This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.
Table of Contents

Introduction

What is BioMap2 – Purpose and applications
   One plan, two components
   Understanding Core Habitat and its components
   Understanding Critical Natural Landscape and its components

Understanding Core Habitat and Critical Natural Landscape Summaries

Sources of Additional Information

Brimfield Overview

Core Habitat and Critical Natural Landscape Summaries

Elements of BioMap2 Cores
Core Habitat Summaries
Elements of BioMap2 Critical Natural Landscapes
Critical Natural Landscape Summaries
Introduction

The Massachusetts Department of Fish & Game, through the Division of Fisheries and Wildlife’s Natural Heritage & Endangered Species Program (NHESP), and The Nature Conservancy’s Massachusetts Program developed BioMap2 to protect the state’s biodiversity in the context of climate change. BioMap2 combines NHESP’s 30 years of rigorously documented rare species and natural community data with spatial data identifying wildlife species and habitats that were the focus of the Division of Fisheries and Wildlife’s 2005 State Wildlife Action Plan (SWAP). BioMap2 also integrates The Nature Conservancy’s assessment of large, well-connected, and intact ecosystems and landscapes across the Commonwealth, incorporating concepts of ecosystem resilience to address anticipated climate change impacts.

Protection and stewardship of BioMap2 Core Habitat and Critical Natural Landscape is essential to safeguard the diversity of species and their habitats, intact ecosystems, and resilient natural landscapes across Massachusetts.

What Does Status Mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act (MESA), M.G.L. c.131A, and its implementing regulations 321 CMR 10.00. Rare species are categorized as Endangered, Threatened or of Special Concern according to the following:

- **Endangered species** are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- **Threatened species** are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- **Special Concern species** have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition NHESP maintains an unofficial watch list of plants that are tracked due to potential conservation interest or concern, but are **not** regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are **not** regulated by any law or regulations, but they can help to identify...
ecologically important areas that are worthy of protection. The status of natural communities reflects the documented number and acreages of each community type in the state:

- Critically Imperiled communities typically have 5 or fewer documented good sites or have very few remaining acres in the state.
- Imperiled communities typically have 6-20 good sites or few remaining acres in the state.
- Vulnerable communities typically have 21-100 good sites or limited acreage across the state.
- Secure communities typically have over 100 sites or abundant acreage across the state; however, excellent examples are identified as Core Habit to ensure continued protection.

In 2005 the Massachusetts Division of Fisheries and Wildlife completed a comprehensive State Wildlife Action Plan (SWAP) documenting the status of Massachusetts wildlife and providing recommendations to help guide wildlife conservation decision-making. SWAP includes all the wildlife species listed under the Massachusetts Endangered Species Act (MESA), as well as more than 80 species that need conservation attention but do not meet the requirements for inclusion under MESA. The SWAP document is organized around habitat types in need of conservation within the Commonwealth. While the original BioMap focused primarily on rare species protected under MESA, BioMap2 also addresses other Species of Conservation Concern, their habitats, and the ecosystems that support them to create a spatial representation of most of the elements of SWAP.

Core Habitat identifies key areas that are critical for the long-term persistence of rare species and other Species of Conservation Concern, as well as a wide diversity of natural communities and intact ecosystems across the Commonwealth. Protection of Core Habitats will contribute to the conservation of specific elements of biodiversity.

Critical Natural Landscape identifies large natural Landscape Blocks that are minimally impacted by development. If protected, these areas will provide habitat for wide-ranging native species, support intact ecological processes, maintain connectivity among habitats, and enhance ecological resilience to natural and anthropogenic disturbances in a rapidly changing world. Areas delineated as Critical Natural Landscape also include buffering upland around wetland, coastal, and aquatic Core Habitats to help ensure their long-term integrity.

The long-term persistence of Massachusetts biological resources requires a determined commitment to land and water conservation. Protection and stewardship of both Critical Natural Landscapes and Core Habitats are needed to realize the biodiversity conservation vision of BioMap2.

Components of Core Habitat

Core Habitat identifies specific areas necessary to promote the long-term persistence of rare species, other Species of Conservation Concern, exemplary natural communities, and intact ecosystems.

Rare Species

There are 432 native plant and animal species listed as Endangered, Threatened or Special Concern under the Massachusetts Endangered Species Act (MESA) based on their rarity, population trends, and threats to survival. For
Table 1. Species of Conservation Concern described in the State Wildlife Action Plan and/or included on the MESA List and for which habitat was mapped in BioMap2. Note that plants are not included in SWAP, and that marine species such as whales and sea turtles are not included in BioMap2.

