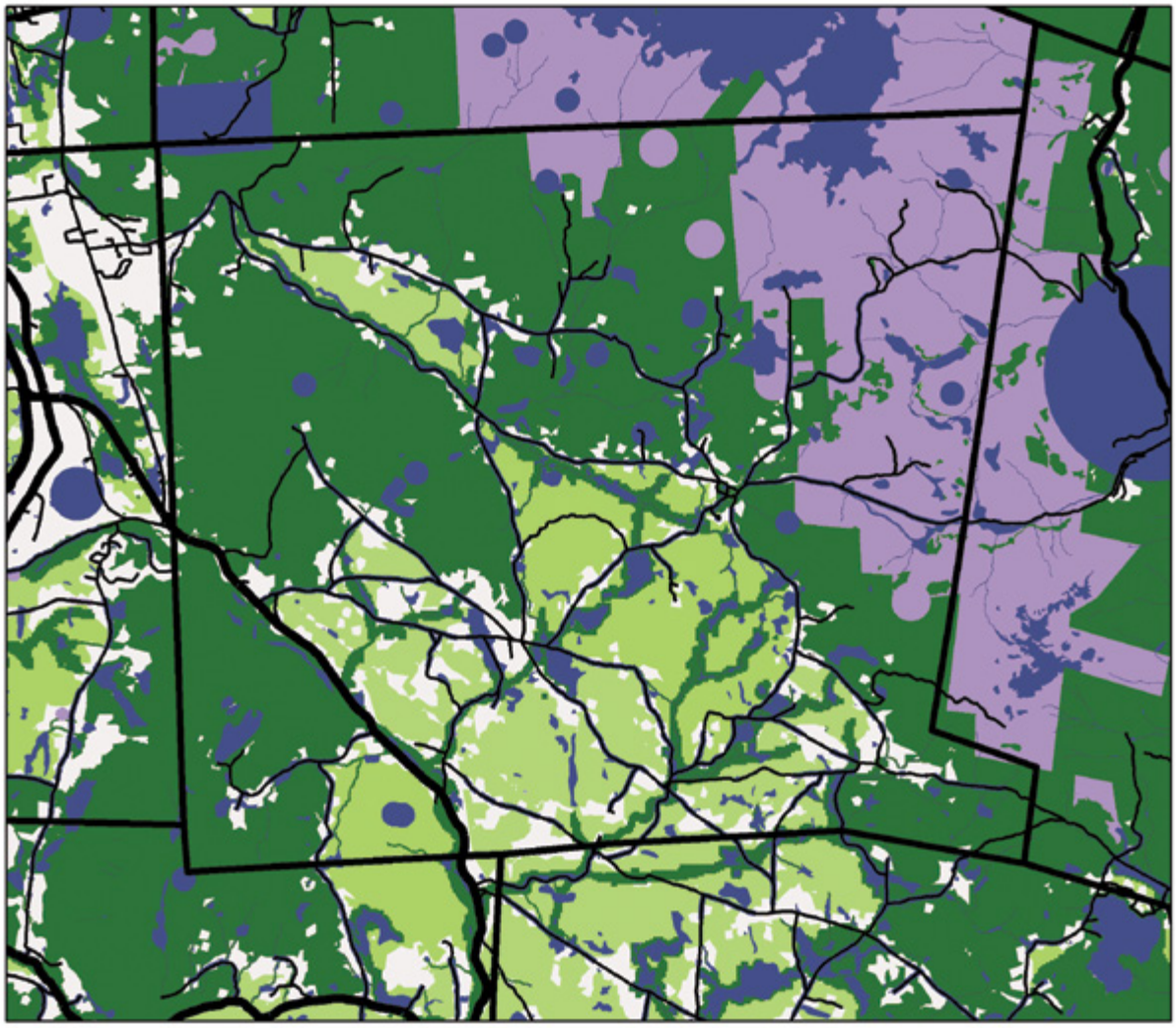
Map 7:
State and Regional Conservation Priorities



Town Boundary

Roads
- Primary
- Secondary

- Highest Priority: Landscape Scale
- Priority: Landscape Scale
- Highest Priority: Community & Species Scale
- Priority: Community & Species Scale

Data Source:
Vermont Center for Geographic Information

Vermont State Plane Projection
NAD1983 Datum
Map by Monica Przyperhart
October, 2017

0 0.5 1 2 Miles

0 0.5 1 2 Kilometers

Map 7 State and Regional Priorities: Vermont Conservation Design

©Dennis Curran–VT Department of Tourism & Marketing

This map broadly outlines the most important regional natural heritage priorities in your community.

