PLANNING: A Key Step Towards Protecting Forest and Wildlife Resources

ACT 171 GUIDANCE

VERMONT
AGENCY OF NATURAL RESOURCES

ACKNOWLEDGMENTS

AGENCY OF NATURAL RESOURCES

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ACT 171 AND PLANNING IN VERMONT

WHAT IS ACT 171

Act 171 amended Vermont Planning Statutes to encourage and allow municipalities to address protection of forest blocks and habitat connectors, while also supporting the local forest products industry. After January 1, 2018, municipalities seeking to have their plans approved by their Regional Planning Commission must include additional information on the future land use map and language that identifies state, regional or locally significant forest blocks and habitat connectors. The plan may also include specific policies on how the community will take steps to reduce forest fragmentation, enhance forest health, and support essential ecological functions.

THE ORIGINS OF ACT 171

Municipal and Regional Planning considers how natural resources, current land use patterns, infrastructure, and town values shape the future of a town or region. Forests and wildlife ranges extend beyond parcel and political boundaries, so planners must consider how state, regional, and local actions and decisions affect these important resources and promote their longevity and productivity. Towns and regions now have the clear authority to plan for forests blocks and habitat connectors, creating more coordinated management of these resources at all scales.

Most communities across the state have experience with the municipal planning process and so will note that Act 171 shines a light on planning for a certain subset of natural resource features. This document is an appendix to the Agency of Commerce and Community Development (ACCD) Planning Manual[1] and uses the Manual's five-step process to help communities focus specifically on planning for forest and wildlife resources in Vermont. Act 171 was signed into law in June of 2016, amending Vermont's planning statutes to allow regions and municipalities to plan for management of forest and wildlife resources. As part of the signing statement[2], then Governor Shumlin directed the Agency of Natural Resources (ANR) to develop guidance for municipalities and regional planning commissions looking to implement the new authority. The changes to Vermont's Planning Statutes resulting from this directive are identified below. For greater context about planning in Vermont and how to start planning in your community, review ACCD's Planning Manual or contact your Regional Planning Commission.

This document is geared towards regional and local Planning Commissioners, Conservation Commissioners, local legislators, policy makers, or anyone interested in creating goals, policies, and actions to protect forest and wildlife resources in their community. Planners can incorporate sample text from this document into town or regional plans or enhance it with local or regional specifics. Additional mapping resources, links to literature, and examples, are listed at the end of the document.

CHAPTER 117 – THE AUTHORITY TO PLAN

The authority to plan comes from the Legislature through Title 24, Chapter 117 of the Vermont Statutes Annotated ("Chapter 117" for short). Chapter 117 contains the State's Planning Goals, definitions, and requirements for all

[1]http://accd.vermont.gov/community-development/town-future/municipal-planning-manual

[2]http://fpr.vermont.gov/sites/fpr/files/Forest_and_Forestry/Vermont_Forests/Library/Governor%27s%20Signing%20Memo%202016%2006%2007.pdf

things related to regional and municipal planning such as required elements of the plans, functions of the commissions, and implementation of plans.

DEFINITIONS - 24 V.S.A. § 4303

To better understand the natural resource protections provided for in Act 171, it is important to start with the new forest planning definitions.

- **FOREST BLOCK:** a contiguous area of forest in any stage of succession and not currently developed for non-forest use. A forest block may include recreational trails, wetlands, or other natural features that do not themselves possess tree cover, and uses exempt from regulation under subsection 4413(d) of this title.

- **FOREST FRAGMENTATION:** the division or conversion of a forest block by land development other than by a recreational trail or use exempt from regulation under subsection 4413(d) of this title.

- **HABITAT CONNECTOR:** land or water, or both, that links patches of wildlife habitat within a landscape, allowing the movement, migration, and dispersal of animals and plants and the functioning of ecological processes. A habitat connector may include recreational trails and uses exempt from regulation under subsection 4413(d) of this title. In a plan or other document issued pursuant to this chapter, a municipality or regional plan commission may use the phrase "wildlife corridor" in lieu of "habitat connector."

- **RECREATIONAL TRAIL:** a corridor that is not paved and that is used for hiking, walking, bicycling, cross-country skiing, snowmobiling, all-terrain vehicle riding, horseback riding, and other similar recreational activity.

STATE PLANNING GOALS - 24 V.S.A. §4302

These statutes guide the local planning process and related policies in addition to regional and state planning efforts. Municipal plans need to be consistent with the State Planning Goals in order to be approved by the Regional Planning Commission. Vermont's goal of maintaining and improving natural resources now specifically calls for management to maintain and improve forest blocks and habitat connectors. This added goal also supports the existing goal of encouraging forest industries. Relevant sections of 24 V.S.A. §4303[3] are below.

RELEVANT AND **NEW** LANGUAGE

(6) To maintain and improve the quality of air, water, wildlife, forests, and other land resources

(C) Vermont's forestlands should be managed so as to maintain and improve forest blocks and habitat connectors.

(9) To encourage and strengthen agricultural and forest industries.

(A) Strategies to protect long-term viability of agricultural and forestlands should be encouraged and should include maintaining low overall density.

[3] https://legislature.vermont.gov/statutes/section/24/117/04302

(B) The manufacture and marketing of value-added agricultural and forest products should be encouraged.

(C) The use of locally-grown food products should be encouraged.

(D) Sound forest and agricultural management practices should be encouraged.

(E) Public investment should be planned so as to minimize development pressure on agricultural and forest land.

REGIONAL PLANS - 24 V.S.A. §4348

Vermont's 11 regional planning commissions are required by statute to develop plans (24 V.S.A. §4348) that are consistent with state planning goals. Regional Plans adopted after January 1, 2018 must now include a map and statement of current and future uses regarding forest blocks and habitat connectors. To address the State's new goal of maintaining and improving forest blocks and habitat connectors, Regional Plans may also include policies that help maintain the functions and values of these priority areas. Relevant sections of 24 V.S.A. §4348a(a)(2)[4] are below.

RELEVANT AND **NEW** LANGUAGE

(2) A land use element, which shall consist of a map and statement of present and prospective land uses, that:

(A) Indicates those areas proposed for forests, recreation, agriculture (using the agricultural lands identification process established in 6 V.S.A. §8), residence, commerce, industry, public, and semi-public uses, open spaces, areas reserved for flood plain, and areas identified by the State, regional planning commissions, or municipalities that require special consideration for aquifer protection; for wetland protection**; for the maintenance of forest blocks, wildlife habitat, and habitat connectors;** or for other conservation purposes.

(F) Indicates those areas that are important as forest blocks and habitat connectors and plans for land development in those areas to minimize forest fragmentation and promote the health, viability, and ecological function of forests. A plan may include specific policies to encourage the active management of those areas for wildlife habitat, water quality, timber production, recreation, or other values or functions identified by the regional planning commission.

MUNICIPAL PLANS - 24 V.S.A. §4382

For municipalities that choose to plan and have plans approved by the Regional Planning Commission, Chapter 117, (24 V.S.A. §4382), requires the plan include 12 elements, many of which already directly or indirectly address natural resources. Relevant sections of 24 V.S.A. §4382(2)[5] are below.

RELEVANT AND **NEW** LANGUAGE

(2) A land use plan, which shall consist of a map and statement of present and prospective land uses, that:

[4] http://legislature.vermont.gov/statutes/section/24/117/04348a
[5] http://legislature.vermont.gov/statutes/section/24/117/04382

(A) Indicates those areas proposed for forests, recreation, agriculture (using the agricultural lands identification process established in 6 V.S.A. §8), residence, commerce, industry, public, and semi-public uses, and open spaces, areas reserved for flood plain, and areas identified by the State, the regional planning commission, or the municipality that require special consideration for aquifer protection; for wetland protection; **for the maintenance of forest blocks, wildlife habitat, and habitat connectors;** or for other conservation purposes.

(D) Indicates those areas that are important as forest blocks and habitat connectors and plans for land development in those areas to minimize forest fragmentation and promote the health, viability, and ecological function of forests. A plan may include specific policies to encourage the active management of those areas for wildlife habitat, water quality, timber production, recreation, or other values or functions identified by the municipality.

This guidance will help you incorporate maps, goals, policies and actions which address forest blocks and habitat connectors into your town or regional plan. There may be other wildlife, forest, or natural resources for your town to evaluate and consider that are not included in the Act 171 requirements. See the ACCD Planning Manual or Conserving Vermont's Natural Heritage to learn more about natural resource planning for your community.

IMPLEMENTING ACT 171 REQUIREMENTS

This document provides a suggested process, which is built on the ACCD Planning Manual's five-step process, to help implement the requirements of Act 171. This five-step process includes:

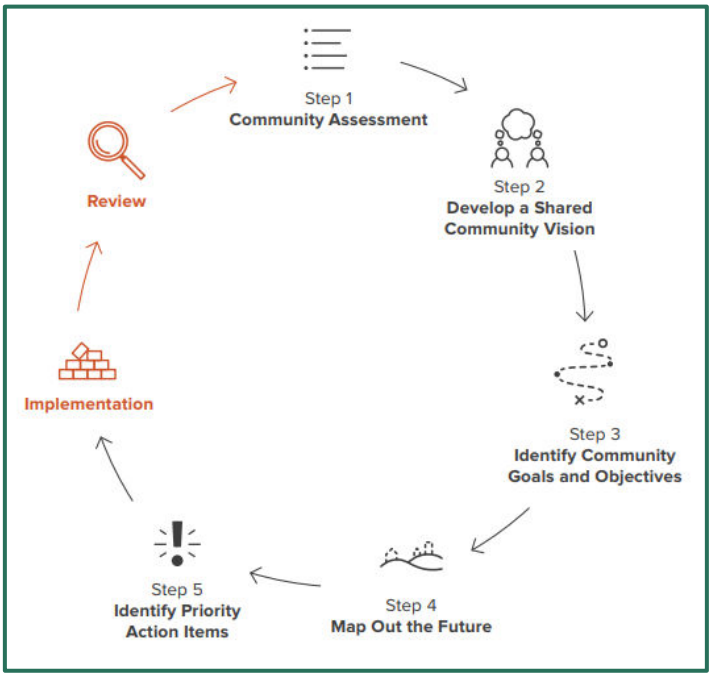
STEP 1
ASSESSMENT OF FOREST BLOCKS AND HABITAT CONNECTORS IN MUNICIPAL AND REGIONAL PLANS

STEP 2
IDENTIFYING COMMUNITY VALUES AND ENGAGING THE PUBLIC

STEP 3
GOALS AND POLICIES

STEP 4
CREATING YOUR FUTURE LAND USE MAP AND PRIORITIES

STEP 5
IMPLEMENTATION AND ACTION – MAKE IT HAPPEN



Picture 1: Image from ACCD Planning Manual

STEP 1: ASSESSMENT OF FOREST BLOCKS AND HABITAT CONNECTORS IN MUNICIPAL AND REGIONAL PLANS

An initial assessment provides an opportunity to understand what natural resources are present, their conditions, and the trends – including opportunities and threats – affecting them. Assessment involves both *inventory* – the collection, presentation, and analysis of data – as well as *interpretation* of the meaning of the data accomplished by looking for trends and asking what they mean for the community. See pages 22-28 of the ACCD Planning Manual.

