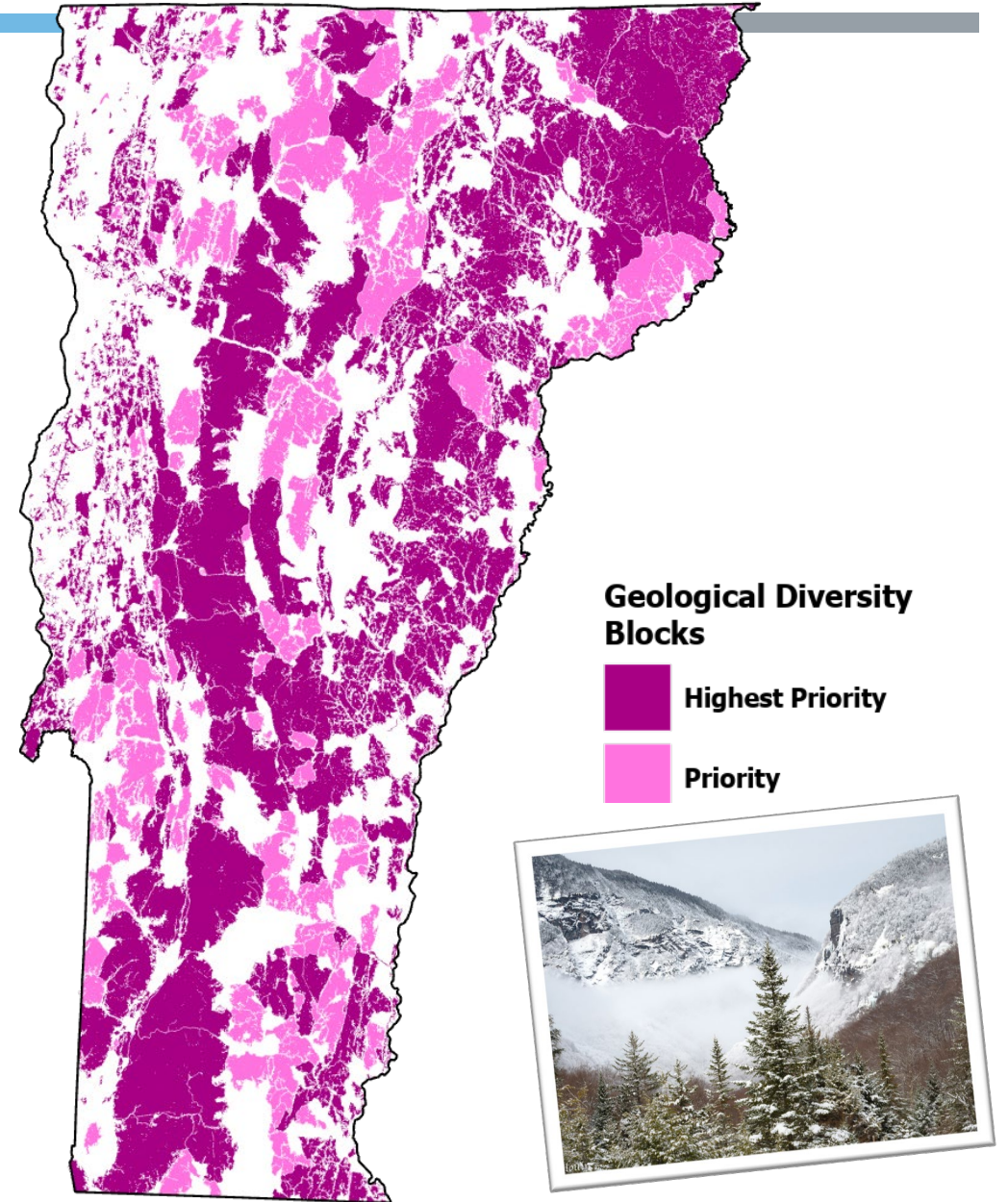
CONNECTIVITY BLOCKS

- A network of habitat blocks selected to promote **landscape connectivity** across Vermont
- Priority is established by habitat block size and landscape context
- The backbone of the network includes:
 - The spines of the major VT mountain ranges
 - Connections to adjacent states and provinces
 - Connections to areas of high geological diversity
 - Connections between high and low elevation zones
 - “Stepping-stone” blocks between larger habits
 - “Anchor” blocks within fragmented regions