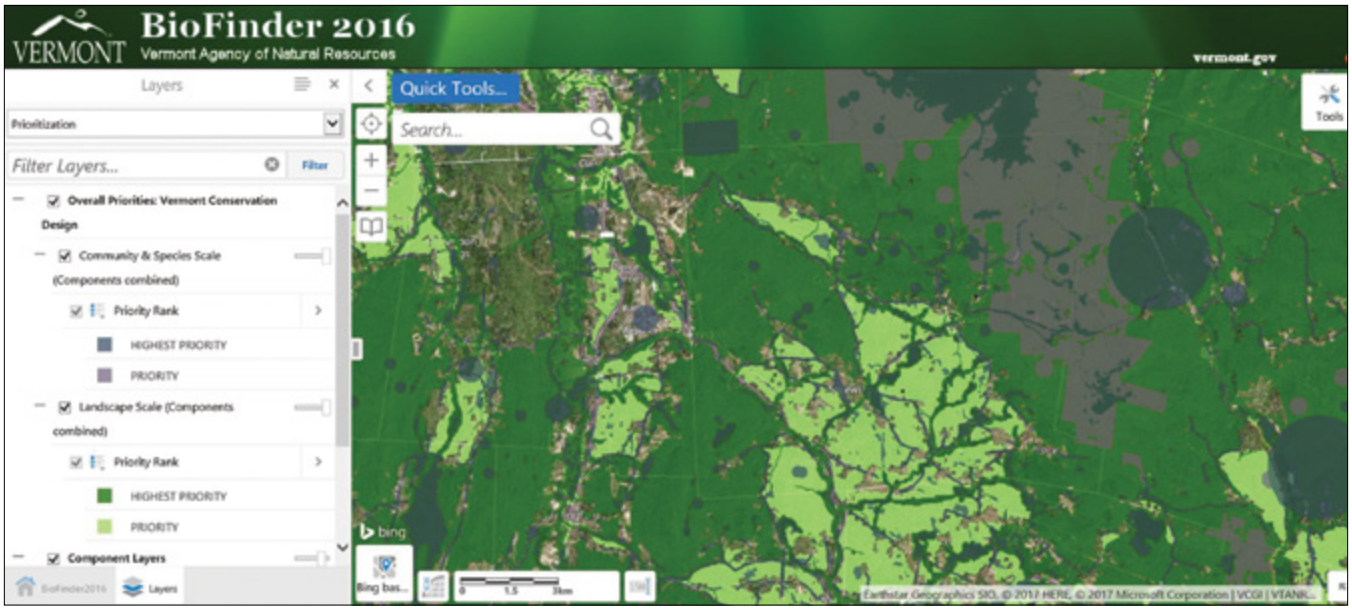
Map Layers (Described Below)	**Base Layers**
Landscape-scale Priorities	
Highest Priority	Roads
Priority	Surface Water
Species and Communities-scale Priorities	Town Boundaries
Highest Priority	
Priority	

In the first six maps, we have been zooming increasingly closer to ground level, eventually identifying very specific ecological features such as deer wintering areas and rare species. Now, we'll zoom back out to see the big picture, incorporating all scales into a single map. Unlike the other maps in this guide, this map does not represent inventory information; instead, it assigns priorities to natural heritage features as we move toward action steps for conservation. A compilation of many ecosystem components, this map identifies the network of Vermont lands and waters most important for supporting ecologically functional ecosystems, natural communities, habitats, and species.

In Part II, we will get into detail about how to use this map to support planning efforts and develop conservation strategies. For now, we insert this map as a bridge between the previous maps, which ask *What's there?* and Part II of this guide, which asks *How can we move from maps and data to conservation actions.*

Map 7 on BioFinder: Prioritization

This map explores the **Prioritization** theme on BioFinder, which will be described in detail in Part II. We recommend viewing this map online, where BioFinder's interactive tools allow for a fuller understanding of the map's priority ranking system.



