

# Using Vermont Conservation Design to Help Plan Your Town's Climate Future

➤ Jens Hilke | Conservation Planning Biologist, Vermont Fish & Wildlife Department





## AGENDA

- Why is land use pattern important for climate
- Translating science into planning
- Six step process

**NEXT UP:  
SECTION 1 OF 3**

# 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



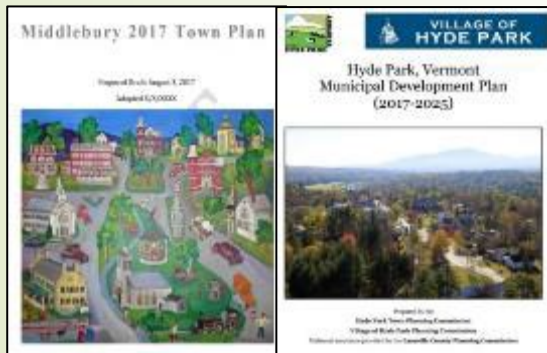
Presentations & Workshops



Support for Planning



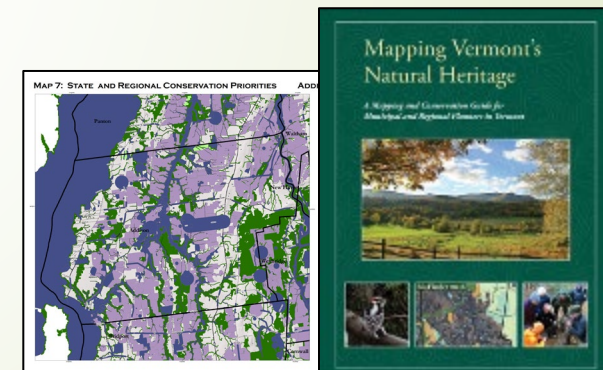
Support for Conservation



Connecting Communities to Each Other



Understanding Ecological and Community Context



Creation/Interpretation of Resources



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

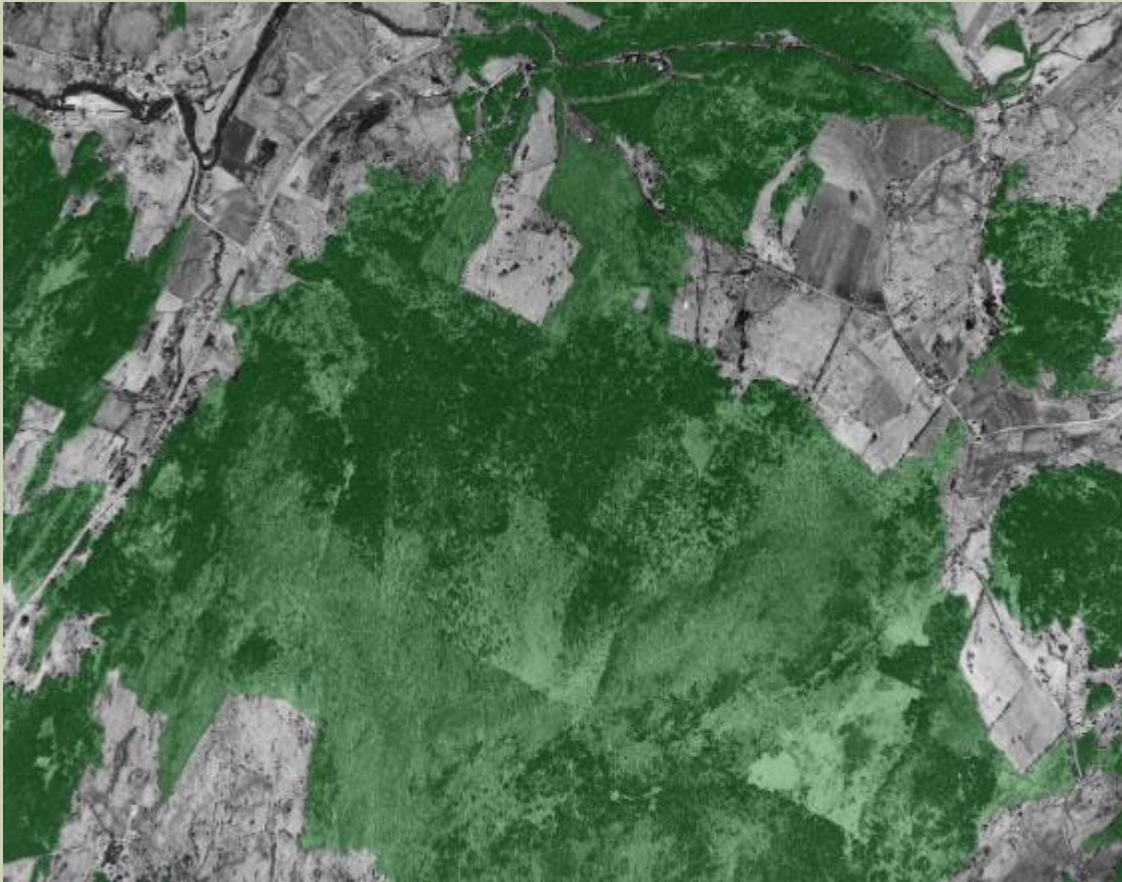
Biological  
diversity

Sequester carbon and  
absorb harmful gases

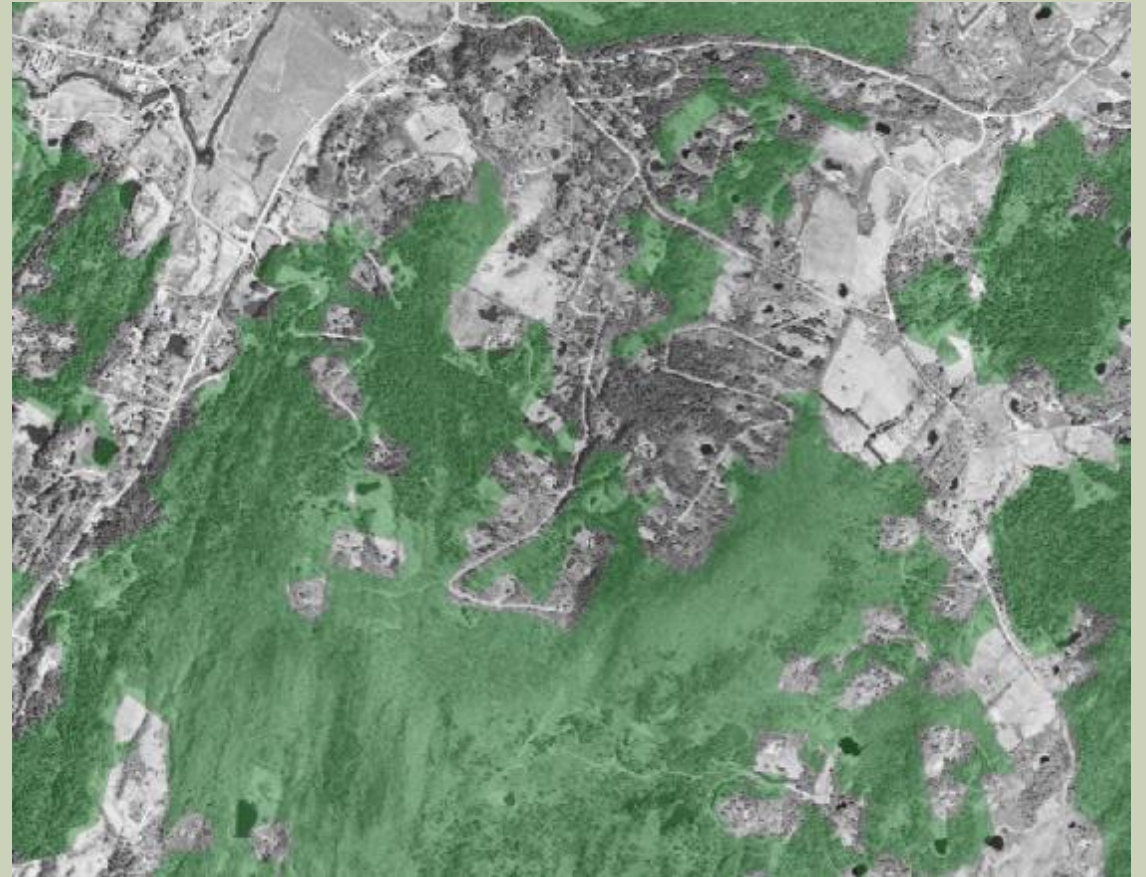


# LOSING WILDLIFE HABITAT & WORKING FOREST

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



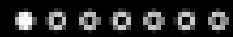
## MIGRATIONS IN MOTION

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.



