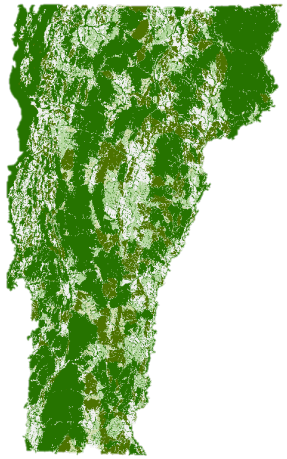
Using BioFinder

House Committee on Environment and Energy



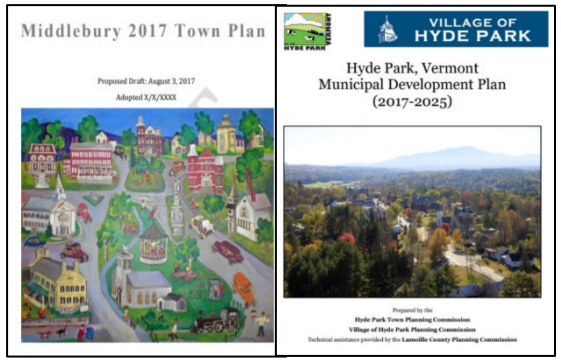
Jens Hilke
Conservation Planner
Vermont Fish & Wildlife Department

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

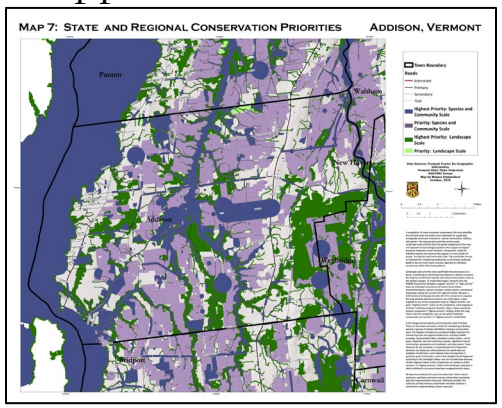


Support for Planning

Support for Conservation

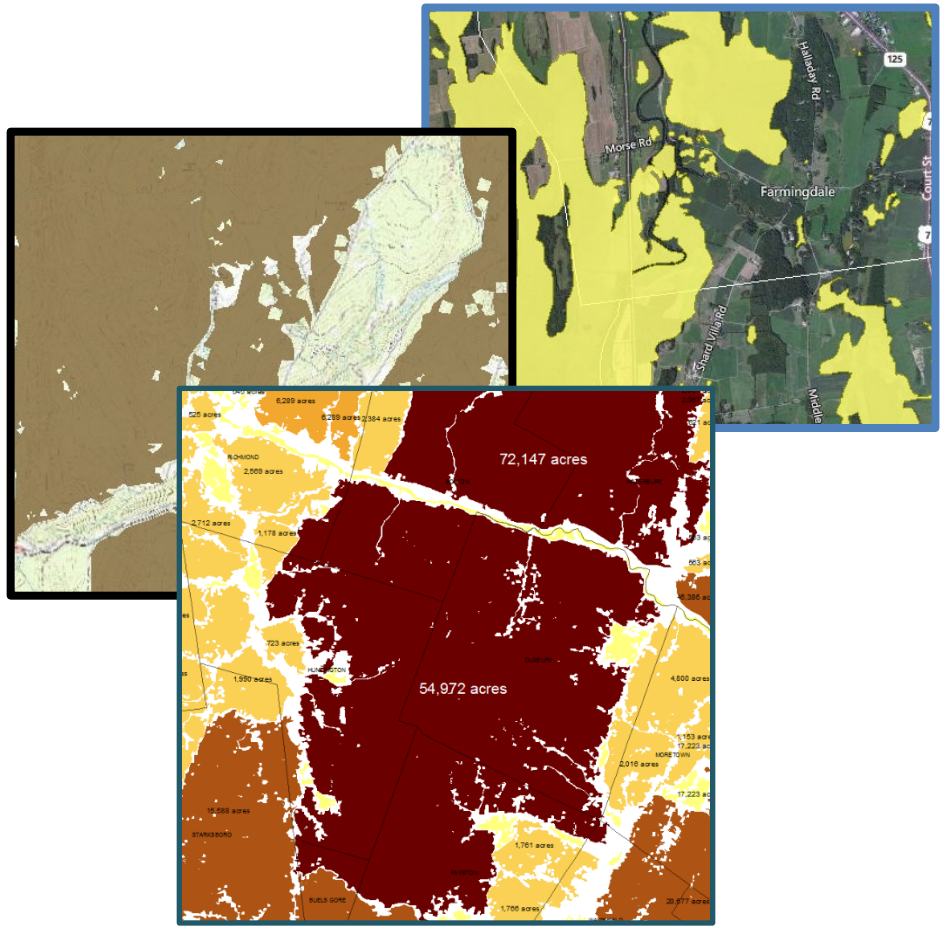
Connecting Communities

Understanding ecological and community context

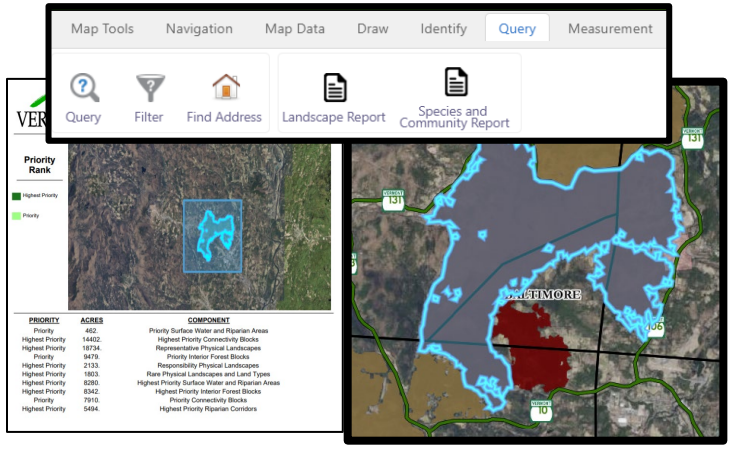


Mapping and Interpretation

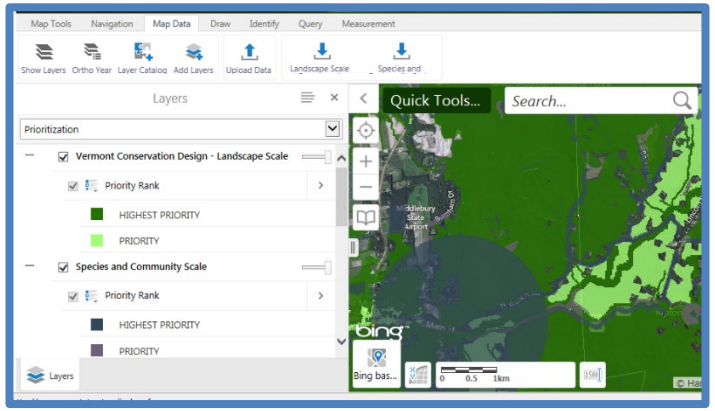
BioFinder IS… a website



A Set of Maps



A Mapping Toolbox



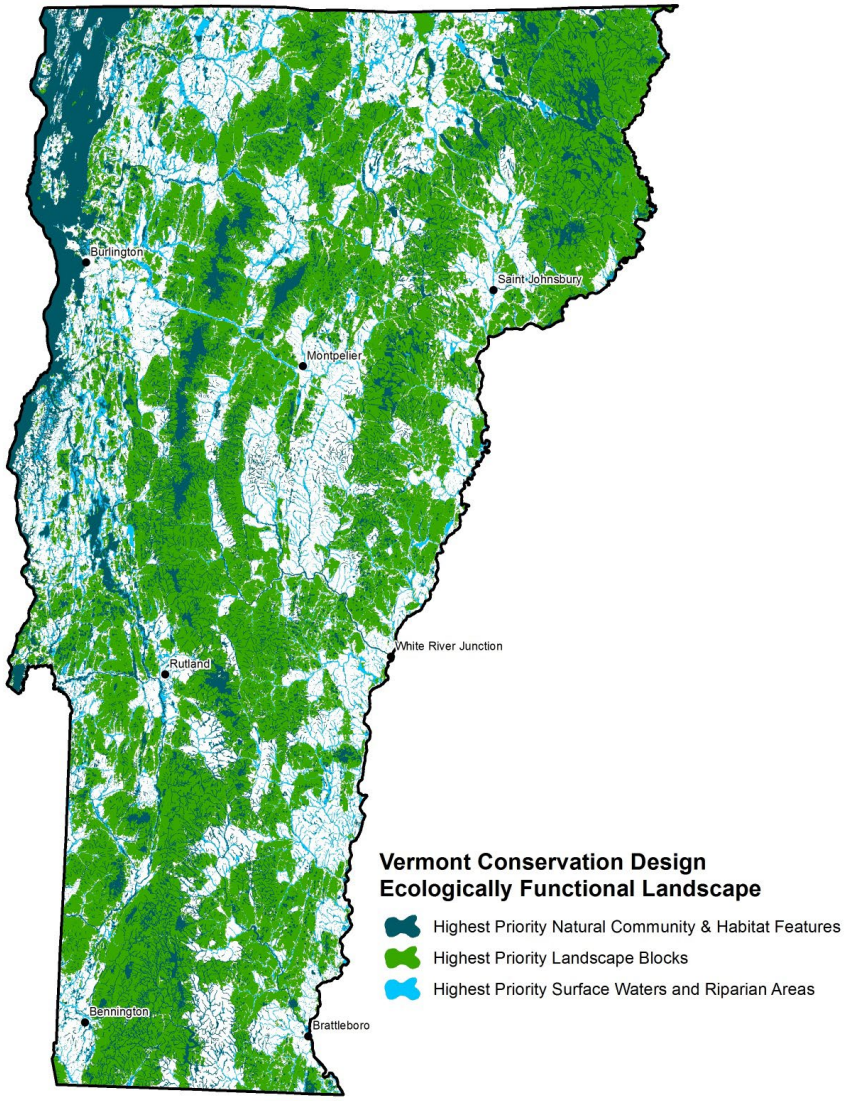
A Prioritization Tool

Vermont Conservation Design

A set of coarse-filter features

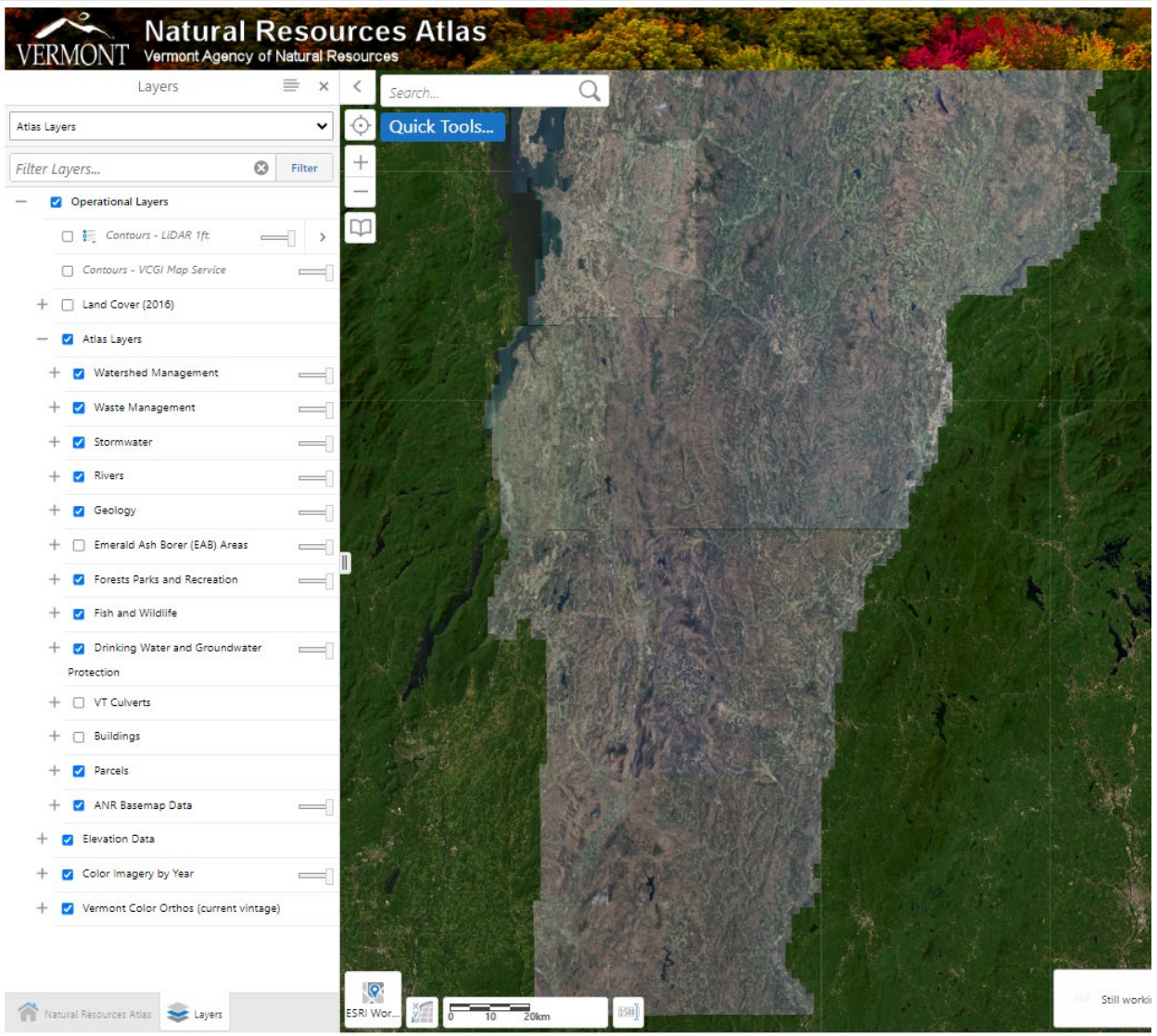
offer high confidence in maintaining biological diversity and ecological processes

into the future.