The assessment process already occurs as part of town or regional plan update (or creation) to identify trends in demographic data or shifts in resources. This guidance will specifically address how to inventory and assess forest blocks and habitat connectors.

UNDERSTANDING THE CONDITION OF FORESTS

Municipal and regional plan elements (or chapters) generally describe the condition of a resource in a community – what is present, how it changed over the years, and what issues, threats, or opportunities may affect it. This sets the foundation and context for the policies and recommendations that follow. The text below describes the general conditions of forests in Vermont and can serve as a starting point for the description of the forest resources in your community. The following text can be used when updating a town or regional plan – for example, within the plan's natural resources or future land use section – and can be adapted or supplemented with specific town information. This guidance will explain how to integrate this text into the plan later.

A SHORT HISTORY OF FORESTS IN VERMONT

OVERVIEW/SAMPLE PLAN TEXT

Always review example text to make sure it applies to individual landscapes, local resources, and town values.

Although forests cover 74% of the state today, Vermont wasn't always the "Green Mountain" state. At the time of European settlement, forests covered almost all of Vermont[6], but wide-scale clearing begun in the early 1800s significantly changed the landscape to an agricultural haven. Clearing reached its peak in the mid- to late-1800s and reduced forest cover to about 35% of the state. Over the last century, westward expansion, the decline of the sheep industry, and reduced timber harvesting have contributed to the steady regrowth of Vermont's forests.[7,8] Today's forests are the result of significant reforestation.

At present, reforestation is slowing as commercial and residential development increases. For the first time in a century, Vermont is experiencing an overall loss of forest cover. While it is hard to pin down the exact amount of acreage, a US Forest Service report indicates Vermont may have lost up to 69,000 acres of forest land between 2010 to 2015.

A look at the larger pattern shows that the primary driver of forest fragmentation is rural sprawl. This type of fragmentation occurs incrementally, beginning with cleared swaths or pockets within an otherwise unbroken expanse of tree cover. Over time, new roads, homes, businesses, driveways, and yards intrude into connected forest acres. Eventually, the contiguous forest is reduced to scattered and disconnected forest islands surrounded by land uses that threaten the health, function, and value of these forests as animal and plant habitat. Furthermore, as forest fragments become ever smaller, practicing forestry becomes operationally impractical, economically nonviable, and culturally unacceptable. In turn, we lose the corresponding and significant contributions that forestry makes to our own economy and culture.

[6] Foster, D. R. et al. Wildlands and Woodlands: A Vision for the New England Landscape. (Harvard Forest, Harvard University, Petersham, Massachusetts, 2010)

[7] Department of Forests Parks and Recreation. Vermont Forest Resources Plan. 167 (Vermont Agency of Natural Resources, 2010)

[8] Foster, D. R. et al. Wildlands and Woodlands: A Vision for the New England Landscape. (Harvard Forest, Harvard University, Petersham, Massachusetts, 2010)

THE BENEFITS OF FOREST BLOCKS & HABITAT CONNECTORS

OVERVIEW/SAMPLE PLAN TEXT

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> Forests provide Vermonters with enormous benefits and a range of critical goods and services. Vermonters rely on healthy forests across the state to maintain a thriving forest economy and functioning natural systems that influence our quality of life. Forests benefits include water supply and water quality protection, flood control and protection, wildlife habitat and biodiversity, clean air, carbon sequestration, outdoor recreation, and scenic beauty. Forests also provide cultural, spiritual, and intellectual enrichment. All of these benefits are known as ecosystem services because of the value they provide. Without forests, these services would need to be replaced and at a great expense.

The following table identifies benefits and ecosystem services of forest blocks and habitat connectors. If you use the following table in your plan, it can be customized with community specific information – for example, information about unique habitats or natural communities, forest-based recreational benefits, important views defined by the forest, and local businesses based on forest-products or services.

BENEFITS	FOREST BLOCKS & HABITAT CONNECTORS
Forest Products Economy	The harvest and manufacturing of forest products contributes $1.4 billion in annual economic output to Vermont's economy.
Economics of Scenery, Fall Foliage, Tourism, and Recreation	A large percentage of recreation and tourism activities are vitally linked to the forest. Money flowing in to Vermont's economy can be attributed directly or indirectly to forest based recreation and tourism.
Flood Protection	Healthy forests play a vital role in absorbing water and moderating its movement across the landscape. Although forests cannot prevent large floods, they do temper flood frequency, intensity, and extent, which in turn significantly reduces the loss of life and damage to property cause by serious flooding.
Clean Water Supply	Forests provide clean water for drinking, recreation, and habitat. This contribution reduces, and in some cases eliminates, the need for expenditures related to manmade infrastructure designed to ensure clean water.
Clean Air	Forests intercept many air pollutants and store them temporarily on leaves and ultimately on the forest floor and within soil. Fine particulate air pollution has serious human health effects, including premature mortality, pulmonary inflammation, accelerated arteriosclerosis, and altered cardiac functions.

Wildlife Habitat	Forests provide the habitat for a great number of wildlife species. Vermonters value wildlife and recognize how wildlife uses and shapes our environment. Wildlife provides other benefits that are rarely recognized by the general public such as pest control, seed dispersal, pollination and nutrient cycling. These contributions and others are critical for proper ecosystem functioning and sustainable delivery of ecosystem services from our forests.
Biological Diversity	Forests provide crucial habitat for healthy and sustainable populations of native plants and animals.
Climate Change Mitigation	Forests pull carbon from the atmosphere and store it in the soil, trees and other vegetation. This process of carbon sequestration regulates atmospheric carbon, thereby moderating the rate of climate change and its associated impacts.
Public Health	Forests improve human health and contribute to Vermont's unique and exceptional quality of life. See also benefits under clean water, clean air, and climate change.
Cultural Heritage	Vermonters value the working landscape and recreational heritage.
For more information on the benefits of forests and habitat connectors see the *2015 Vermont Forest Fragmentation* Report at vtforest.com.	

THREATS: FOREST LOSS, FRAGMENTATION & PARCELIZATION

OVERVIEW/SAMPLE PLAN TEXT

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The loss of forests and their benefits reduces the overall sustainability and resiliency of communities both near and far from the forest. In the short term, a forest loss results in a reduction of economic goods and services, wildlife habitat, and flood mitigation capabilities. In the long term, carbon absorption and climate change mitigation benefits are lost. These short and long-term impacts can also have fiscal implications on towns through increased costs associated with infrastructure, water quality, or emergency services previously supplied by forests.

- FOREST LAND IS BEING LOST. After a century of forest regeneration, Vermont is now losing forest cover. While some of this loss comes from conversion of forests to agriculture and commercial uses, the main cause is scattered residential development. Vermonters gain enjoyment from living in rural areas but the benefits of forests disappear as trees are removed for development. Communities need to balance the importance of forests with other human values.

- INCREMENTAL DEVELOPMENT IS BREAKING UP FORESTS. More difficult to see, but just as harmful, are the incremental impacts of development. Fragmentation occurs when development physically breaks up continuous forest and often happens during low-density, uncoordinated

residential development. This pattern of development compromises many of the ecological and economic benefits of intact forests, including native fish and wildlife habitat, forest health, water quality, outdoor recreation, and forest management. Much of this type of development never triggers Act 250 review.

- ❖ SUBDIVISION IS MAKING FOREST MANAGEMENT DIFFICULT. While large areas of the state were once made up of large parcels owned by a single family or company, properties are now often split and sold to many different buyers. Parcelization impacts forests, even when the land is not converted for development. Overall, economically and environmentally sustainable forest management is very difficult on parcels smaller than 50 acres. Effective forest land management plans are more difficult to achieve when multiple small-acreage landowners are involved, sometimes compromising large-scale forest functions such as wildlife connectivity and flood mitigation. Forestry operations are especially difficult in areas with many landowners of small acreage. Within Vermont, parcelization trends continue to rise. Twenty-five years ago, 19,000 family forest landowners owned parcels up to 10 acres in size. By 2012, there were 43,000 family forest landowners. Data from Vermont Natural Resources Council study on parcelization and fragmentation trends in Vermont can be found at www.vnrc.org/subdivisionreport/.

MAPPING FOREST BLOCKS AND HABITAT CONNECTORS

One of the first steps in performing an assessment for the Act 171 requirements involves the identification and mapping of forest blocks and habitat connectors. If your community chooses to have the town plan approved by the Regional Planning Commission, the plan will need to *indicate those areas that are important as forest blocks and habitat connectors*. ANR's BioFinder is an online mapping tool that displays data sets of statewide and locally significant forest blocks and habitat connectors. A detailed explanation of how to use BioFinder to identify data required to address Act 171 can be found in Appendix A: HOw TO USe Biofinder TO CREATE MAPS FOR ACT 171. It may also be very beneficial to contact the Fish and Wildlife Department's Community Wildlife Program[9] to assist your town or region with the mapping that is required under Act 171.

To comply with Act 171 requirements, identified and located forest block and habitat connector resources need to be included on the future land use map or equivalent (this process will be explained later in the guidance). The identified forest blocks and habitat connectors could also be included on a natural resources map or a map of areas for special consideration within the municipal or regional plan to aid in the planning and prioritization process.

The following language describes what are forest blocks and habitat connectors, the associated mapping process, and how forest blocks and habitat connectors work together. The language could also be used as sample text to insert into a municipal or regional plan to describe any mapping that was undertaken.

[9] www.vtfishandwildlife.com/cms/one.aspx?pageId=132648

FOREST BLOCKS, THEIR PATTERNS, AND MAPPING

MAPPING FOREST BLOCKS

All forest blocks larger than 20 acres are mapped statewide and can be found in BioFinder, a database and mapping tool developed by the Agency of Natural Resources and partners to support stewardship and conservation. These particular forest blocks, all 4,052, are called as "habitat blocks." These can be found under the "Inventory theme – Map 3." Highest priority interior forest and connectivity blocks are two different subsets of the of the 4,502 habitat blocks and are the default view in BioFinder when it is first loaded. They are considered to be the highest priority because they provide interior or core forest conditions (Forest Blocks) or for their connectivity function (Connectivity Blocks). This subset of blocks is critically important to create enough connectivity among populations of single species, allowing for genetic exchange between wildlife populations.

Mapped high priority and priority forest blocks are known to contain existing trails and class IV roads. These features are not excluded in the mapping process. Class IV 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 mapping and regional connectivity and therefore were not considered as a break between blocks. Development such as busier roads (class 3, primary, & highway), buildings, parking areas, lawns, gravel pits, and lands in most agricultural cover classes (including cultivated crops, grasslands and pasture) are excluded from the blocks as they are not considered natural cover.

FOREST BLOCKS AND MAPPING

The best way to start identifying these areas in your community is to look at the following two data layers in BioFinder - biofinder.vermont.gov:

- Highest Priority **INTERIOR FOREST** Blocks
- Highest Priority **CONNECTIVITY** Blocks

Together, the data layers represent a connected network of forest that provides high-quality interior forest habitat. Additional information and maps can be found in BioFinder.

OVERVIEW/SAMPLE PLAN TEXT

Always review example text to make sure it applies to individual landscapes, local resources, and town values.