Prev



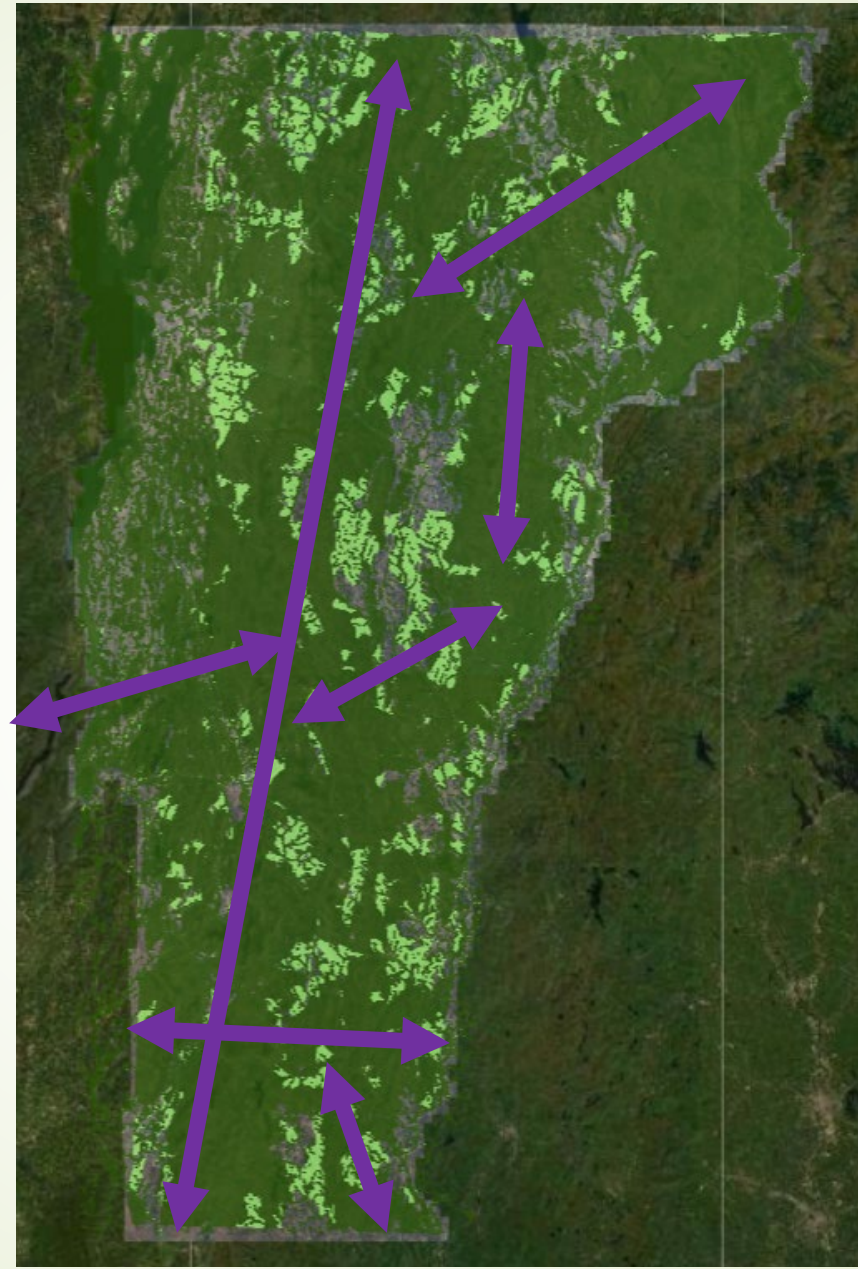
Next

- Mammals
- Birds
- Amphibians





WILDLIFE  
ON THE  
MOVE







Male Bear M0063

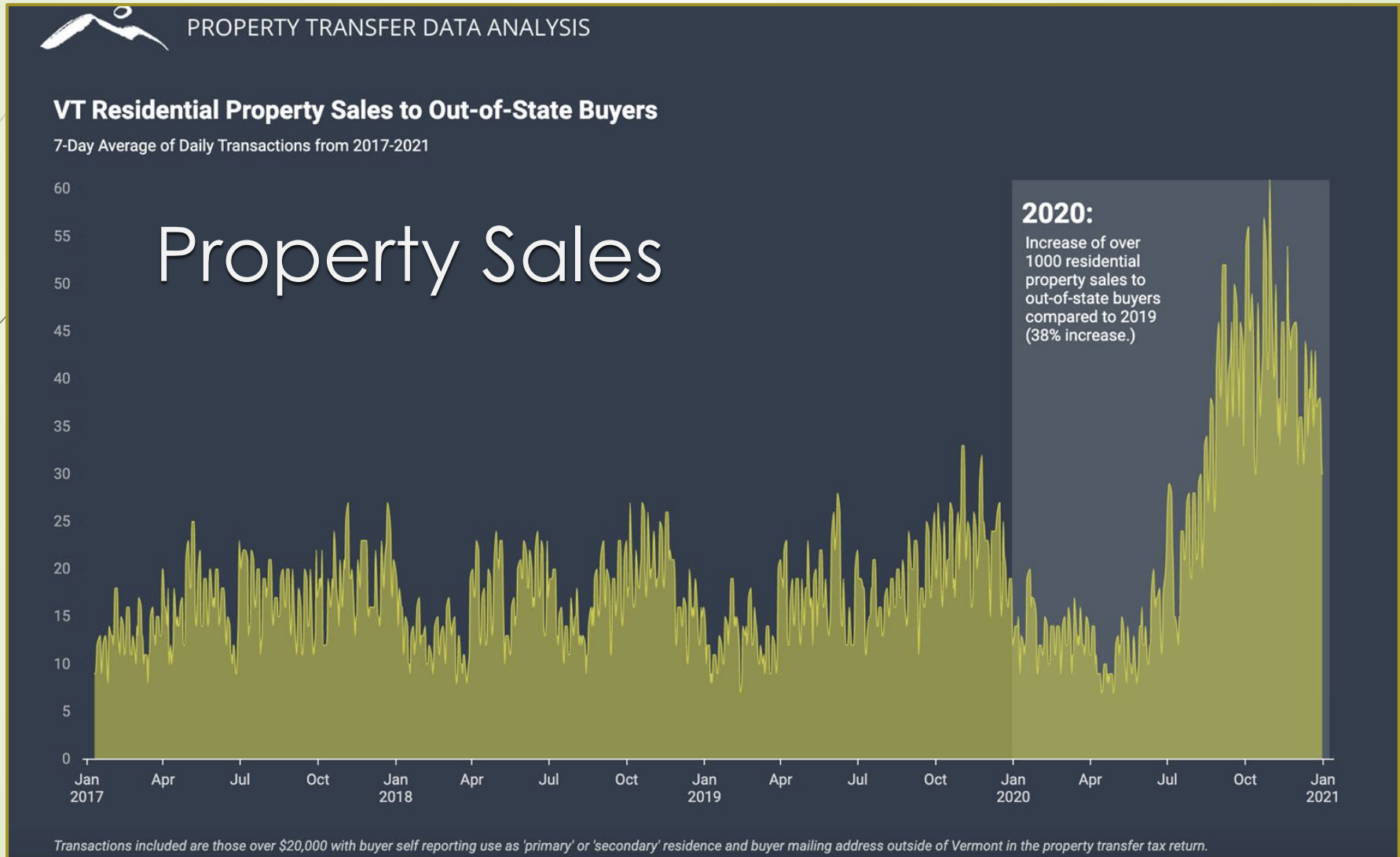
October 11 2017 – November 11 2017

Approximately 140 km.





# PEOPLE ARE ON THE MOVE TOO!



# PROPERTY SALES

## VT Residential Property Sales to Out-of-State Buyers

Search in table

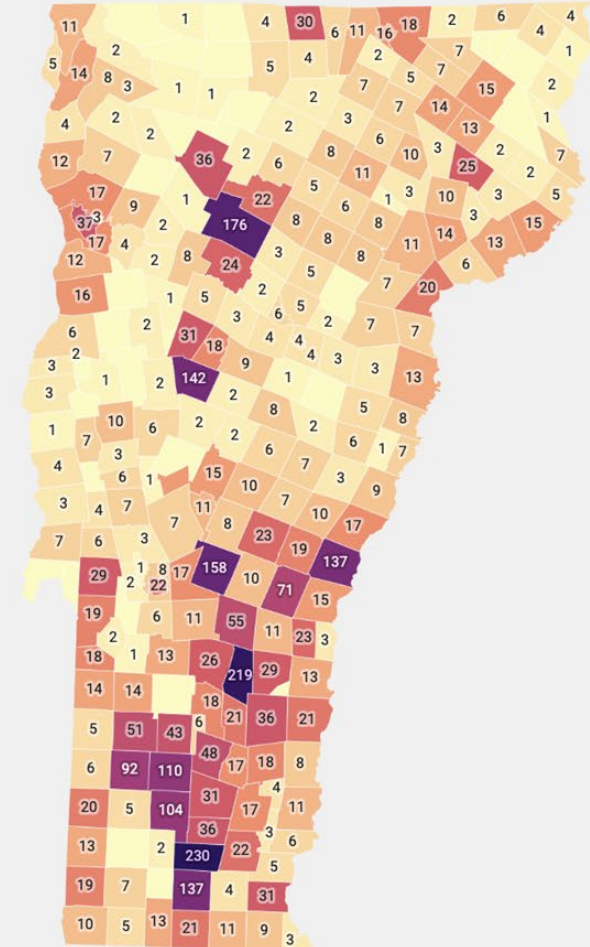
Page 1 of 17 >



	Town	Sales	2017	2018	2019	2020
1	Stowe	156  176	84.7M	104.2M	66.8M	132.1M
2	Ludlow	142  219	44.7M	65.4M	75M	97.9M
3	Dover	126  230	38M	37M	32.6M	72.7M
4	Stratton	63  104	31.4M	29.9M	31.5M	65.4M
5	Wilmington	96  137	37.6M	19.4M	21.3M	53.8M
6	Woodstock	48  71	37.9M	21.8M	28.7M	53M
7	Warren	104  142	23.2M	25M	29M	49.3M
8	Winhall	48  110	20.1M	23.8M	24.8M	49.2M
9	Manchester	39  92	16.1M	22.9M	25.3M	46M
10	Killington	140  158	27.5M	31.8M	43.5M	43.9M
11	Hartford	85  137	20.1M	27.7M	29.5M	41.8M
12	Dorset	20  51	9.2M	11.8M	15.7M	37M
13	Plymouth	25  55	5.7M	11M	11M	20.4M
14	Burlington	32  37	12.4M	10.4M	6.7M	17.6M
15	Pomfret	5  19	2.1M	7M	1.6M	17.4M

## Residential Property Sold to Out-of-State Buyers in 2020

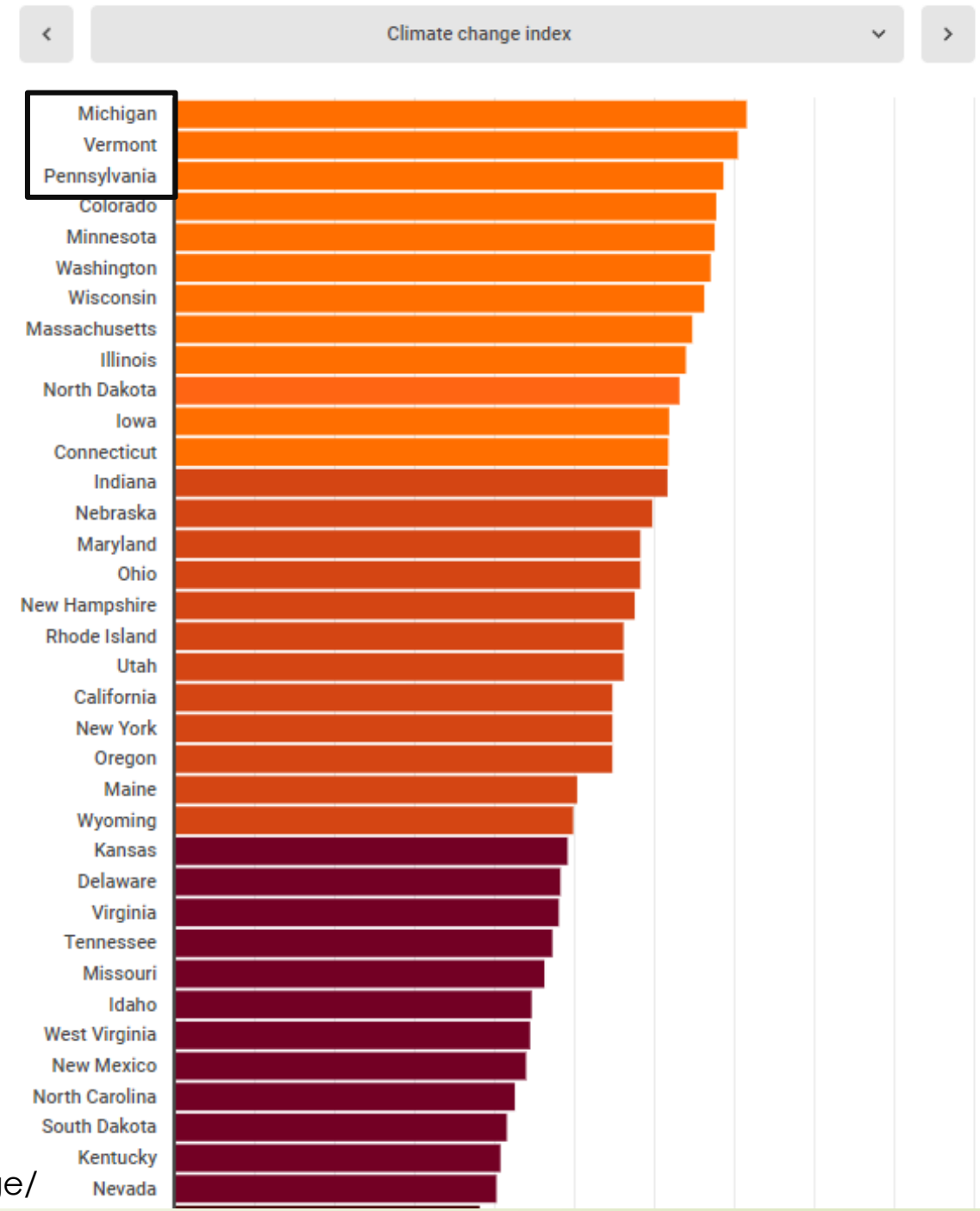
# of transactions where buyer listed out of state mailing address



# 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/>







**Core Forest  
Blocks**

**Wildlife  
Road  
Crossings**

**Small,  
"stepping  
stone"  
forests**

**Streamside  
Connectors**



# FREEDOM & UNITY

Balancing Individual liberty  
and community  
responsibility since 1791





# ACT 171 PLANNING PROVISIONS

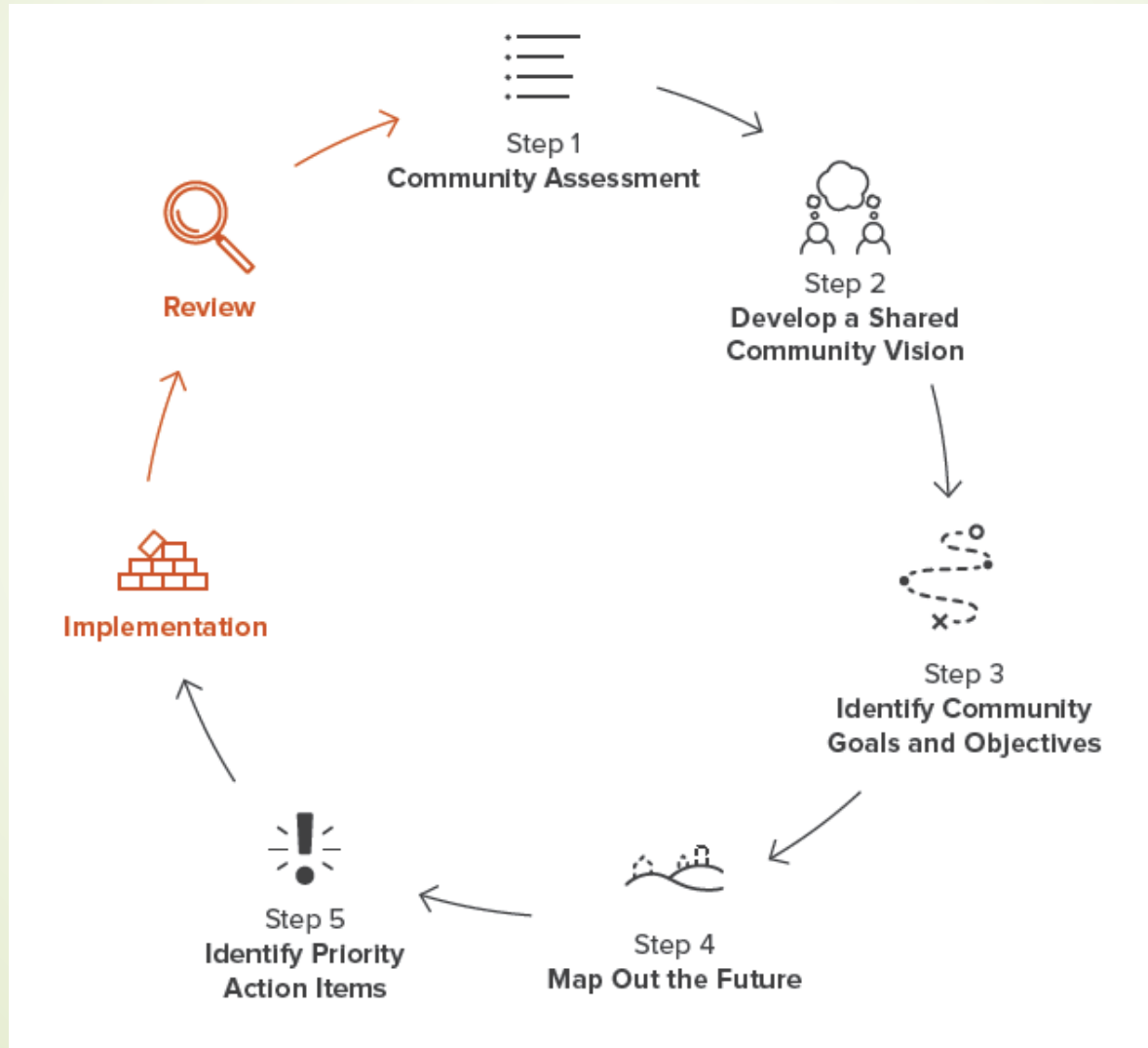
Requires town and regional plans to:

- ▶ 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.