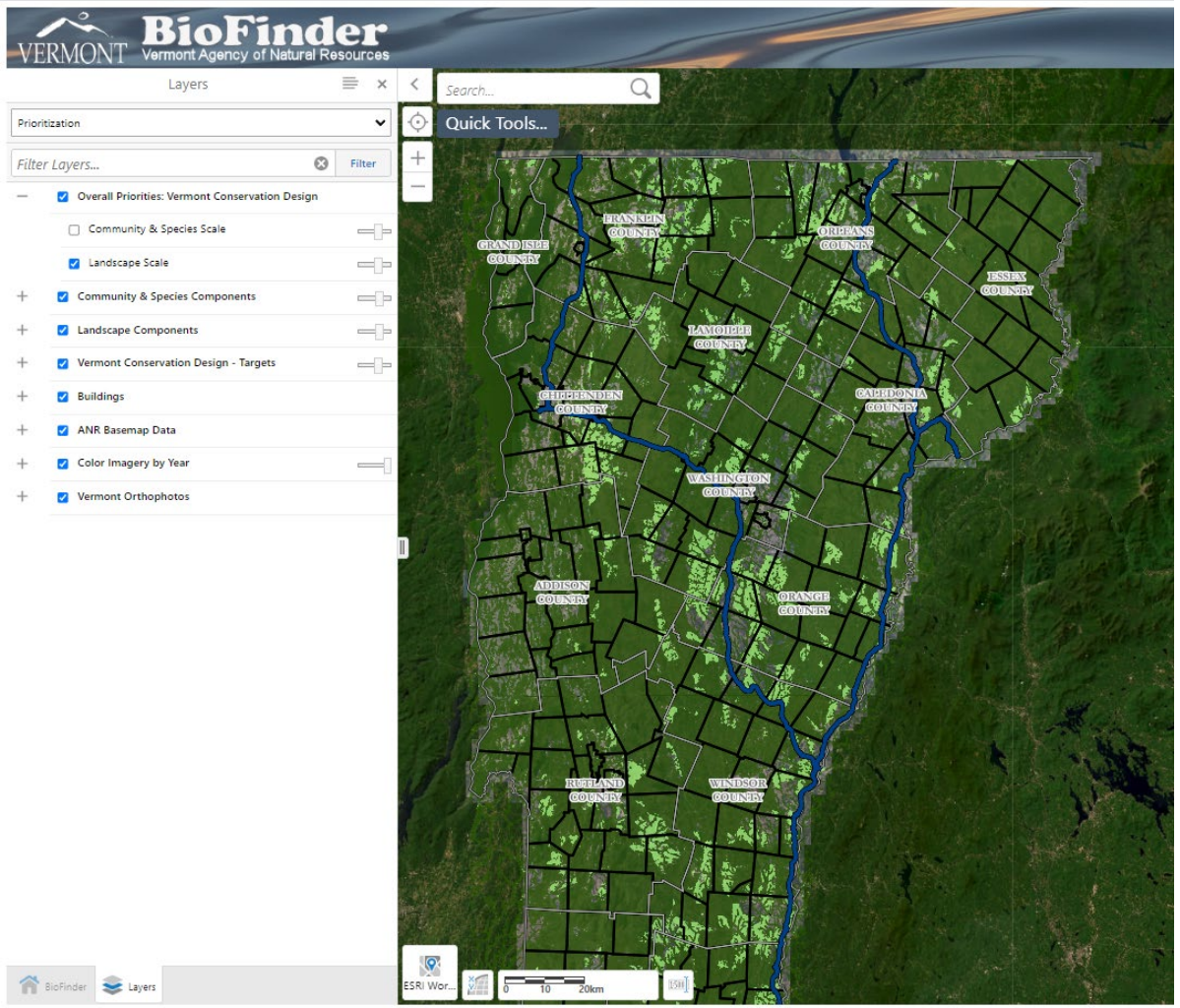
Displayed on BioFinder & on the ANR Atlas

ANR Atlas



- Data clearinghouse
- Organized by Department
- Some use-specific tools

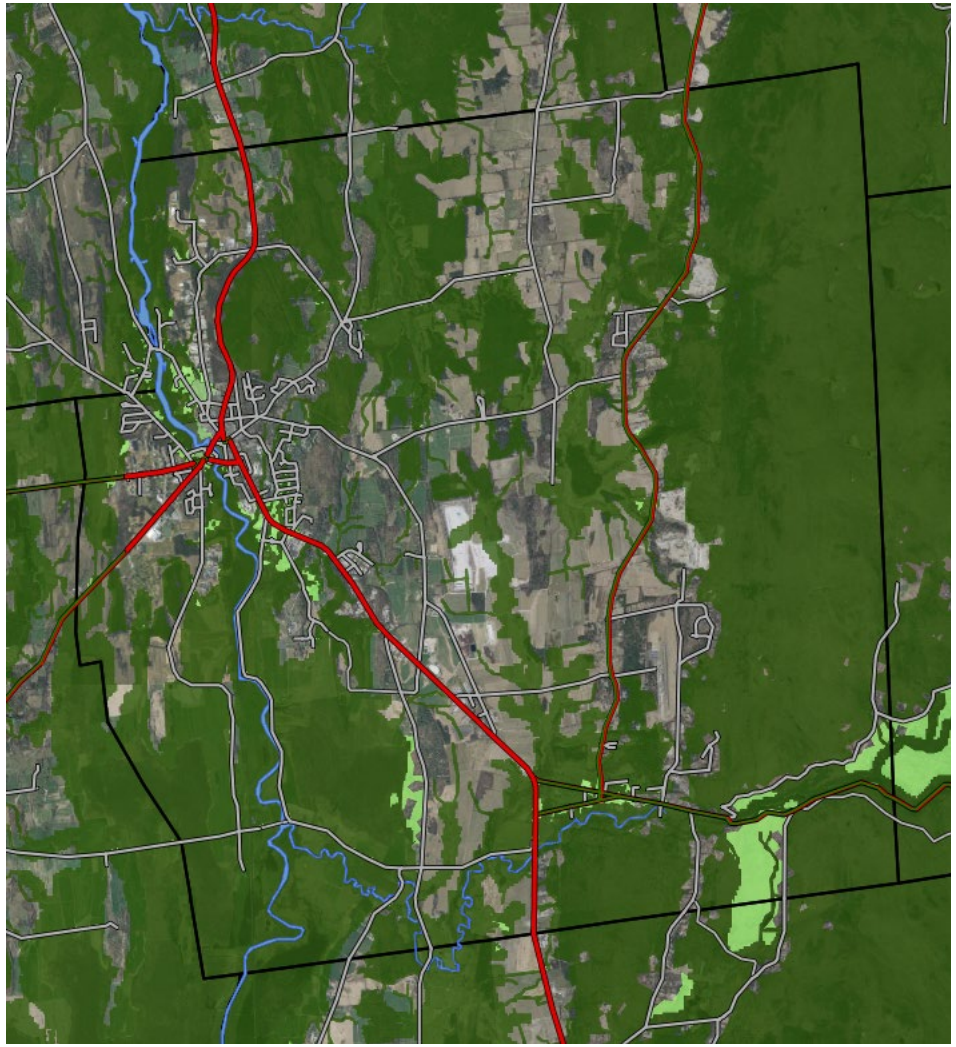
Prioritization



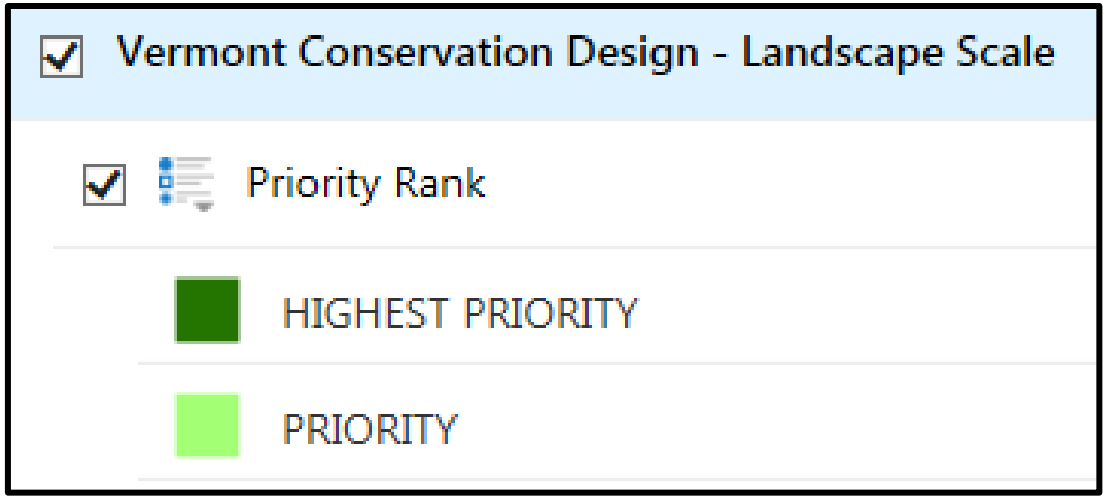
- Overall Network
- Two Scales of Priorities
  - Landscape
  - Community & Species

Vermont Conservation Design assigns an overall **priority rank** to lands and waters most important for maintaining **ecological function.**