<table>
<thead>
<tr>
<th>Taxonomic Group</th>
<th>MESA-listed Species</th>
<th>Non-listed Species of Conservation Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammals</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Birds</td>
<td>27</td>
<td>23</td>
</tr>
<tr>
<td>Reptiles</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Amphibians</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Fish</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>Invertebrates</td>
<td>102</td>
<td>9</td>
</tr>
<tr>
<td>Plants</td>
<td>256</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>413</strong></td>
<td><strong>62</strong></td>
</tr>
</tbody>
</table>

BioMap2, NHESP staff identified the highest quality habitat sites for each non-marine species based on size, condition, and landscape context.

Other Species of Conservation Concern

In addition to species on the MESA List described previously, the State Wildlife Action Plan (SWAP) identifies 257 wildlife species and 22 natural habitats most in need of conservation within the Commonwealth. BioMap2 includes species-specific habitat areas for 45 of these species and habitat for 17 additional species which was mapped with other coarse-filter and fine-filter approaches.

Priority Natural Communities

Natural communities are assemblages of plant and animal species that share a common environment and occur together repeatedly on the landscape. BioMap2 gives conservation priority to natural communities with limited distribution and to the best examples of more common types.

Vernal Pools

Vernal pools are small, seasonal wetlands that provide important wildlife habitat, especially for amphibians and invertebrate animals that use them to breed. BioMap2 identifies the top 5 percent most interconnected clusters of Potential Vernal Pools in the state.

Forest Cores

In BioMap2, Core Habitat includes the best examples of large, intact forests that are least impacted by roads and development, providing critical habitat for numerous woodland species. For example, the interior forest habitat defined by Forest Cores supports many bird species sensitive to the impacts of roads and development, such as the Black-throated Green Warbler, and helps maintain ecological processes found only in unfragmented forest patches.

Wetland Cores

BioMap2 used an assessment of Ecological Integrity to identify the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Aquatic Cores

To delineate integrated and functional ecosystems for fish species and other aquatic
Species of Conservation Concern, beyond the species and exemplary habitats described above, BioMap2 identifies intact river corridors within which important physical and ecological processes of the river or stream occur.

Components of Critical Natural Landscape

Critical Natural Landscape identifies intact landscapes in Massachusetts that are better able to support ecological processes and disturbance regimes, and a wide array of species and habitats over long time frames.

Landscape Blocks

BioMap2 identifies the most intact large areas of predominately natural vegetation, consisting of contiguous forests, wetlands, rivers, lakes, and ponds, as well as coastal habitats such as barrier beaches and salt marshes.

Upland Buffers of Wetland and Aquatic Cores

A variety of analyses were used to identify protective upland buffers around wetlands and rivers.

Upland Habitat to Support Coastal Adaptation

BioMap2 identifies undeveloped lands adjacent to and up to one and a half meters above existing salt marshes as Critical Natural Landscapes with high potential to support inland migration of salt marsh and other coastal habitats over the coming century.

The conservation areas identified by BioMap2 are based on breadth and depth of data, scientific expertise, and understanding of Massachusetts’ biodiversity. The numerous sources of information and analyses used to create Core Habitat and Critical Natural Landscape are complementary, and outline a comprehensive conservation vision for Massachusetts, from rare species to intact landscapes. In total, these robust analyses define a suite of priority lands and waters that, if permanently protected, will support Massachusetts’ natural systems for generations to come.

Legal Protection of Biodiversity

BioMap2 presents a powerful vision of what Massachusetts would look like with full protection of the land most important for supporting the Commonwealth’s biodiversity. While BioMap2 is a planning tool with no regulatory function, all state-listed species enjoy legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Wetland habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.00). The Natural Heritage Atlas contains maps of Priority Habitats and Estimated Habitats, which are used, respectively, for regulation under the Massachusetts Endangered Species Act and the Wetlands Protection Act. For more information on rare species regulations, and to view Priority and Estimated Habitat maps, please see the Regulatory Review page at http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/.

BioMap2 is a conservation planning tool that does not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the BioMap2 vision is fully realized, we must continue to protect our most imperiled species and their habitats.

For more information on rare species and natural communities, please see our fact sheets online at www.mass.gov/nhesp.
Understanding Core Habitat Summaries

Following the Town Overview, there is a descriptive summary of each Core Habitat and Critical Natural Landscape that occurs in your city or town. These summaries highlight some of the outstanding characteristics of each Core Habitat and Critical Natural Landscape, and will help you learn more about your city or town’s biodiversity. You can find out more information about many of these species and natural communities by looking at specific fact sheets at www.mass.gov/nhesp.