Identifying a forest is more complex than simply identifying the locations of trees. A forest is an ecosystem with interacting assemblage of plants, animals, and the physical landscape. Forest blocks are areas of contiguous forest and other natural habitats (wetlands, old meadows etc.) that are unfragmented by roads, development, or agriculture. These areas provide significant interior forest habitat, ecological connectivity, or physical landscape diversity. Forest blocks can range in size and are identified by the land cover of an area, not bounded by political or parcel boundaries.

Forest blocks are composed of core and edge areas. “Core forest” is described as forest that is more than 100 meters from the non-forest boundary. The “forest edge” is the ring around the core. This edge has different characteristics and serves as habitat for a different suite of species than the forest core. Given the complexity of any landscape and very different ecological conditions across the state, it is difficult to establish a minimum or maximum number of acres to define a functional forest block.

The shape and location of a forest block also affects its ecological importance. A forest block that is highly irregular in shape with a high degree of forest edge may be less functional for some species than a forest block of the same acreage and a regular shape. Furthermore, a forest block that is well connected to other forest blocks functions better than one that is completely isolated. When blocks are close in proximity, animals can use several connected small forest blocks, like stepping stones, to meet their life needs.

Forest pattern addresses the configuration of forest blocks and habitat connectors and the degree to which forest blocks and habitat connectors connect across the landscape or within a particular town. A healthy forest pattern is one in which a town’s largest forest blocks connect to one another via smaller forest blocks and riparian areas. These large blocks also connect to large forest blocks beyond the town boundaries. Ultimately, a healthy forest pattern is a network of contiguous streams and forest blocks that extends across town, interrupted only by a few roads or non-forest land cover.

HABITAT CONNECTORS, THEIR SCALES, AND MAPPING

MAPPING HABITAT CONNECTORS

The 2016 Highest Priority Wildlife Road Crossings dataset in BioFinder provides insight into site-specific connectivity at the local scale.

HABITAT CONNECTORS AND MAPPING

The best way to begin to identify these areas in your community is to look at the following three data layers in BioFinder- biofinder.vermont.gov:

- Highest Priority **CONNECTIVITY** Blocks
- **SURFACE WATERS** and **RIPARIAN AREAS**
- Highest Priority **WILDLIFE ROAD CROSSINGS**

OVERVIEW/SAMPLE PLAN TEXT

Always review example text to make sure it applies to individual landscapes, local resources, and town values.

Habitat connectors refer to land or water that links larger patches of habitat within a landscape to allow for the movement, migration, and dispersal of animals and plants. They can be a forest block, riparian area, or a specific road crossing that wildlife repeatedly use. Examples include small habitat blocks that

serve as stepping stones between core forest, riparian habitat along streams and rivers, strips of forest cover between developed areas, hedgerows, or fencerows. Sizes can range from a fraction of an acre to one or two hundred acres.

Movement of animals from one habitat patch to another is the most common function attributed to habitat connectors. This is true for both wide and small ranged animals. Bobcats and black bears might use connections quite frequently, whereas spotted salamanders might use them only a few nights each spring to move from hibernation sites to breeding pools.

Habitat connectors should be considered at two scales: landscape and local. Landscape scale connectivity is important for connecting populations of wildlife over large areas or within a region. This allows for genetic variability and ensures migration. Examples of a large forest pattern that includes landscape scale forest blocks and habitat connectors are the connections between the Green Mountains of Vermont and the White Mountains of New Hampshire. The habitat connectors between both mountain ranges allow for diverse and abundant wildlife populations that can withstand the effects of disease or other significant impacts. At this large scale, there is some overlap between forest blocks and habitat connectors. Very small forest blocks of minimal habitat or forestry value can function as connecting habitat. These smaller blocks serve an important connectivity role at a large landscape scale.

The network of habitat connectivity at the local scale involves a mix of smaller forest blocks that connect the larger Connectivity Blocks as well as locations where wildlife can successfully cross over (or under) the road. In some cases, fish and wildlife movement associated with specific road crossing areas is seasonal, as evidenced by salamander spawning migrations in early spring. In other cases, movement could be simple happenstance of an animal curious for new food sources on the other side of the road. Many species of wildlife are selective to specific habitat conditions along roads and are faithful to crossing them in the same place as long as those habitat conditions persist.

WORKING TOGETHER: FOREST BLOCKS AND HABITAT CONNECTORS

OVERVIEW/SAMPLE PLAN TEXT

Always review example text to make sure it applies to individual landscapes, local resources, and town values.

The effects of forest fragmentation are minimized when we maintain an ecologically functional landscape. In Vermont, an ecologically functional landscape is one with large areas of connected forest, riparian areas, wildlife habitat, and natural communities. A high degree of diversity and connectivity is needed to be resilient to shifts in ecological processes and to allow species to access required habitat.

The degree of ecological functionality and connectivity varies with landscape condition. Conservation of only narrow threads of trees or shrubs within a developing landscape will not maintain an area's ecological values, biological diversity, or plant and animal habitat needs. However, even narrow tree lines or hedgerows can serve as habitat connectors across short distances for some species, but wider connectors would serve more species and offer more connectivity. Conservation of corridors in conjunction with the maintenance of forest blocks with diverse habitat conditions will assist in supporting ecosystem functions and related public benefits.

An ecologically functional landscape is especially important in the context of climate change. Populations of species are already adjusting their home ranges to adapt to new conditions. Northward migration of some species is occurring in response to warming temperatures, as well as in response to more complex changes in soil moisture and micro-climates. Movement resulting from climate change may also occur in more than one direction. Therefore, the overall network of connected lands and waters made up of forest blocks and habitat connectors in Vermont and throughout the northeast region is instrumental in allowing for migration of both plants and animals as our climate changes.

LOCAL AND REGIONAL INVENTORIES

In addition to data available in BioFinder, some municipalities may already have local information that was collected by a natural resource professional as part of an ecological inventory. These inventories may identify forest blocks (sometimes referred to as contiguous habitat units) or habitat connectors (sometimes referred to as wildlife corridors) that exist in the town. Local inventories are helpful as they often include field-verified data that may be more appropriate for municipal scale planning. In other cases, neighboring communities have collaborated to conduct multi-town inventories that may provide insight into important forest blocks beyond the municipality. In addition, regional plans have natural resources maps, policies, and background information that may be useful for informing municipal work.

These existing inventories and resources, as well as any other regional resources, may be helpful to the Town when conducting an assessment and can help the town in its efforts to identify forest blocks and connectors.

COMPLETING THE ASSESSMENT

Once the mapping process of identifying forest blocks and habitat connectors is complete, the next step is to update and include this information in the natural resources map for the town or region. This will provide the larger context of these areas overlapped with other natural resource features and will be used later to inform the future land use map.

As part of the mapping and assessment process, some towns may find the majority of their land base is part of a forest block or habitat connector. Fear not, as the next steps will help the community with the decision making and prioritization process of how to best develop or conserve these areas based on the ecological resources as well as community values.

After the natural resource map is updated, complete the assessment by analyzing the conditions, opportunities and threats affecting identified forest blocks and habitat connectors. Consider using the language in the sections above as general background on the condition, benefits and threats related to Vermont's forests. Then, identify any additional information about the municipality or region, such as local forest resources, benefits, and values, and locally unique development pressures or conservation opportunities. This assessment can include the following considerations:

- *Are identified forest blocks and habitat connectors in conserved areas?*
- *Are identified forest blocks part of a productive working landscape?*
- *Are identified forest blocks and habitat connectors in areas subject to development or subdivision pressure?*
- *Are there other factors that could impact, positively or negatively, identified forest blocks and habitat connectors (for example, invasive species, water quality issues, potential transfers of land that may affect the viability of the land).*

- *Are there unique opportunities to maintain forest blocks and habitat connectors through local or other initiatives?*
- *Are identified forest blocks and habitat connectors part of a larger regional network?*

To gain a view of the whole picture, it's important to consider resources at both the landscape and local scales when developing the assessment. Once the assessment is completed, update the natural resource and/or land use chapters of the plan with language regarding the condition of forests, the benefits provided by forest blocks and habitat connectors, and the threats facing these areas. Doing this step, begins to provide the foundation for any policy or action steps a community chooses to take.

RESULTS OF THIS STEP

- Updated natural resources map highlighting important forest blocks and habitat connectors.
- Updated natural resources chapter of the municipal or regional plan, incorporating community-specific information about existing conditions, trends, threats, and opportunities.

STEP 2: IDENTIFYING COMMUNITY VALUES AND ENGAGING THE PUBLIC

SEE THE ACCD PLANNING MANUAL'S SECTION "STEP 2, DEVELOP A SHARED COMMUNITY VISION" FOR ADDITIONAL INFORMATION.

Act 171 instructs towns and regional planning commissions to plan for land development in those areas that are identified as statewide, regional, or locally important forest block and habitat connectors that minimizes forest fragmentation and promotes the health, viability, and ecological function of forests. The result of the assessment in Step 1 will be a natural resources map showing locations of these important forest blocks and habitat connectors.

Identifying forest block and habitat connectors on a map is the first step to help shape local choices about how to minimize fragmentation of these resources. The next step is to understand the full range of reasons, or community values, that identify why these areas are important to people in your town. They may be recognized for hunting, logging, recreation, water and air quality, flood protection, and wildlife habitat. Often, multiple values are located in the same place.

The resources on the map are the "what," identifying what is located in or present in a town or region. Community values reflect the "why," or why these resources matter to the people who live there. Identifying specific reasons a community cares about different places makes it easier to

How to identify community values

THERE ARE MANY WAYS TO IDENTIFY COMMUNITY VALUES, INCLUDING:

- Surveys,
- Interviews,
- Suggestion boards in public places,
- Community values mapping, and
- simply asking people!

develop goals for what could and should happen there in the future. A shared goal also makes it easier to identify and prioritize actions for achieving the goals of a town or region.

INVOLVING COMMUNITY TO CREATE A VISION

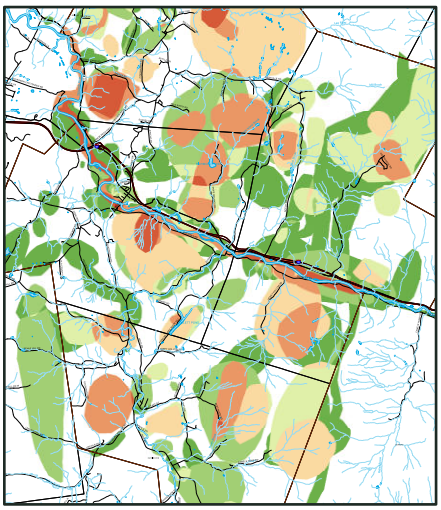
Public participation of community members is essential to develop a town or region's plan's values, goals, and policies. A range of approaches to engage community members, from public meetings to potlucks, is on pages 13-18, and especially pages 17-18 of the ACCD's Planning Manual.

Identifying the location of community values on a map, in addition to the natural resources from Step 1, can be particularly helpful in creating conversation and developing a shared community vision. Once information about community values is collected, it is useful to think about how the areas people value compare to the areas where forest blocks and habitat connectors are located. Do they overlap? Do certain areas that are forest blocks and habitat connectors have multiple community values? Putting community values and natural resources on a map together can make this exercise easier.