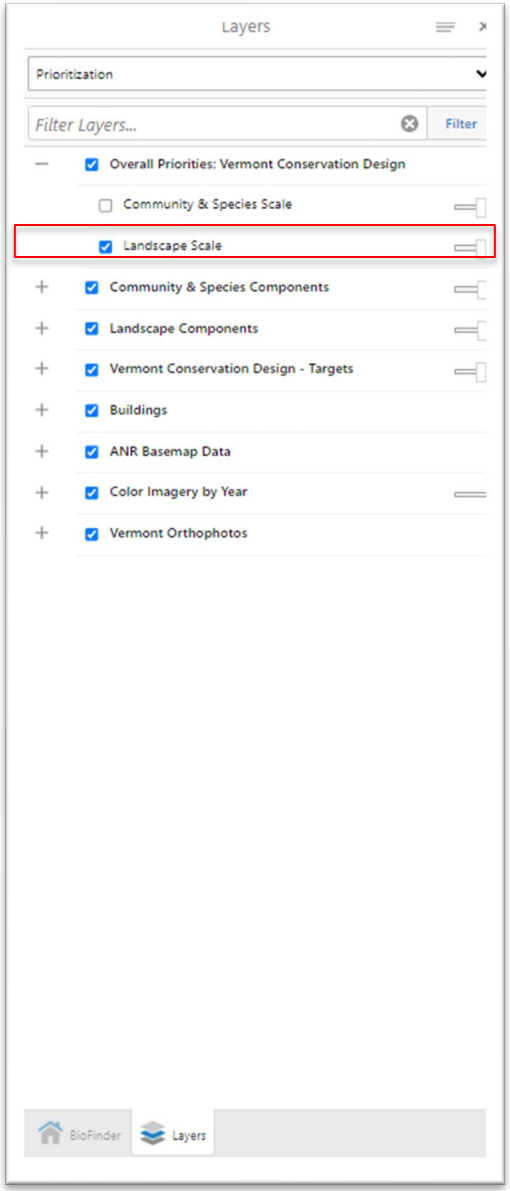
Vermont Conservation Design

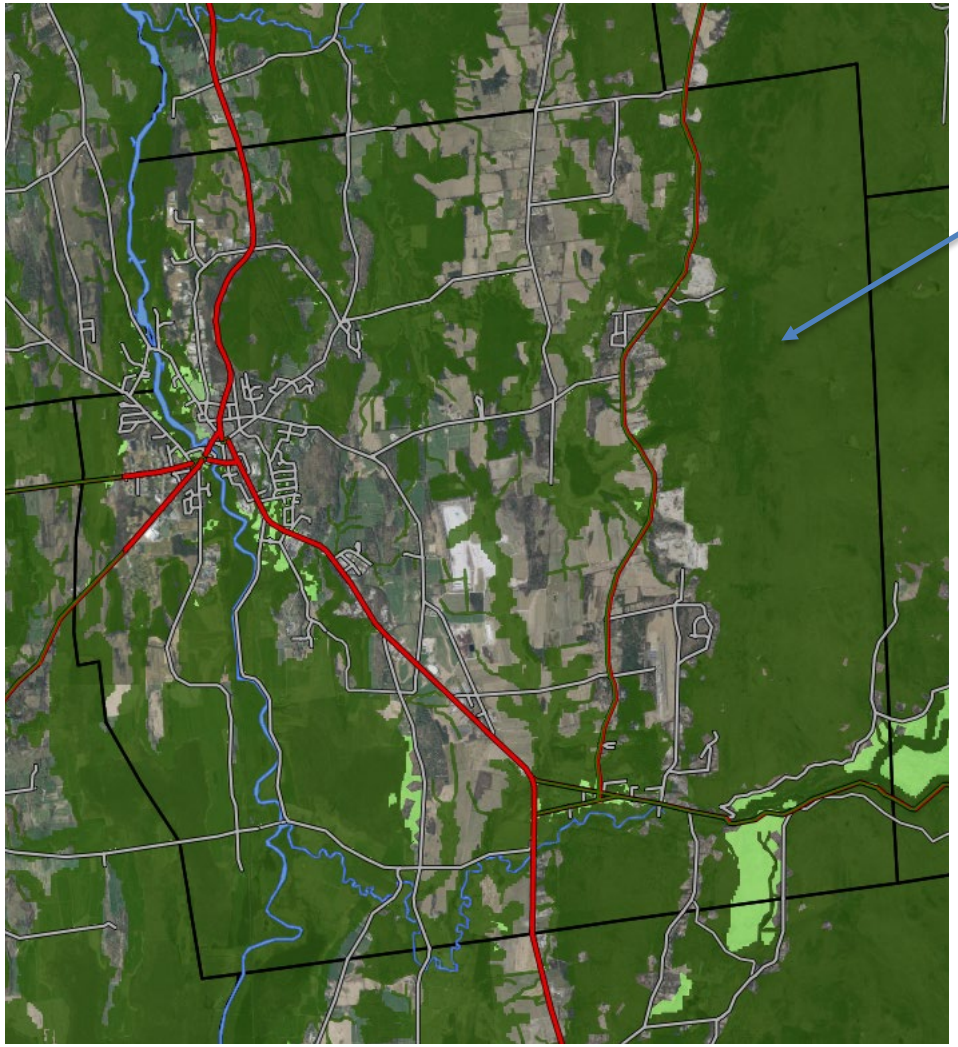


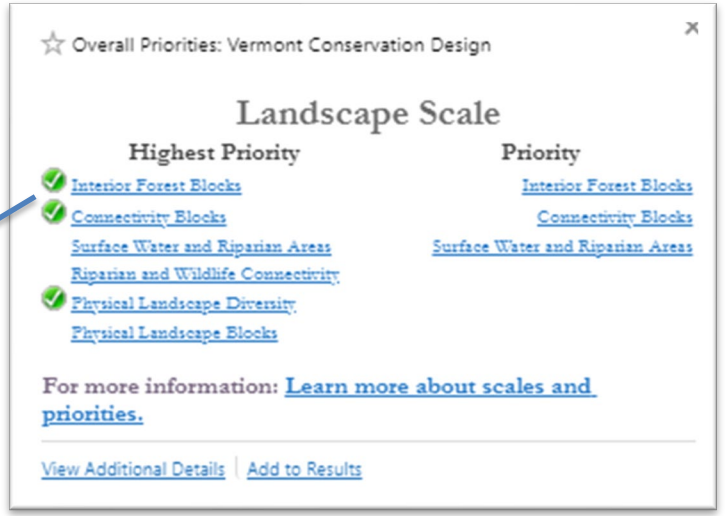
Middlebury, VT



Landscape Pattern & Context



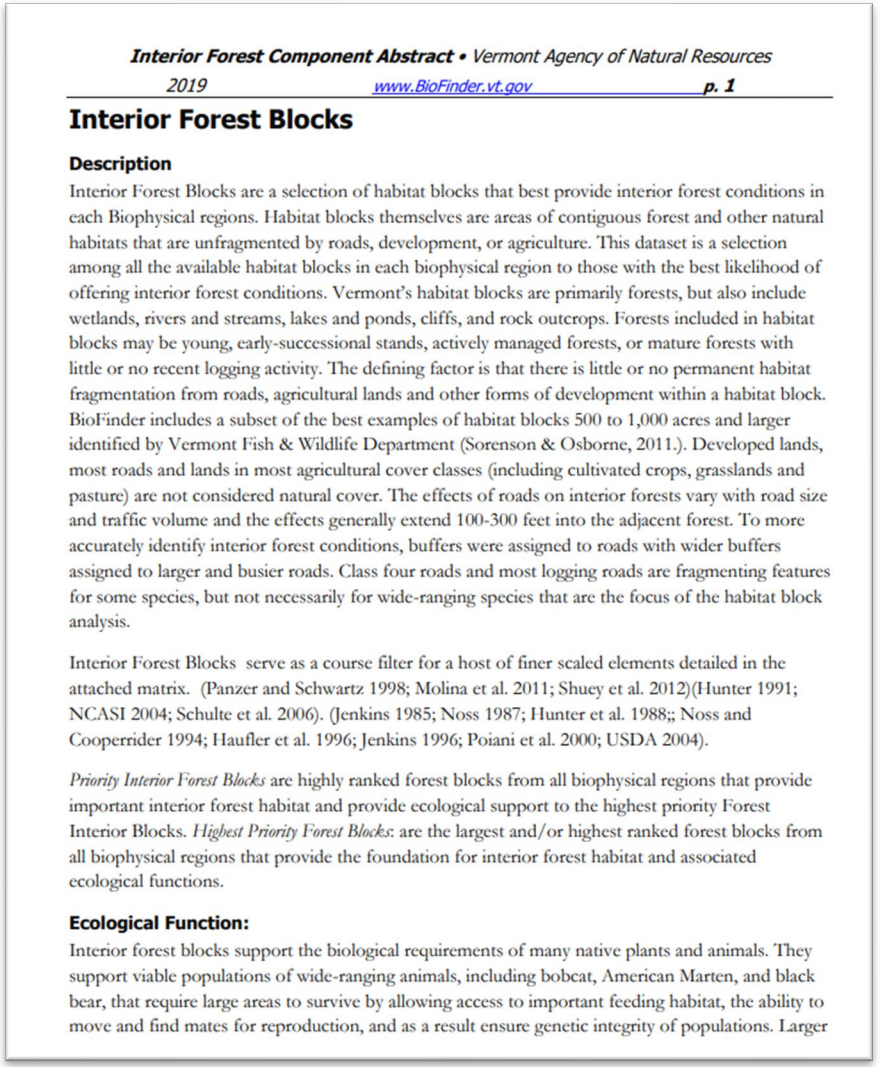




Middlebury, VT

Learn More

- Component Abstracts
  - What is an "Interior Forest"?
  - Why are they ecologically important?
  - How was the mapping done to choose certain places?



Interior Forest Blocks

Description

Interior Forest Blocks are a selection of habitat blocks that best provide interior forest conditions in each Biophysical regions. Habitat blocks themselves are areas of contiguous forest and other natural habitats that are unfragmented by roads, development, or agriculture. This dataset is a selection among all the available habitat blocks in each biophysical region to those with the best likelihood of offering interior forest conditions. Vermont's habitat blocks are primarily forests, but also include wetlands, rivers and streams, lakes and ponds, cliffs, and rock outcrops. Forests included in habitat blocks may be young, early-successional stands, actively managed forests, or mature forests with little or no recent logging activity. The defining factor is that there is little or no permanent habitat fragmentation from roads, agricultural lands and other forms of development within a habitat block. BioFinder includes a subset of the best examples of habitat blocks 500 to 1,000 acres and larger identified by Vermont Fish & Wildlife Department (Sorenson & Osborne, 2011.). Developed lands, most roads and lands in most agricultural cover classes (including cultivated crops, grasslands and pasture) are not considered natural cover. The effects of roads on interior forests vary with road size and traffic volume and the effects generally extend 100-300 feet into the adjacent forest. To more accurately identify interior forest conditions, buffers were assigned to roads with wider buffers assigned to larger and busier roads. Class four roads and most logging roads are fragmenting features for some species, but not necessarily for wide-ranging species that are the focus of the habitat block analysis.

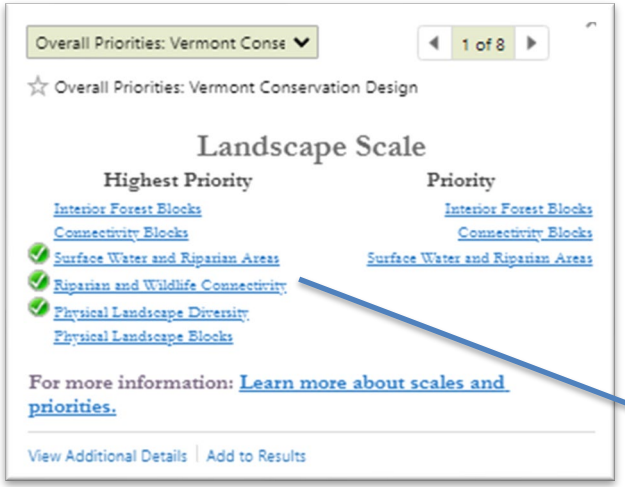
Interior Forest Blocks serve as a course filter for a host of finer scaled elements detailed in the attached matrix. (Panzer and Schwartz 1998; Molina et al. 2011; Shuey et al. 2012)(Hunter 1991; NCASI 2004; Schulte et al. 2006). (Jenkins 1985; Noss 1987; Hunter et al. 1988;; Noss and Cooperrider 1994; Haufler et al. 1996; Jenkins 1996; Poiani et al. 2000; USDA 2004).

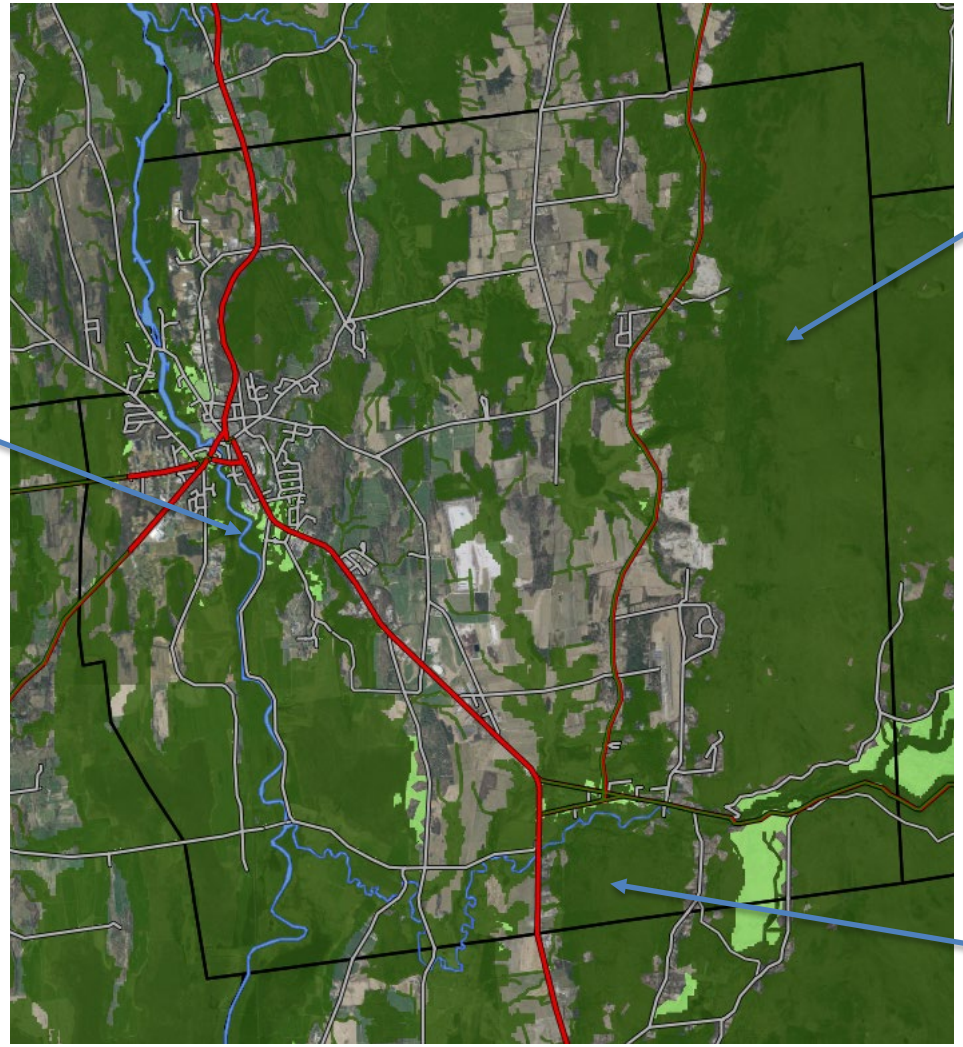
Priority Interior Forest Blocks are highly ranked forest blocks from all biophysical regions that provide important interior forest habitat and provide ecological support to the highest priority Forest Interior Blocks. *Highest Priority Forest Blocks*: are the largest and/or highest ranked forest blocks from all biophysical regions that provide the foundation for interior forest habitat and associated ecological functions.