*Agency of Natural Resources Guidance on Act 171*

[https://anr.vermont.gov/act171\\_forestplanning](https://anr.vermont.gov/act171_forestplanning)

# PLANNING PROCESS



## Resources

**Municipal Plans** **Making Plans Matter**

**Tools for Improving the Planning Process**

Teams that used the new Planning Manual offered this advice for updating their municipal plans.

**Before You Start**

Meet with all town boards, commissions and staff first to make their engagement, identify key issues, and help focus the town plan steps. Have all the year-to-date data ready to go. Have your goals and a good regulatory processes (like zoning or Act 250) if so, the plan may need more detailed process than otherwise. Determine if you will rewrite or work with your existing plan – see page 82 of Planning Manual for guidance. Write the plan the way you would want to read it.

**Step 1 – Assessment**

Keep the date and analysis as relevant to your town's goals and policies as possible. Avoid getting bogged down with information-gathering and describing existing conditions. Keep the initial assessment process simple, using readily available data and analyses – such as those in the regional plan. Avoid tracking time and money in additional data and analyses unless you need more to make good policy decisions for the community.

**Step 2 – Vision**

Use multiple media for announcing the town plan outreach – the techniques suggested in the Planning Manual work. One-on-one conversations make a difference. Each planning commissioner could personally invite 10 or more people to participate. Talk with representatives directly to hear their concerns. Use the town plan process to strengthen community and bring people together.

**Step 3 – Goals and Objectives**

Specify the level of commitments in the plan. Consider using just two categories – one high level like a goal, and a second category of statements that are SMART (Specific, Measurable, Attainable, Relevant, and Time-bound). Briefly address all the required town plan elements but focus on those that are meaningful for your town.

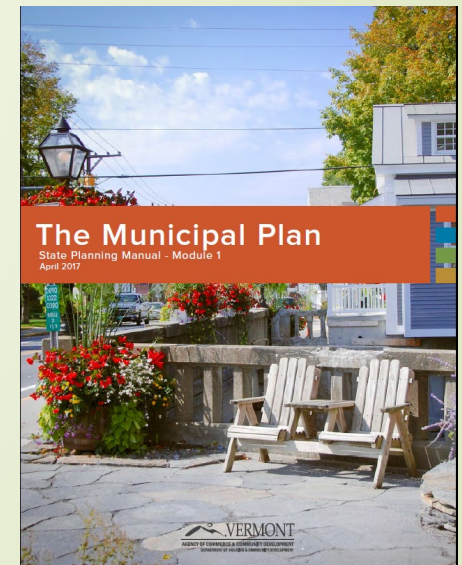
**Step 4.5 – Map and Identify Priorities**

Determine if a professional is being or other town plan by applying a SMART screen and organize your implementation strategies in ways that are easy to track like the chart on page 79 of the Planning Manual. Evaluate the strategies that the town currently spends money and time on. Do they support your vision and goals and if not, how do the town re-align its budget, staffing and volunteer time? Use a facilitator to help work through any tough issues.

**Implementation and Review – Make It Happen**

Conduct an annual review of your plan to determine progress and adjust approaches. See page 83 of the Planning Manual. Use your consultation with the regional planning commission to review your implementation strategies and learn about resources to help reach your goals. See page 92 of the Planning Manual.

For more information, please contact:  
 Faith Kjaaland, faith.kjaaland@vermont.gov  
 802.249.5228

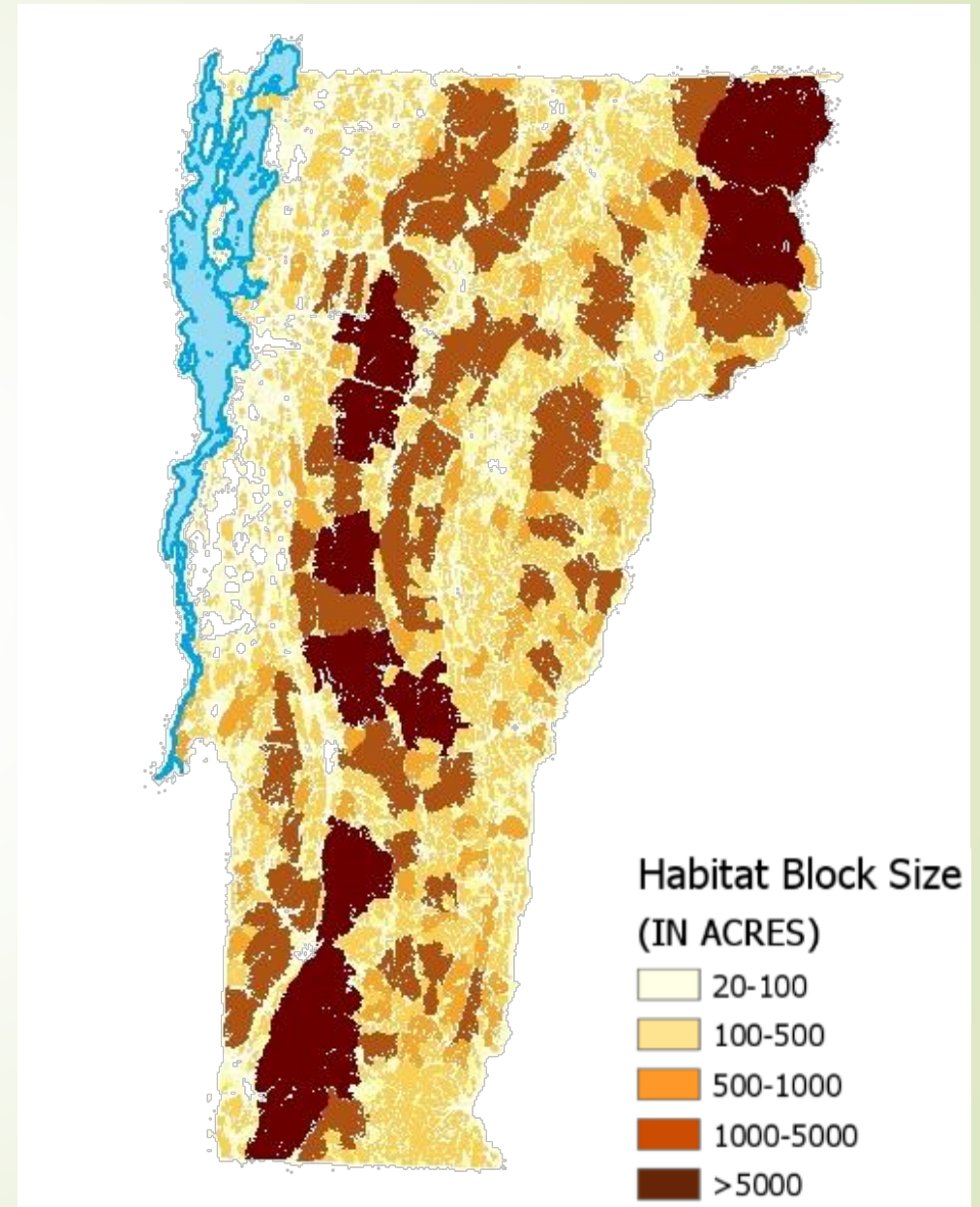




# Habitat Blocks

*Areas of  
natural cover*

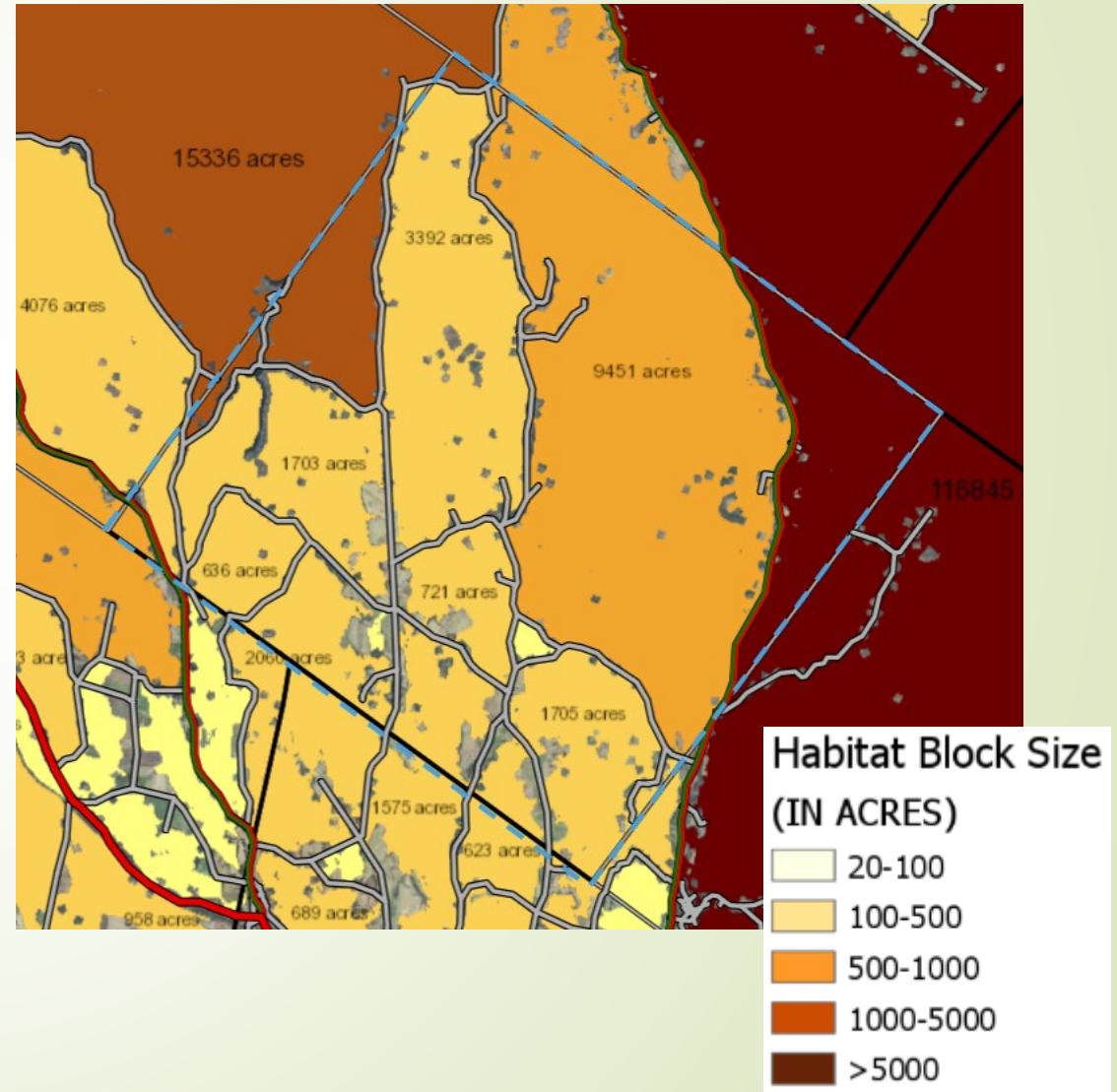
(no roads,  
development  
or  
agriculture)