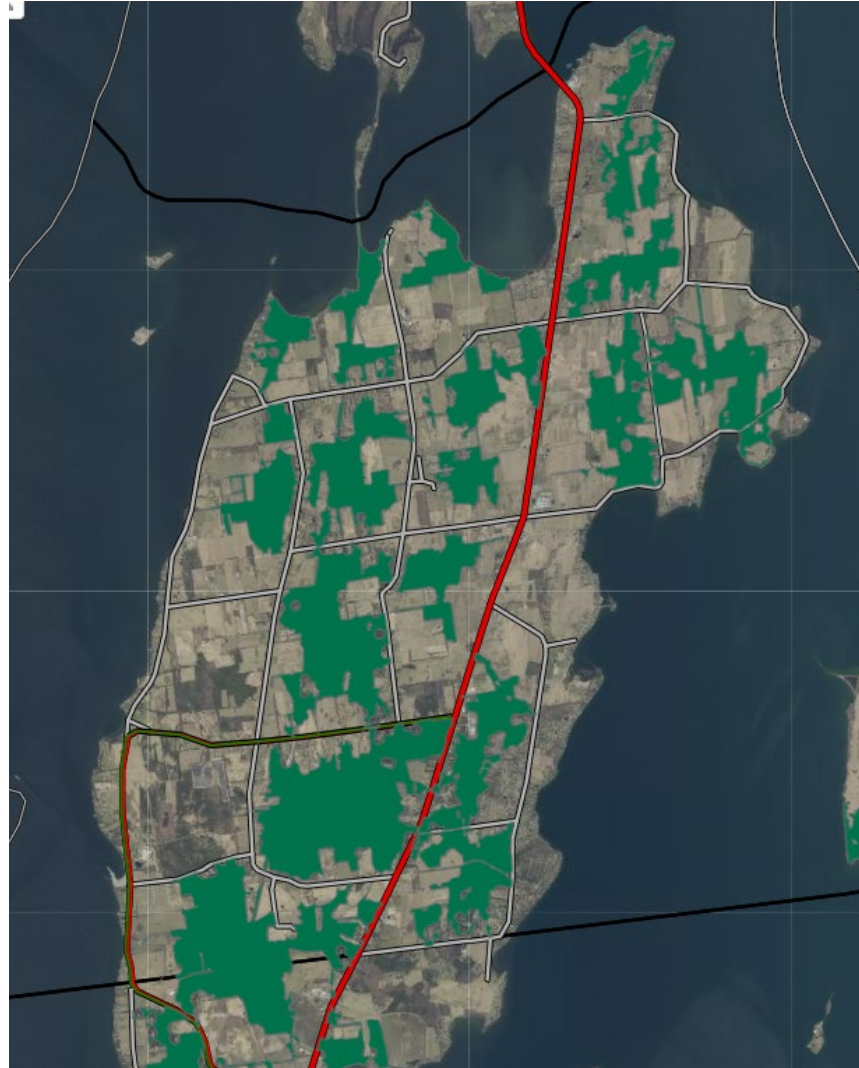


GEOLOGICAL DIVERSITY BLOCKS

- A selection of habitat blocks that represents the full range of **physical landscape settings** across Vermont
- Diversity in enduring physical features gives rise to diversity in ecological communities
- Includes additional representation for:
 - Rare settings
 - ‘Responsibility’ settings



GEOLOGICAL DIVERSITY BLOCKS



Riparian Connectivity



In parts of the state, riparian areas are the only connections between forest blocks

We need to restore riparian vegetation.

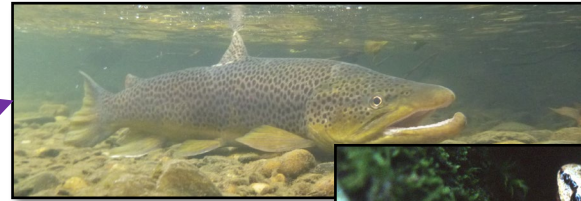


COMMUNITY & SPECIES SCALE COMPONENTS

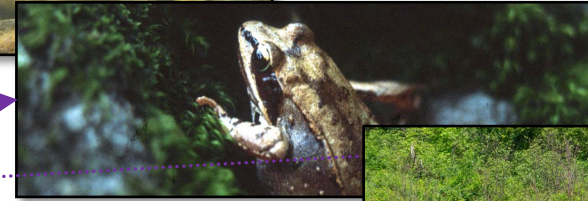
Natural Communities



Aquatic Habitats



Vernal Pools



Wetlands



Wildlife Road Crossings



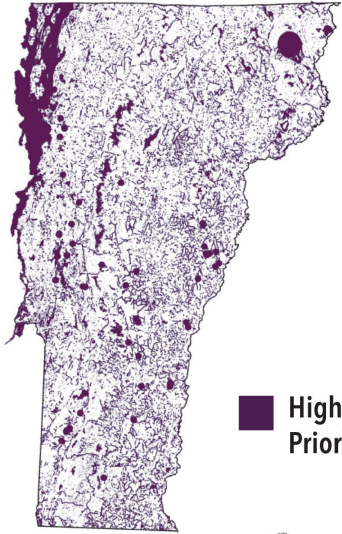
Grasslands/Shrublands



Rare, Threatened, & Endangered Species

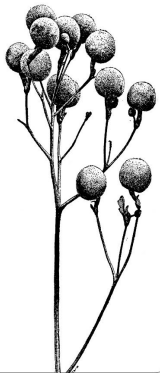


NATURAL COMMUNITIES, HABITATS & SPECIES

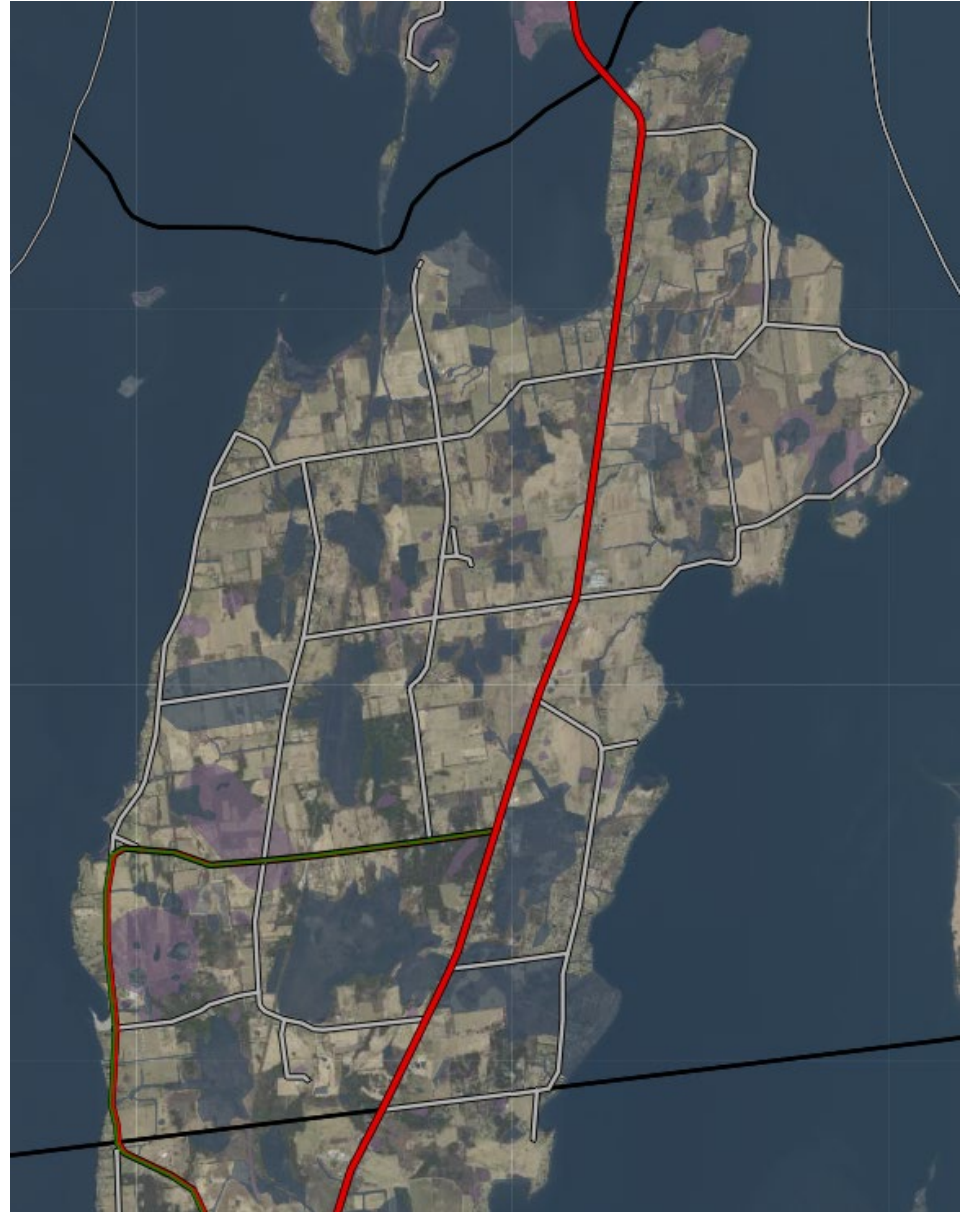


Highest Priority

All the mapped community and species scale components: Natural Communities, Aquatic Habitats, Vernal Pools, Wetlands, Wildlife Road Crossings, and Rare, Threatened & Endangered Species.