Ecological Function:

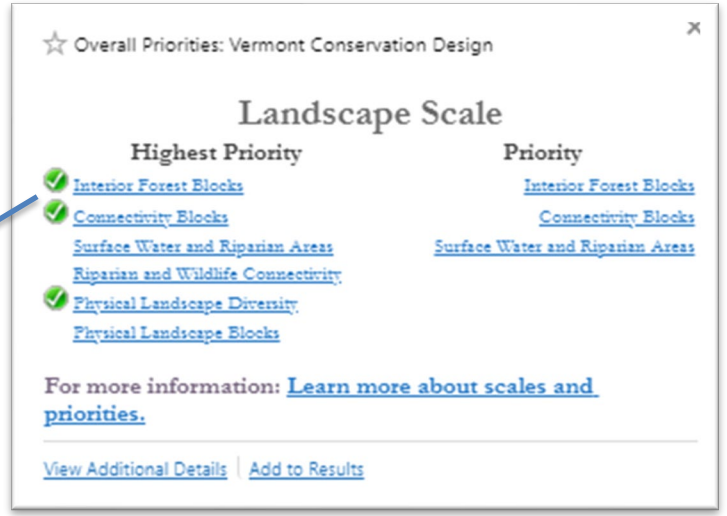
Interior forest blocks support the biological requirements of many native plants and animals. They support viable populations of wide-ranging animals, including bobcat, American Marten, and black bear, that require large areas to survive by allowing access to important feeding habitat, the ability to move and find mates for reproduction, and as a result ensure genetic integrity of populations. Larger