The areas that have multiple values – natural resource, forest block, habitat connector, *and* community values – are likely the areas the community may wish to prioritize as locally important forest blocks and habitat connectors. Other areas could still be important for their standalone ecological, social, or economic value, and may still be identified as being important for Act 171 planning purposes.

MAINTAIN, EVOLVE, AND TRANSFORM:

Shared goals are an important starting point for conversation, but creating a vision of a land use future needs to link those goals to specific places. "Mapping places the community wants to (1) maintain, (2) evolve, and (3) transform can be a great way to engage people in this conversation. This approach helps identify the degree of change a community would like to see and focuses attention on where and what needs more detailed discussion, planning, or targeted investment." See the Planning Manual, pp. 42-44 for more information on this approach.



This image shows a "heat map" of overlapping community values in Richmond, Jericho, Bolton, and Huntington. Areas in darker colors contain a more diverse mix of value groups, while lighter colors contain fewer overlapping values. This Community Values Mapping exercise was conducted in 2013 as part of the "Science to Action" project. Later that year a detailed natural resource inventory was conducted, and the resulting inventory maps and values maps were shown together to help the towns develop planning initiatives based on community values and ecological priorities.

Picture: 2 Community Values Mapping in Richmond, Jericho, Bolton, and Huntington.

RESULTS OF THIS STEP:

- Public outreach completed with a range of people engaged.
- Community values for forest blocks and habitat connectors, as well as other areas of the community, are identified for purposes of informing the future land use vision.
- Notes of any additional feedback received during public outreach that may inform what the community wishes to achieve for important areas (i.e., goals and future vision – see Step 3 below).

STEP 3: IDENTIFY COMMUNITY GOALS AND POLICIES

SEE THE ACCD PLANNING MANUAL'S SECTION "STEP 3, IDENTIFY COMMUNITY GOALS AND OBJECTIVES" FOR ADDITIONAL INFORMATION.

After the community's resources (Step 1) and community values (Step 2) are identified, along with conditions, trends, threats and opportunities, the next step is to identify what *goals* and *policies* will help the community achieve its desired future. That desired future is typically articulated in a municipal or regional plan's vision statement. A vision statement is a high-level statement that describes the future of the community. Additional ideas or statements about the future of forest blocks and habitat connectors may have been generated during the community outreach in Step 2. While actions are also an important part of planning, these are discussed in more detail in Step 5.

Communities already go through the exercise of developing goals and policies for each of the elements in a municipal or regional plan. Your town plan likely already includes a broad range of natural resource goals and policies, but it is now required to specifically address forest blocks and habitat connectors. Many communities may find that their existing plans already include a great deal of content and maps that can be used to address this new requirement.

GOALS AND POLICIES

Goals, policies, and actions have unique roles to play in the town planning process and are worth discussing here. Each term is defined clearly below, as modified from the Town of Stowe town plan[10]:

- GOALS express broad, long-range community aspirations relative to one or more category of topics. They should be considered aspirational statements for the community.

- POLICIES are statements of the town's intent, or position, with regard to specific issues or topics. In certain settings, such as Act 250 proceedings, policy statements will serve as the basis for determining a project's conformance with the Town Plan.

The ACCD Planning Manual also provides definitions for the above, as well as both good and bad examples of each term. Towns can edit the examples to fit their own definitions and intent.

IDENTIFYING GOALS FOR FOREST BLOCKS AND HABITAT CONNECTORS

Vermont's state land use goals (24 V.S.A. §4302) provide a good starting point for thinking about community goals for forest blocks and habitat connectors. "Rather than crafting new language and concepts, a community can opt to use the same language as the statewide goals, or the regional plan's goals, where appropriate" (Planning Manual, p. 51).

[10] www.townofstowevt.org/images/photos/Chapter_5.pdf

The goals related to forest blocks and habitat connectors, which were updated with Act 171, can be found on p. 7 of this document. (Many other goals also relate to natural resources – see Appendix 1 of ACCD's Planning Manual for a full list.)

The information from the assessment (Step 1) and the identification of community values (Step 2) can be used to identify "potential opportunities and challenges in realizing the vision and will guide you toward identifying goals and" policies that advance the community vision.

Many communities may already have goals that, directly or indirectly, aim to minimize forest fragmentation and maintain habitat connectivity. First, review existing plan goals and assess how well they address state planning goals in 24 V.S.A §4382 and community goals. Second, either update existing goals or write new goals that help achieve this purpose.

SOME EXAMPLES OF GOALS FOR PURPOSES OF IMPLEMENTING ACT 171 ARE:

- *Maintain and improve the ecological integrity of intact forest blocks.*
- *Maintain and improve forest blocks that are large enough to support working forests.*
- *Maintain and improve the ecological integrity and functionality of habitat connectors.*

While the focus of Step 3 is to identify goals, take some time during this step to brainstorm possible policies and action items that support those goals. The community should generally support the policies and actions included in this list. It is not necessary to fully evaluate the policies and actions yet. Later on, in Step 5, you will revisit and evaluate the goals and action items and select the best ones to be included in a prioritized implementation plan (Planning Manual, p. 51).

IDENTIFYING SPECIFIC POLICIES FOR FOREST BLOCKS AND HABITAT CONNECTORS

How should policies be selected? According to Act 171, plans should "plan for land development [in areas identified as important forest blocks and habitat connectors] to minimize forest fragmentation and promote the health, viability and ecological function of forests" (24 V.S.A. §4382(a)(2)(D)).

In addition, the updated statute provides guidance on the approaches municipalities might choose to take: "A plan may include specific policies to encourage the active management of [forest blocks and habitat connectors] for wildlife habitat, water quality, timber production, recreation, or other values or functions identified by the municipality." (24 V.S.A. §4382(a)(2)(D)).

This shows the range of uses that can be compatible with the broader state goal of managing Vermont's forest lands to maintain and improve forest blocks and habitat connectors. Each community can select policies that reflect their specific natural resources and community values. One community might, for example, focus on minimizing fragmentation from subdivision with policies that guide how land is subdivided:

- WHEN LAND IS SUBDIVIDED, PROVISION SHOULD BE MADE TO ENSURE ACCESS FOR FUTURE FOREST MANAGEMENT AND TO AVOID POTENTIAL CONFLICTS BETWEEN LAND USES. *(2012 Waitsfield, VT Town Plan)*

Another community might focus on landowner incentives:

- THE TOWN WILL SUPPORT LANDOWNERS WORKING TO REDUCE THE FRAGMENTATION OF IMPORTANT FOREST BLOCKS AND HABITAT CONNECTORS (E.G., THROUGH ENROLLMENT IN

THE CURRENT USE PROGRAM, CONSERVATION EFFORTS, OR OTHER EFFORTS A LANDOWNER MAY UNDERTAKE).

Other policies may focus on how development takes place on the land:

- DEVELOPMENT SHOULD BE DESIGNED AND SITED IN A MANNER TO PRESERVE CONTIGUOUS AREAS OF ACTIVE OR POTENTIAL WILDLIFE HABITAT. CORRIDORS CONNECTING HABITAT AREAS FOR LARGE MAMMALS MUST BE INCORPORATED IN PLANS FOR MANAGEMENT AND CONSERVATION OF FORESTED AREAS. FRAGMENTATION OF SIGNIFICANT AND NECESSARY WILDLIFE HABITAT SHOULD NOT BE APPROVED.
  (2015 Two Rivers-Ottauquechee Regional Commission Regional Plan)

For additional examples of policies, see Appendix B: Examples of Town Plan Policies.

It is important to note that in Vermont, plan policies are used in many processes, including Act 250 proceedings, Public Utility Commission "Section 248" proceedings regarding certain energy development projects, and local decision-making processes such as capital planning, zoning, and investment decisions. Town plans also set the stage for developing local bylaws, and for other implementation measures, since anything a community does to implement its plan must be consistent with the town plan. To carry weight in regulatory proceedings, plan policies must be well-defined and explicit.

Numerous prior Vermont Environmental and Supreme court decisions have discussed the importance of clarity within town and regional plans with respect to decisions in Act 250 and Section 248. As identified in the Natural Resources Board e-notes, which summarizes important Act 250 Environmental and Supreme Court decisions "pursuant to *In re Molgano*, 163 Vt. 25, 31 (1994), Act 250 must first determine whether town plan provisions at issue are ambiguous or specific; if provisions are ambiguous, Act 250 should next examine relevant zoning by-laws for provisions which resolve the ambiguity; if provisions are specific and unambiguous, then they should be applied to project without reference to zoning by-laws."[11] To determine if a plan provision is specific, "Court determines whether provision is: (1) pertains to a specific location in that earth resources are site specific; (2) is intended to guide conduct; (3) it is sufficiently clear to guide the average person. *Rivers Development, LLC,* Nos. 7-1-05, 68-3-07 Vtec, at 10 (1/8/08)."[12] In cases where a plan is ambiguous, the court may review a town's zoning bylaws to provide guidance.

The above applies to zoning bylaws as well. In a 2008 Vermont Supreme Court Decision (In re: Appeal of JAM Golf, LLC, 2008 VT 110), the court struck down portions of a South Burlington zoning bylaw that required "protection" of "important natural resources including streams, wetlands, scenic views…" These sections of the bylaw were ruled unenforceable because they lacked standards for what constituted protection and did not specify the conditions under which "protection" would apply. For plan policies or bylaws to carry weight in regulatory proceedings, they must be clear, well-defined, specific, and consistent.

PAY ATTENTION TO WORDS USED IN THE TOWN PLAN:

- SHALL, MUST, MAXIMIZE, MINIMIZE: Use these terms to write strong policies. "Must" is preferred over "shall" according to the New Federal Rules of Appellate Procedure.[13]

[11] http://nrb.vermont.gov/documents/e-notes
[12] http://nrb.vermont.gov/documents/e-notes
[13] https://plainlanguage.gov/guidelines/conversational/shall-and-must/

- **SHOULD, MAY:** These terms indicate that a policy is advisory.
- **WHERE FEASIBLE, WHERE REASONABLE:** The inclusion of the terms "where feasible" and "where reasonable" weaken policies. If there are specific reasons that a policy might not apply, such as topography or cost effectiveness, mentioning those reasons specifically can increase the strength and enforceability of the policy.
- **SHALL BE ENCOURAGED:** While the phrase "shall be encouraged" does include "shall," requiring the encouragement of something is not a strong policy and weakens the statement.

The Courts have provided rulings regarding use of the words such as shall, must, and should. "Words such as 'direct,' 'encourage,' 'promote,' and 'review,' may provide guidance in the interpretation of a Plan, but are not mandatory. *Green Meadows Center, LLC, The Community Alliance and Southeastern Vermont Community Action,* #2W0694-1-EB, FCO at 42 (12/21/00)."[14] In addition, "phrases such as "strongly encourages" and "should focus its efforts to encourage" indicate nonmandatory elements of a town plan. *The Van Sicklen Limited Partnership,* #4C1013R-EB, FCO at 55 (3/8/02)."[15] Whereas, "only language that "is clear and unqualified, and creates no ambiguity," (e.g. "shall not," "must," and "prohibited") can be read to create specific restrictions. *In re JLD Properties of St. Albans, LLC*, #116-6-08 Vtec, Decision on the Merits at 45, 47 (1/20/10)."[16]

An alternate method to create strong policies and avoid having to use the words shall or should is to use active and direct verbs to begin policy statements. An example of this is "Locate energy generation facilities in areas with high generation potential" rather than "Energy generation facilities should be/shall be located in areas with high generation potential." Your community's action items will identify to what extent and how the community addresses the policy.