COMMUNITY & SPECIES SCALE



**Core Forest
Blocks**

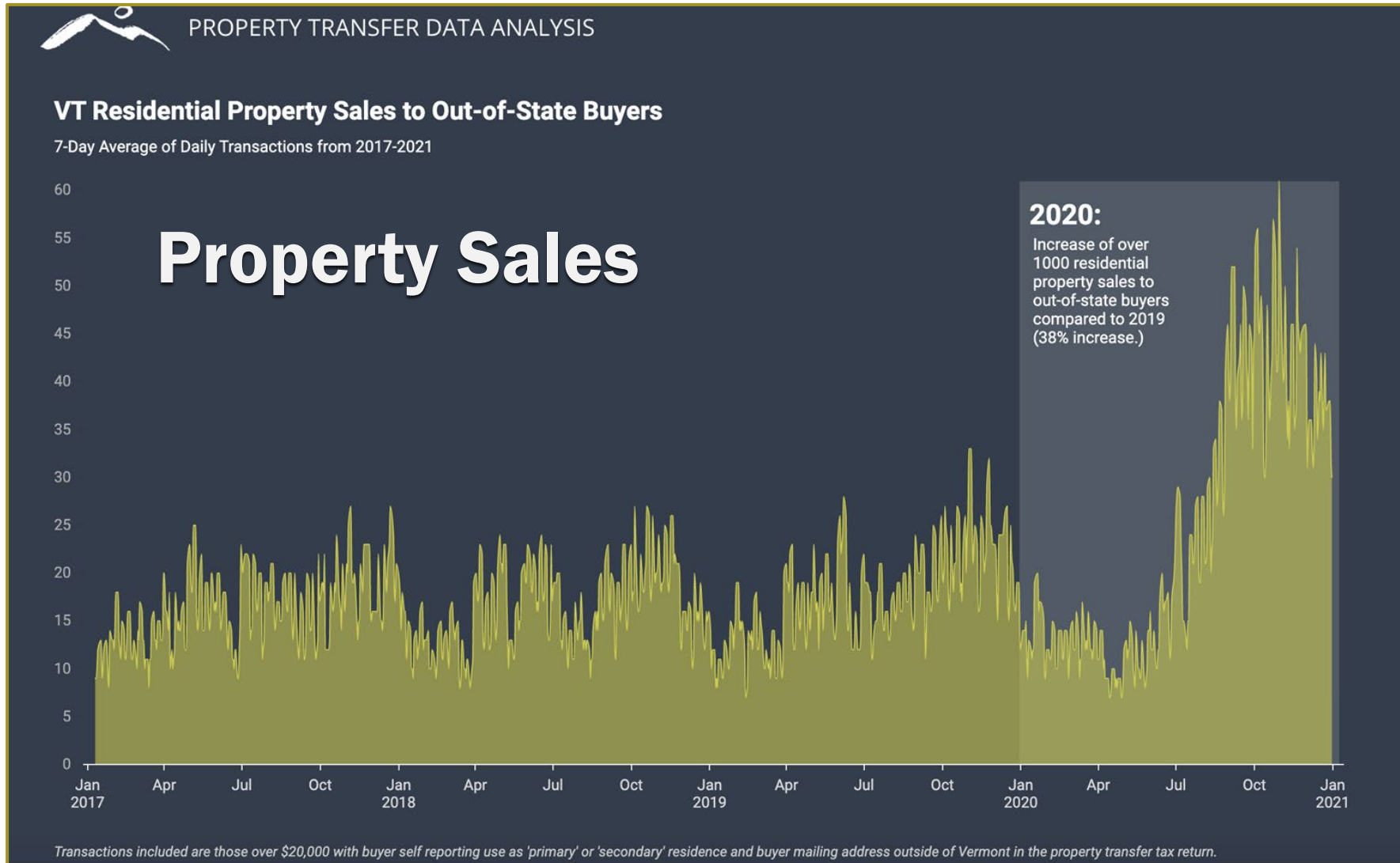
**Wildlife
Road
Crossings**

**Small,
“stepping
stone”
forests**

**Streamside
Connectors**



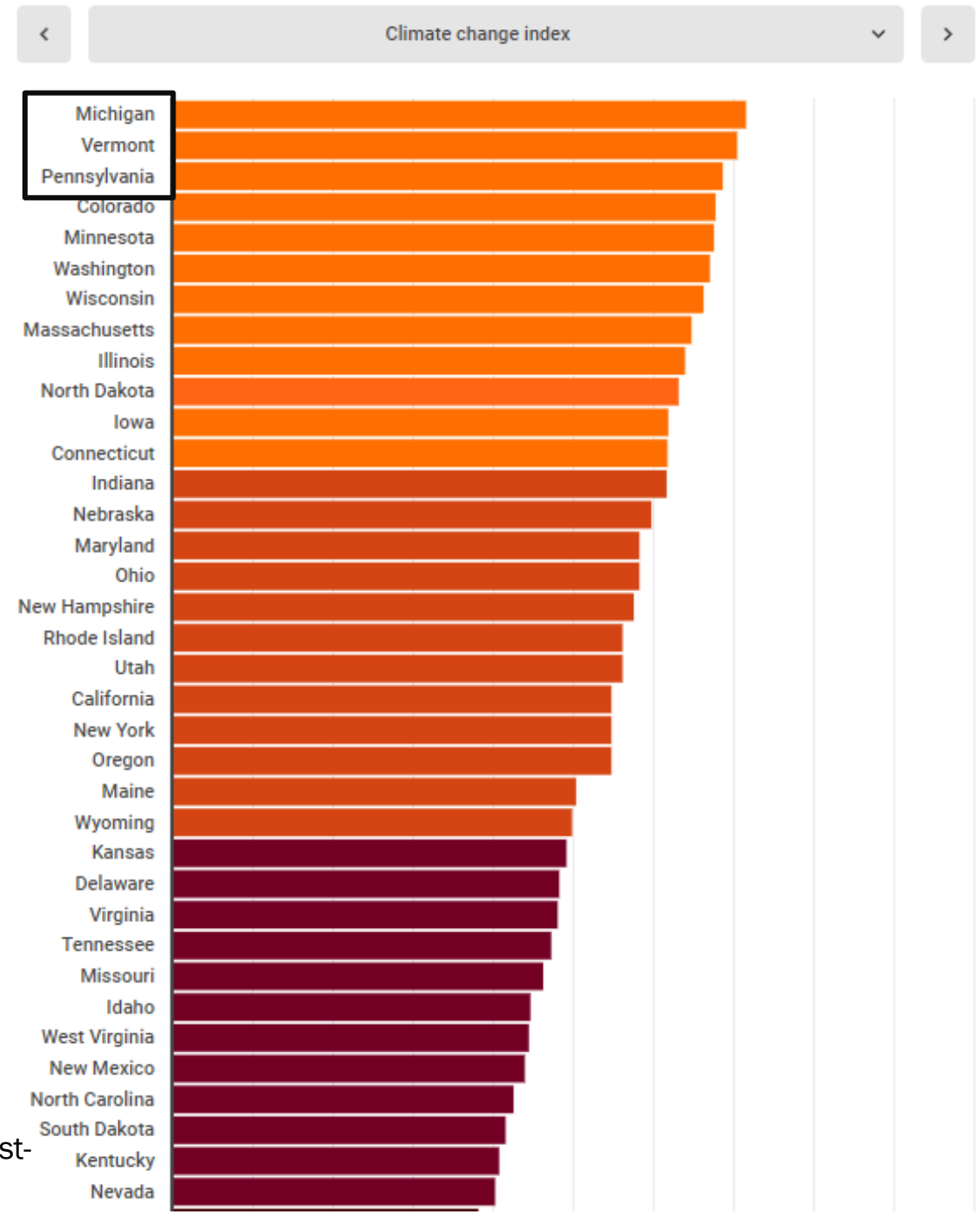
PEOPLE ARE ON THE MOVE TOO!



SAFEST STATES FOR CLIMATE CHANGE

- Drought
- Extreme heat
- Wildfires