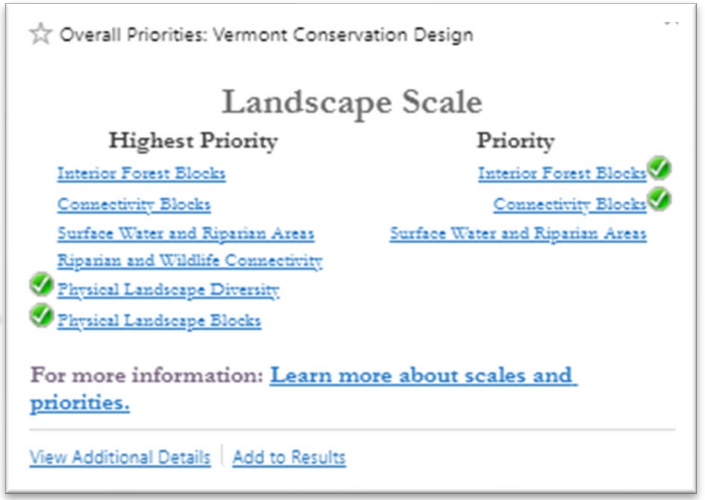
Landscape Pattern & Context



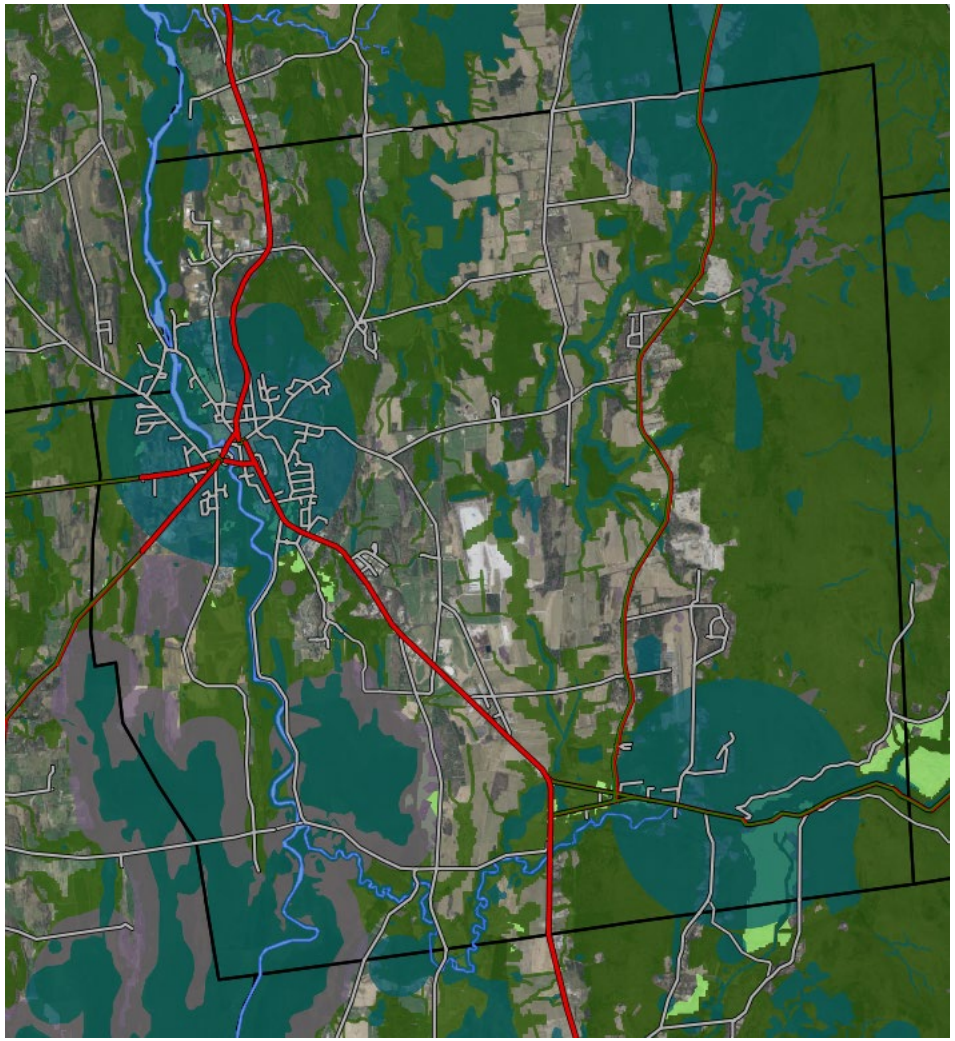


Middlebury, VT



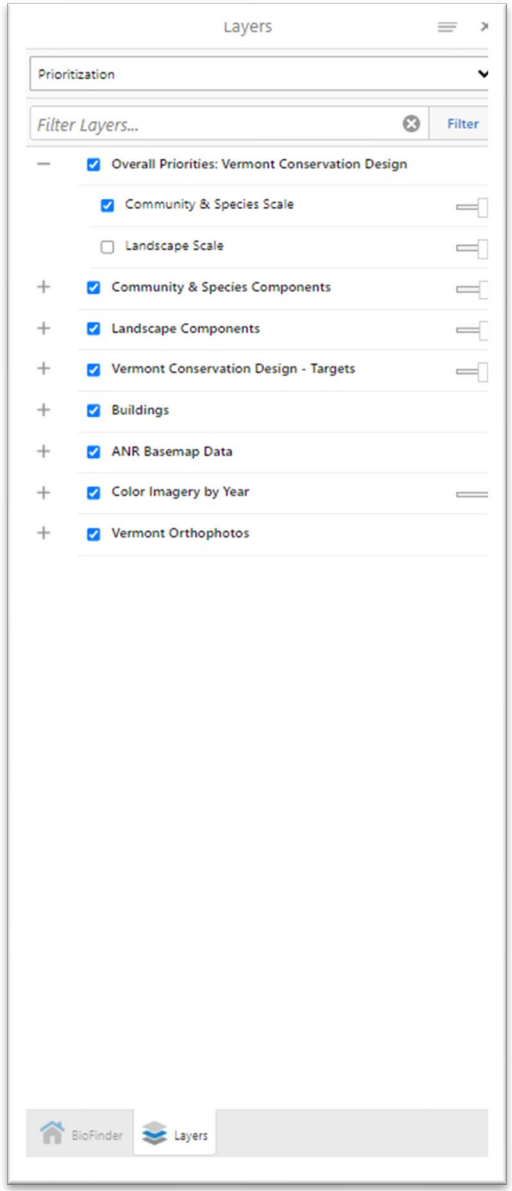


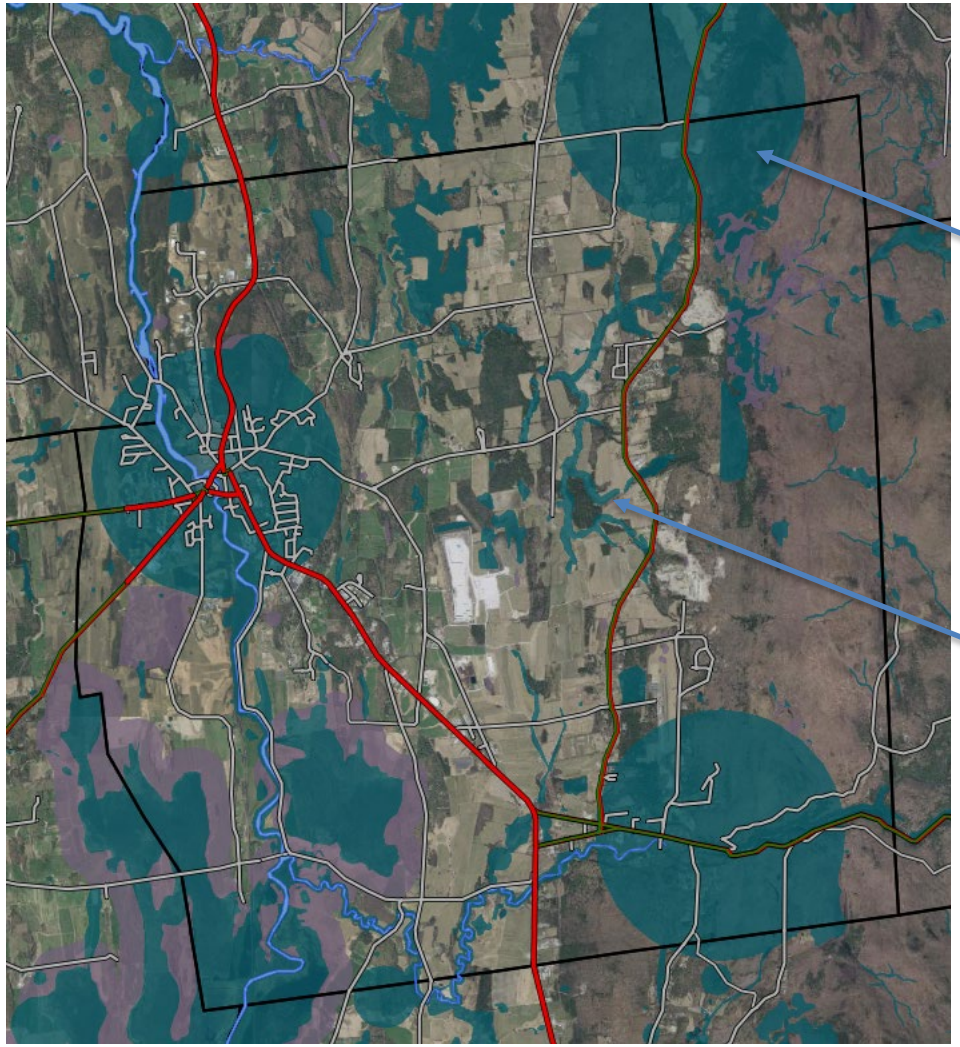
Combined Priorities



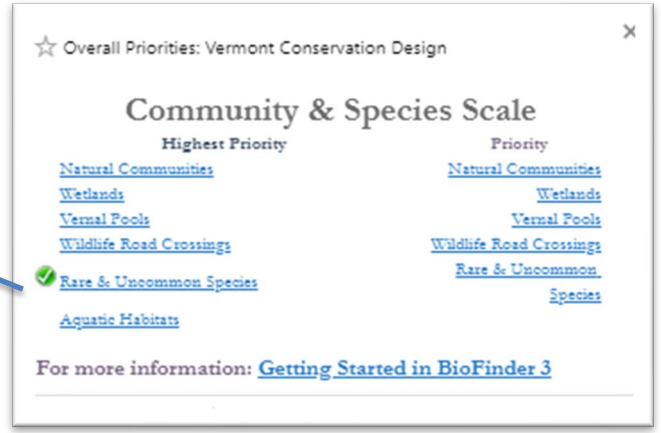
Middlebury, VT

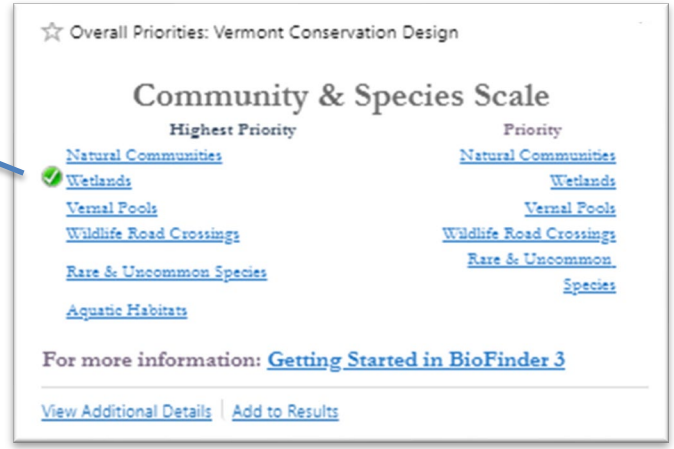
Community & Species Hotspots



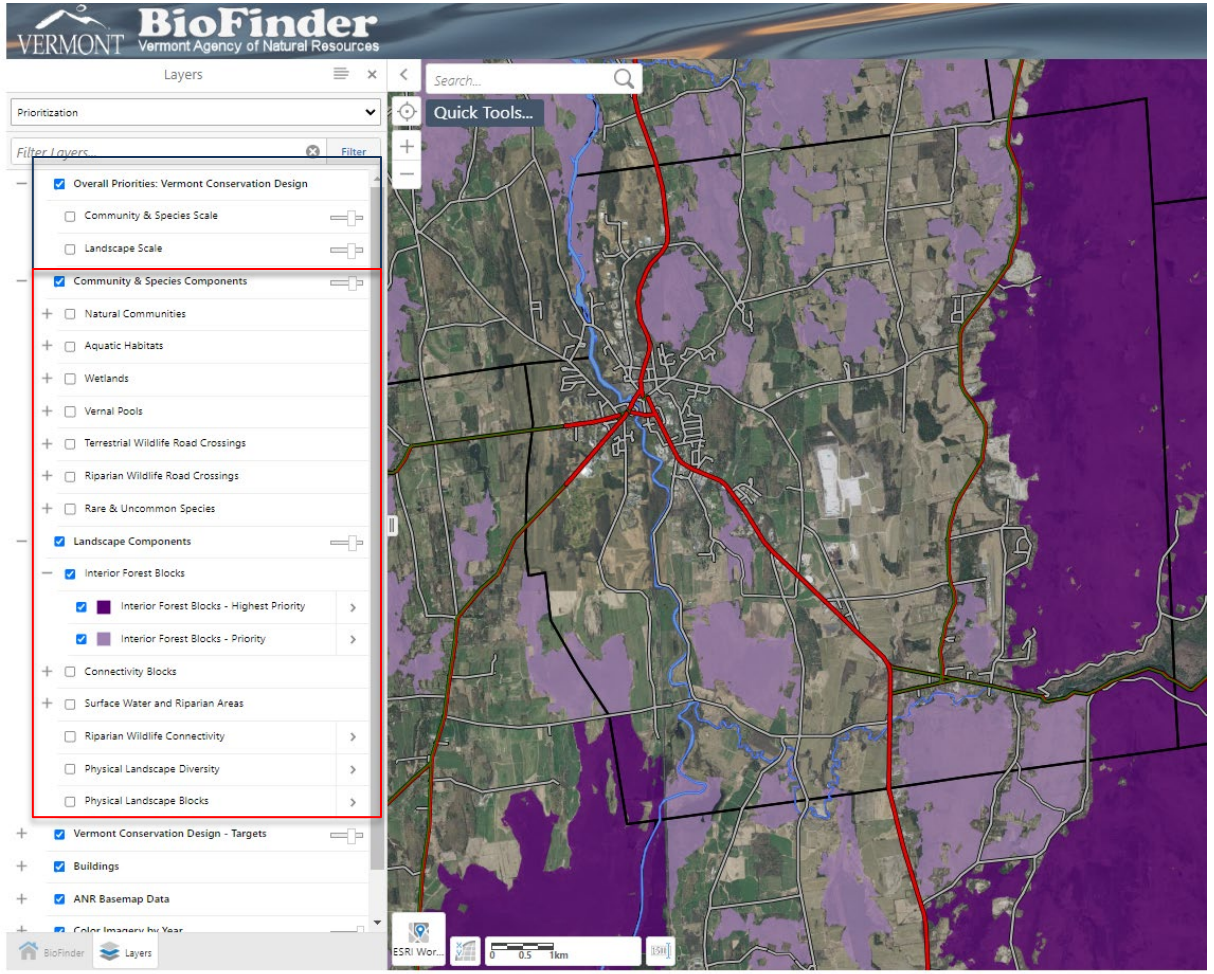


Middlebury, VT





Suite of Components



Whole is greater than sum of the parts

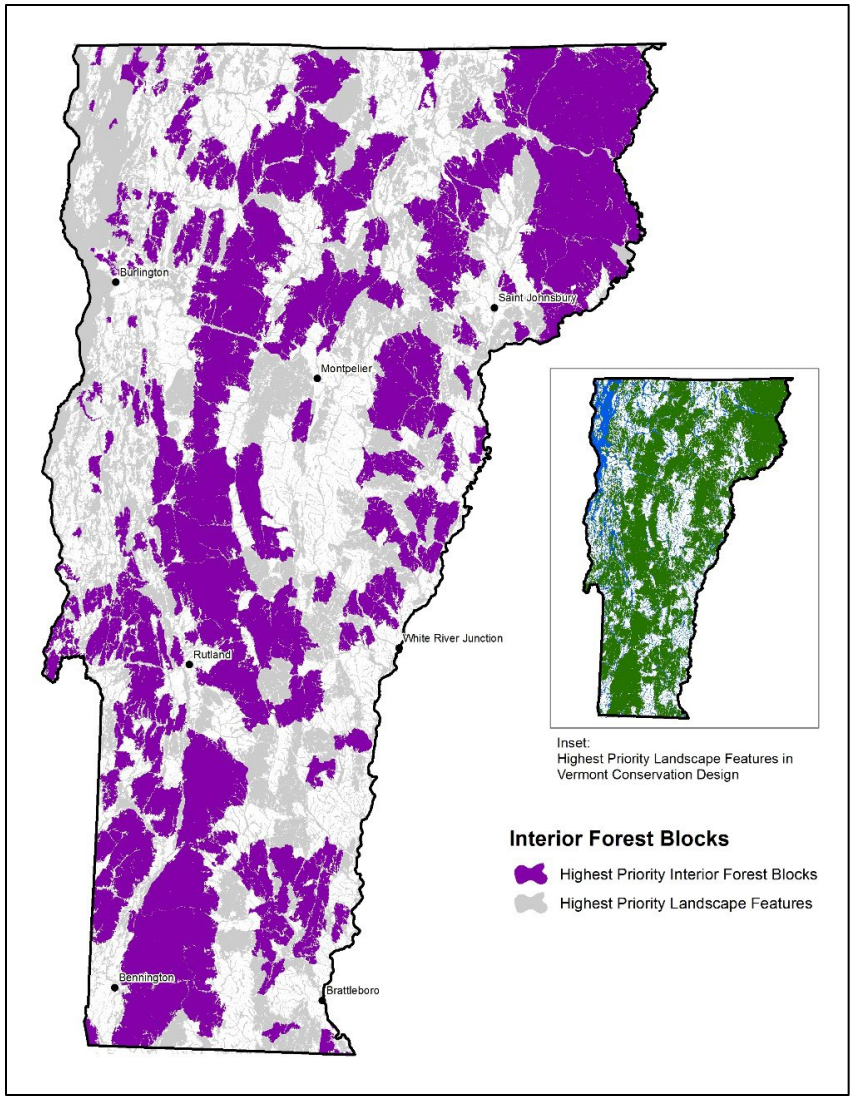
- Landscape
  - Interior Forest Blocks
  - Connectivity Blocks
  - Physical Landscape Blocks
  - Surface Waters & Riparian
  - Riparian Wildlife Connectivity
- Community & Species
  - Natural Communities
  - Aquatic Habitats
  - Wetlands
  - Vernal Pools
  - Wildlife Road Crossings
  - Rare & Uncommon Species

Interior Forest Blocks

Ecological Function Supports:

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

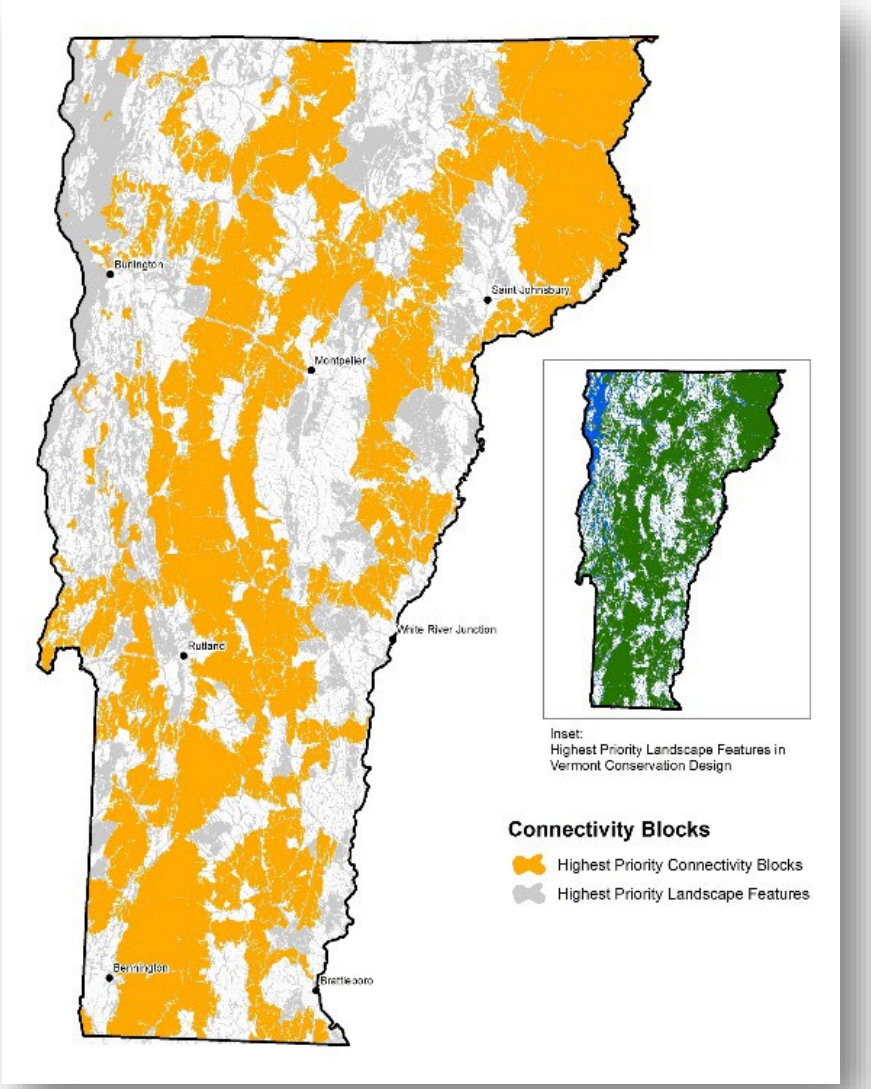
Subset of the Habitat Blocks



Connectivity Blocks

Ecological Function Supports:

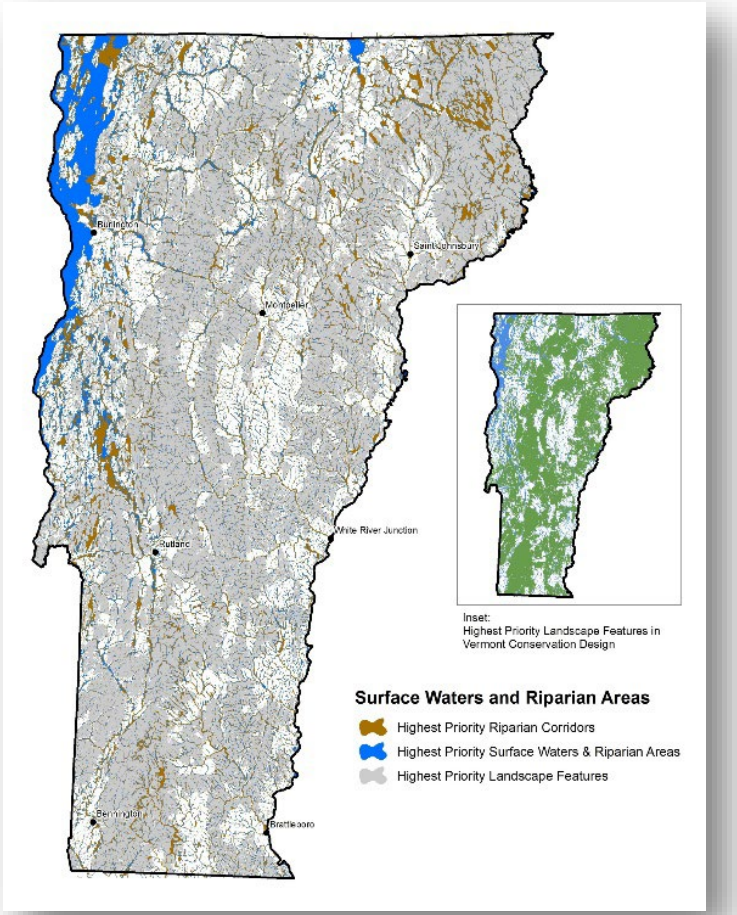
- Wildlife movement and dispersal;
- Climate resilience;
- Genetic exchange between populations.



Surface Water and Riparian Areas

Ecological Function:

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



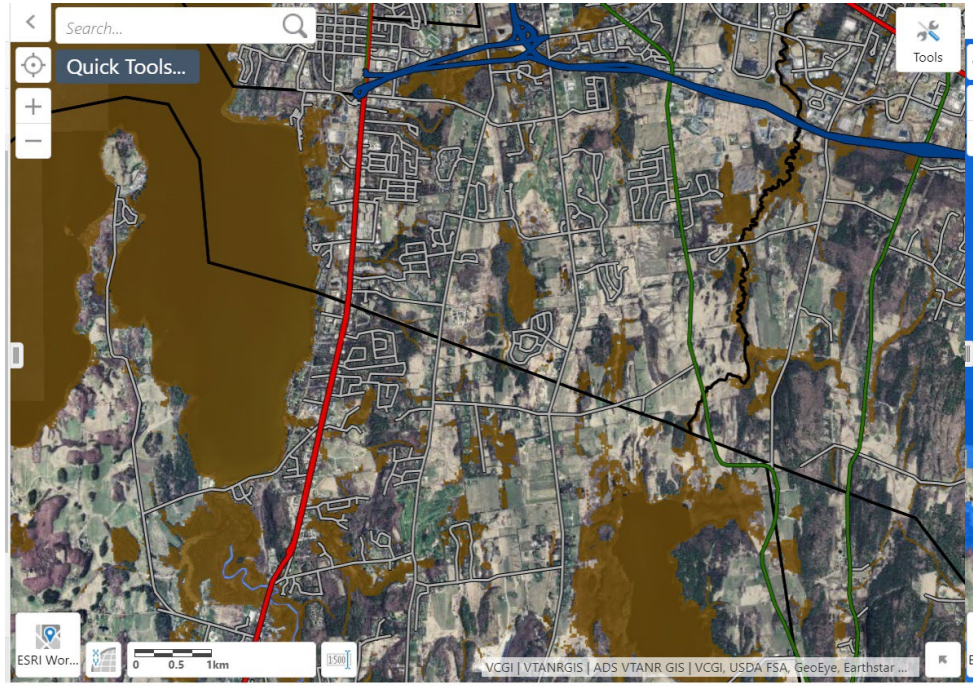
Riparian Wildlife Connectivity

Ecological Function:

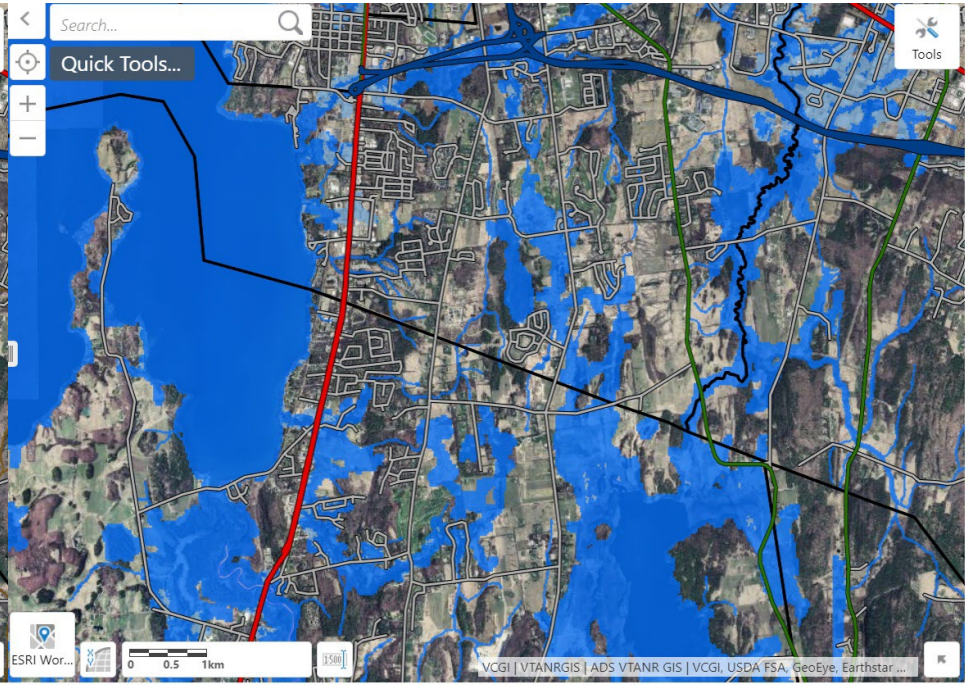
- Wildlife corridors;
- Habitat for specialist species (mink, otter, beaver, and wood turtle);
- Water quality protection.