Identifying and articulating goals and potential policies prepares you for Step 4, which involves thinking about what should be taking place where on the land. Later, the goals and policies will be integrated into the natural resource and land use elements.

RESULTS OF THIS STEP:

- Updated or new goals regarding maintaining and improving forest blocks and habitat connectors.
- Draft list of policies that help implement the goals.

STEP 4: CREATING YOUR FUTURE LAND USE MAP AND POLICIES

SEE THE ACCD PLANNING MANUAL'S SECTION "STEP 4, MAP OUT THE FUTURE" FOR ADDITIONAL INFORMATION.

Plans are required to include a "land use plan" that considers all uses in a community. It includes a map of future land uses, as well as policies to achieve that future. Vermont's municipal planning statute specifies that the land use plan:

> "…shall consist of a map and a statement of present and prospective land uses that:
>
> (A) Indicates those areas proposed for forests, recreation, agriculture…residence, commerce, industry, public, and semi-public uses, and open spaces, areas reserved for floodplain, and areas identified by the

[14] http://nrb.vermont.gov/documents/e-notes
[15] http://nrb.vermont.gov/documents/e-notes
[16] http://nrb.vermont.gov/documents/e-notes

State, the regional planning commission, or the municipality that require special consideration for aquifer protection; for wetland protection; for the maintenance of forest blocks, wildlife habitat, and habitat connectors; or for other conservation purposes."

(D) Indicates those areas that are important as forest blocks and habitat connectors and plans for land development in those areas to minimize forest fragmentation and promote the health, viability, and ecological function of forests. A plan may include specific policies to encourage the active management of those areas for wildlife habitat, water quality, timber production, recreation, or other values or functions identified by the municipality."

This section outlines how to map out future land uses on the land use map and prioritize the policies that will achieve the community's future vision for forest blocks and habitat connectors.

ABOUT THE FUTURE LAND USE MAP

One component of the land use plan is a future land use map. A future land use map illustrates where different activities should (and shouldn't) happen in the community in the future. The location of different activities considers both the resources that are present on the ground and the community's goals for the future. Municipal and regional plans are required to include future land use maps.

Future land use maps graphically communicate important components of a community's vision. The map doesn't necessarily reflect current uses of land, but rather the future categories of desired uses. According to statute it must communicate how the municipality or region makes space for a range of uses – not only natural resources, but also housing, commerce, public uses, areas reserved for floodplains, and more. In creating the map, communities make decisions about how to balance competing land use goals. According to the ACCD Planning Manual, "The future land use map is not a zoning map, but it does establish the basis for a zoning map should a community wish to use that tool."

According to ACCD's Planning Manual, land use classifications of a future land use map can and should be broad. They may reflect very general land uses such as a village center, agriculture, or conservation. Descriptions of the land use categories should be included in the text of the plan to describe the intent of the category.

HOW TO INCORPORATE FOREST BLOCKS AND HABITAT CONNECTORS INTO THE FUTURE LAND USE MAP

One of the general land use categories on a future land use map, in addition to those uses mentioned above, is conservation. Conservation areas are those areas to be conserved or protected from development. Act 171 added specificity to the statute and requires the future land use map to identify important forest blocks and habitat connectors, and reflect how the community is ensuring that development in these areas is done in a way that minimizes forest fragmentation and promotes the health, viability, and ecological function of forests.

Now that the work of identifying resources, community values, goals, and policies is complete, how is this information translated onto a map showing how land should be used in the future? The following steps for doing this are adapted from the ACCD Planning Manual.

1. Review your natural resources map to see where development constraints and opportunities exist. Constraints may be physical, like steep slopes, or other restrictions, as in the case of land that is conserved. The goal of this exercise is to plan for development that minimizes fragmentation and promotes the health

of forests. Identify forest blocks and habitat connectors that are less desirable for development because of their ecological and community importance, and areas that may be appropriate for development.

2. Look at the **existing land use map** to understand where different uses are currently located and encouraged. Look at what types of districts already exist – many communities have existing conservation, forest, resource protection, or working lands districts.

3. **Revisit the location and goals for forest blocks and habitat connectors** developed in previous steps. Think about how the locations of forest blocks and habitat connectors relate to existing land use. Do the boundaries of the existing land use areas need to be modified to achieve these goals? For example, consider whether identified forest blocks or habitat connectors should go into a "conservation" or "working lands/rural" use, as described on pages 66-72 of the ACCD Planning Manual. You can also look at things like whether one of the areas identified, such as an important habitat connector, is currently an area where future land use is residential development. It may be appropriate to change the boundaries of this area slightly. Another option is that the future land use map retains this residential focus but the community identifies a policy or action that will maintain the integrity of that area. This could include an update of subdivision regulations to promote development in a way that minimizes the fragmentation of the area that is identified on the natural resources map.

4. Based on any changes made in (3) above to integrate forest blocks and habitat connectors, **review the purpose statements for each future land use district** to ensure that they reflect the purpose statements of these districts, especially if they have changed with the inclusion of the goal to minimize fragmentation of forest blocks and habitat blocks.

5. **Crafting a future land use map** involves the hard task of balancing uses across the community – whether forests, housing, energy, or other potentially competing uses. This guide has focused on adjusting the future land use map to address forest blocks and habitat connectors. Once this has been done, it is worthwhile to ensure that any changes to the future land use map, and policies, are compatible with other goals throughout the plan. See page 73 of the ACCD Planning Manual for a way to ensure the plan is internally consistent.

Examples of Future Land Use Maps and Natural Resource Maps can be found in the ACCD Planning Manual.

NOTE: *This guidance will be revised to include examples of maps that meet the Act 171 standards once approved by Towns and Regional Planning Commissions.*

INTEGRATING TEXT AND POLICIES INTO THE LAND USE PLAN

The future land use map is only one aspect of the land use element or chapter of the Town Plan. The land use chapter also includes text that summarizes the existing conditions, the desired future state, and the policies that will advance that future. While the natural resources chapter may include specific information about natural resources (such as the sample text offered earlier in this guidance), the land use chapter may talk more broadly about the future vision, the types of land uses that should take place in different parts of the community, and why.

The land use chapter could also include key policies related to forest blocks and habitat connectors that will help achieve the future vision of the community. Once the vision has been translated onto a map, revisit the draft policies brainstormed in the previous step. Will these policies make the vision for future land use happen? Select new policies

or tweak existing policies that will advance the identified goals for forest blocks, habitat connectors and future uses of land. Ensure that they are integrated into the land use chapter.

RESULTS OF THIS STEP

- Updated land use chapter, which includes an update future land use map and policies.

STEP 5: IMPLEMENTATION AND ACTION

SEE THE ACCD PLANNING MANUAL'S SECTION "STEP 5, MAKE IT HAPPEN" FOR ADDITIONAL INFORMATION.

Like goals and policies, actions have a unique role to play in the town planning process. Towns should outline goals and policies first, then consider specific actions that advance these goals and policies. The definition below is modified from the Town of Stowe town plan. Communities can edit this suggested language to fit their needs:[17]

- IMPLEMENTATION TASKS [sometimes called "actions" or "recommendations" by towns] are specific actions that may be taken by identified entities to support one or more policy and achieve the community's goals.

DEVELOPING AN IMPLEMENTATION PROGRAM

Once you have identified important forest blocks and habitat connectors on the future land use map, and created potential policies for those areas, the next step is to make that vision a reality. This is done through an *implementation program*.

An *implementation program* is a required part of a municipal or regional plan. It ensures that a community's hard work – assessing its resources, thinking about its goals and vision, and translating those into a future land use map and policies – results in the future the community wants to see. The implementation program can also be thought of as a "road map" for implementation.

The ACCD planning manual (p. 75) notes several steps for what an implementation program should include:

- *Actions to be taken*
- *Associated timelines for completion*
- *Those responsible for the action*
- *Anticipated cost, if known*
- *A way to evaluate effectiveness, for example, perf*ormance measures or targets

A common way for this to be presented in a plan is in a table format below as taken the ACCD Planning Manual:

[17] www.townofstowevt.org/images/photos/Chapter_5.pdf

Municipal Plan Implementation Strategies [Example]

Municipal Plan Element: Land Use
Objective/Measurable Target: The majority of new development and subdivision occurs in the village and surrounding districts.

Action/Strategy	Area	Recommended Lead/Partner	Estimated Cost	Timing	Priority	Financing
Hold public meetings on land conservation options and follow up with individual meetings with key landowners	Agriculture and Conservation Districts	Conservation Commission with assistance from Land Trust	Low (meeting and outreach expenses)	2 years	High	Conservation Commission Fund
Update bylaw to maintain historic character of the village and neighborhoods and enable infill in keeping with revitalization goals.	Village Districts	Planning Commission	$20,0000 (consultant and public outreach)	2 years	High	Municipal Planning Grant and Town Planning Fund

Picture 3: Example of implementation strategies table from ACCD Planning Manual.

APPROACHES FOR YOUR TOWN TO CONSIDER

In developing an implementation program, there are several approaches a town can take to plan for development in a way that minimizes forest fragmentation and promotes the health, viability, and ecological functions of forests. The following action steps or tools can be identified in your town or regional plan as part of your implementation plan. The implementation plan can simply list each selected option without the background detail provided here. Be sure to identify who will carry out each action step and how, and when, it will be implemented.

The following lists include both regulatory and non-regulatory actions and represent a selection of the many actions a town may choose to undertake. This is a starting point, not a prescription. The specific actions a community selects will depend on their goals, policies, community values, and priorities. One first action step, not listed below, could be to first assess how well existing policies, bylaws, ordinances, or investments support the potentially new goals of the plan.

REGULATORY ACTIONS

- ESTABLISH RESOURCE PROTECTION DISTRICTS (24 V.S.A. § 4414) THROUGH ZONING. Statute enables municipalities to create zoning districts to regulate the type, density, use, and location of development in certain areas. Specifically, forest districts are authorized, allowing communities to limit (or, if desired, exclude) all development unrelated to commercial forestry and forest conservation. This can help reduce the development, fragmentation, and parcelization of forests. Conservation districts are another option. These typically encompass areas defined by the presence of one or more natural resources that include features like important wildlife habitat or plant species, high elevations, wildlife corridors and crossing areas (habitat connectors), intact forest blocks, and water source protection areas that often include forest resources. Both forest and conservation districts can require low average densities, smaller development footprints, limit uses, or require conditional use

review to ensure minimal impact on important resources. A type of resource district is an overlay district. Three examples of overlay district language are included in the Examples of Overlay District Language.

