

Charlotte's Significant Wildlife Habitat Map and Database

A USER'S GUIDE

Acknowledgements

The 2008 Map is the product of more than two years of professional review and assessment, organized by the Conservation Commission and led by the following team: Linda Hamilton, Bob Hyams, and Trafton Crandall (Conservation Commission); Marty Illick (Lewis Creek Association); Larry Hamilton (Forest Ecologist); Jens Hilke and John Austin (Vermont Fish & Wildlife Department); and Jesse Mohr and Matt Kolan (Consulting Ecologists). Funding was provided by the select board, Conservation and Planning Commissions, and a municipal planning grant from Vermont Department of Housing and Community Affairs. The update process took into account findings and recommendations of the 1995-2001 Vermont Biodiversity Project, State of Vermont Wildlife Action Plan, Lewis Creek Association Conservation Priority Plan, Chittenden County Open Space Plan, and the 2004 Vermont Agency of Natural Resources publication, *Conserving Vermont's Natural Heritage: A Guide to Community-Based Planning for the Conservation of Vermont's Fish, Wildlife, and Biological Diversity*.



PHOTO: JESSE MOHR

Barred owl.

History

Charlotters appreciate wildlife and understand the need to maintain key areas of habitat so that this important part of our natural heritage continues. For this reason, wildlife habitat planning maps have been included in Charlotte Town Plans since 1990.

The Map is updated at least every 10 years to reflect science's growing understanding of wildlife and habitat. As part of the 2008 update, it was renamed the Significant Wildlife Habitat Map to avoid confusion with the technical term "critical habitat," which is commonly associated with the Federal Endangered Species Act. The Significant Wildlife Habitat Map is currently awaiting adoption into the Charlotte Town Plan as an update of the current (2000) Critical Wildlife Habitat Map. (Copies of the Town Plan are available through the Town website www.charlottevt.org or at the Planning and Zoning Office at the Charlotte Town Hall.)

Purpose of the Map

The purpose of the Significant Wildlife Habitat Map is to provide up-to-date information regarding the general location and nature of especially important wildlife habitat in Charlotte. It is a plan-

ning tool, intended to aid residents, Town boards, educators, conservation organizations, and others, to better understand these resources and thus make informed decisions about them. The Town Plan includes critical wildlife habitat on the list of features with high public value in Charlotte and uses the Map as a way to reference their location. The Map is not intended for survey or engineering purposes.

The Map is based on a review of publicly available science-based information. It reflects what is known today about the general location and nature of areas of significant wildlife habitat in Charlotte. The Map also integrates local priorities with regional and state considerations.

Sources of information about the natural features of Charlotte vary in scale, age, and comprehensiveness. Some but not all areas have been field-checked in detail. Nevertheless, available information is more than adequate to map those areas that appear to have the characteristics of significant wildlife habitat. The associated database documents what is currently publicly known about these areas. Questions related to the exact location of habitat features or best stewardship practices of specific areas may require additional field assessment by knowledgeable professionals.

Seven Ecological Principles Relevant to Wildlife Habitat and Its Conservation

1. Maintain large, intact patches of native vegetation.
2. Protect habitats that are key to the distribution and abundance of priority species (identified in the State of Vermont's 2006 Wildlife Action Plan as being of greatest concern).
3. Protect exemplary natural communities and aquatic features.
4. Maintain connections among wildlife habitats for movement and gene flow.
5. Maintain significant ecological processes (such as wetlands and floodplains recharging groundwater and filtering surface water).
6. Contribute to regional persistence of rare species by protecting their habitat locally.
7. Ensure that the full range of native biological diversity is maintained by protecting a representation of all ecosystems found in Charlotte and the greater Champlain Valley.

Only those habitat areas which support one or more of these principles are considered "significant" and included on the 2008 Significant Wildlife Habitat Map.

Hepatica.



PHOTO: CAROL HANLEY

Purpose of the Database

The Significant Wildlife Habitat Map database serves as a reference library for the map. The purpose of the database is to:

- Compile publicly available, science-based information about each mapped area, including field studies conducted with landowner permission.
- Provide copies or electronic links to original sources of information, or citations of original material.
- Document the scientific methodology used to classify, identify, and assess significant wildlife habitat in Charlotte.
- Indicate the basis for including each area on the Map.
- Provide a structure for updating map-related information.