# Habitat Blocks

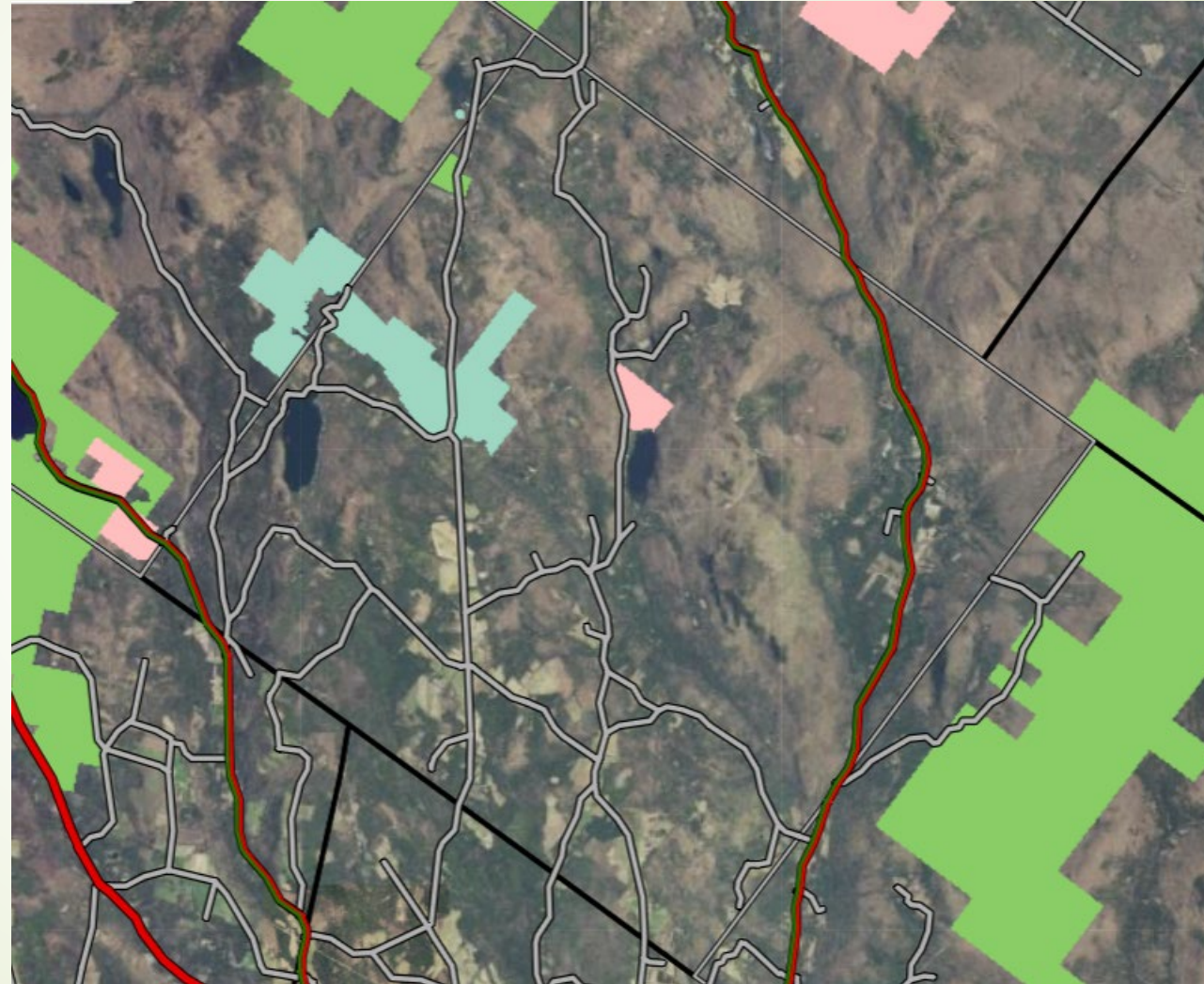
*Areas of  
natural cover*

(no roads,  
development  
or  
agriculture)





# Conserved Land



# Use Value Appraisal





# Vermont Conservation Design



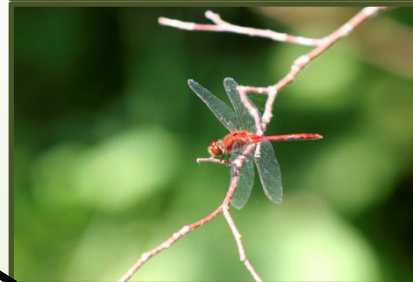
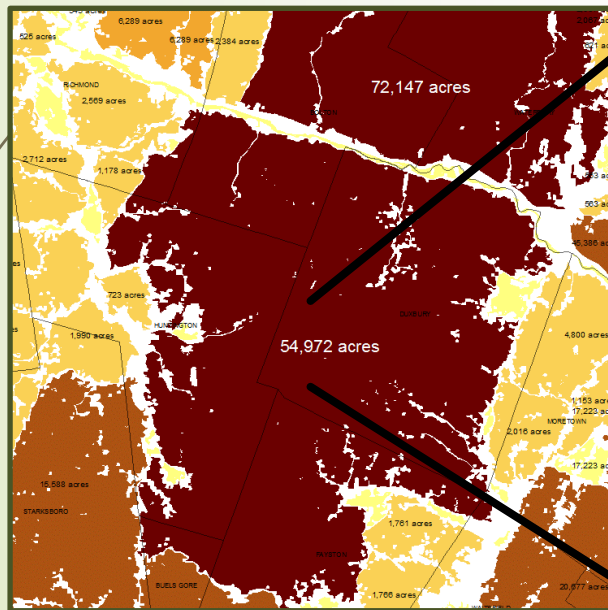
**most important lands and waters  
for maintaining ecological  
function now and into the future**

- **Intact**
- **Connected**
- **Diverse**

*A set of coarse-filter features  
offer high confidence in maintaining biological diversity and  
ecological processes into the future.*

## Coarse filter

*If examples of all coarse-filter elements are conserved at the scale at which they naturally occur, most of the species they contain—from the largest trees and mammals to the smallest insects—will also be conserved.*