Riparian Wildlife Connectivity

Riparian Wildlife Connectivity



Surface Waters & Riparian



Physical Landscape Blocks

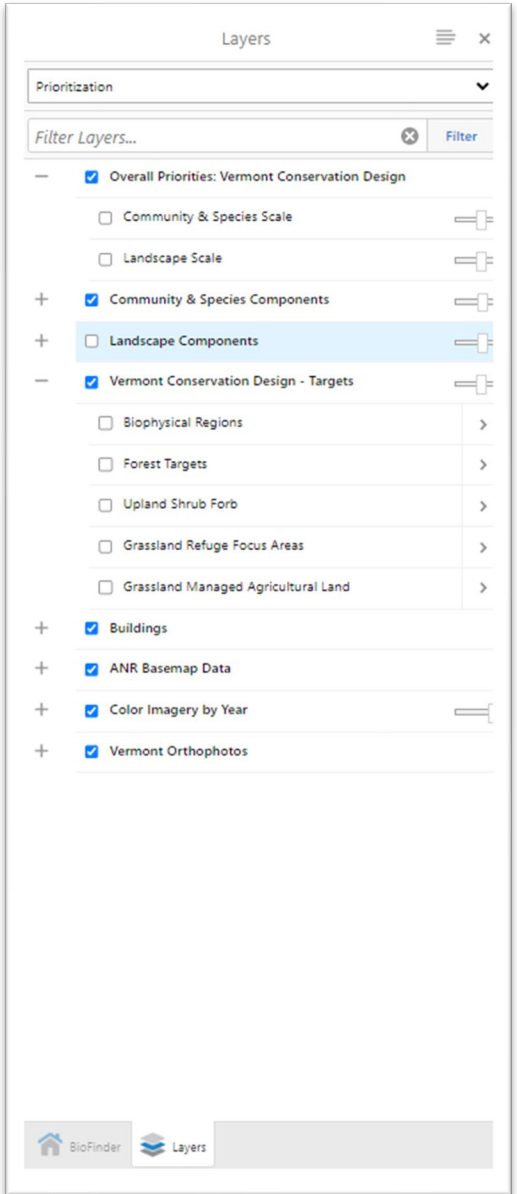
Ecological Function:

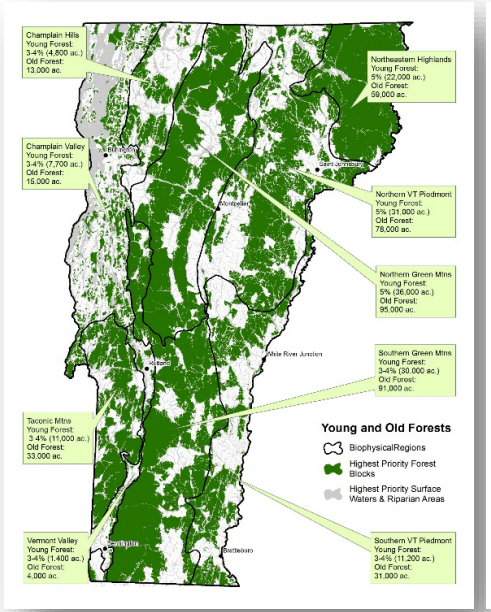
- Diverse bedrock, soils, elevations, & landforms have the most biodiversity;
- Climate change resilience;
- Protects future biodiversity.

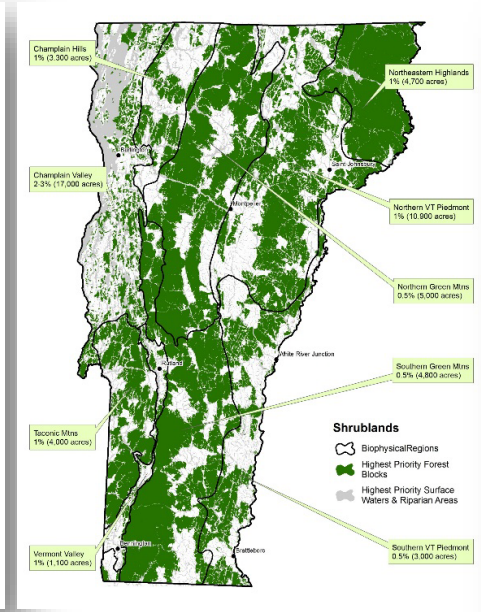
Community & Species Components

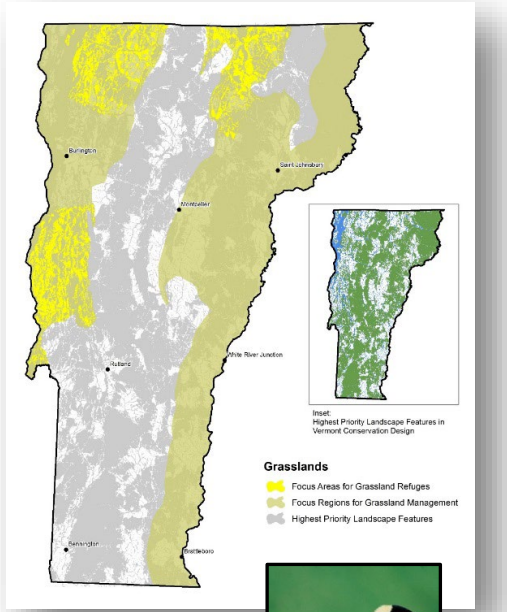
- Natural Communities
- Aquatic Habitats
- Rare & Uncommon Species
- Wildlife Road Crossings
- Vernal Pools
- Wetlands
- Caves and Mines (Not Mapped)

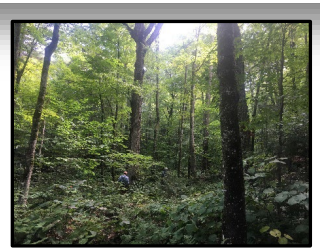
Young and Old Forests, Shrublands, Grasslands





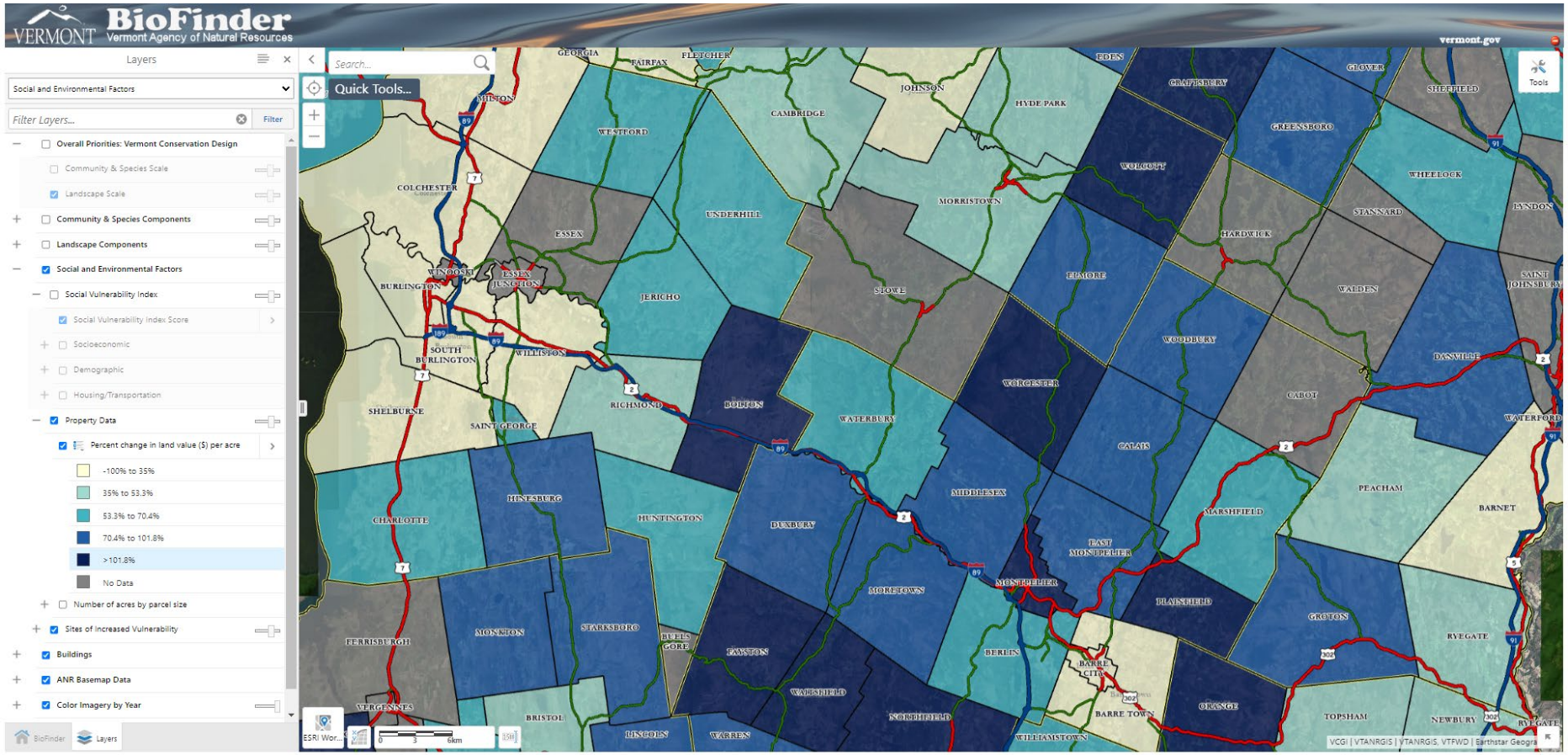






Social & Environmental Factors

- Social Vulnerability Index from Dept of Health
- Parcelization data from VNRC

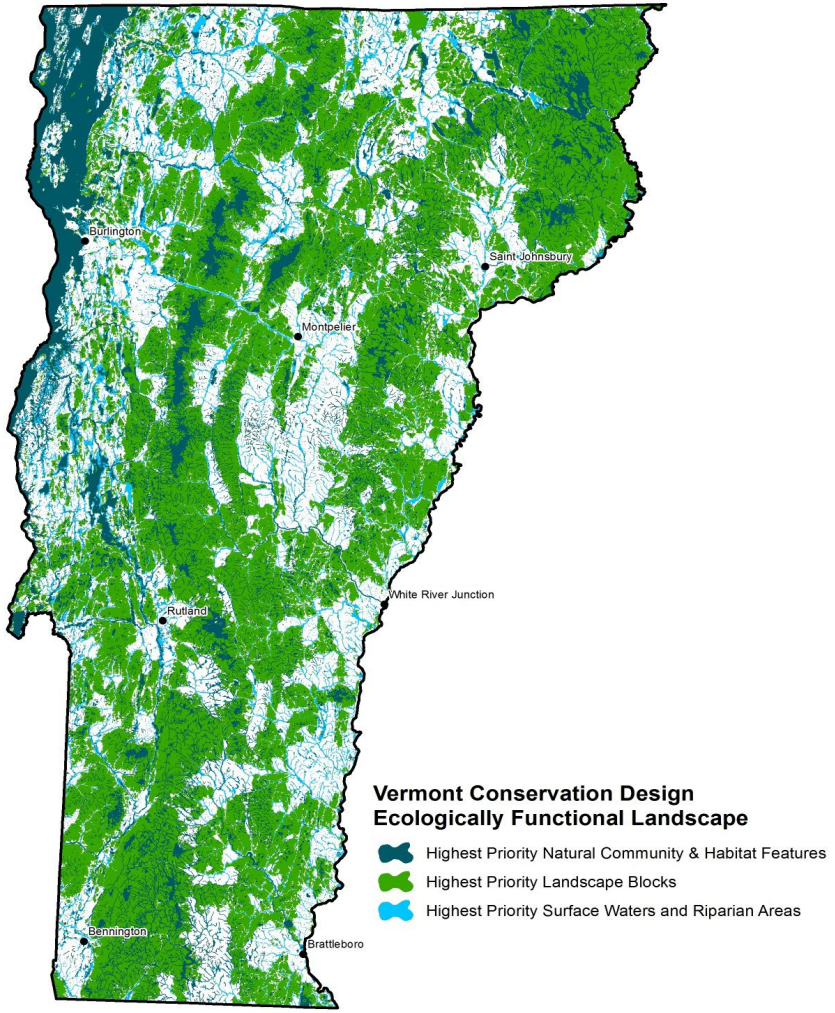


Vermont Conservation Design

Maintains an intact, connected and diverse natural landscape

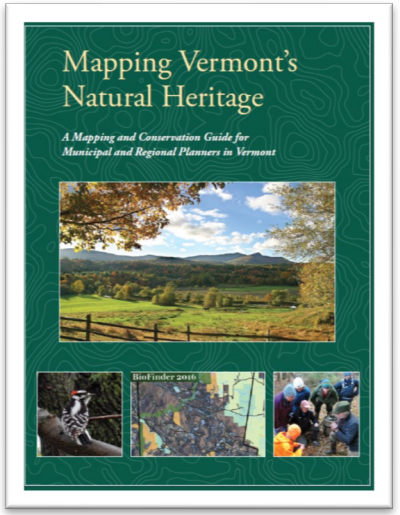
Conserves species and natural communities