To load Map 7 on BioFinder: Open the **Prioritization** theme, then check the boxes next to both **Overall Priorities: Vermont Conservation Design** layers: **Community & Species Scale (Components combined)** and **Landscape Scale (Components combined)**.

For additional guidance on using BioFinder, please see Getting Started in the introduction to this guide, or **Tips and Tools** on the BioFinder website.

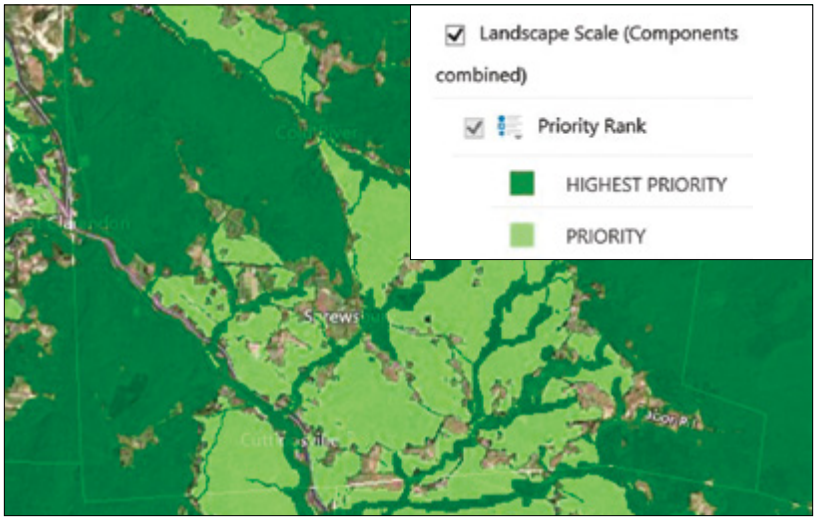
Vermont biologists call this map Vermont Conservation Design, because it looks holistically at ecological function. Instead of identifying and mapping components individually, Vermont Conservation Design identifies the connected network of components that create the basis for most ecological interactions. None of the data represented on this map are new; all have been introduced in previous maps. Here, datasets are combined and prioritized to provide a sense of how they work together to create an ecologically functional landscape. We introduce this concept briefly here; ecological function will be explained in detail in Part II.

The map presents priorities at two scales. "Landscape Scale" priorities form the background of the map and represent broad ecological patterns and processes important across Vermont. We then combine the components critical to maintaining individual species and groups of species into a "Community & Species Scale" dataset. These priorities are just as important for maintaining biodiversity as the broad, landscape patterns but are much more concrete, depicted as individual occurrences rather than broad patterns.

Landscape Priorities

What are Landscape Priorities?

The two-toned, green background of this map depicts network of ecological priorities at the landscape scale. In a dramatic play, you can think of this map as outlining the stage on which most ecological interactions occur, and as such they cover 68 percent of Vermont's land area. Because all green areas work together as a network, all contribute significantly to overall ecological function. The dark green areas are the most important.



This layer combines the following datasets, described in detail below:

- Interior Forest Blocks
- Connectivity Blocks
- Riparian Wildlife Connectivity
- Surface Water and Riparian Areas
- Physical Landscape Diversity

Some of these you will recognize from the data presented in previous inventory maps. Others use the same basic data already presented, now prioritized according to particular selection criteria. All datasets have been divided into two classes: "highest priority" and "priority."

Landscape Priorities: Significance

The datasets included in this map were specifically chosen because as a group, maintaining or enhancing these features is likely to conserve the majority of Vermont's species and natural communities, even as the climate changes. Put another way, these maps outline the areas of land that need to remain healthy and intact if we want to provide plants, animals, and natural resources the best chance of survival over time. On the other hand, a decline in the quality of these lands is likely to correspond to a decline in the state's ecological function.