- Flooding
- Climate Change preparedness

<https://www.policygenius.com/homeowners-insurance/best-and-worst-states-for-climate-change/>



SPRAWL

Dispersed,
auto-dependent
development outside
of compact urban
and village centers,
along highways, and
in rural countryside.

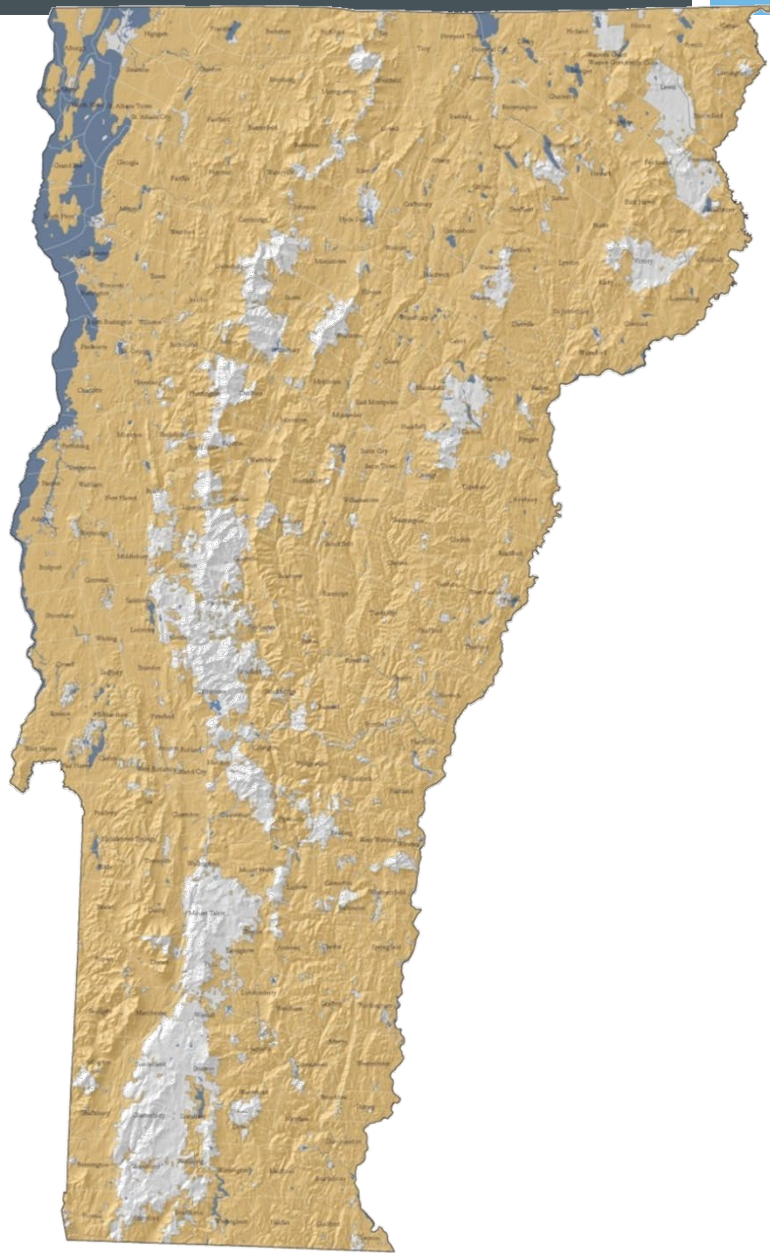
(SmartGrowth Vermont)