Additional Information

For copies of the full BioMap2 report, the Technical Report, and an interactive mapping tool, visit the BioMap2 website via the Land Protection and Planning tab at www.mass.gov/nhesp. If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program

By phone 508-389-6360
By fax 508-389-7890
By email natural.heritage@state.ma.us
By Mail 100 Hartwell Street, Suite 230
West Boylston, MA 01583

The GIS datalayers of BioMap2 are available for download from MassGIS at www.mass.gov/mgis.
**Town Overview**

Brimfield lies within the Lower Worcester Plateau Ecoregion, an area comprised of open hills and transition hardwood and central hardwood forests. Most parts drain to the Chicopee and Quinebaug Rivers.

---

**Brimfield at a Glance**

- Total Area: 22,603 acres (35.3 square miles)
- Human Population in 2010: 3,609
- Open space protected in perpetuity: 3,862 acres, or 17.1% percent of total area*
- BioMap2 Core Habitat: 1,567 acres
- BioMap2 Core Habitat Protected: 860 acres or 54.9%
- BioMap2 Critical Natural Landscape: 6,277 acres
- BioMap2 Critical Natural Landscape Protected: 2,843 acres or 45.3%.

**BioMap2 Components**

### Core Habitat
- 3 Exemplary or Priority Natural Community Cores
- 6 Wetland Cores
- 8 Aquatic Cores
- 9 Species of Conservation Concern Cores**
  - 2 birds, 1 reptile, 3 amphibians, 1 fish, 3 insects

### Critical Natural Landscape
- 2 Landscape Blocks
- 6 Wetland Core Buffers
- 8 Aquatic Core Buffers

* Calculated using MassGIS data layer “Protected and Recreational Open Space—March, 2012”.
** See next pages for complete list of species, natural communities and other biodiversity elements.
BioMap2 Core Habitat and Critical Natural Landscape in Brimfield

[Map showing BioMap2 Core Habitat and Critical Natural Landscape in Brimfield]

BioMap2 Core Habitat

BioMap2 Critical Natural Landscape

1 Mile

For more information on rare species and natural communities, please see our fact sheets online at [www.mass.gov/nhesp](http://www.mass.gov/nhesp).
Species of Conservation Concern, Priority and Exemplary Natural Communities,
and Other Elements of Biodiversity in Brimfield

Insects

Moths
Two-striped Cord Grass Moth, \( Macrochilo bivittata \), Non-listed SWAP

Dragonflies
Spine-crowned Clubtail, \( Gomphus abbreviatus \), SC
Brook Snaketail, \( Ophiogomphus aspersus \), SC

Amphibians
Blue-spotted Salamander, \( Ambystoma laterale \), SC
Marbled Salamander, \( Ambystoma opacum \), T
Four-toed Salamander, \( Hemidactylium scutatum \), Non-listed SWAP

Fishes
Bridle Shiner, \( Notropis bifrenatus \), SC

Reptiles
Spotted Turtle, \( Clemmys guttata \), Non-listed SWAP

Birds
American Bittern, \( Botaurus lentiginosus \), E
Least Bittern, \( Ixobrychus exilis \), E

Priority Natural Communities
Acidic Graminoid Fen, S3

Exemplary Natural Communities
Acidic Rocky Summit/Rock Outcrop Community
Mixed Oak Forest

Other BioMap2 Components
Aquatic Core
Wetland Core
Landscape Block
Aquatic Core Buffer
Wetland Core Buffer

For more information on rare species and natural communities, please see our fact sheets online at [www.mass.gov/nhesp](http://www.mass.gov/nhesp).
E  = Endangered
T  = Threatened
SC = Special Concern
S1 = Critically Imperiled communities, typically 5 or fewer documented sites or very few remaining acres in the state.
S2 = Imperiled communities, typically 6-20 sites or few remaining acres in the state.
S3 = Vulnerable communities, typically have 21-100 sites or limited acreage across the state.
BioMap2 Core Habitat in Brimfield

Core IDs correspond with the following element lists and summaries.
Elements of BioMap2 Cores

This section lists all elements of BioMap2 Cores that fall entirely or partially within Brimfield. The elements listed here may not occur within the bounds of Brimfield.