Landscape Priorities: Map Interpretation

To create this map, Vermont Fish & Wildlife Department biologists assigned priority or highest priority status to interior forest blocks, connectivity blocks, riparian corridors, surface waters, and physical landscapes, taking into account the regional context in which each component was found. In other words, a smaller interior forest block in the Champlain Valley may qualify as highest priority, because large forest blocks are less common in the Champlain Valley than in the Green Mountains or Northeast Kingdom. In these areas, large blocks are more plentiful, and an interior forest block of the same size may not be considered highest priority. Each data layer was considered within the context of its own region. To learn more about how priorities were assigned for each component layer, visit the BioFinder website.

Because a fully functional landscape includes all of the components mapped, the map displayed amasses all priority areas on any of the layers. Lands mapped on any component map as highest priority are given highest priority status on the compilation. Land mapped as priority is likewise assigned priority status, unless covered by another component's highest priority ranking. While the printed map shows only the compilation, you can see which individual components are "priority" or "highest priority" on BioFinder.

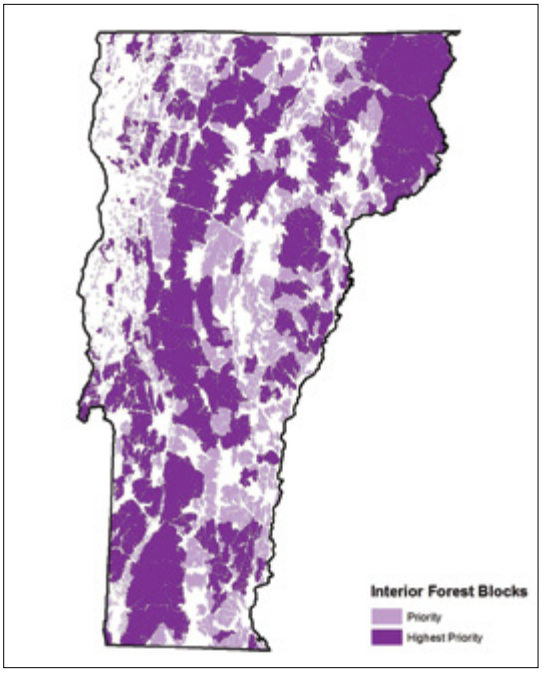
The datasets include:

Interior Forest Blocks

This is a subset of the Habitat Blocks layer that we described in Maps 3 and 6. This selection includes those blocks that are most important for maintaining interior forest, separated into highest priority and priority status.

Interior forests are those large enough to support the highest diversity of ecological processes, such as predator-prey interactions and natural disturbance regimes. They help to maintain air and water quality, and they promote flood resilience. They support numerous plant and animal species, including some that occur only in these large forest blocks, away from edges or development. Interior forest is also essential for wide-ranging mammals, which need sufficient habitat to support their daily and seasonal needs.

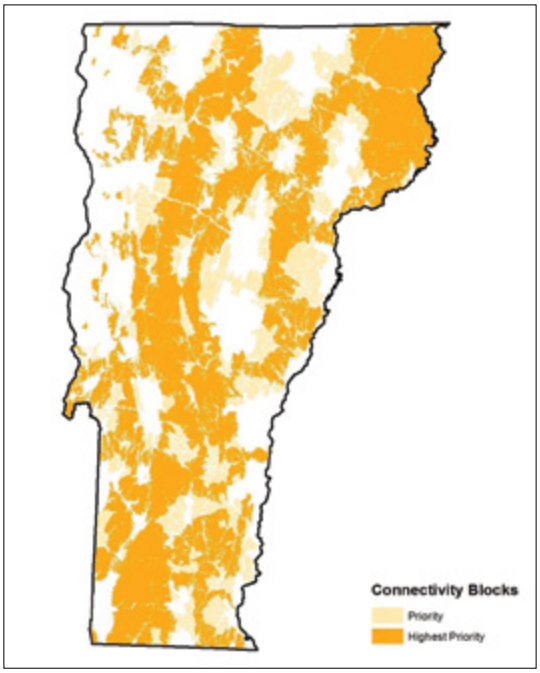
Highest priority was assigned to the largest or highest quality habitat blocks within each Vermont biophysical region. This means that smaller habitat blocks were included in the Champlain Valley where large forests are relatively scarce than in the Green Mountains or Northeast Kingdom. Highest priority represents the best remaining interior forest examples within a regional context. Priority includes all other blocks that were assessed to be large enough or of high enough quality to perform the functions of interior forest.