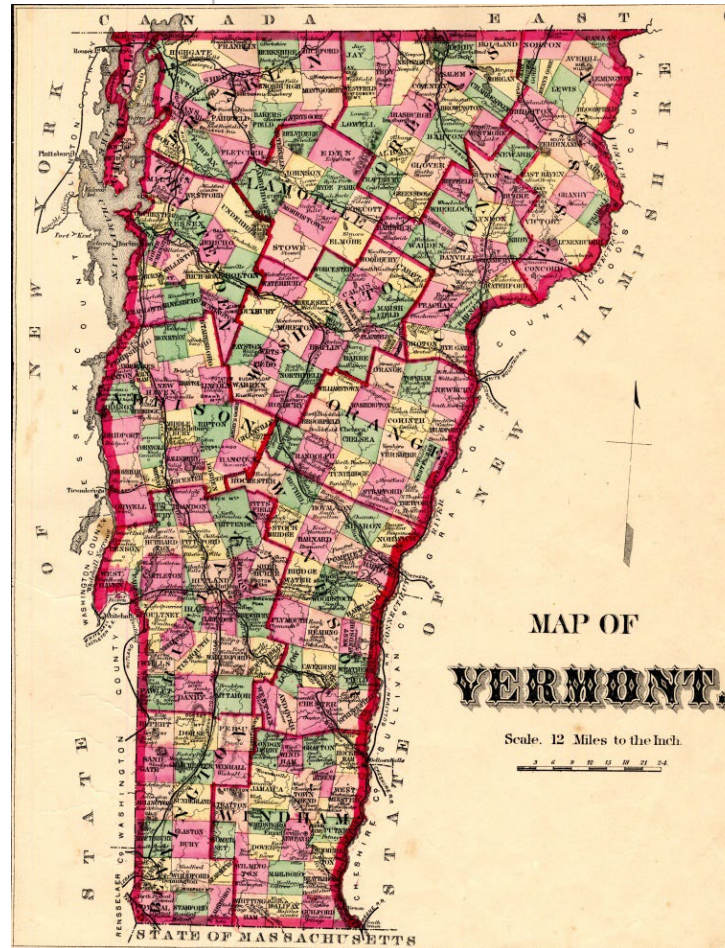
PLANNING AND PROPERTY RIGHTS

- A careful balance and key consideration for planning
- Good land use planning considers property rights as well as other community goals

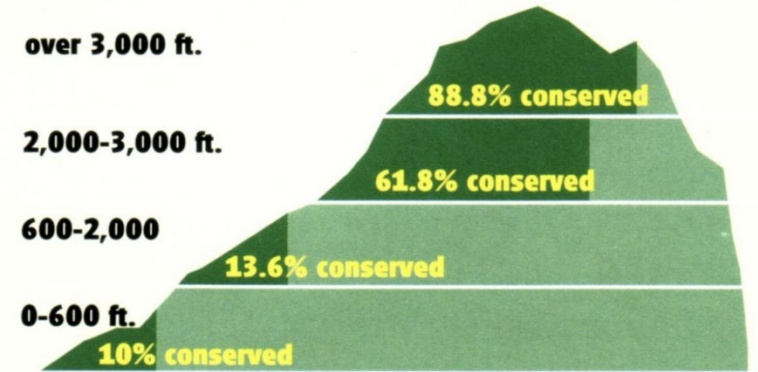




83% PRIVATE LAND



Percentage of each elevation zone in conserved lands. Much of Vermont's biodiversity is found at low elevations, but the lowest elevations are the least protected.



Vermont Biodiversity Project

Many Ways of Moving Forward

Range of options

Landowner

Land
Management

Education

Incentive
Programs

Management
Agreements

Conservation
Easements

Land Acquisition

Municipal

Education
& Outreach

Inventory

Town
Plan

Conservation
Plan

Bylaws

Zoning

No one tool is right for every landowner or town



Freedom & Unity



Balancing Individual liberty and community responsibility since
1791

ACT 171 PLANNING PROVISIONS

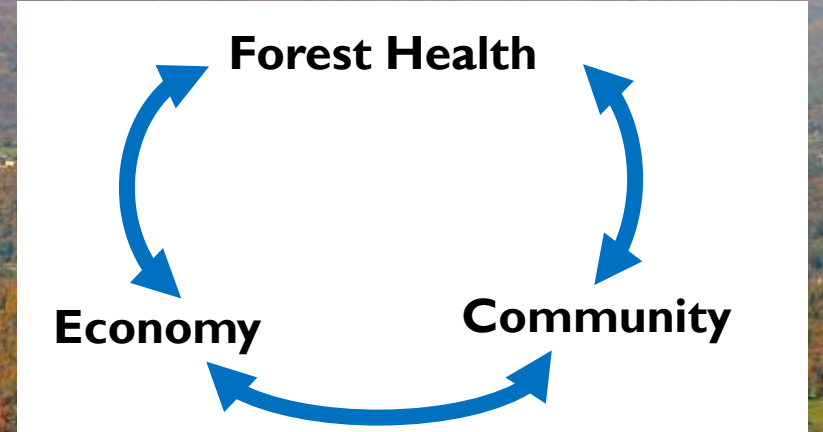
Requires town and regional plans to:

- indicate those areas that are important as **forest blocks** and **habitat connectors**
- plan for land development in those areas to minimize forest fragmentation and promote the health, viability, and ecological function of forests.

Act 171 ANR Guidance Document


http://anr.vermont.gov/Planning/Forest_Blocks_And_Habitat_Connectors

WORKING FORESTS



Goal: To Maintain Function

(Ecological, Economic *and* for Community Values)



Encourage support for businesses that use local forest products.

Institute a local products purchasing policy for municipal purchases.

GOAL:

SUPPORT WORKING FORESTS

Encourage management plans and/or Current Use

Connect landowners to incentives programs

Where possible, keep development to the edges rather than penetrating into the middle of blocks.

Adopt or evaluate subdivision regs.

**GOAL:
MAINTAIN LARGE
FOREST BLOCKS**

Encourage land conservation in important areas.

Consider a conservation, forest or overlay district.

Limit driveway length or establish building envelopes/clearing standards.

Encourage estate planning.

An aerial photograph of a rural landscape. The terrain is a mix of green fields, brownish soil, and dark green forests. A prominent road or path winds through the center of the image. There are several small ponds or lakes scattered throughout the landscape. The overall scene is a typical rural or semi-rural setting.

Encourage estate planning.

Consider in conjunction with habitat connectors

Adopt or evaluate subdivision regs.

**GOAL:
MAINTAIN CONNECTIONS
BETWEEN BLOCKS**

Encourage land conservation in important areas.

Limit driveway length or establish building envelopes/clearing standards.

Consider a conservation, forest, or overlay district.

An aerial photograph of a rural landscape. A river winds through the center, surrounded by green fields and patches of forest. The terrain is hilly, and there are some buildings and roads visible. The overall scene is a mix of natural and developed areas.

Encourage estate planning.

Adopt or evaluate subdivision regs.