Scientific Basis

To meet the Town Plan's intention to encourage wise use and stewardship of wildlife habitat, significant wildlife habitat resources need to be identified and understood. Therefore, using the best available scientific approach and information, the wildlife habitat areas in Charlotte that are particularly important ("significant") have been identified and mapped. Natural communities (natural associations of native plant and animal species and the ecological interactions they support) are often key components of significant wildlife habitat. This, and other factors, make some parts of the landscape more important than others as habitat.

Wildlife is a broad term encompassing all wild flora and fauna. The Map focuses primarily on the ecosystems and natural communities on which wildlife species depend. Priority wildlife species are those indicated in the Vermont State Wildlife Action Plan as being of "greatest concern" in the state because of rareness and other factors.

All wildlife species have three basic life requirements: food, water, and cover, which collectively comprise the habitat of a given species. Species are limited by the life requirement in least supply. To provide locally for a diversity of wildlife species, it is necessary to maintain not only a variety of habitat types, but also more than a minimum size and quantity of suitable habitat areas that contain the limiting life requirement. It is essential to also maintain connections among areas. Without these key features of habitat variety, quantity, quality, and linkage, many species will not persist regardless of the total amount of land available to them.

PHOTO: MATTHEW KOLAN



Spotted salamander.

The 2008 Significant Wildlife Habitat Map is an update of the Town Plan's 2000 Critical Wildlife Habitat Map. The structure and methodology of the update is a model endorsed and promoted by the State of Vermont.

During the 2006-2008 map update process, all of Charlotte's wildlife habitat was assessed using seven widely accepted ecological principles relevant to wildlife habitat and its conservation.

1. Maintain large, intact patches of native vegetation.

This not only helps maintain the viability of our natural communities, it also supports two groups of species in particular that have limited habitat in Charlotte. The first group includes species that require lots of space, like black bear and Northern goshawk; they are dependent on large habitat patches. The second group includes interior forest species, like the ovenbird and hermit thrush, that are most successful when they breed in the safety of deep forest, well away from predators common along the edge. Fragmented patches of vegetation mean more edge and more opportunity for the spread of aggressive non-native species, a process that can overpower and displace native species and natural communities.

2. Protect habitats that are key to the distribution and abundance of priority species (identified in the 2006 Vermont Wildlife Action Plan).

Many wildlife species have specific and limiting requirements, and are therefore not widespread. When their specialized habitat is lost, they usually cannot adapt, and they too are lost. For example, wood frog and yellow- and blue-spotted salamanders are dependent on vernal pools, which are found in probably less than 1% of Charlotte. Species-specific habitat protection requires a thorough understanding of a given species and its associated habitat needs. Through the Vermont Wildlife Action Plan, the Department of Fish &

PHOTO: MATTÔHEW KOLAN



Male fisher tracks.

Wildlife has identified species in the state of greatest conservation need and the habitats that are key to their distribution. Protecting these key habitats will help keep bobcat, fisher, and other important Charlotte species from continued decline.

3. Protect exemplary natural communities and aquatic features.

There are some natural communities and aquatic features in good condition in Charlotte that are otherwise rare in the state. The clayplain forest of Williams Woods off Greenbush Road is a good example. In addition, Charlotte also supports some very high quality examples of relatively common natural communities and aquatic features, such as the aquatic habitats of Lewis Creek. These rare occurrences and high quality examples of common natural communities and aquatic features are termed “exemplary.” They contain some of Charlotte’s rarest species and highest quality habitats.

4. Maintain connections among wildlife habitats for movement and gene flow.

Many of Charlotte’s habitats exist as relatively small islands surrounded by areas less favorable for wildlife. Crossing a road, open field, or large lawn around a house can be a stressful and even dangerous experience for many wildlife species. Some species will avoid crossing these less favorable areas altogether. Others, like many of our amphibians, are compelled by need to cross a danger zone, and die in the process. The high level of stress, mortality, and avoidance associated with crossing these less favorable areas is detrimental to wildlife populations. When wildlife species are not able to or are deterred from traveling between neighboring habitats, breeding opportunities are restricted, and gene pools and flow shrink. Feeding opportunities are also limited. Bobcats, for example, like to feed in Charlotte’s brushy shrubland areas, but prefer to den in the deep woods. Maintaining linkages among areas of favorable habitat can be key to species health and ultimate survival.

5. Maintain significant ecological processes (such as wetlands and floodplains recharging groundwater and filtering surface water).