Connectivity Blocks

Landscape connectivity is the degree to which blocks of suitable habitat are connected to each other (Noss and Cooperrider 1994). While Interior Forest Blocks generally provide the majority of suitable habitat at the landscape scale, Connectivity Blocks include both these large blocks and the necessary smaller blocks that together create a linked network. The proximity of one forest block to another is the major criterion for determining connectivity, but the presence of riparian areas and the character of intervening roads, agricultural lands, or development are also important.

Together, this network enables wide-ranging animals to move across their range, allows animals



to find suitable habitat for their daily and annual life needs, provides the habitat in which young animals can disperse, provides plant and animal species places to colonize new and appropriate habitat as climate and land uses change, and contributes to ecological processes, especially genetic exchange between populations.

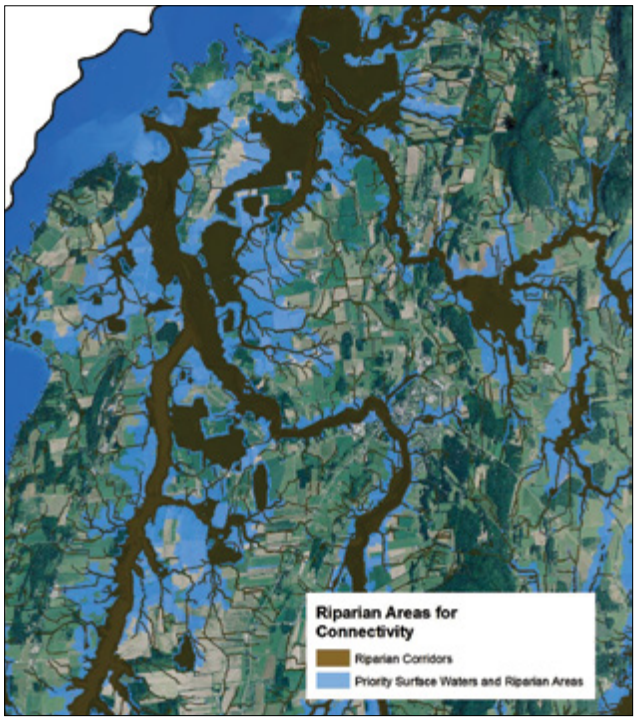
Like Interior Forest Blocks above, this information is a subset of the Habitat Blocks layers presented in Maps 3 and 6, and Connectivity Blocks have similarly been divided into highest priority and priority groups. While Interior Forest Blocks don't necessarily connect, highest priority Connectivity Blocks create a terrestrial network of forests that link all biophysical regions within the state. This incorporates the spines of the state's major mountain ranges, connections to unfragmented habitat outside Vermont, and interior forest blocks within fragmented biophysical regions that contain abundant rare species and significant natural communities. Small forest blocks are included as highest priority areas at pinch-points in the network that are critical for the continuation of the network. Priority areas provide a supporting buffer around the highest priority backbone and add alternative pathways for connectivity.

Riparian Wildlife Connectivity

This data matches the layer of the same name presented in Map 3. On Map 7, the entire layer is considered highest priority, due to the high diversity of species that use these areas. To reiterate, riparian wildlife connectivity refers to the connected network of riparian areas in which natural vegetation occurs, providing natural cover for wildlife movement and plant migration. This network extends state-wide and beyond. The combination of Riparian Areas for Connectivity and Connectivity Blocks provide the best available paths for linking wildlife habitat across the landscape, especially in highly fragmented areas of Vermont.

Surface Water and Riparian Areas

This information covers the same geographic area as the data called Surface Waters and Riparian Areas presented in Map 5. Here, however, the layers have been prioritized into highest priority and priority. Highest priority was given to all waterways themselves, including lakes, ponds, rivers, streams, and the valley bottoms in which they occur. The highest priority



area also includes a buffer around each water body occurring on undeveloped land, with larger buffers for larger water bodies. Priority status was given to those riparian areas occurring in developed areas, even those for which some natural processes are currently limited in function. They are included here to be considered for conservation efforts or management that enhances ecosystem function.