GOAL:

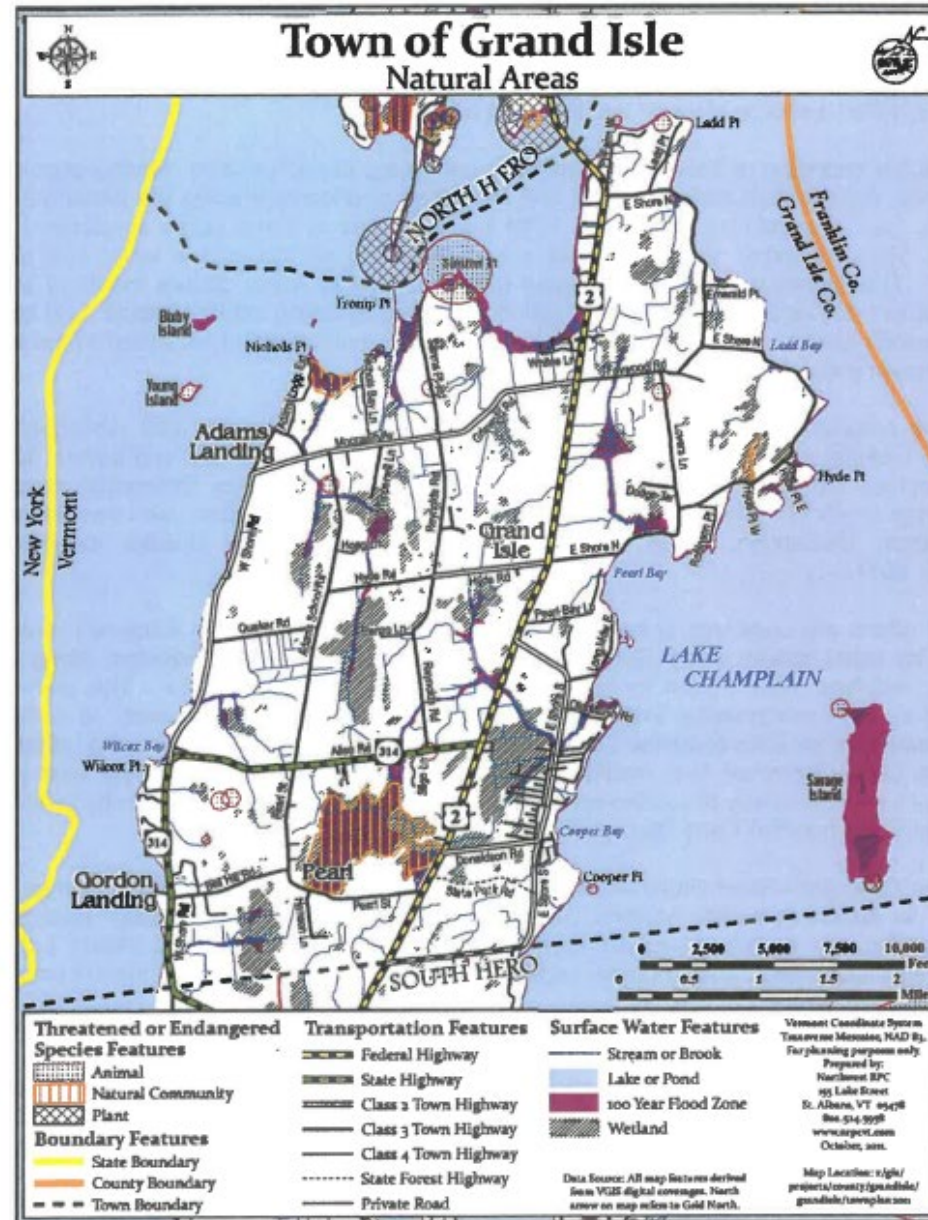
INCLUDE PHYSICAL LANDSCAPE DIVERSITY WHEN IDENTIFYING FOREST BLOCKS AND CONNECTIONS

Encourage land conservation in important areas.

Limit driveway length or establish building envelopes/clearing standards.

Consider a conservation or forest district.

TOWN PLAN NATURAL AREAS



TOWN PLAN FUTURE LAND USE



Proposed Land Use Districts	Transportation Features	Surface Water Features	Boundary Features
Village	Federal Highway	Stream or Brook	State Boundary
Commercial/Lt. Industrial	State Highway	Lake or Pond	County Boundary
Commercial	Class 2 Town Highway	Residential Shoreline	Town Boundary
Recreation Shoreline	Class 3 Town Highway	Rural Residential/Agricultural	
Residential Shoreline	Class 4 Town Highway	Small Offshore Islands	
Flood Hazard	State Forest Highway	Flood Hazard	
	Private Road		

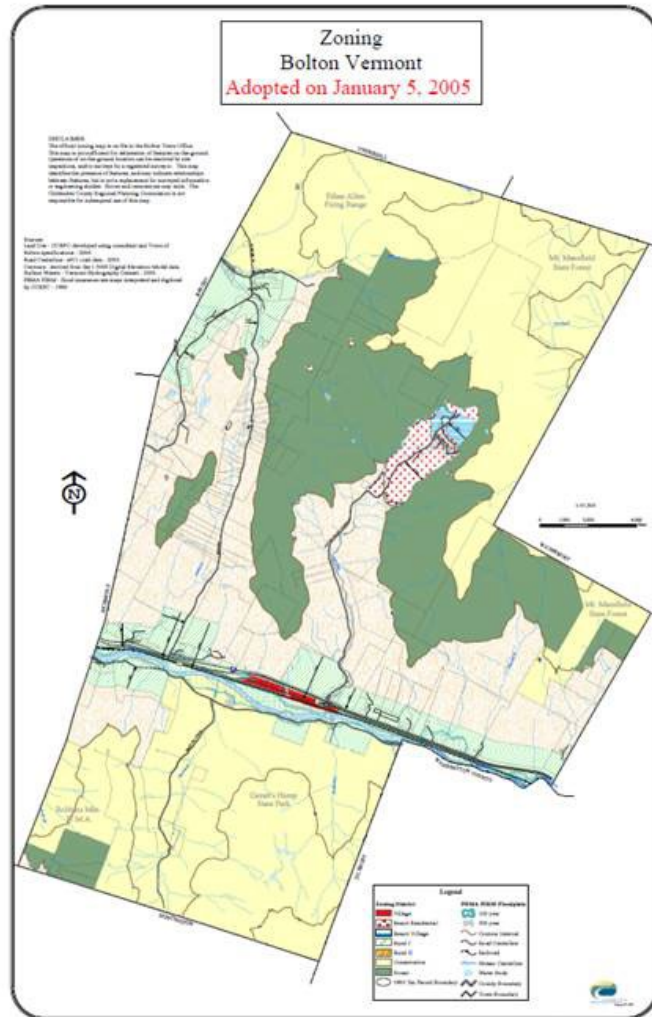
Map Information:
 Vermont Coordinate System
 Transverse Mercator, NAD 83.
 For planning purposes only.
 Prepared by:
 Northwest RPC
 155 Lake Street
 St. Albans, VT 05475
 802.524.5998
 www.nwrpc.com
 October, 2011
 Map Location: gis/projects/county/grandisle/grandisle/townplans.htm

Data Source: All map features derived from VGIS digital coverages. North arrow on map refers to Grid North.