- INCORPORATE DEVELOPMENT REVIEW STANDARDS IN ZONING BYLAWS THAT ADDRESS FOREST AND WILDLIFE RESOURCES:
    - CONDITIONAL USE STANDARDS regulate the external impacts of development (off site issues). If communities choose to label certain uses as "conditional," then state statute (*24 V.S.A. §4414(3)(A)*) lists certain *general conditional use standards* that must be included in any conditional use review process (for example, to address impacts on local roads, community facilities and services, and neighboring properties). Though these general conditional use standards do not address natural resources, statute *(24 V.S.A. §4414(3)(B))* also gives communities the option to include *specific conditional use standards* including "any other standards or factors that the bylaws may include." Specific standards are often used to address impacts to natural resources, especially if applied to allowed uses within resource conservation districts. These standards can help minimize forest fragmentation. Consider reviewing the operability of forestry operations to maintain a working forest landscape. For example, in forest reserve districts, sawmills and other forest oriented businesses could be permitted uses, whereas single family homes in remote locations could be conditional uses.
    - SITE PLAN REVIEW STANDARDS (24 V.S.A. §4416) regulate internal site layout and design of a particular property. Typically, site plan review looks at building sites, site circulation, access, parking, screening, and landscaping. Site plan review can also include standards to preserve or protect important elements or features identified on the site – including significant natural resources such as forest stands, wetlands, or endangered species – through context sensitive site layout and design. It is important to note, however, that site plan review does not apply to single or two-family homes, as specified in statute, and is probably not the best option for conserving large tracts of forest land.
- CREATE OR UPDATE SUBDIVISION REGULATIONS (24 V.S.A., §4418, 4463). Subdivision regulations are the second most common land use regulations Vermont municipalities enact (after zoning) and one of the most powerful tools available for reducing forest fragmentation. They control the pattern of development by regulating the division of land and protect natural and cultural features by applying review standards to development projects such as through the placement of cut lines, building envelopes, and location of roads. *Note: If a town must choose between developing subdivision or zoning regulations, subdivision regulations may be the more effective first step in limiting forest fragmentation. Whereas zoning regulations focuses on the use and location of development, subdivision regulations focus on the pattern of creating new lots (and eventually development).*
- ENCOURAGE PLANNED UNIT DEVELOPMENTS (PUDS) (24 V.S.A., §4417*).* PUDs allow communities to be flexible in the application of land development regulations under subdivision or conditional use review – subject to additional PUD standards, as required by statute – including, but not limited to open space standards. Standards that require the clustering of development and guide the layout of roads and utilities, the location of structures, and the location and use of open space can all help protect large forest blocks and wildlife resources. *Note: If PUD regulations are difficult to administer, the same goals can be achieved through a combination of subdivision regulations and conditional use standards.*
- INVESTIGATE THE FEASIBILITY OF ALTERNATIVES TO MAXIMUM LOT SIZE TO GUIDE DENSITY. The density of development is an indicator of how intensely land is being used. Well-sited, lower density development can be better for the health of natural resources. Density is typically regulated by lot sizes, with larger lot sizes being

used to achieve lower density. However, this can have the unintended consequence of fragmenting the land. Another option is to manage density by having a standard within a district, but maximum lot sizes. This ensures that when development takes places on larger lots it does not fragment the lot.

- REVIEW AND STRENGTHEN LOCAL ROAD POLICIES (19 V.S.A., 23 V.S.A., 24 V.S.A.). Many of Vermont's road networks provide access to undeveloped forest land. Well-planned, sited, and managed road networks contribute to the conservation of forest resources by providing access for timber and wildlife management, restoring degraded areas, guiding users away from sensitive habitats, limiting impacts on wildlife, and getting people out into the woods to appreciate firsthand a community's forest resources. Poorly sited roads, and driveways have the opposite effect by fragmenting forest land, limiting wildlife movement, channeling stormwater runoff, and creating breaks in forest cover that serve as pathways for invasive species. Municipalities have dealt with this by adopting policies to guide and restrict how such roads are upgraded. For example, municipalities have reclassified roads as "public trails," ensuring they will not be upgraded, or have used zoning to require development occur in areas with frontage on class three or higher roads.

NON-REGULATORY ACTIONS

- PROMOTE THE USE VALUE APPRAISAL ("CURRENT USE" OR "UVA") PROGRAM. Vermont's Use Value Appraisal program allows landowners to pay reduced property taxes on their farm and forest land based on the productive value of the land rather than the development value. As a disincentive to development, the program also includes a Land Use Change Tax. Almost 50% of eligible forest land in Vermont is enrolled in the Current Use program. It is widely cited as one of the most important factors in conserving farm and forest land in the state.
- ENCOURAGE INDIVIDUALS TO HAVE AND FOLLOW A MANAGEMENT PLAN. Having a management plan can help individual landowners think about the long-term management of a piece of property. Licensed consulting foresters are available to conduct property inventories. They can suggest management approaches, sustainable harvesting techniques, and help ensure the protection of important ecological areas. Having a baseline inventory can also potentially help landowners apply for state and federal programs that exist to help with conservation or management projects.
- TALK WITH LANDOWNERS ABOUT CONSERVATION EASEMENTS. A conservation easement is a private legal agreement that prevents land from being developed. Easements separate the right to develop a property from the ownership of the property. In this way, an individual (or town, or private entity) may continue to own, manage, and even sell a property despite a conservation easement. Easements can take a variety of forms and can set the terms for activities such as mining, forestry, agriculture, and renewable energy generation. For private individuals, easements make owners eligible for certain tax benefits concerning estate, property, income, and capital gains taxes.
- ESTABLISH A TOWN FOREST, AND USE IT AS AN OPPORTUNITY TO MODEL SUSTAINABLE FOREST MANAGEMENT AND FOR EDUCATION ABOUT THE VALUE OF FORESTS (10 V.S.A. §2653). Municipalities may designate land they own (and acquire land to designate) as municipal forest land. Over 168 municipalities own 368 town forests covering more than 67,000 acres of forest land, all open for public benefit. They may be managed for a variety of purposes, including wood products, water quality, wildlife habitat, education, and recreation. Some municipalities conduct timber harvests in their forests and use the revenue to fund stewardship or conservation efforts.

- PROMOTE SUCCESSION PLANNING. Parcelization and forest fragmentation occur in Vermont because of multiple factors. One factor is a lack of succession planning that provides for the transfer of forest land ownership within families, from one generation to the next. Family held forests account for a large percentage of Vermont's forests and at present, the average age of a Vermont forest landowner is over 65. Municipalities can encourage landowners to engage in estate planning so that forest land can be maintained over multiple generations, thus reducing the future threat of subdivision and conversion due to a death in the family, an unforeseen illness, or other events.
- SUPPORT FOREST PRODUCTS INDUSTRIES. Act 171 also clarified what constitutes a "forestry operation."

    - Forestry operation: activities related to the management of forests, including a timber harvest; pruning; planting; reforestation; pest, disease, and invasive species control; wildlife habitat management; and fertilization. "Forestry operation" includes the primary processing of forest products of commercial value on a parcel where the timber harvest occurs. (10 V.S.A. 2602(6)).

  Communities can support these types of operations through local policies and regulations. For examples, when governing how land is divided, subdivision standards can be added that require areas for log landing sites and access to areas important for forestry operations. Similarly, in those areas of your community where forestry operations are most likely to occur, consider siting standards for any residential uses that may take place nearby. This may minimize conflicts between rural residential uses and rural working lands uses.

PRIORITZING ACTIONS

It's common after a planning process to have a long list of potential actions that the community wishes to accomplish, but it may not be possible to complete them all. Prioritize the selected actions so that the community has a manageable list and a greater chance of successfully advancing some of the initiatives.

When it comes to prioritizing actions, here are some considerations:

- *Does it help forest blocks or habitat connectors?*
- *Does it also align with community values identified above?*
- *Is the type of action compatible with community values and sentiments? Some communities have capacity and interest in land use regulation, for example; others do not.*
- *What will be the cost? Are financial resources available for implementation?*
- *Is there staff or volunteer capacity to complete the work?*
- *What should the timing of the action be, given other community priorities?*
- *Are there opportunities to build on existing efforts or momentum underway?*

Once actions are selected they can be added to the plan using a table like the one above.

RESULTS OF THIS STEP

- Implementation program – a table or other document showing tasks, responsibility, timeline, and priority for the actions that will lead toward the community's goals.

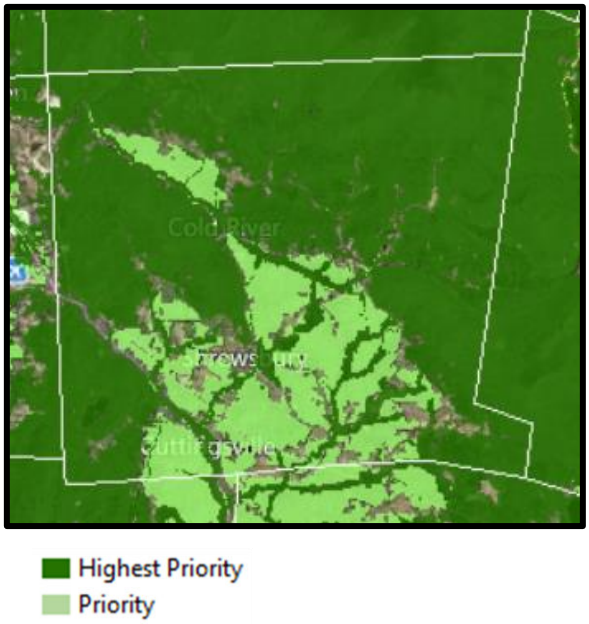
APPENDIX A: HOW TO USE BIOFINDER TO CREATE MAPS FOR ACT 171

BioFinder is a database and mapping tool for identifying Vermont's lands and waters that support important ecosystems, natural communities, habitats, and species. It was developed by the Agency of Natural Resources and its partners to support stewardship and conservation. Updated in 2016, BioFinder highlights networks of forests, streams and other features that together create the heart and backbone of Vermont's landscape. The Vermont Agency of Natural Resources' Atlas is a separate online mapping tool that serves as the clearinghouse for *all* data offered by the Agency. It is not specific to land use planning interests or biological diversity. As such, the Atlas can be overwhelming to planning and conservation commissioners. BioFinder offers the most important datasets for land use planning and biological diversity and includes specific tools for understanding what suite of components are present in any location. Furthermore, it explains what each dataset is, why it is important, and how it was created. All Atlas layers can be displayed in BioFinder through the "Map Data" toolbar.

USING BIOFINDER

1. **OPEN** the BioFinder Mapping Page and zoom into your town. Read more here to learn about using BioFinder.
2. **LOCATE LANDSCAPE PRIORITIES:** This map shows a network of the most important components included in the following datasets, categorized into **"HIGHEST PRIORITY"** and **"PRIORITY"** areas:
    - Interior Forest Blocks
    - Physical Landscape Diversity
    - Connectivity Blocks
    - Riparian Wildlife Connectivity
    - Surface Waters and Riparian Areas

    Use this step to examine the **network** of lands and waters necessary to maintain Vermont's ecological function. By doing this, you can divide locations into three classes: highest priority, priority, and those that don't contribute significantly to the network. Together, this network encompasses the majority of Vermont species and habitats and provides resilience for a changing climate.