There is substantial overlap between the areas covered by this layer and by Riparian Wildlife Connectivity. When used together, this layer appears as a buffer around the riparian corridors, outlining the habitats and land area needed to support those critical connections.

Physical Landscape Diversity

These data are the same as in the layer of the same name presented in Map 4. On Map 7, the entire layer is considered highest priority. When viewing this map in BioFinder, you can determine whether a feature is rare, representative, or responsibility in addition to identifying the physical nature of the feature. To reiterate, these are the parts of the landscape that resist change—the hills and valleys, the underlying bedrock, and the deposits left behind by glaciers. While all are mapped as highest priority on these maps, a biologist may be able to provide additional information about how to incorporate physical landscape diversity into other priorities.

Landscape Priorities: Planning Considerations

Part II of this guide offers a detailed, step-by-step process for prioritizing natural resources information and bringing it into your planning framework. Here is a quick summary of some of the most important planning considerations:

- **Interior Forest Blocks:** Avoid fragmentation. Limited development on the margins of large forest blocks may not have significant adverse effects if it does not reduce connectivity between blocks and does not encroach on the block's interior. Forest management that maintains age structure is compatible with maintaining interior forest conditions.
- **Connectivity Blocks:** Avoid fragmentation. Maintain forest cover and limit development along the margins where blocks border one another, to allow for movement of plants and animals throughout the network.
- **Riparian Wildlife Connectivity:** Maintain a naturally vegetated area around the waterway. This may vary from 50 feet on each side of small streams to 300 feet on each side or larger rivers. Consider restoration of areas that are currently impacted.
- **Surface Water and Riparian Areas:** Maintain or restore natural vegetation in an area wide enough to maintain water quality, stabilize shorelines, provide shade, and maintain connectivity.
- **Physical Landscape Diversity:** Where possible, maintain or restore natural vegetation and limit development on rare and responsibility physical landscapes. Forest management is compatible, so long as forest structure is maintained. Rare, responsibility, and representative physical landscapes can also be used as a prioritization tool to strengthen the importance of other features.

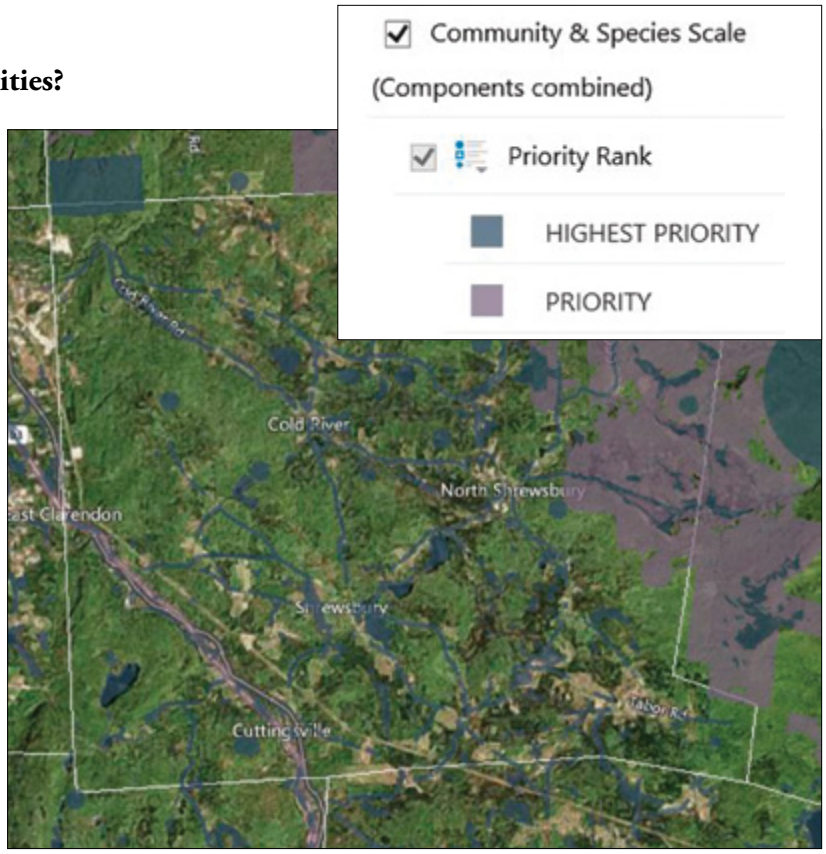
Landscape Connectivity: The Big Picture

To capture the complete regional network of connected lands, you can view Connectivity Blocks, Riparian Connectivity, and Wildlife Road Crossings together. To see local networks, you may also want to include Interior Forest Blocks.