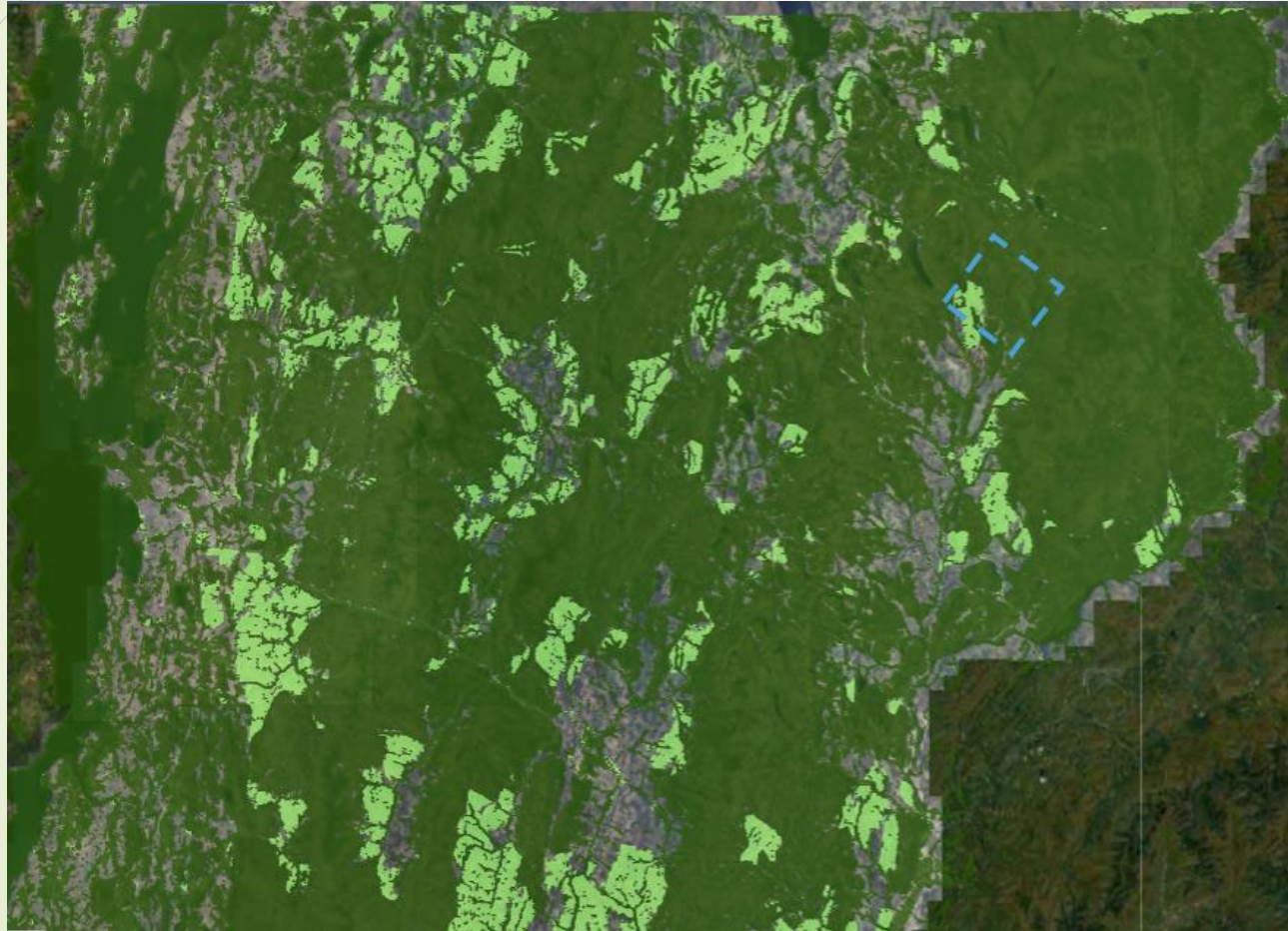




# Wildlife Present in Forest Patches

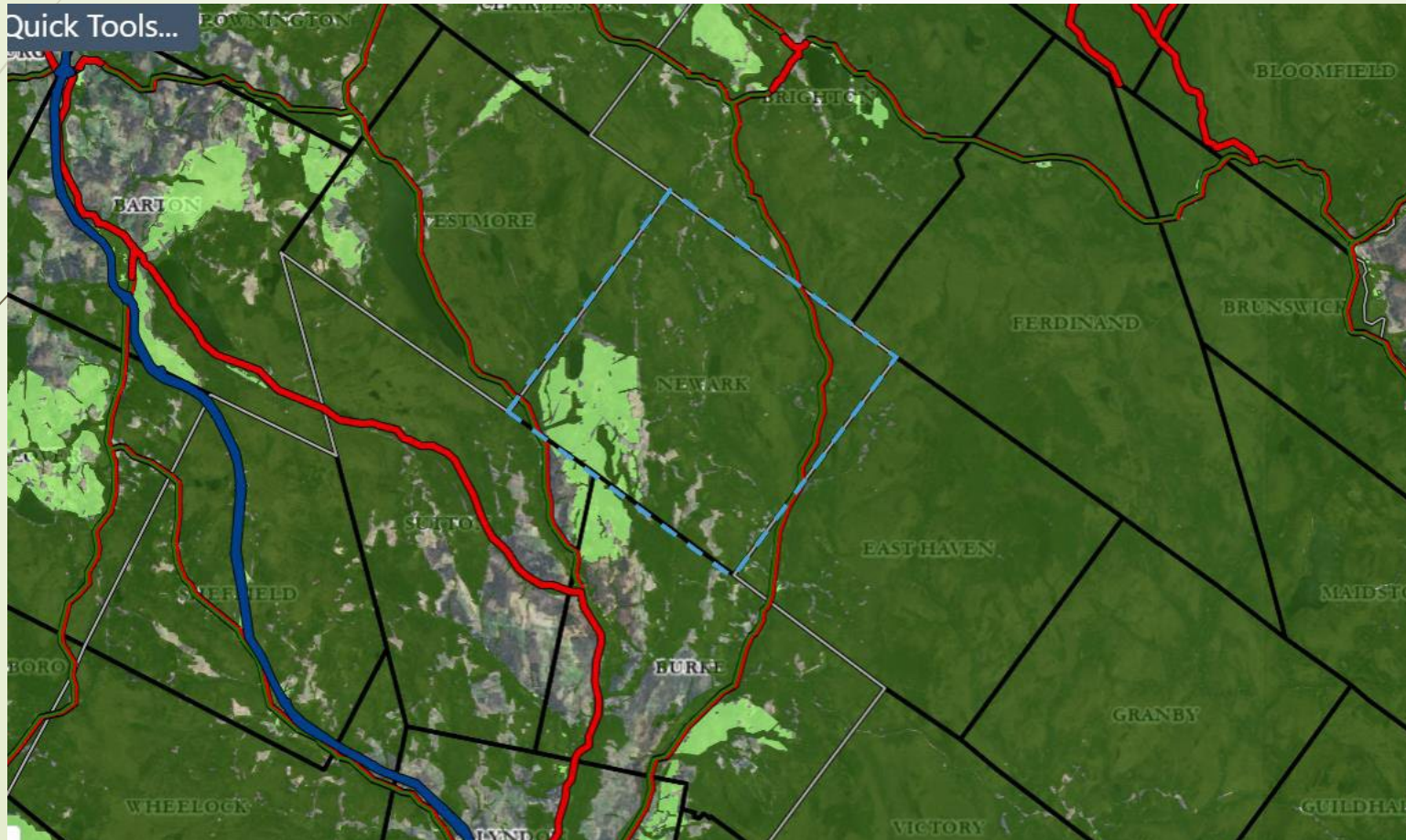


# Vermont Conservation Design



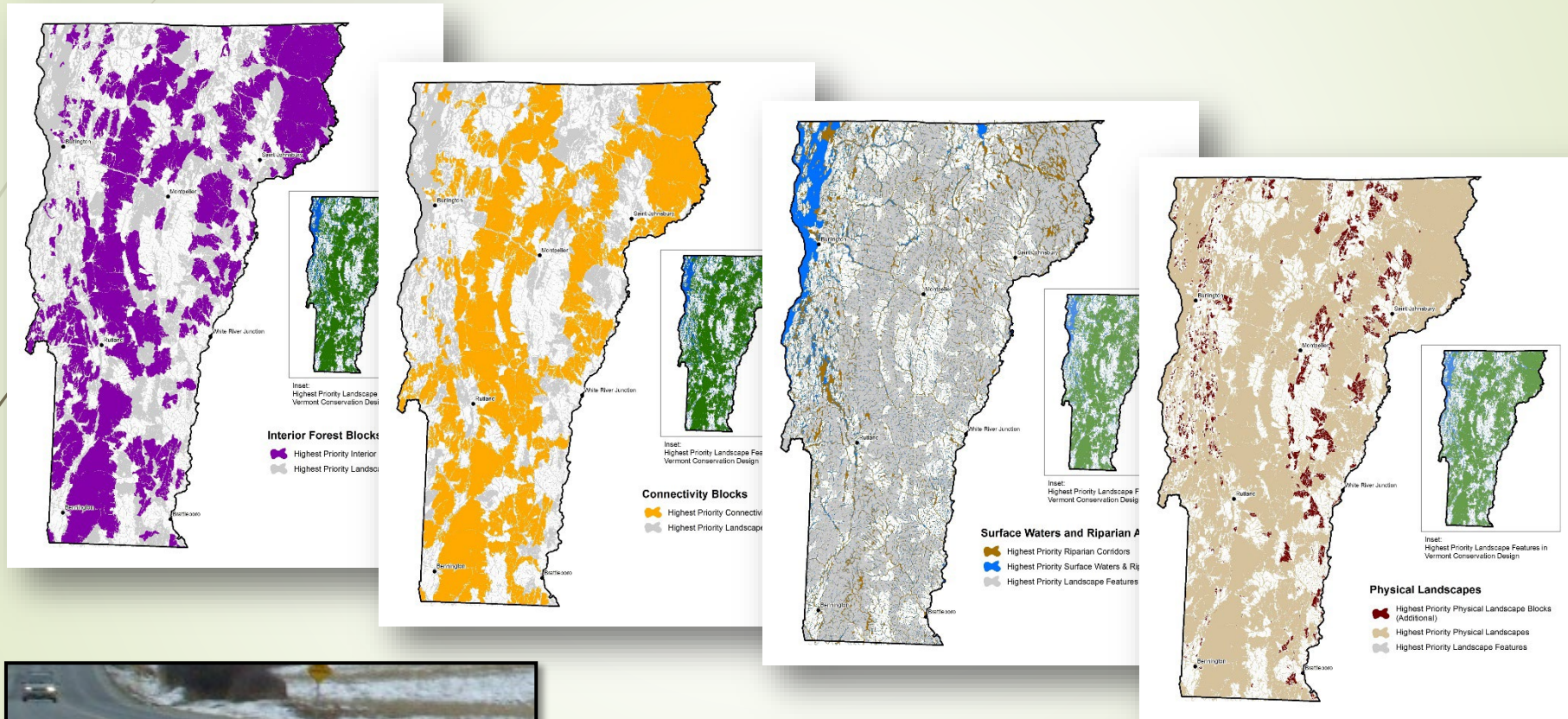


# Vermont Conservation Design





# Landscape Priorities



***Maintain the specific functions of each element***

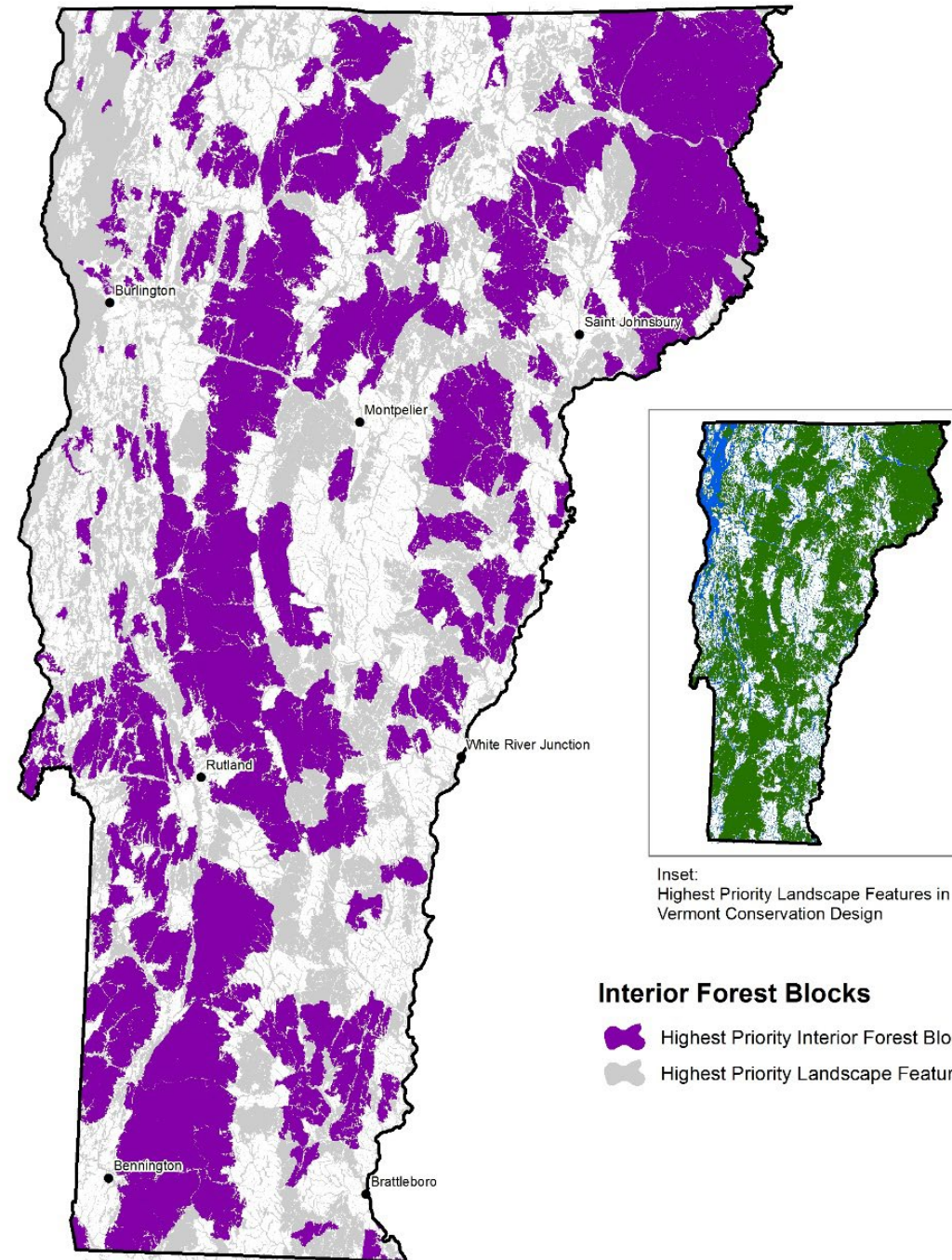


# Interior Forest Blocks

## ***Ecological Function Supports:***

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

***\*Subset of the Habitat Blocks\****

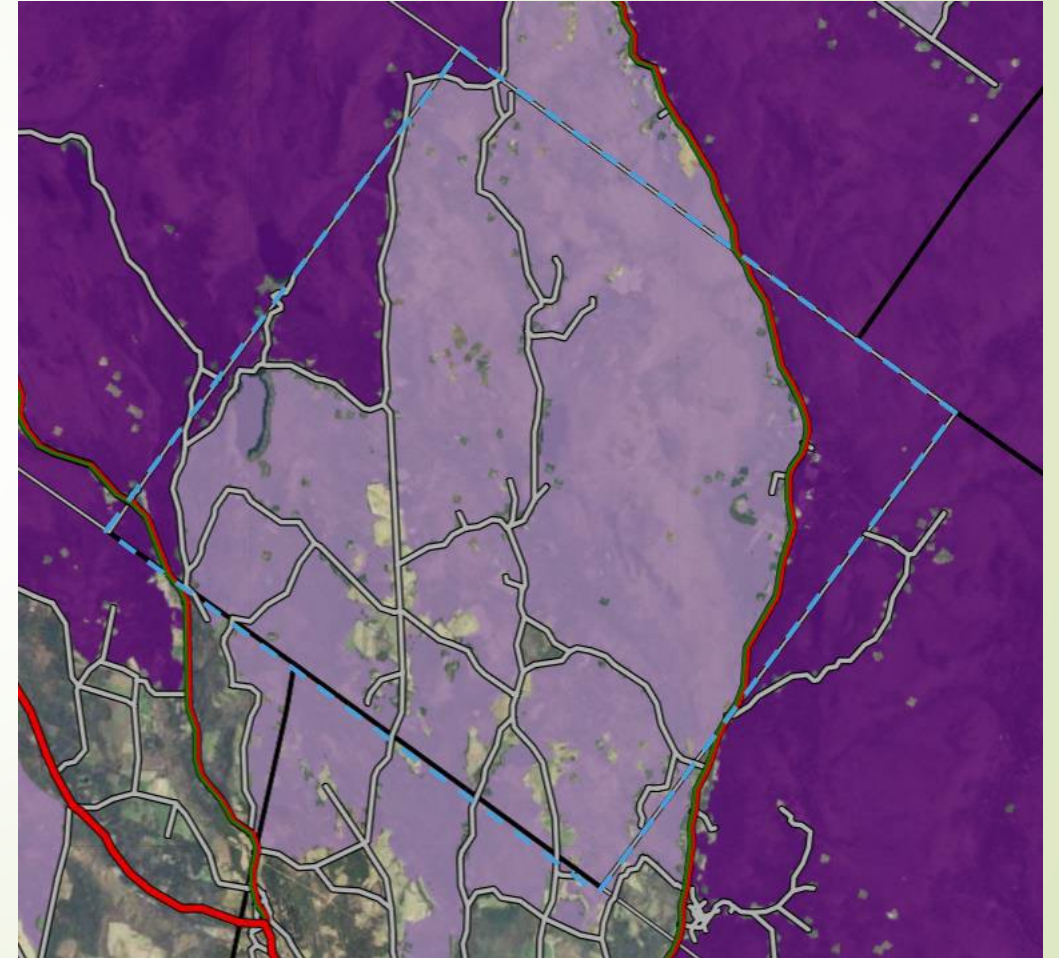
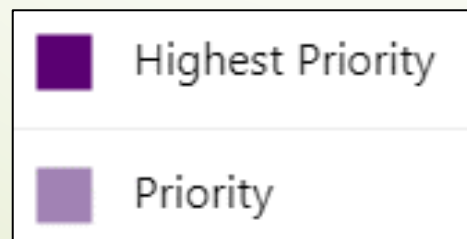