Allows nature to adapt to a changing climate



Applications of Vermont Conservation Design

- **Conservation planning for towns**
- **Land conservation prioritization**
- **State lands management**
- **Staying Connected Initiative**
- **New England Governors – Eastern Canadian Premiers connectivity resolution**
- **Section 248 – “no undue adverse impact on… the natural environment”**
- **Provides context for all of our habitat protection efforts, including Act 250 review**

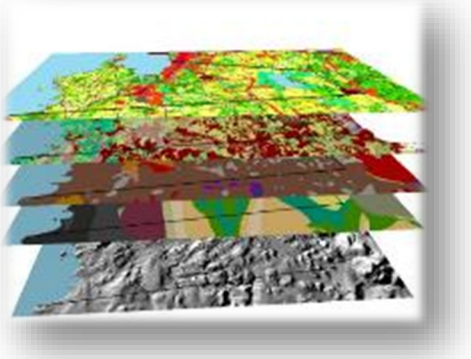


STAYING CONNECTED INITIATIVE

A Multi-Pronged Approach

STAYING CONNECTED INITIATIVE

- Conservation science
- Land protection
- Land use planning
- Outreach & engagement
- Transportation systems



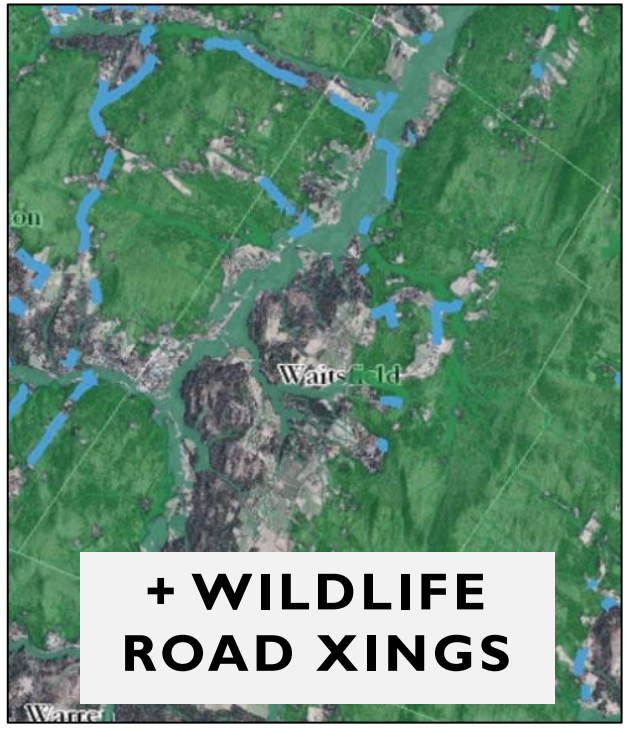
www.stayingconnectedinitiative.org

Act 171: Forest Integrity Planning

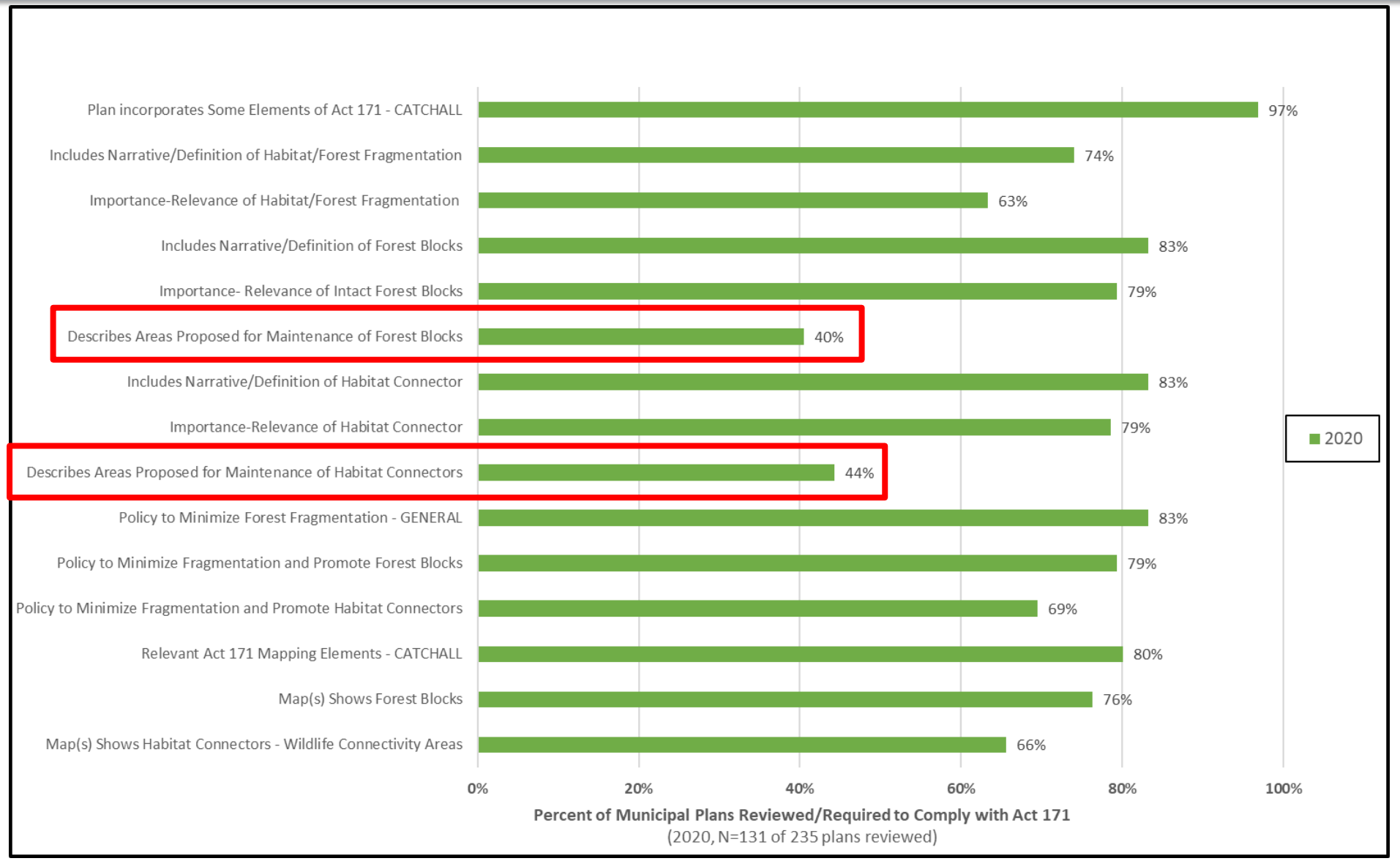
Requires town and regional plans to:

- 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.