Maintaining the water purifying processes of wetlands, floodplains, and groundwater recharge areas is critical to ensuring that an adequate supply of clean water is available for all species, including humans. Maintaining these processes is also critical to protecting the water quality of Lake Champlain and the many species it supports. Additionally, Charlotte’s shorelines, beaver ponds, floodplains, and cliffs are epicenters of important

habitat-forming processes. The wealth of natural communities and wildlife species found in these locations is a result of these natural ecological processes.

6. Contribute to regional persistence of rare species by protecting their habitat locally.

Protecting the habitat of rare, threatened, and endangered species is critical to preventing these already imperiled species from disappearing. Several state and federally listed species and their habitats are found in Charlotte. The federally endangered Indiana bat is known to utilize large loose-barked trees, wetlands, and streams in and around Charlotte. Upland sandpipers, a state threatened species, utilize the grassy fields, lawns, and pastures of Charlotte, while the stonecat, a small freshwater catfish, is found in the LaPlatte River. The town also supports a number of state threatened and endangered plants and a number of rare but not yet listed wildlife species.

7. Ensure that the full range of native biological diversity is maintained by protecting ecosystems that are poorly represented in the landscape.

Only with the full diversity of Charlotte’s ecosystems present in the landscape can each species of native wildlife and natural community find a suitable home now and in the future. Because ecosystems and the wildlife populations they support are dynamic, it is not practical to survey or map them in fine detail. They change over time due to natural processes and human activities. There are, however, maps of geology, soils, and other natural features that indicate what ecosystems, natural communities, and species the whole town (and specific areas within the town) are capable of supporting and how much of this potential has been lost. We know, for example, that Charlotte has extensive flat clayey soils, which give rise to biologically very rich clayplain forest—and that much of this area has been converted to agricultural and residential uses. As a result, the abundance and distribution of the ecosystems and uniquely rich natural communities these soils support is now very limited compared to what the town is capable of supporting.

For a detailed explanation of the seven ecological principles and assessment methodologies, see *Technical Guide to Classifying, Identifying and Justifying Significant Wildlife Habitat in Charlotte, Vermont* included in the database.

A Note about Accuracy

Because source material for the Map update is from a range of scales, sources, and dates, some inaccuracy at the site level is to be expected.

For example, the most recent orthophotos are from 2006, and land use changes have occurred since then. Also, some state maps used, such as the official 911 map, wetlands, and surface water/stream maps, routinely require field visits to establish accuracy. Houses/structures seen on the orthophotos that create a disturbed area greater than one acre in a mapped habitat area were excluded manually from the final map, except in Linkage Habitat if the linkage function was still evident despite that human activity. In respect to site-level accuracy, the 2008 Significant Wildlife Habitat Map is more accurate than the widely used and respected US Soil Survey (another planning map), which accepts inadvertent inclusion of up to 15% of other types of soil in mapped areas.

It was not practical to survey the entire town on the ground. Nor was it necessary in order to update the current habitat indicator map. The best available maps and data were used. Field-checking has been done where feasible (more than 350 hours since early 2006), to verify and supplement already existing information. The associated database indicates all studies and material reviewed.

Types of Wildlife Habitat in Charlotte

Five general types of habitat are found in Charlotte:

1. Forest

Trees are the dominant vegetative life form. Forest habitat includes forests (with canopy cover of 60% or more) and woodlands (canopy cover of 25%-60%).

2. Aquatic

Areas inundated or strongly affected by surface water. Aquatic habitat includes streams, rivers, lakes, and wetlands, and their adjacent water- and sediment-affected lands. Note that these water-influenced and influencing adjacent lands (buffer zones) actually vary in width and location due to topography and stream meandering. However, for practical purposes when mapping, uniform 100-foot buffers are indicated on each side of wetlands and named streams in Charlotte. Buffers of 330 feet are indicated on each side of Thorp Brook, Lewis Creek and LaPlatte River, in keeping with state and international standards.

3. Shrubland

Shrubs and young trees are the dominant vegetative life form. Note that only areas likely to persist as shrubland for 10 years or more due to natural conditions that prevent tree establishment (such as beaver-maintained wetlands, floodplains, shrub swamps, and the margins of rock outcrops) are considered persistent enough to assess as Significant Wildlife Habitat. Since most Shrubland Habitat in Charlotte is maintained only through human intervention (periodic brush-hogging), it is not stable enough to be classified as persistent and included on this map. The Conservation Commission is preparing a map overlay of

human-dependent Shrubland Habitat, based on the most recent orthophoto available (2006). This shows abundance and distribution of this important habitat type at least at that time.