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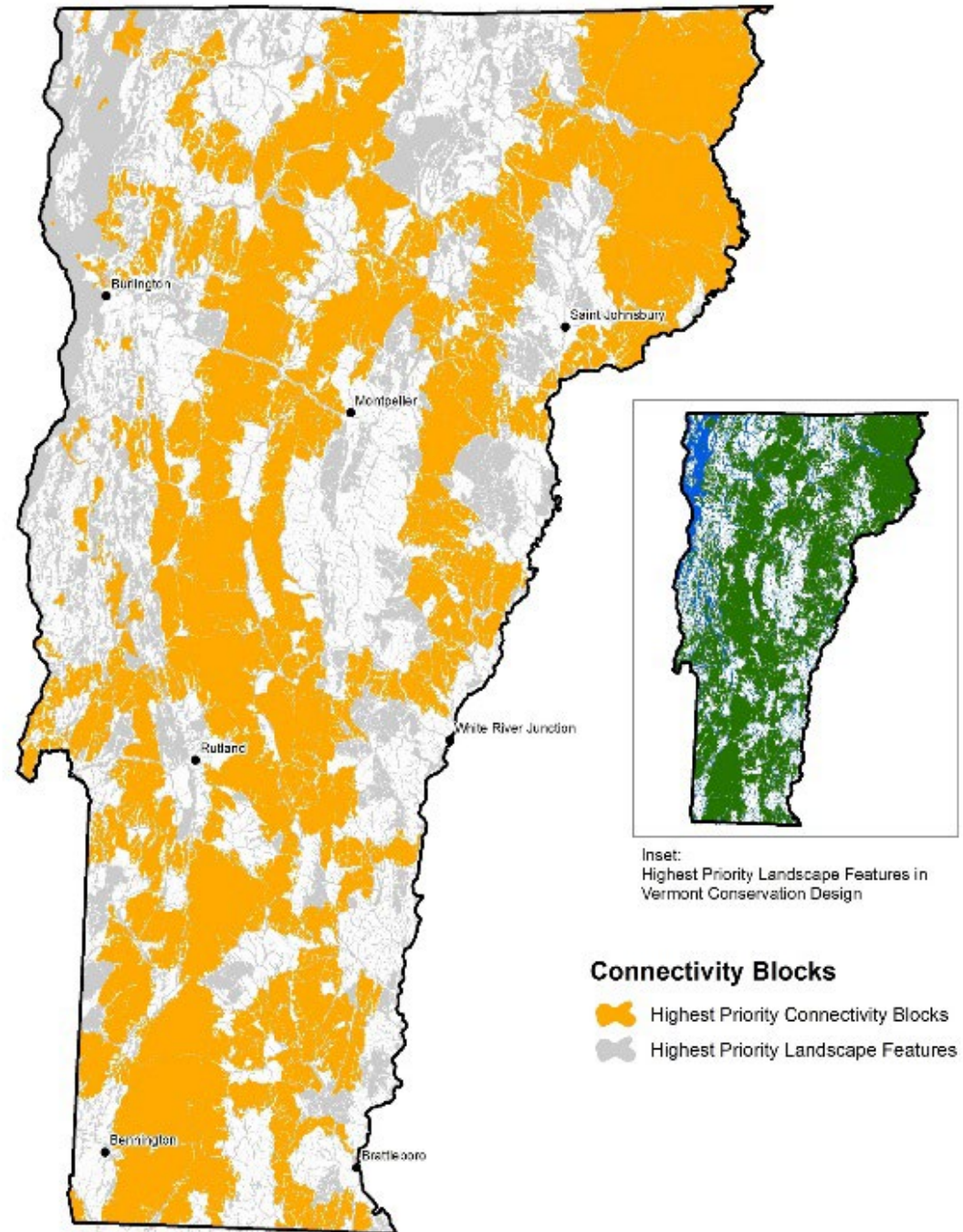




# Connectivity Blocks

## *Ecological Function Supports:*

- Wildlife movement and dispersal;
- Climate resilience;
- Genetic exchange between populations.





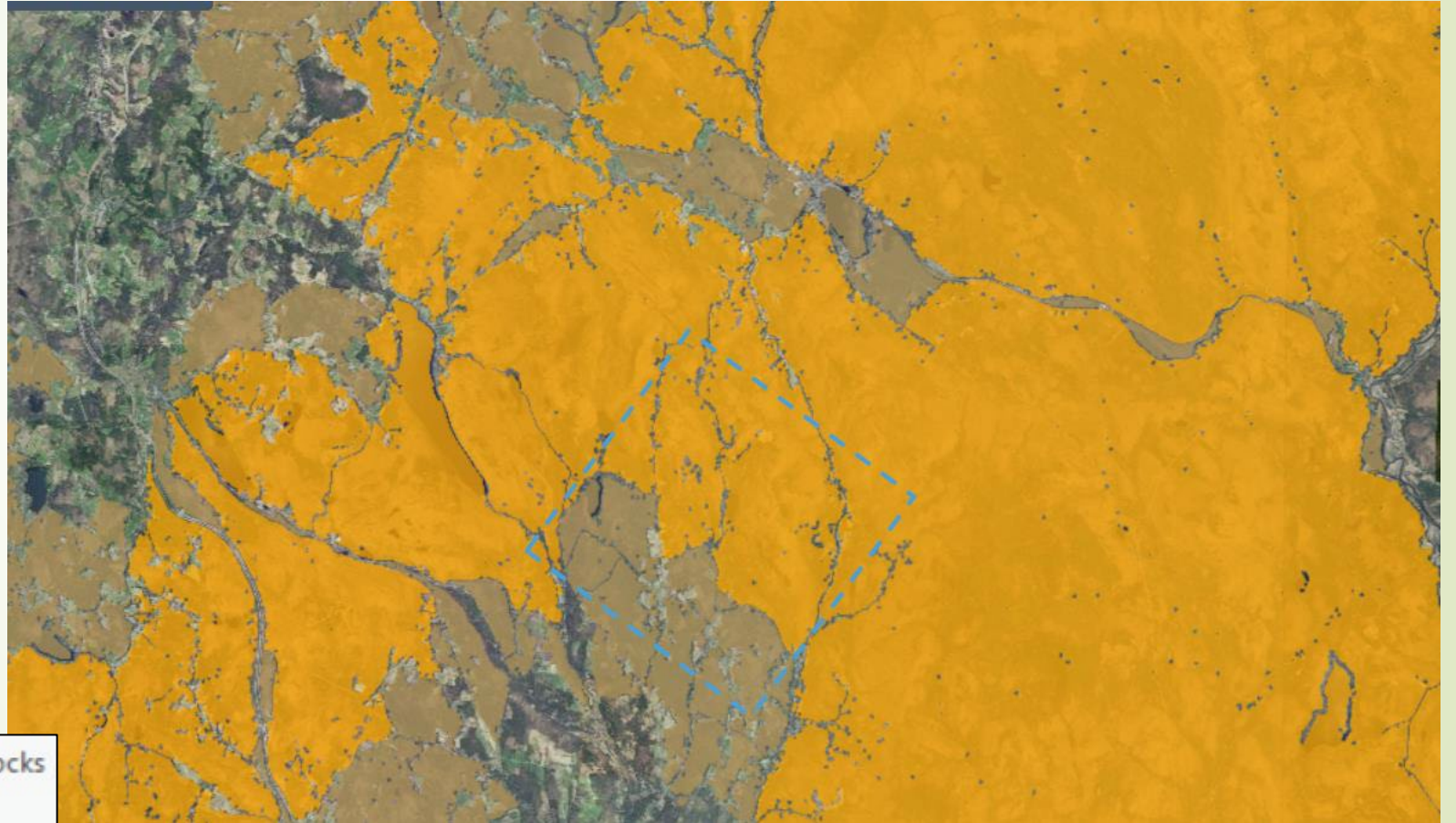
# Connectivity Blocks

- Highest Priority Connectivity Blocks
- Priority Connectivity Blocks





# Connectivity Blocks



- Highest Priority Connectivity Blocks
- Priority Connectivity Blocks

# Connectivity Blocks

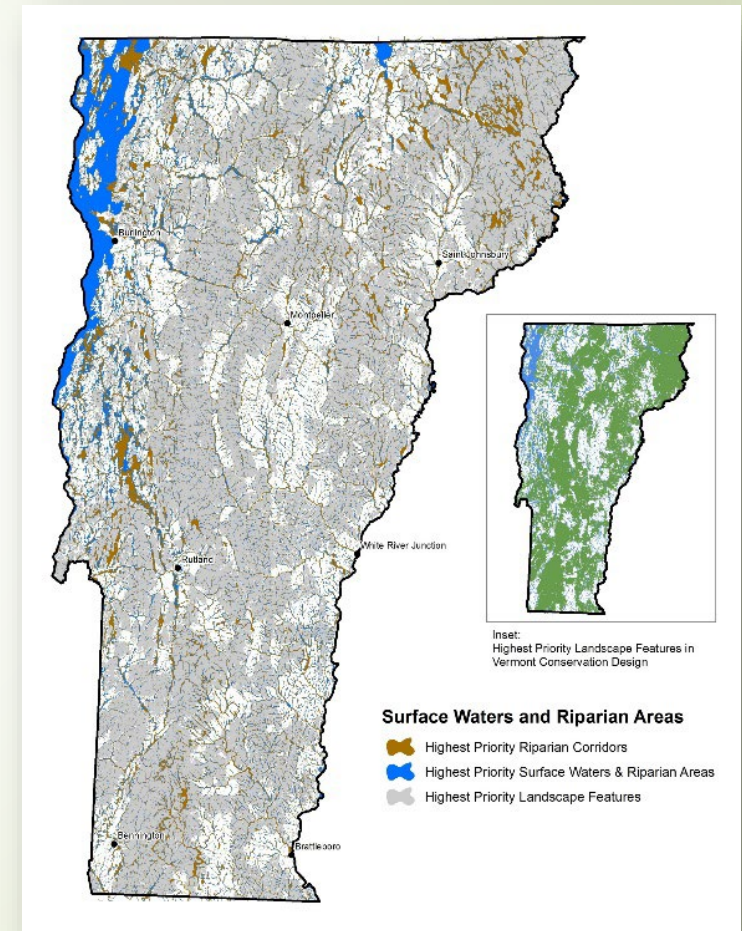




# Surface Water and Riparian Areas

## *Ecological Function:*

- Aquatic Habitats & Biota
- Wildlife habitat & corridors
- Floodwater storage
- Shoreline and water quality protection

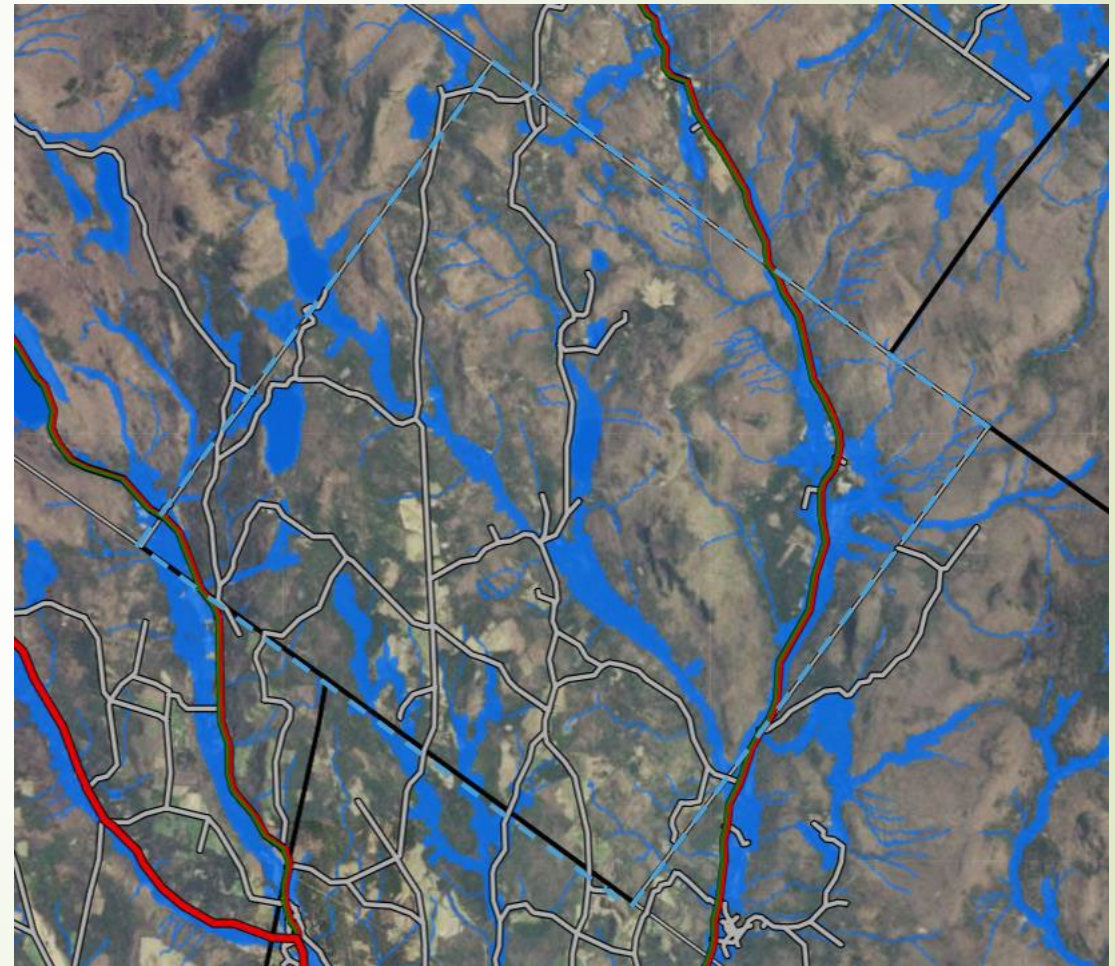
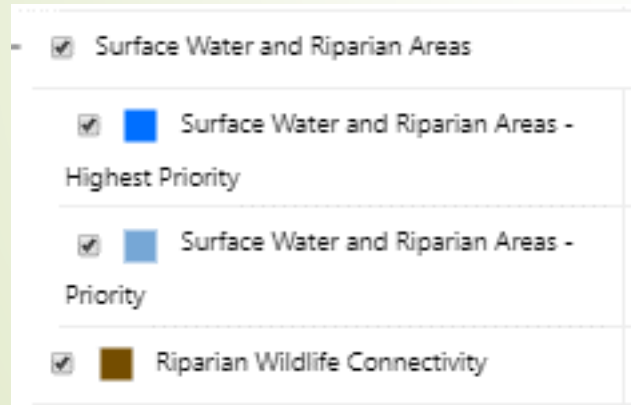