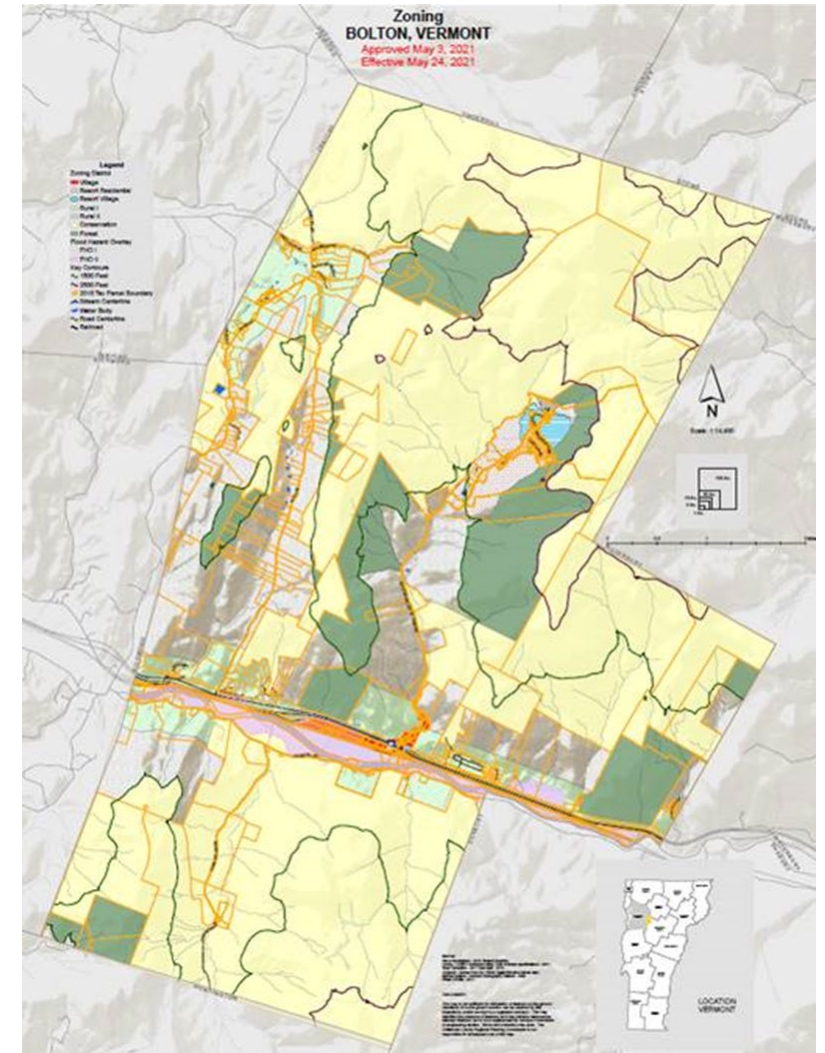
ZONING

Bolton's Zoning Rewrite 2018-2021

Old Zoning



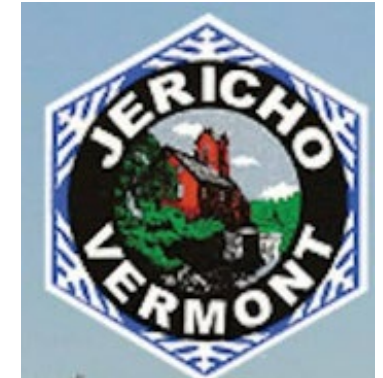
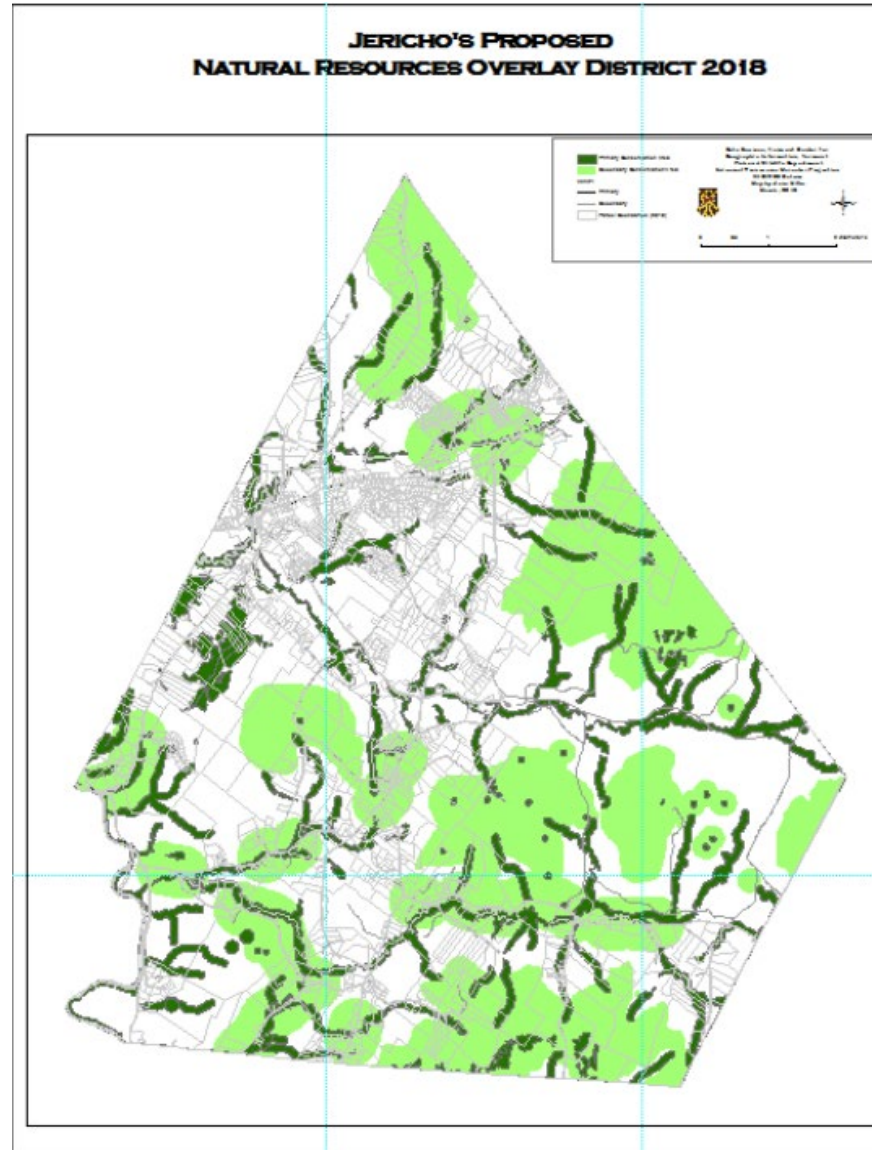
New Zoning