Community and Species Priorities

What are Community and Species Priorities?

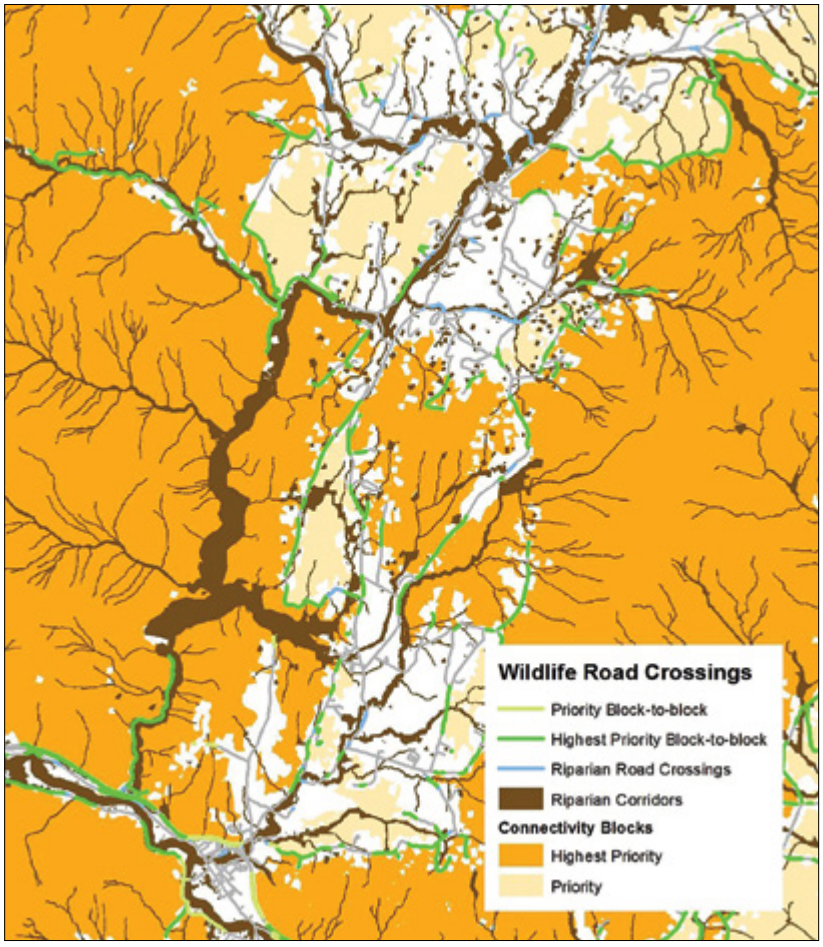
In the foreground of Map 7, in two shades of purple, are areas representing specific features on the landscape rather than the broad ecological patterns depicted in green. These are what we call "Species and Community Scale Priorities," and they are the lands and waters critical for maintaining individual species or groups of species identified as having a conservation need. In examining the areas highlighted, you may recognize outlines from Maps 3, 5 and 6; all data displayed here were also presented on one of those maps. Here, data have been prioritized, allowing a viewer to identify features as "priority" or "highest priority" according to a state ranking system.



The datasets prioritized here include:

- Wildlife Crossings
- Representative Lakes
- Exemplary Surface Waters
- Vernal Pools
- Wetlands
- Rare Species
- Uncommon Species
- Rare Natural Communities
- Uncommon Natural Communities
- Common (Representative) Natural Communities
- Grasslands and Shrublands
- Mast Stands

Just as with landscape-scale priorities, these data have been divided between highest priority and priority.