# Surface Water and Riparian Areas

## *Ecological Function:*

- Aquatic Habitats & Biota
- Wildlife habitat & corridors
- Floodwater storage
- Shoreline and water quality protection





# Physical Landscape Diversity & Blocks

## ***Ecological Function:***

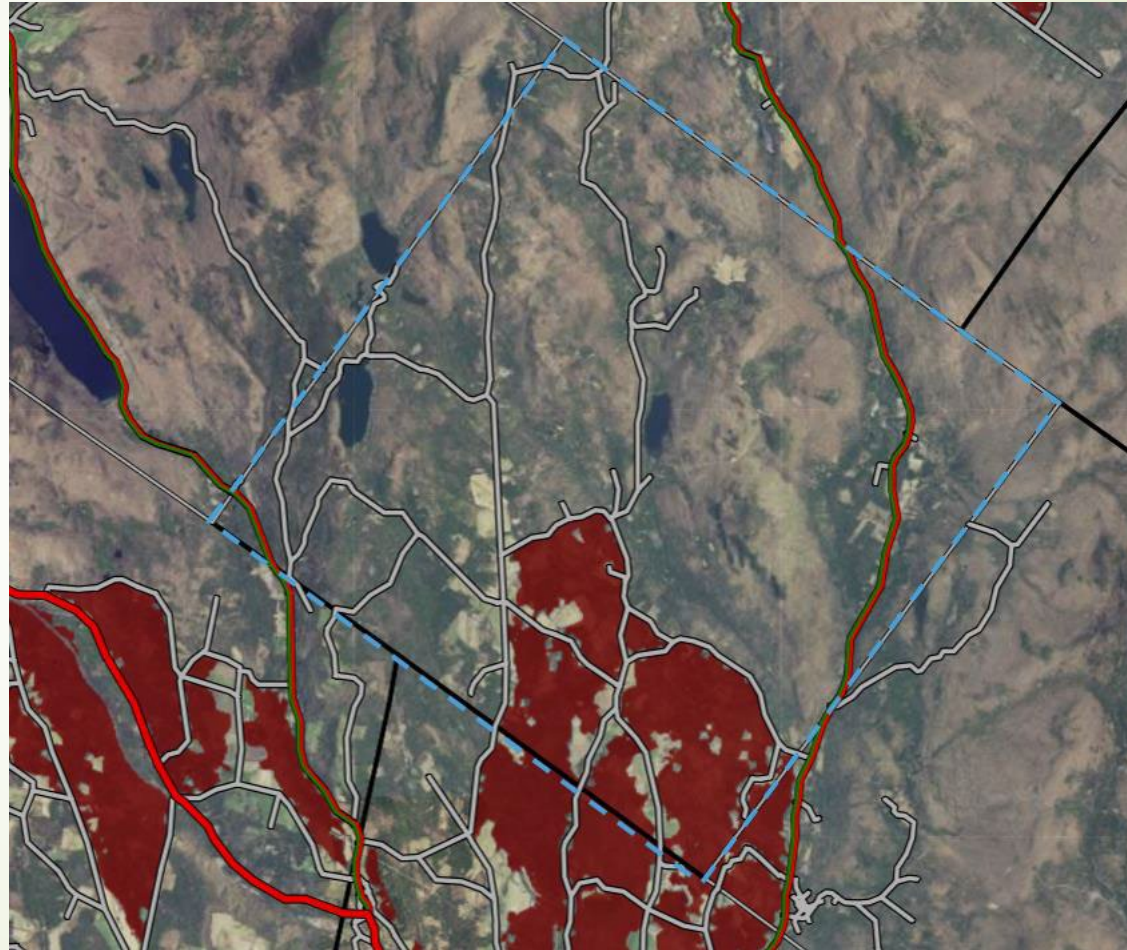
- Diverse bedrock, soils, elevations, & landforms have the most biodiversity;
- Climate change resilience;
- Protects future biodiversity.





# Physical Landscape Diversity & Blocks

Low-to-mid elevation  
transitional : Calcareous  
sed/metased : Dry flats





# Community & Species Components



- **Natural Communities**
- **Aquatic Habitats**
- **Rare & Uncommon Species**
- **Wildlife Road Crossings**
- **Vernal Pools**
- **Wetlands**
- **Caves and Mines (Not Mapped)**





# Community & Species Components

- Aquatic Habitats
  - Aquatic Habitats - Highest Priority
- Wetlands
  - Wetlands - Highest Priority
  - Wetlands - Priority
- Vernal Pools
  - Vernal Pools - Highest Priority
  - Vernal Pools - Priority





# Six steps for prioritizing

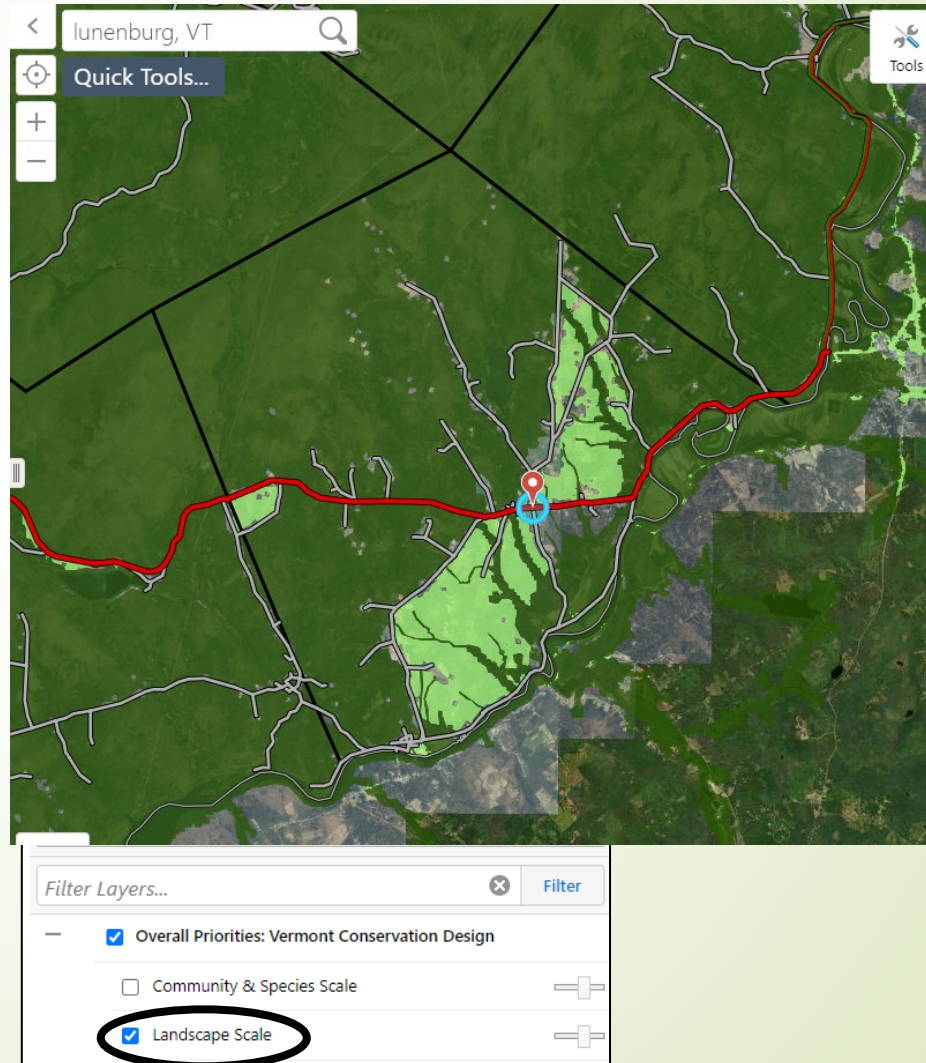


DETERMINE ECOLOGICAL CONTEXT			IDENTIFY AREAS OF HIGH PUBLIC VALUE	DEVELOPING & CHOOSING OPTIONS	
1	2	3	4	5	6
Locate priorities at the landscape scale	Locate priorities at the species and natural communities scales	Identify important components within priority areas	Identify areas of high public value	Establish options	Evaluate and choose options



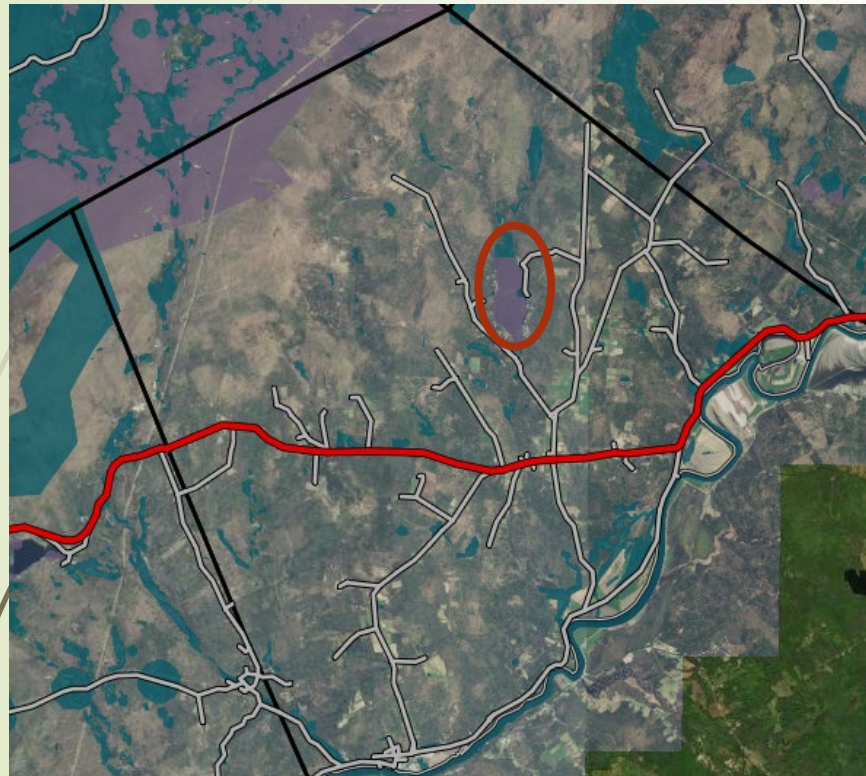
# Step 1: Locate priorities at the landscape scale

Lunenburg, VT





## Step 2: Locate priorities at the natural communities and species scales



Filter Layers... ✕ Filter

- Overall Priorities: Vermont Conservation Design
- Community & Species Scale
- Landscape Scale

Overall Priorities: Vermont Conse ▼ ◀ 1 of 2 ▶ ✕

☆ Overall Priorities: Vermont Conservation Design

### Community & Species Scale

Highest Priority	Priority
<a href="#">Natural Communities</a>	<a href="#">Natural Communities</a>
<a href="#">Wetlands</a>	<a href="#">Wetlands</a>
<a href="#">Vernal Pools</a>	<a href="#">Vernal Pools</a>
<a href="#">Wildlife Road Crossings</a>	<a href="#">Wildlife Road Crossings</a>
<a href="#">Rare &amp; Uncommon Species</a>	<a href="#">Rare &amp; Uncommon Species</a> <span>✓</span>
<a href="#">Aquatic Habitats</a>	

For more information: [Getting Started in BioFinder 3](#)

[View Additional Details](#) | [Add to Results](#)

A satellite map of a watershed area, similar to the one on the left. A thick red line outlines the watershed boundary. A large blue-shaded area within the watershed is circled in cyan.



# Step 3: Identify important components within priority areas

Quick Tools... lunenburg, VT

Overall Priorities: Vermont Conse

1 of 13

☆ Overall Priorities: Vermont Conservation Design

### Community & Species Scale

Highest Priority

- Natural Communities
- Wetlands
- Vernal Pools
- Wildlife Road Crossings
- Rare & Uncommon Species
- Aquatic Habitats

Priority

- Natural Communities ✓
- Wetlands
- Vernal Pools
- Wildlife Road Crossings
- Rare & Uncommon Species
- Species

For more information: [Getting Started in BioFinder 3](#)

[View Additional Details](#) [Remove from Results](#)

Filter Layers... Filter

- Overall Priorities: Vermont Conservation Design
- Community & Species Scale
- Landscape Scale

lunenburg, VT

Quick Tools...

