

## Wildlife Road Crossings

### Description

Wildlife Road Crossings are locations where wildlife are likely to cross roads based on the presence of forests, shrublands and wetlands on both sides of the road. The dataset is the result of an assessment of structural components (i.e., where there is forest and/or other natural vegetation on both sides of a road) to predict the ease of movement for a variety of wildlife species. This assessment is not specific to particular species as it offers a generalized sense of where the greatest variety of species is likely to move.

Wildlife Road Crossings are the finest scale of Habitat Connectivity in Vermont Conservation Design. Landscape connectivity refers to the degree to which blocks of suitable habitat are connected to each other (Noss and Cooperrider 1994). At the coarsest, eco-regional scale, connecting land in Vermont can be thought of as a “network” supporting genetic heterogeneity and movement of populations of wide-ranging mammal species across huge swaths of the landscape; such as between the Adirondacks Mountains of New York, Vermont’s Green Mountains and the White Mountains of New Hampshire. It is a network in the sense that it includes 1) the largest blocks of contiguous, unfragmented core habitat, (the source and principle home area of many species as well as areas of diversity in the physical landscape), 2) connecting forest or “stepping stone blocks” (These may be smaller, but their landscape position between larger blocks make them integral to maintaining the network) and 3) local connections including riparian connectivity and wildlife road crossings.

### Ecological Importance

Wildlife road crossings are a critical and vulnerable component of the network of connecting lands. These areas of habitat fragmentation are locations where wildlife species are most likely to cross roads, based on remote assessment of structural connectivity features. Movement of animals from one habitat patch to another is the most common function associated with connecting habitat. This function is particularly important for wide-ranging animals, such as bobcats and black bears, or for animals that require a great deal of space to meet their daily life needs, such as barred owls or otter. Although connecting habitat is often associated with wide-ranging mammals, it is equally important for animals with relatively small ranges. Spotted salamanders, for example, use connecting habitat in spring to move from their hibernation sites to breeding pools. The value of connecting habitat is a function of both seasonal and spatial patterns of wildlife behavior. For example, connecting habitat may allow black bears to access important food resources during a specific time of year (seasonal), or it may prevent isolation of bear populations by allowing free exchange of breeding adults (spatial). Ultimately, connecting habitat can ensure that the habitat, movement, migration, and behavior requirements of most native plants and animals are conserved across a broad landscape. The broader ecological value of connecting habitat is to join fragmented pieces of habitat, thereby reducing the deleterious effects of habitat fragmentation and population isolation. Linking small or otherwise isolated habitat patches may reduce the risk of local population extinctions by ensuring immigration, recolonization, reproduction, and exchange of genes for some plant and animal species. While conserving corridors has great merit, do not assume that conserving threads of vegetative cover

within a developing landscape will maintain an area's ecological values and biological diversity. Nor will corridors alone meet the habitat needs of all of an area's plant and animal species. Only in conjunction with the conservation of large areas of undeveloped land with diverse habitat conditions, will vegetative corridors assist in supporting ecosystem functions and related public benefits.

### **Wildlife Road Crossing Conservation Goal**

Conserve wildlife road crossings wherever possible, especially in fragmented landscapes. Wildlife Road Crossings are of critical importance in this network as they are the most threatened by future development.

### **Component Mapping Goal Statement**

To map locations of potential wildlife road crossings statewide based on structural connectivity features.

### **Input Datasets (s) & Selection Criteria**

All roadsides were divided into study plots of 60m along the road and 75m perpendicular. For each plot, the % Habitat Block was calculated. Where both sides of the road included the requisite amount of cover, that road segment was flagged as Highest Priority or Priority.

Vermont Habitat Blocks, Hawkins-Hilke et al. 2023. Vermont Fish & Wildlife Department.

### **Description**

Habitat blocks show all areas of natural cover (Combining 2016 Forest canopy, Shrubland, & Wetland landcover data from University of Vermont Spatial Analysis Lab) surrounded by roads, development and agriculture, ranging in size from 150-acres to 150,000-acres and prioritized for biological importance.

### **Selection Criteria**

Highest Priority Wildlife Road Crossings are those with greater than 75% of the land on both sides of the road in natural cover. Priority Wildlife Road Crossings are those with greater than 50% of the land on both sides of the road in natural cover.

### **Source Data Strengths**

This dataset provides our best look at local-scale movement areas. While areas such as the Champlain Valley of Vermont are not considered important for regional scale movement between the Adirondacks and the Green Mountains, a network of patches of intact forest and small connecting lands between them still exist. Though fragmented habitat, they nonetheless provide connectivity to help wildlife populations persist into the future. This dataset is the best we have for addressing fine scale connectivity.

## Component Limitations

Field surveys to document wildlife movement have not been performed in most of these areas. Wildlife road crossings were selected based on the presence of adjacent natural cover (e.g., forest, wetlands and waters). This dataset does not rank crossing areas based on ecological importance. For example, a wildlife road crossing on I-89 may be significantly more important to the overall connectivity network than a rural road in that the interstate is one of the state's most significant barriers to wildlife movement. Under the time limitations of this project we could not discriminate between a crossing of this most significant barrier and the crossing of a small rural road. As with all features included in Vermont Conservation Design, we recommend site-specific surveys prior to making any land-use decision.

## Component Priority & Justification

*Priority* Wildlife Road Crossings are those with greater than 50% of the land on both sides of the road in natural cover.

*Highest Priority* Wildlife Road Crossings are those with greater than 75% of the land on both sides of the road in natural cover.

## References

Hawkins-Hilke et al. 2023. [Vermont Habitat Blocks](#), Vermont Fish & Wildlife Department

## For more information

For more information specific to this component, contact Vermont Fish & Wildlife Department, Jens Hilke, at 802-461-6791, [jens.hilke@vermont.gov](mailto:jens.hilke@vermont.gov) and Bob Zaino, at 802-476-0128, [Robert.Zaino@vermont.gov](mailto:Robert.Zaino@vermont.gov)