4. Linkage

These are areas in addition to the above that provide connections for animal movement and plant dispersal among forest, aquatic, and shrubland habitat areas across the larger region. This may include hedgerows, fields, small lawns, vegetated drainage ways, and fallow lands that provide needed links to feeding, denning, and breeding grounds. Note that since wildlife species vary in their tolerance of activity of humans and domestic animals within their linkage habitat, these areas are generally swaths or vegetative zones rather than narrow paths.

5. Grassland Bird Habitat

This includes hayfields, pastures, fallow fields, beaver meadows, and large grassy areas that remain unmowed during periods key for nesting and raising young of species dependent on this habitat type (bobolinks, Savannah sparrow, meadowlark, northern harrier, and others). Note that Grassland Bird Habitat is maintained almost exclusively through bird-friendly management by people, which means it may not persist from year to year. Because of its temporal nature, Grassland Bird Habitat could not be included on the 2008 Significant Wildlife Habitat Map. It was assessed, however, and guidelines for how to identify and maintain these habitat areas are now provided in the 2008 Conservation Commission publication, *Grassland Birds in Charlotte: Our Role in Their Future*. This is available at the Town Hall, or click [HERE](#) to download it as a pdf file; it can also be viewed on the Conservation Commission section of the Town website at www.charlottevt.org.

PHOTO: TERRY DINNAN



**Moose
in East
Charlotte.**



PHOTO: ROSE PAUL/THE NATURE CONSERVANCY

View east over Williams Woods.

Accessing and Using the Map and Database

The Map is available in two forms:

■ A paper version with simplified color coding.


A large color copy of the 2008 Significant Wildlife Habitat Map is on display in the Town Hall. You can get an 11" x 17" color copy from the Planning and Zoning Office. Color coding indicates the general location and nature of significant habitat areas. This simplified overview of the whole Town can also be viewed and downloaded to a computer as a non-interactive pdf file by clicking [HERE](#), or via the town website www.charlottetv.org. *Note that the Map is best understood and used in electronic form in conjunction with the associated database because it is not uncommon for colored areas on the paper copy to include more than one habitat category (such as swamp forest that is also linkage habitat).*

■ An electronically interactive version linked to its database.

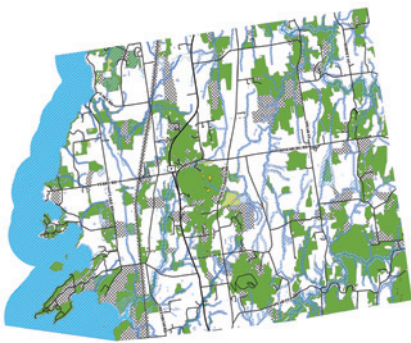
The habitat map was created by the Chittenden County Regional Planning Commission (CCRPC). Access to the map in interactive, electronic form is available online at <http://maps.ccrpcvt.org/WLHABMap/>

Through this platform, you can customize your view by using the four "click-on" overlay options that depict the location of the four habitat types, which can be viewed separately or in combination:

- *Forest
- *Aquatic
- *Persistent Shrubland
- *Linkage (corridors)

Reports associated with each habitat element can be viewed as well. First click the icon  (upper right menu bar), then click on the map feature to view reports for each habitat polygon (or shape). Reports are in PDF format. These reports tell the viewer which of the seven ecological principles are supported in each of the mapped areas, and all publicly available information related to that area.

Depending on your Internet browser, you should have options for downloading reports and sections of the map for future review. If you have any questions regarding the use of the interactive map, contact the Charlotte Planning and Zoning Office, 802-425-3533, or dean@townofcharlotte.com



Other Resources

Residents without internet access may use the publicly available computers at Charlotte Library to reach the map via the Town website at www.charlottetv.org

Residents may also obtain paper copies of map blow-ups of their property and surrounds (with property boundaries), and print-outs of the information relevant to that area, from the Planning and Zoning Office in the Town Hall.

This User's Guide was prepared for Charlotte Conservation Commission by the habitat map update team. Editors: Linda Hamilton and Eleanor Russell. Graphic design: Carol Hanley. Town of Charlotte, Vermont, 2009.