3. **LOCATE COMMUNITY AND SPECIES PRIORITIES:** While landscape priorities give us the network in which *most* ecological interactions occur, some species or habitats are so small or have such specialized needs that they are worth protecting wherever they occur, even if they are not located within the landscape network. Add those habitats important to species and communities of conservation concern to your map. While often small in area, these locations are equally important for maintaining regional biodiversity and healthy fish and wildlife populations. For example, wildlife crossings are locations where wide-ranging mammal species such as bear, bobcat, and fisher are most likely to traverse roads as they travel to meet daily or seasonal dietary needs or disperse to find mates. If these crossing areas do not remain available, some populations may not persist even where other habitat needs are present. The areas mapped at this scale include the following:

- Wildlife Road Crossings
- Vernal Pools
- Wetlands
- Grasslands and Shrublands
- Mast Stands
- Rare Species
- Uncommon Species
- Rare Natural Communities
- Uncommon Natural Communities
- Common Natural Communities[18]

As you examine the locations of resources on this map, pay special attention to where they fall in relation to the landscape scale network in Step 2. When Community and Species Priorities are located within larger blocks of forest or water, they can be used to elevate the priority ranking of that larger block. Many strategies for conserving the larger blocks will then benefit the Community and Species Priorities, too. Where Community and Species Priorities are located *outside* the network identified in Step 2, your community may want to consider separate conservation strategies. Because Community and Species Priorities generally encompass much smaller acreage, they are often more vulnerable. For some, a seemingly minor change in land use could wipe out an entire patch of habitat—a vernal pool, for example, or a mast stand. And although the components themselves may cover little acreage, the *processes* altered by a single loss may change food webs, impact disease regimes, or alter migration or dispersal patterns across the ecosystem. Where Community and Species Priorities fall outside Step 2 priorities, they are therefore generally places to consider focusing more direct conservation measures, due to their sensitivity.

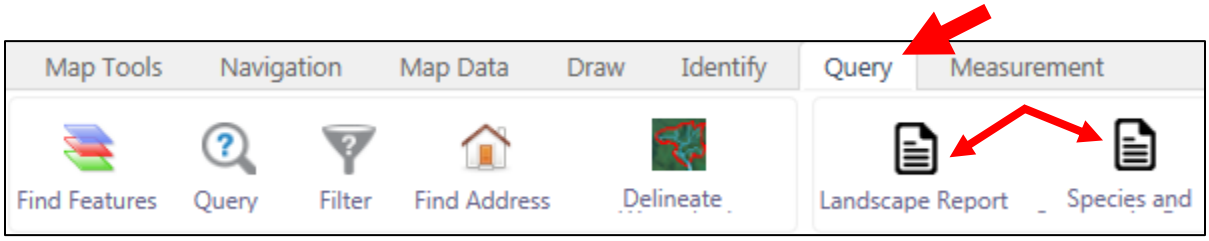
4. IDENTIFY THE COMPONENTS: In Steps 2 and 3, the primary goal was to identify *locations* of ecological priority within the municipal planning area. Before identifying appropriate conservation strategies, it's now time to determine which resources are present in each important area. We can then use these resources to create a map of ecological priorities that will be more helpful for municipal planning. This is important because conservation strategies are not universally appropriate for all resources. Both riparian areas and mast stands may constitute priority locations but may not conserve them using the same methods.

   Start with landscape priorities, as seen in Step 2. Using BioFinder which components are most prevalent in the "highest priority" network? Interior forest blocks? Surface water? Important physical landscapes? Does adding "priority" areas contribute additional components? Make a list or chart. Then repeat the process with community and species priorities.

   To help you with this process, BioFinder can generate reports quantifying all the components present in a defined area, such as a town.

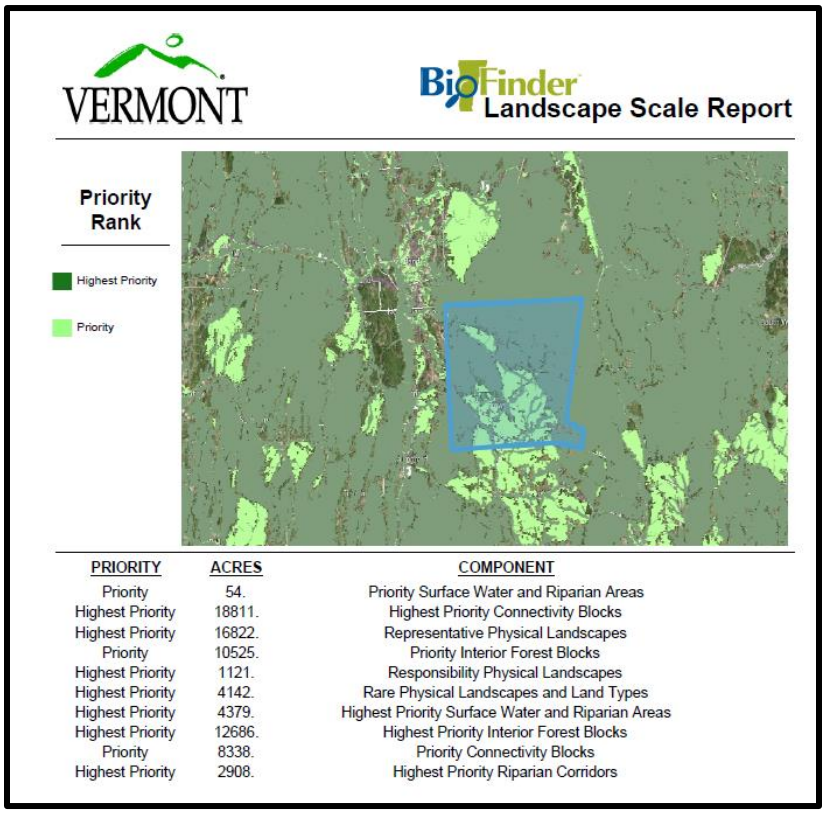
[18] The Common Natural Communities category captures several elements that appear in Part I as their own entities, including deer wintering habitat.

To access these reports, open the toolbox by clicking the symbol in the top, right-hand corner. Open the "Query" tab, where you can select either a "Landscape Report" or a "Species and Communities Report."



In generating a report, you will be given an option to either draw an outline of your area of interest or upload a shapefile. If you already have a digitized map layer that outlines your area of interest (a shapefile), this is the easier option. However, you can also use your cursor to click around the edges of your target area until you have captured the entire area, double-clicking to finish the shape.

You can choose to see the report as a pdf or an excel file. In either case, the report lists all components present in the area outlined, the level of priority, and the acreage covered by each.


VERMONT

BioFinder Landscape Scale Report

Priority Rank

Highest Priority

Priority

PRIORITY	ACRES	COMPONENT
Priority	54.	Priority Surface Water and Riparian Areas
Highest Priority	18811.	Highest Priority Connectivity Blocks
Highest Priority	16822.	Representative Physical Landscapes
Priority	10525.	Priority Interior Forest Blocks
Highest Priority	1121.	Responsibility Physical Landscapes
Highest Priority	4142.	Rare Physical Landscapes and Land Types
Highest Priority	4379.	Highest Priority Surface Water and Riparian Areas
Highest Priority	12686.	Highest Priority Interior Forest Blocks
Priority	8338.	Priority Connectivity Blocks
Highest Priority	2908.	Highest Priority Riparian Corridors

In some cases, the acreage covered by different components can give you a sense of where to focus your efforts. For example, if you have substantial acreage in Connectivity Blocks, you may want to spend some effort thinking of the best ways to avoid fragmentation of and between these blocks. However, there are some components for which acreage is an inappropriate measure of priority. For example, vernal pools are almost never large, and yet they remain an important contributor to biodiversity. Reports can therefore be extremely helpful in simply providing a list of components to look at when considering conservation strategies. Limited attention should be placed on the acreage covered by each, particularly on the Species & Communities Report.

Once you have created your list of components, review them to be sure you understand what they are and their implications for land use, using *Conserving Vermont's Natural Heritage*, or other sources. Take extra care to understand those features that came up multiple times on your lists or cover large expanses within your community.

Once you fully understand the suite of components at play in your community, it is time to create a map of ecological priorities. For many communities, these maps can be based directly on the state priorities maps. They may also incorporate local data into state maps. For some communities, however, it will be important to first refine priorities. For example, the land in some communities is mapped almost entirely as "highest priority" at the landscape scale. In this case, it is important to recognize the crucial role your local lands and waters play in maintaining *Vermont's* ecological function. However, this information is unlikely to help you in prioritizing local conservation or planning efforts. Other towns contain few or no "highest priority" features. In either case, there are some locations in your community that play a more critical ecological role than others.

In these cases, one way to further prioritize is to place a higher priority on locations with many overlapping components. You can think of these as *hotspots*, or places in which many important ecological components co-occur. Wetlands are important. Interior forests are important. Rare physical features are important. Locations in which *all* of these important components are present may have even higher ecological value than those with just one component. If you find that the basic prioritization of Steps 2 and 3 did not provide you with as much variation as you would like, you can place the *highest* priority on these hotspots of overlap. They can also be terrific starting places around which to focus efforts or rally community support.

NEED HELP?

The Community Wildlife Program at Vermont Fish and Wildlife Department may be available to provide technical assistance to your community as you undertake this process. Please visit www.vtfishandwildlife.com/cms/one.aspx?pageId=132648 for more information.

APPENDIX B: EXAMPLES OF TOWN PLAN POLICIES

The following policies are examples for your town to consider. Notes are also included to identify how a policy could be strengthened or clarified. As you finalize the policies for your town, always check back to ensure that they advance the goals your community has set.

Please consider these at building blocks only – adapt them for your local community and needs, rather than cutting and pasting them into your town plan.

SAMPLE POLICIES FROM VERMONT MUNICIPAL AND REGIONAL PLANS

- When land is subdivided, provision should be made to ensure access for future forest management and to avoid potential conflicts between land uses. (Waitsfield, VT 2012 Town Plan)
    - NOTE: This policy could be strengthened by replacing "should" with "must." The concept of "forestry operations" as now defined in Chapter 117 should also be integrated into a policy such as this one. This signals that the community prioritizes subdividing land in a way that leaves access and space for forestry equipment such as portable sawmills.
- High elevation forest lands shall remain free from development and shall support appropriate uses as defined in the municipal zoning regulations. (Bennington, VT 2010 Town Plan)
    - NOTE: This policy could be strengthened for use in a regulatory proceeding by clarifying what is considered "high elevation" (above 1,500 feet, 1,700 feet).
- Avoid fragmentation of large blocks of significant wildlife habitat and maintain connectivity between habitat blocks as corridors for wildlife migration. *(Readsboro, VT 2010 Town Plan)*
    - NOTE: Make sure that terms used – like significant wildlife habitat, habitat blocks, corridors – are defined or mapped so that the policy provides sufficient clarity for decision makers. Also, keep in mind that "avoid" is weaker than "prohibit;" communities need to make decisions about how they want to manage resources to prevent fragmentation and loss of working forests.
- Development shall be designed and sited in a manner to limit the fragmentation of large blocks of contiguous forest to the greatest degree possible. *(Montgomery, VT 2016 Town Plan)*
    - NOTE: Policy could be clarified by removing "to the greatest degree possible." While this is a phrase that is often used in plan policies and zoning, it has the effect of weakening the regulatory effect of policies. Alternatively, that phrase could be modified as "…to the greatest degree possible based on the site's topography and available development sites on the parcel where development is proposed."
- Where important natural features, soil conditions, or special resources including, but not limited to, agricultural and forested land are identified, clustered or peripheral development is required to protect such resources and prevent fragmentation and sprawling settlement patterns. *(Two Rivers-Ottauquechee Regional Commission 2015 Regional Plan)*
- Development should be designed and sited in a manner to preserve contiguous areas of active or potential wildlife habitat. Corridors connecting habitat areas for large mammals must be incorporated in plans for management and conservation of forested areas. Fragmentation of significant and necessary wildlife habitat should not be approved. *(Two Rivers-Ottauquechee Regional Commission 2015 Regional Plan)*