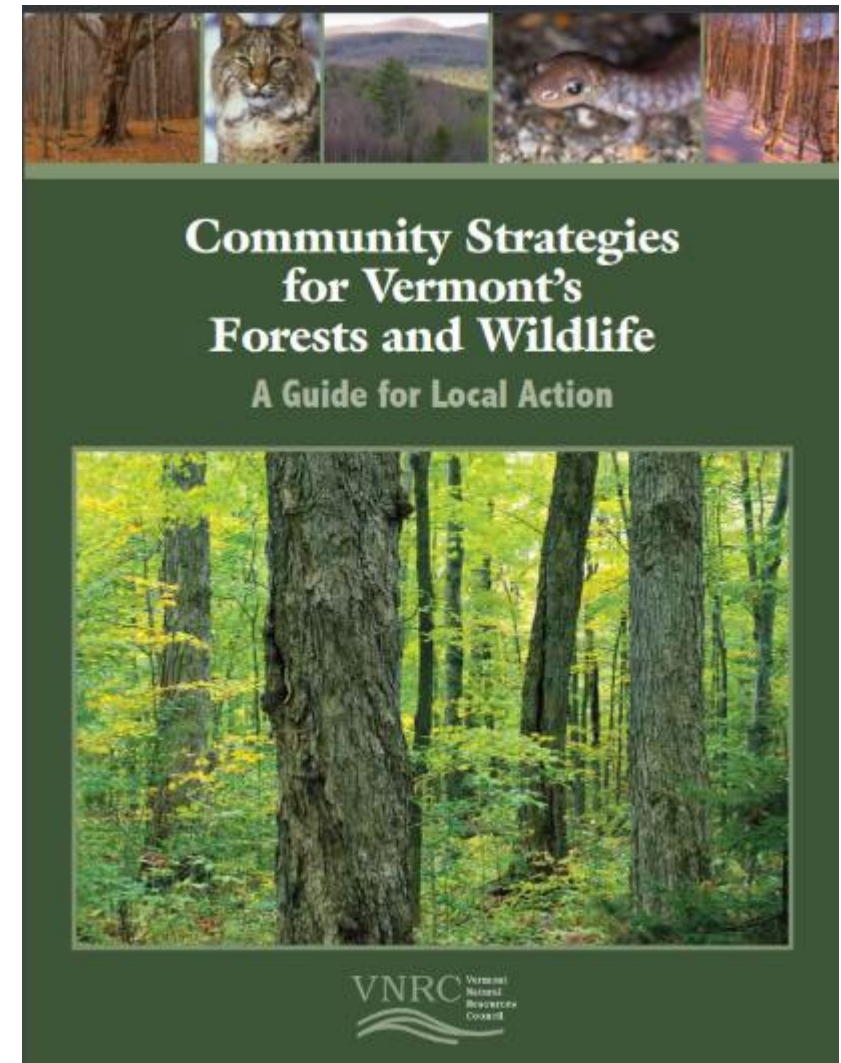
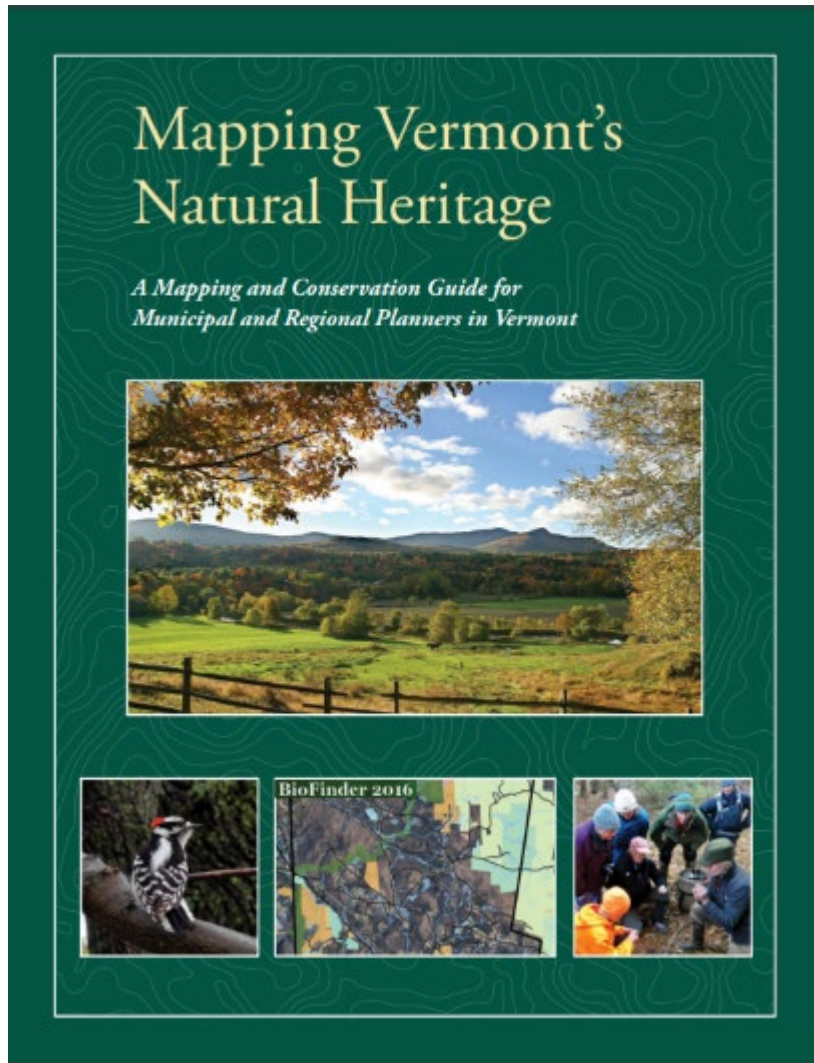
Jericho Natural Resources Overlay: 2012-2018

What is an Overlay?

- Protects certain features
- Applied “over” Zoning Districts, where situation or feature exists
- Special rules or criteria in the regulations



RESOURCES





Experience
**A VIBRANT, WELCOMING
COMMUNITY**



**Healthy Forests, Healthy
Economy Healthy Community**



HOW YOU CAN SUPPORT CONSERVATION IN VERMONT



Vermont Habitat Stamp



Nongame Wildlife Fund

<http://vtfishandwildlife.com/donate>



THANK YOU!

Jens.Hilke@vermont.gov