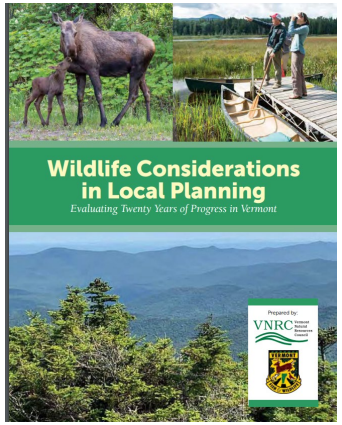
Example Act 171 Map



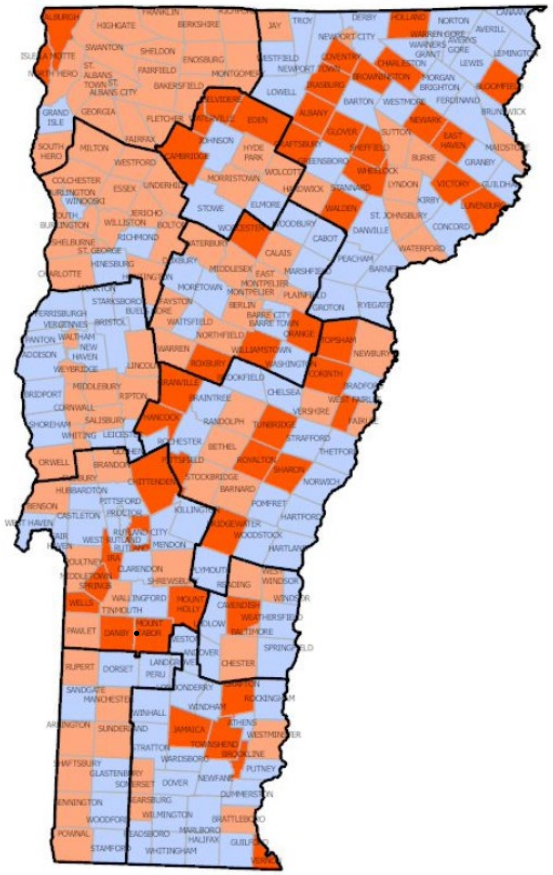
Act 171 Implementation

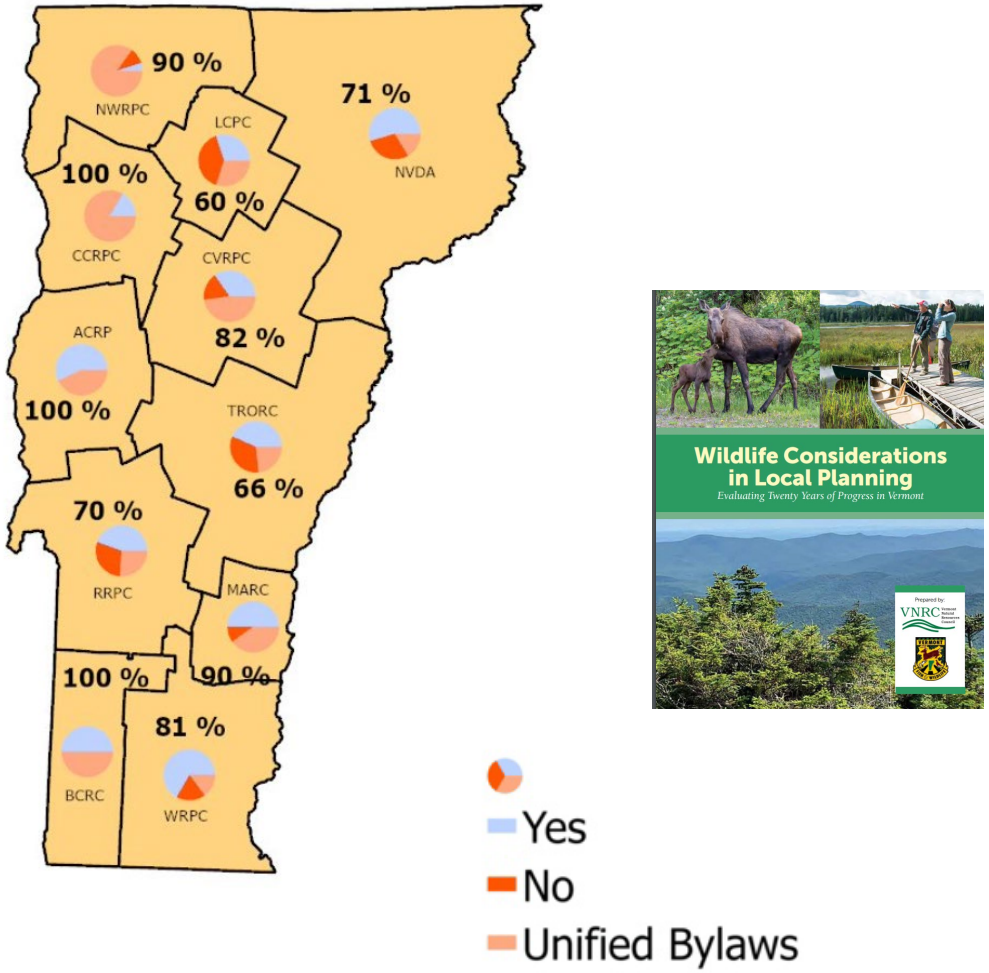


2022 Wildlife Considerations in Local Planning



Towns with Zoning

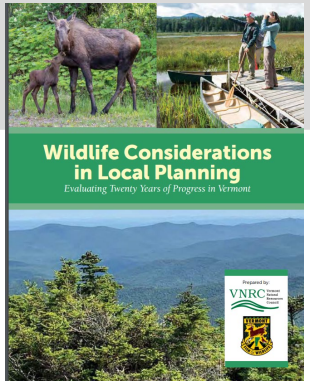




Zoning District Efficacy

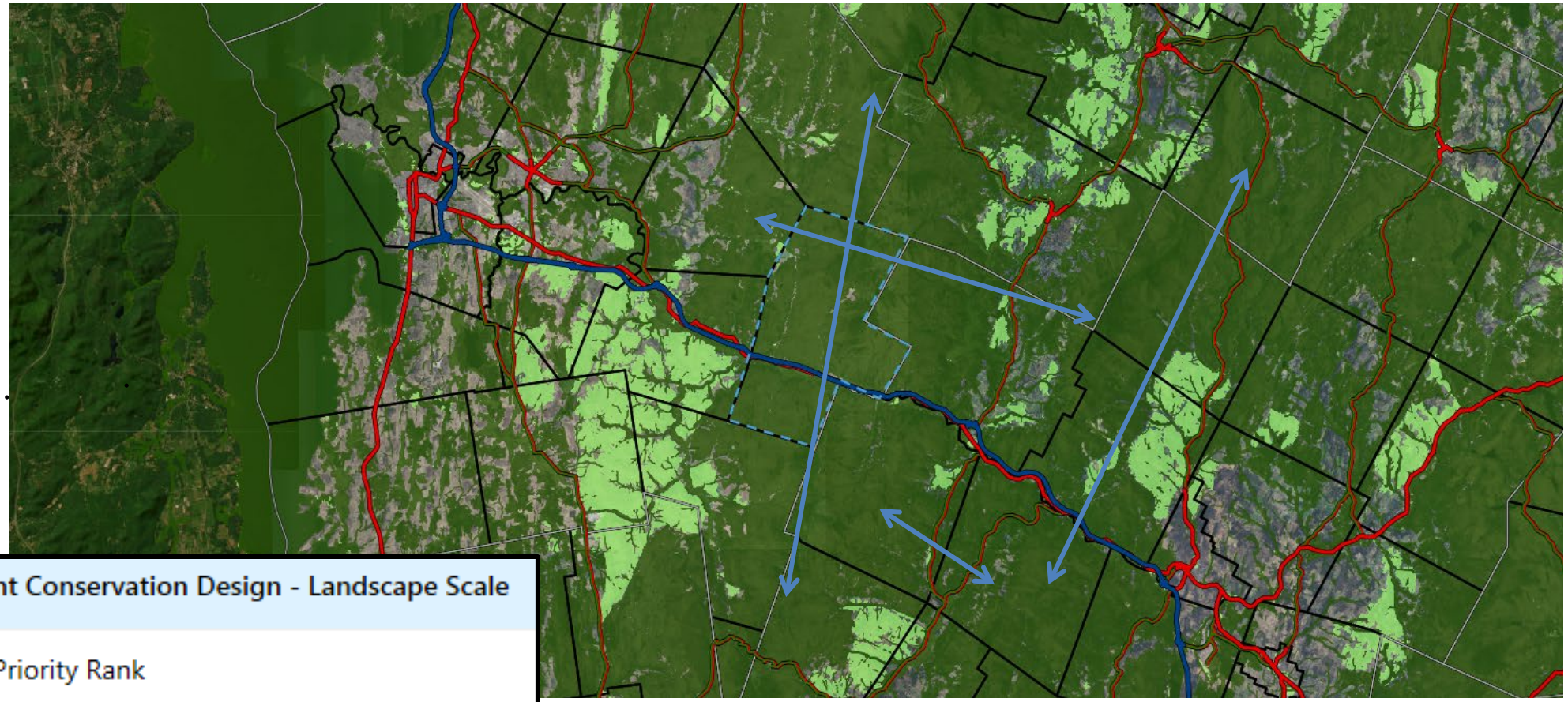
	Conservation District	Forest Reserve District	Water Resource District	Natural Resources Overlay District	Wildlife Overlay District	Fluvial Erosion/ River Hazard District	Rural / Ag. / Resource / Res. District	Residential District	Open Space District
Percentage of towns where district exists*	44%	25%	11%	3%	4%	14%	82%	80%	16%
District has specific wildlife review**	19%	23%	9%	83%	63%	0%	6%	4%	15%
District has fragmentation standards**	10%	31%	0%	50%	50%	0%	4%	4%	15%

Percent of Towns with Zoning Regulations
****Percent of Towns with District***



VNRC Vermont Natural Resources Council

Bolton



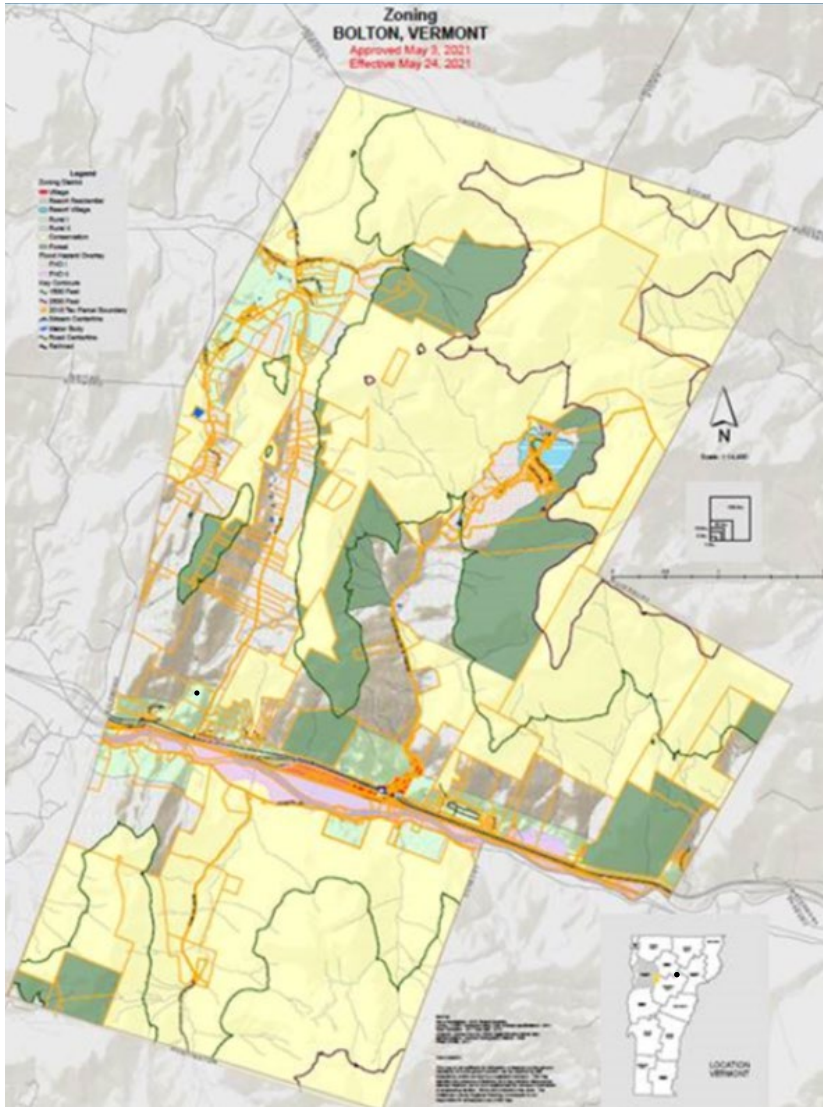
Vermont Conservation Design - Landscape Scale

Priority Rank

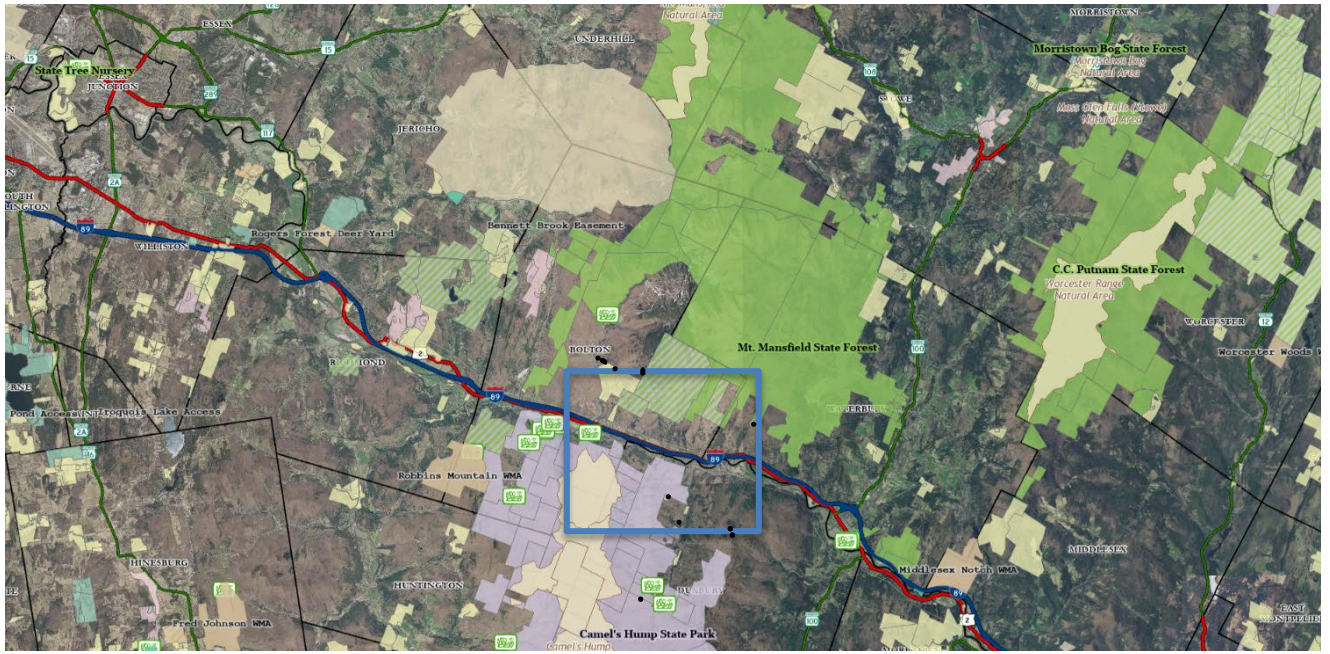
HIGHEST PRIORITY

PRIORITY

Pattern in the landscape



2021 Bolton Zoning Districts



Conserved lands

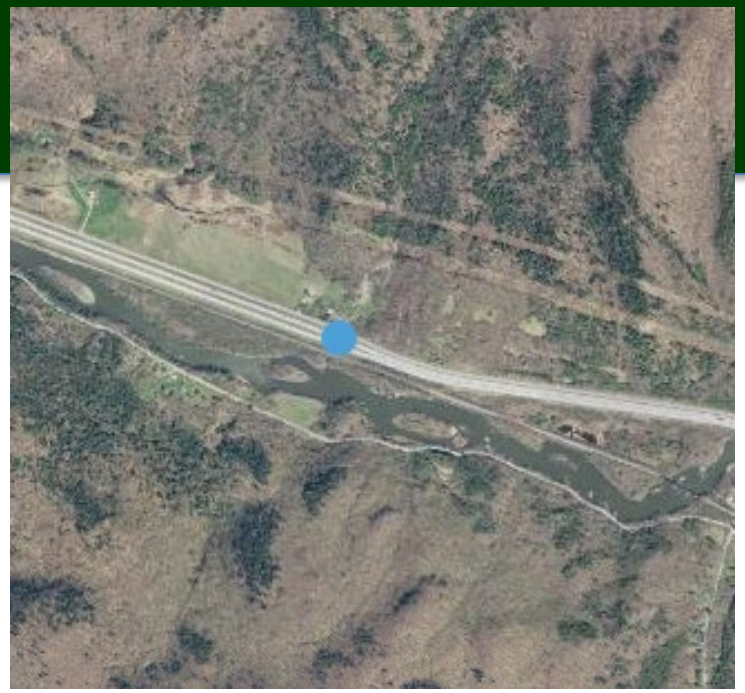
Climate Resilience

Bear under Rt 9 in Searsburg

Transportation infrastructure can accommodate wildlife passage and river process and be more economical than repeated failure with flooding.

Meeting multiple values

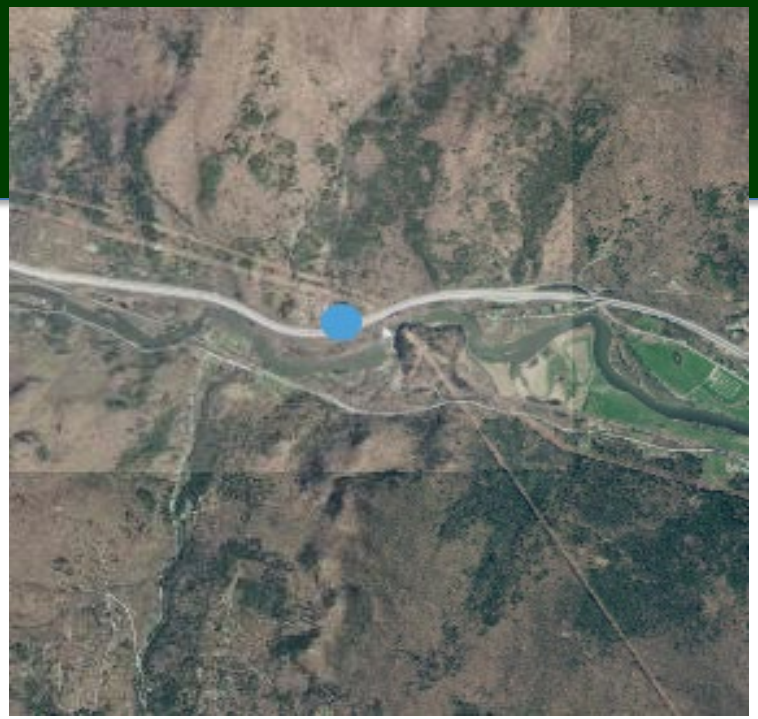
I 89 in Bolton, Bridge 50-4



Type	Concrete box
Length	350'
Width	12
Height	
AADT	I89 AADT = 28,200 RT 2 AADT =1800

US 2 in Bolton, Culvert (Sharkyville)

Type	Culvert in need of replacement
Length	395'
Width	4.5'
Height	5.4'
AADT	I89 AADT = 28,200 RT 2 AADT =1800




Thank You
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