CONCORD

LUNENBURG

GUILDHALL

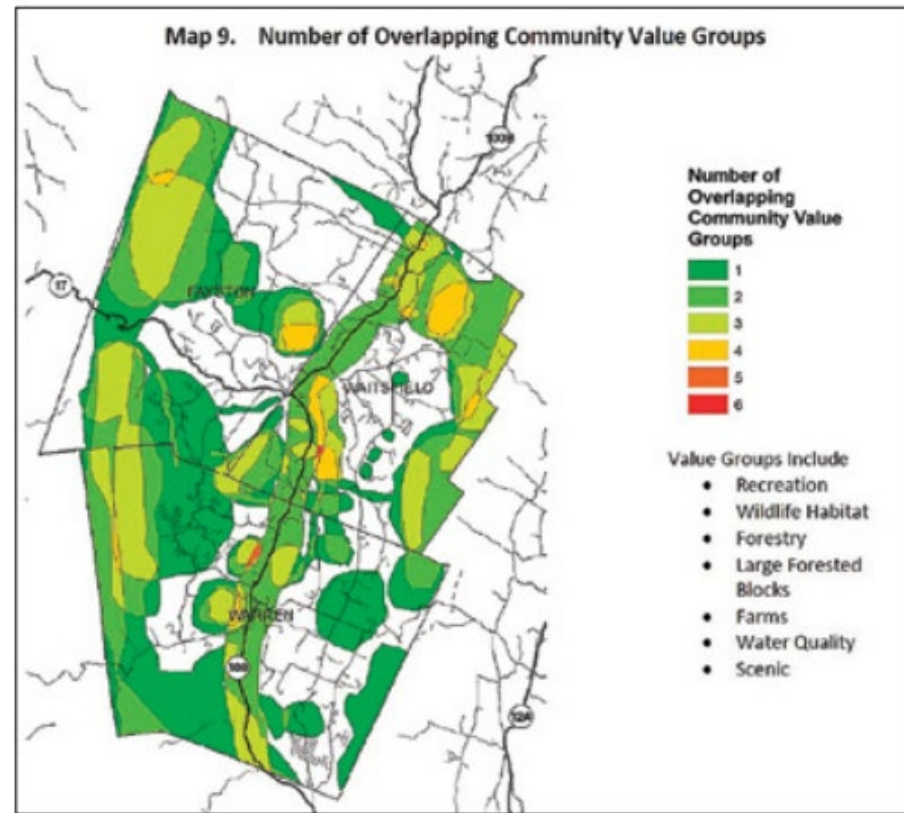
0 1.5 3km

Map Tools Navigation Map Data Draw Identify **Query** Measurement

Query Filter Find Address Landscape Report Species and Community Report

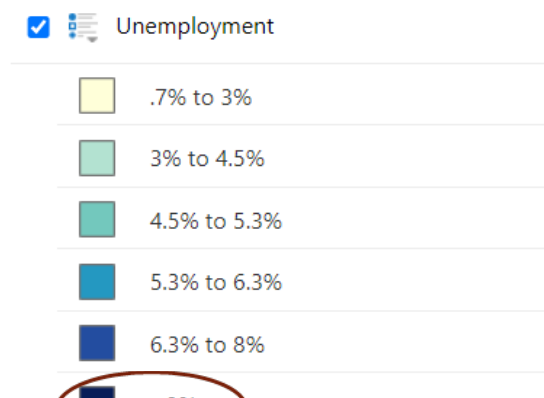
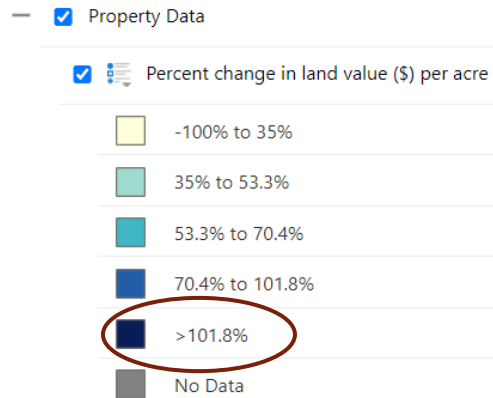


## Step 4: Identify areas of high public value



*This map, from a Community Values Mapping session in the Mad River Valley, shows the number of community values groups identified in each location across the region.*

# Social and Environmental Factors





## Step 4.5: Identify the problem

- Problem
- People
- Consensus



## Step 5: Establish options

- ▶ Current level of protection?
- ▶ Review town plan
- ▶ Visualize Change
- ▶ Brainstorm
  - Walks and talks
  - Outreach to Landowners
  - Natural Resources Inventory
  - Establish Town Forest
  - Zoning
  - Subdivision





# Step 6: Evaluate and choose options

For each strategy, consider...

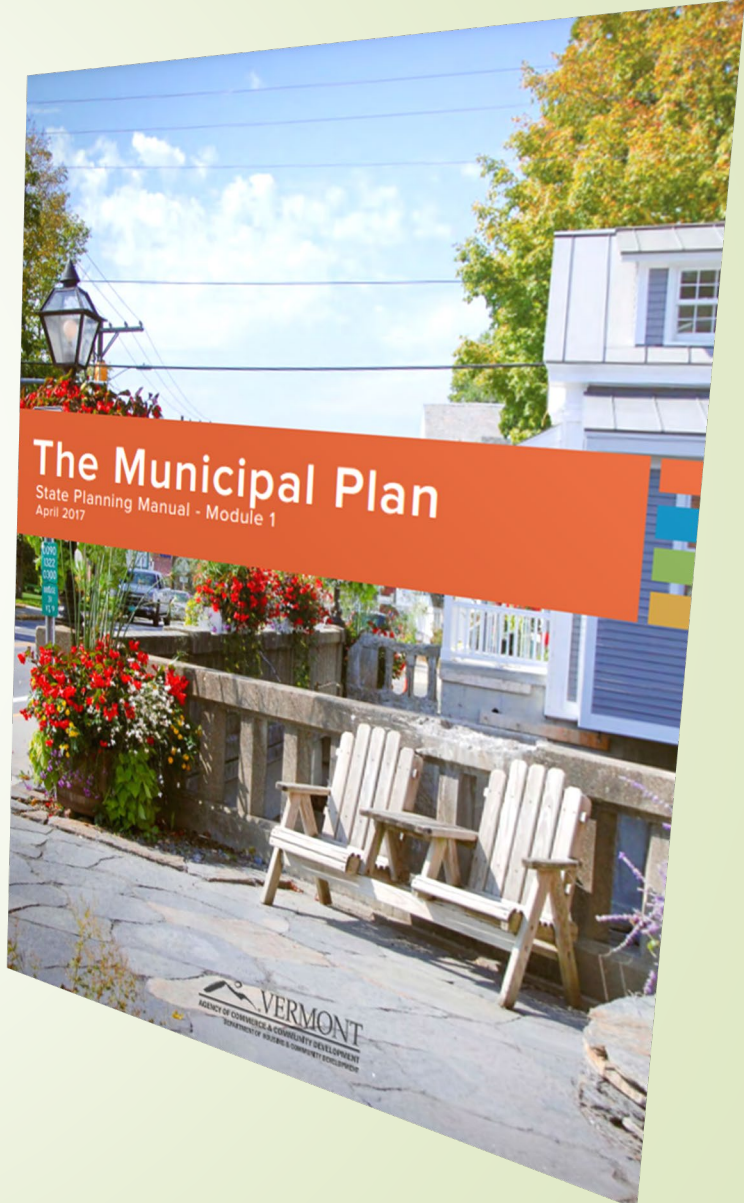
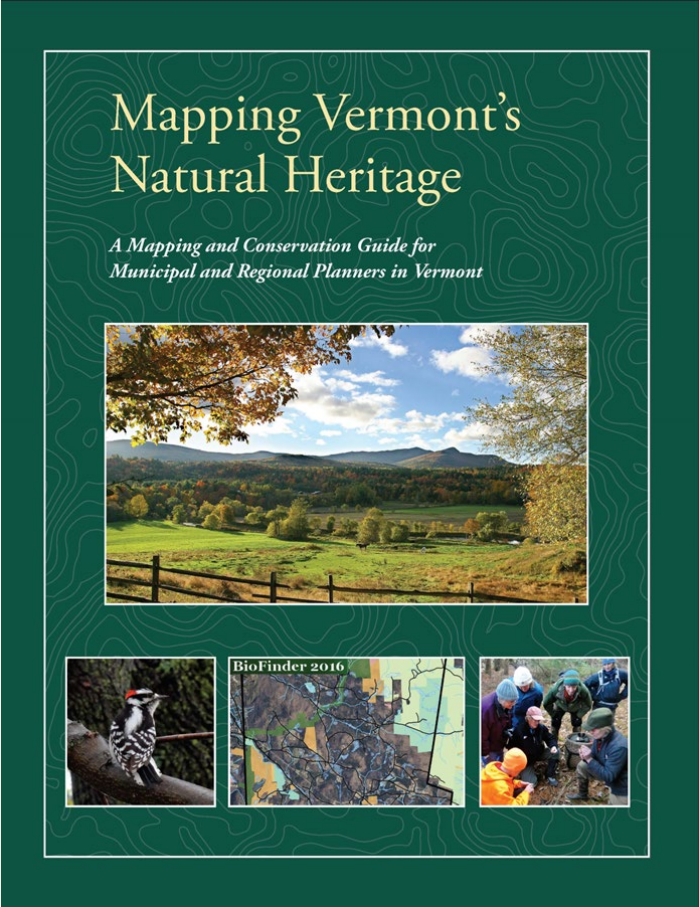
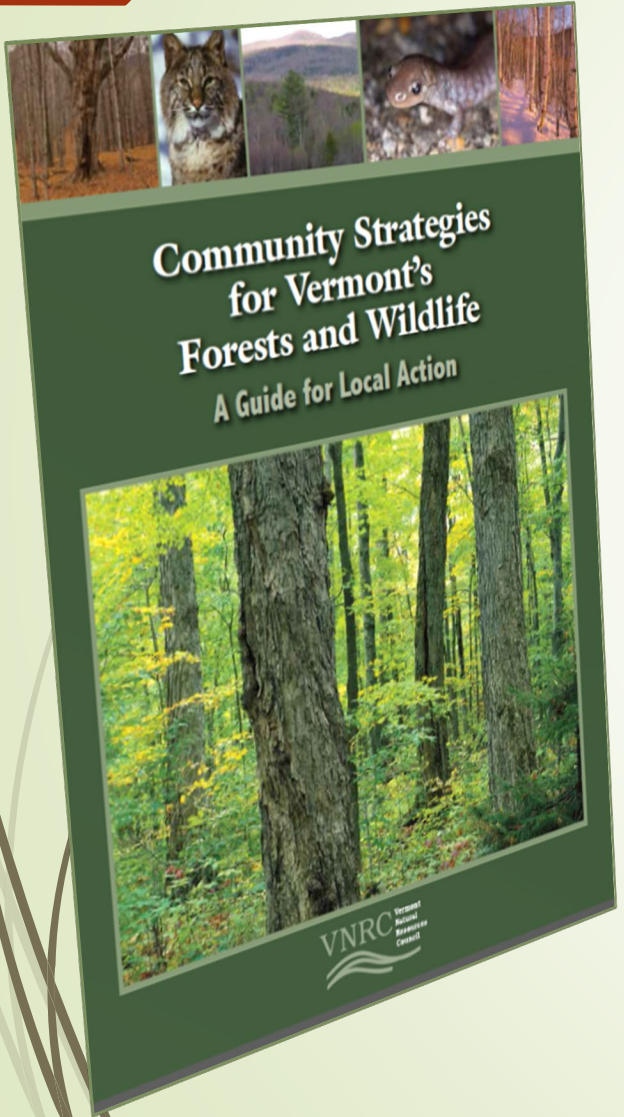
- Does it help the problem statement
- Does it align with community values?
- Does your town have capacity?
- Cost?
- Who else can help? Opportunity to build on existing efforts?

DETERMINE ECOLOGICAL CONTEXT			IDENTIFY AREAS OF HIGH PUBLIC VALUE	DEVELOPING & CHOOSING OPTIONS	
1	2	3	4	5	6
Locate priorities at the landscape scale	Locate priorities at the species and natural communities scales	Identify important components within priority areas	Identify areas of high public value	Establish options	Evaluate and choose options

Tools	Does It Help the Problem?	Cost	Internal Capacity	Effort	Align with Comm. Values?	Potential Partners	Build on Existing Efforts?
Walks/Talks Series	Low/Med	Low	Low	Low	Yes	ANR, Master Naturalist	Yes
Outreach to Landowners	Low/Med	Low	Med	Med	Yes	Coverts, Audubon	Yes
Natural Resources Inventory	Med	High	Med	Med	Yes	FWD, ACCD, Consult.	Yes
Establish Town Forest	Low	High	High	High	Yes	TPL, Co. Foresters, ANR	No
Zoning	High	Low - High**	High	High	Depends	RPC, ANR	No
Subdivision	High	Low - High**	High	High	Depends	RPC, ANR	No
** Depending on if you hire consultant.							



# Resources



# How you can support conservation in Vermont



Vermont Habitat Stamp



Nongame Wildlife Fund

<http://vtfishandwildlife.com/donate>





Thank You!

[Jens.Hilke@vermont.gov](mailto:Jens.Hilke@vermont.gov)