Species and Community Priorities: Significance

The datasets included in this map are considered highly important for maintaining state and regional biodiversity. Of course, you may have information on other local important features, such as critical bat habitat, clayplain forest, turtle habitat, etc.—and many such datasets also contribute to local biodiversity. Included here are components that constitute priorities throughout the state. This list and

the locations covered are a terrific place to start; you can then add local data if it is available.

Species and Community Priorities: Map Interpretation

To create this map, Vermont Fish & Wildlife Department biologists assigned "priority" or "highest priority" status to wildlife crossings, surface waters, vernal pools, wetlands, rare and uncommon species, significant natural communities, grasslands, shrublands, and mast stands. In assigning this status, they took into account the regional context in which the element was found, meaning that an uncommon natural community of the same size and condition may have been treated differently in the Champlain Valley and the Northeast Kingdom. To learn more about how priorities were assigned for each component layer, visit the BioFinder website.

As you interact with this map, please remember that all data were collected for use at the state level. Some of these layers contain omissions, and these omissions may be critical when translating data into implementation measures. Wherever possible, the collection of field inventory information will enhance a community's understanding of these resources.

Species and Community Priorities: Planning Considerations

Please see planning considerations presented alongside individual datasets in Maps 3-6. In general, priorities at the species and community scales are no more or less important than those at the landscape scale, but they tend to be smaller, take up less space, and are therefore more vulnerable. Resources mapped as priorities at this scale are often incompatible with development or intensive land use.

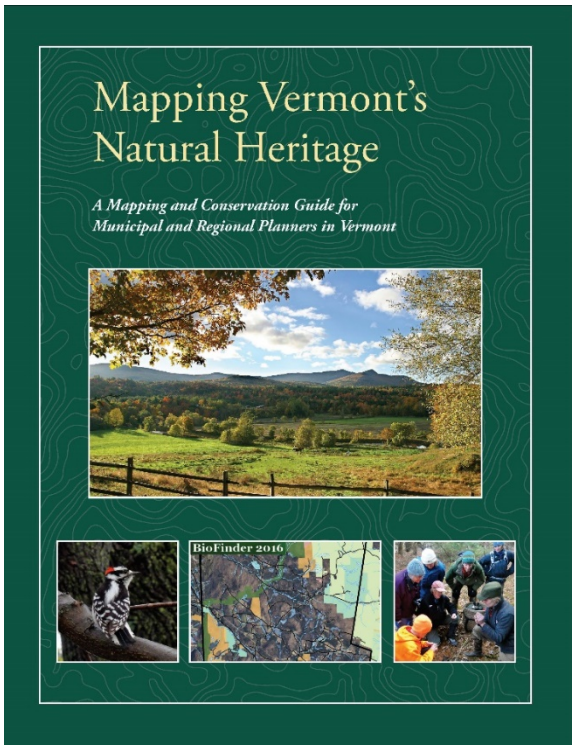
Building on What You Have

Across Vermont, many communities have already identified areas as ecologically important, and they may differ in terminology or coverage than those put forth in this guide. In most communities, it will be worth comparing your maps to these, but it will likely make sense to build on what you have rather than to start over. If you would like assistance determining next steps, Vermont Fish & Wildlife Department's Community Wildlife Program may be able to help you.

©Jim Eaton–VT Department of Tourism & Marketing

Mapping Vermont's Natural Heritage

This is one chapter of a larger publication called *Mapping Vermont's Natural Heritage: A Mapping and Conservation Guide for Municipal and Regional Planners in Vermont*. Please visit https://anr.vermont.gov/node/986 for additional information or to see the entire guide.



Authors:
Monica Przyperhart, Fish & Wildlife Specialist
Jens Hawkins-Hilke, Conservation Planner
John M. Austin, Wildlife Biologist

———

Published by Vermont Fish & Wildlife Department, Agency of Natural Resources

Printed in the United States of America 5 4 3 2 1
ISBN: 978-0-9772517-4-2
Check www.vtfishandwildlife.com for updates
Produced by Lilla Stutz-Lumbra, Vermont Fish & Wildlife Department
Printed by Leahy Press, Inc., Montpelier, Vermont
Cover Photos: (large image) Dennis Curran - VT Department of Tourism and Marketing
(small images) Monica Przyperhart