- Locate and configure land development to avoid the fragmentation of, and adverse impacts to, natural areas, critical wildlife habitat and connectivity areas identified in the regional plan or local plans by the Vermont Agency of Natural Resources, or through site investigation. *(Northwest Regional Planning Commission 2015 Regional Plan)*
- In Rural and Working Lands Areas, protect the viability of agriculture and forest lands by supporting development designed to mitigate the impacts from parcel fragmentation and to provide continued accessibility to resource lands. When development of agricultural and forest lands occurs, development should be clustered in such a way so as not to negatively impact the continued viability of any remaining or adjacent agricultural operations. Consideration should also be given to the loss of open space and recreational resources when developing agricultural and forestlands. *(Lamoille County Planning Commission 2015 Regional Plan)*

GENERAL SAMPLE POLICIES NOT FROM A SPECIFIC MUNICIPALITY

- ENCROACHMENT INTO INTERIOR OF FOREST BLOCKS: Development that takes place within identified forest blocks shall be located at the edges of the blocks in order to reduce fragmentation of the block by roads, clearing, and development. If there is no land that is physically suitable for development at the edge of the blocks, the development must be located in order to minimize fragmentation of the block.
- ENCROACHMENT INTO INTERIOR OF FOREST BLOCKS: Roads longer than 1,000 feet are prohibited within the forest blocks as identified on [map] unless a longer road reduces impacts on natural resources.
- REDUCING IMPACTS OF DEVELOPMENT ON HABITAT CONNECTORS: Where development takes place within a habitat connector as identified [map/definition], development shall be located at the edges of the connector area in order to facilitate wildlife travel through the area. In the event that there is no land that is practical for development outside the wildlife connector, the development's design must minimize impacts on the continued viability and use of the corridor.
- MINIMIZING FRAGMENTATION OF FOREST BLOCKS AND HABITAT CONNECTORS: Roads, driveways, and utilities shall be designed to avoid the fragmentation of identified forest blocks and wildlife connectors.

EXAMPLES OF OVERLAY DISTRICT LANGUAGE FROM ZONING IN THREE COMMUNITIES

WHAT IS AN OVERLAY DISTRICT?

An overlay district is a special zoning district which can "*supplement or modify the zoning requirements otherwise applicable in underlying districts in order to provide supplementary provisions for areas such as shorelands and floodplains, aquifer and source protection areas, ridgelines and scenic features, highway intersection, bypass, and interchange areas, or other features described in section 4411 of this title*" 24 VSA §4414(2). The examples below are from the Town's zoning provisions and specifically protect habitat connectors/wildlife corridors. Overlay districts place additional provisions on top of the underlying zoning district requirements in order to protect the feature in consideration. Overlay districts typically encompass the feature to be protected – in these cases, the district is the area of the wildlife corridor. Existing or proposed overlay districts from zoning regulations can be included on plan maps. The purpose of the overlay should be described in the plan text.

TOWN OF SHREWSBURY – 2017 ZONING[19]

- The Town of Shrewsbury created a **"Special Features Overlay Zone"** a zoning overlay district to ensure the protection of the Town's ecological and aesthetic resources. The standard creates a heightened level of review for wildlife corridors defined on a map.
    - SECTION 208: Special Features Overlay Zones
        - 208.1 Description

          The Special Features Overlay Zones are superimposed over all underlying zoning districts, and include Wetlands, Deer Wintering Areas, Wellhead Protection Areas, Meadowlands, Steep Slopes, Ridgelines, and Wildlife Corridors.
        - 208.2 Purpose

          The purpose of the Special Features Overlay Zones is to ensure the protection of the Town's ecological and aesthetic resources. The Town Plan has identified fragile areas, natural areas, critical wildlife habitat areas, and resource areas which deserve special attention. Due to the diversity of land use districts that include these resources, and land forms and land capabilities within these districts.

TOWN OF HARTFORD – 2016 ZONING[20]

- The Town of Hartford created a **"Wildlife Connector Overlay District."** The standard creates a heightened level of review for wildlife corridors defined on a map.
    - "The Hartford Master Plan identifies many areas throughout the Town that encompass significant natural resources and have particular importance to the Town's rural character. These areas make Hartford a special place and represent the Town's heritage of working farms and forest lands as part of a sustainable, environmentally sound, local-resource-based economy. These areas include such features as prime and statewide agricultural soils, forests, wetlands, riparian areas, steep slopes, important wildlife habitat, scenic views, ridgelines and hillsides. Since they are located in multiple zoning districts, and the characteristics of these areas vary, special overlay zoning districts are established in sections of the Town to ensure sufficient protection of these important features. It is not the Town's intent to prevent development in the overlay districts, but rather to have appropriate placement of development to minimize impacts on these areas as much as possible." Hartford Zoning / Overlay Districts 260-21
    - **"Wildlife Connector Overlay Objective:** to provide sufficient area for animals to move freely between conserved lands, undeveloped private lands, contiguous forest habitat, and other important habitat, land features, and natural communities within and beyond the boundaries of the Town in order to meet their necessary survival requirements.

TOWN OF WILLISTON – 2009 UNIFIED DEVELOPMENT BYLAW (AMENDEND 2015)[21]

[19] http://shrewsburyvt.org/wp-content/uploads/2017/06/Shrewsbury-Unified-Zoning-and-Subdivision-Regulations-Final-6-7-2017-General.pdf

[20] www.ecode360.com/12345685?highlight=overlay#12345685

[21] www.town.williston.vt.us/vertical/sites/%7BF506B13C-605B-4878-8062-87E5927E49F0%7D/uploads/WDB_Aug_18_2015.pdf

- The Town of Williston created a "Conservation Area Overlay District" as part of its Unified Development Bylaws for the Town of Williston. Conservation Areas include seven separate (and overlapping) types of areas including "Wildlife Connectivity Corridors" within their definition of Significant Wildlife Habitat Areas.
    - 27.1.1 What are Conservation Areas? There are seven distinct Conservation Areas in Williston: 1) significant wildlife habitat areas; 2) areas containing uncommon, rare, threatened, or endangered species; 3) unique natural communities; 4) farmlands of local importance, 5) scenic viewsheds, 6) special flood hazard areas (see WDB Chapter 28), and 7) streams, wetlands, lakes, and ponds (see WDB Chapter 29).

    - 27.1.2 What is the purpose of these standards? The protection of Conservation Areas will provide significant benefits for soil conservation, water quality, groundwater recharge, biological diversity, and the visual character that defines Williston. These standards will prevent incompatible development from impairing the ecological functions of these areas and reducing the benefits they naturally provide to humans and wildlife. This chapter establishes permit requirements and development standards designed to minimize and avoid undo adverse impacts to these resources. Development may be acceptable in Conservation Areas to the extent that it is compatible with the goal of protecting the physical features, ecological functions, and biodiversity they provide." From Chapter 27 of the Unified Development Bylaws for the Town of Williston

    - 27.5 Significant Wildlife Habitat Areas (SWHA)
        - 27.5.1 What are SWHA?
            - Those natural features that contribute to the survival and/or reproduction of the wildlife of Williston and surrounding communities. This shall include: (1) core habitat; and (2) wildlife connectivity corridors.

        - 27.5.2 What is Core Habitat?
            - A combination of several different wildlife habitat types combined to form a unit of relatively continuous wildlife habitat. Areas characterized as Core Habitat generally consist of relatively large forested areas that might contain a combination of early succession habitats; forested riparian areas; wetlands and vernal pools; deer wintering areas (i.e. deeryards); mast stands; ledge, talus, or cliff habitats; and habitat identified by the Vermont Department of Fish and Wildlife as either significant wildlife habitat or necessary wildlife habitat in accordance with 10 V.S.A. Sec. 6086(a)(8)(A).

        - 27.5.3 What is a Wildlife Connectivity Corridor?
            - A route that permits the direct travel or spread of animals or plants from one area or region to another, either by the gradual spread of a species' population along the route or by the movement of individual members of the species. Generally, such areas are characterized by undeveloped forested and riparian corridors, including forest cover reaching to road rights-of-way, which serve to link large tracks of unfragmented core habitat. In Williston, the corridor was designed to accommodate bobcat, fisher, mink, four-toed salamander, wood frog, smooth green snake, and wood turtle.

        - 27.5.4 What are the boundaries of the SWHAs?
            - The boundaries of SWHAs are shown on the official map titled "Significant Wildlife Habitat Areas," which is available for review at the Williston Planning and Zoning Office.

- 27.5.5 What is the purpose of protecting Significant Wildlife Habitat Areas?
    - This section establishes development standards designed to: guide development in a manner that maintains large blocks of forest and areas of contiguous habitat; protect distinct types of habitat required for specific wildlife species; and, ensure the continued movement of wildlife species between unfragmented blocks of forest and core habitat within the town and surrounding region.

APPENDIX C: FOR MORE INFORMATION

MAPPING FOREST BLOCKS & HABITAT CONNECTORS TOOLS AND DATA

- **BioFinder**: biofinder.vermont.gov
- **Fish and Wildlife Department's Community Wildlife Program:** http://www.vtfishandwildlife.com/cms/one.aspx?pageId=132648
- **Vermont Natural Resources Council parcelization data:** http://www.vnrc.org/subdivisionreport/

PLANNING FOR FOREST BLOCKS AND HABITAT CONNECTORS

- **Conserving Vermont's Natural Heritage: A Guide to Community-Based Planning for the Conservation of Vermont's Fish, Wildlife, and Biological Diversity,** Vermont Fish and Wildlife Department: vtfishandwildlife.com/UserFiles/Servers/Server_73079/File/Get%20Involved/Partner%20in%20Conservation/Conserving_Vermont's_Natural_Heritage.pdf
- **Community Strategies for Vermont's Forests and Wildlife: A Guide for Local Action,** Vermont Natural Resources Council: vnrc.org/wp-content/uploads/2013/08/VNRC-Forestland-Conservation-10-1-links.pdf

FORESTS AND FORESTRY RELATED ACTIVITIES

- **Our Vermont Woods - Municipalities:** ourvermontwoods.org/audience/municipality
- **FragNet - The Northeast Forest Fragmentation Information network**: uvm.edu/femc/fragnet

MUNICIPAL PLANNING IN VERMONT

- **Planning Manual for Vermont's Municipalities:** accd.vermont.gov/community-development/town-future/municipal-planning-manual
- **The Vermont Planning Information Center's Website:** www.vpic.info
- **Essentials of Local Land Use Planning and Regulation**, by the Vermont Land Use Education & Training Collaborative: vpic.info/Essentials.html

REPORTS AND STUDIES TO THE VERMONT LEGISLATURE

- **2015 Forest Fragmentation Report,** Vermont Department of Forests, Parks and Recreation: vtforest.com