Core 1082
Priority & Exemplary Natural Communities
Acidic Graminoid Fen S3

Core 1094
Species of Conservation Concern
Blue-spotted Salamander Ambystoma laterale SC

Core 1096
Wetland Core

Core 1103
Wetland Core

Core 1106
Wetland Core

Core 1110
Wetland Core

Core 1111
Species of Conservation Concern
Blue-spotted Salamander Ambystoma laterale SC

Core 1119
Species of Conservation Concern
Marbled Salamander Ambystoma opacum T

Core 1124
Wetland Core

Core 1127
Wetland Core
Aquatic Core
Species of Conservation Concern
Two-striped Cord Grass Moth Macrochilo bivittata Non-listed SWAP
Four-toed Salamander  
Hemidactylium scutatum  
Non-listed SWAP

Least Bittern  
Ixobrychus exilis  
E

Core 1164
Aquatic Core

Core 1167
Priority & Exemplary Natural Communities
Acidic Rocky Summit/Rock Outcrop Community

Core 1168
Wetland Core

Core 1170
Priority & Exemplary Natural Communities
Acidic Rocky Summit/Rock Outcrop Community

Core 1177
Wetland Core

Core 1178
Priority & Exemplary Natural Communities
Acidic Rocky Summit/Rock Outcrop Community

Core 1206
Aquatic Core
Species of Conservation Concern
Bridle Shiner  
Notropis bifrenatus  
SC

Core 1208
Aquatic Core
Species of Conservation Concern
Spotted Turtle  
Clemmys guttata  
Non-listed SWAP
American Bittern  
Botaurus lentiginosus  
E

Core 1213
Wetland Core
Aquatic Core

For more information on rare species and natural communities, please see our fact sheets online at [www.mass.gov/nhsp](http://www.mass.gov/nhsp).
<table>
<thead>
<tr>
<th>Species of Conservation Concern</th>
<th>Notropis bifrenatus</th>
<th>SC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core 1223</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Core</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Species of Conservation Concern</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bridle Shiner</td>
<td>Notropis bifrenatus</td>
<td>SC</td>
</tr>
<tr>
<td><strong>Core 1259</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland Core</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Core 1289</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland Core</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Core 1529</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic Core</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priority &amp; Exemplary Natural Communities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acidic Rocky Summit/Rock Outcrop Community</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circumneutral Rocky Summit/Rock Outcrop Community</td>
<td>S2S3</td>
<td></td>
</tr>
<tr>
<td>Circumneutral Talus Forest/Woodland</td>
<td></td>
<td>S3</td>
</tr>
<tr>
<td>Hickory - Hop Hornbeam Forest/Woodland</td>
<td></td>
<td>S2</td>
</tr>
<tr>
<td>Mixed Oak Forest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oak - Hickory Forest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ridgetop Pitch Pine - Scrub Oak Community</td>
<td></td>
<td>S2</td>
</tr>
<tr>
<td>Species of Conservation Concern</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autumn Coralroot</td>
<td>Corallorhiza odontorhiza</td>
<td>SC</td>
</tr>
<tr>
<td>Climbing Fumitory</td>
<td>Adlumia fungosa</td>
<td>SC</td>
</tr>
<tr>
<td>Green Rock-cress</td>
<td>Boechera missouriensis</td>
<td>T</td>
</tr>
<tr>
<td>Lion's Foot</td>
<td>Nabalus serpentarius</td>
<td>E</td>
</tr>
<tr>
<td>Orange Sallow Moth</td>
<td>Pyrrhia aurantiago</td>
<td>SC</td>
</tr>
<tr>
<td>Brook Snaketail</td>
<td>Ophiogomphus aspersus</td>
<td>SC</td>
</tr>
<tr>
<td>Spine-crowned Clubtail</td>
<td>Gomphus abbreviatus</td>
<td>SC</td>
</tr>
<tr>
<td>Blue-spotted Salamander</td>
<td>Ambystoma laterale</td>
<td>SC</td>
</tr>
<tr>
<td>Spring Salamander</td>
<td>Gyrinophilus porphyriticus</td>
<td>Non-listed SWAP</td>
</tr>
</tbody>
</table>
Core Habitat Summaries

Core 1082

A 2-acre Core Habitat featuring a Priority Natural Community.

Acidic Graminoid Fens are sedge- and sphagnum-dominated acidic peatlands that experience some groundwater and/or surface water flow but no calcareous seepage. Standing water is often present throughout much of the growing season. This example of Acidic Graminoid Fen is a small, yet species-rich, community on the edge of a larger wetland along the Quinebaug River. This relatively common natural community type is typical habitat for many state-listed plant and animal species.

Core 1094

A 246-acre Core Habitat featuring a Species of Conservation Concern.

Adult and juvenile Blue-spotted Salamanders inhabit upland forests during most of the year, where they reside in small-mammal burrows and other subsurface retreats. Adults migrate during late winter or early spring to breed in vernal pools and fish-free areas of swamps, marshes, or similar wetlands. Larvae metamorphose in late summer or early fall, whereupon they disperse into upland forest.

Core 1096

A 2-acre Core Habitat featuring Wetland Core.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Core 1103

A 1-acre Core Habitat featuring Wetland Core.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Core 1106

A 2-acre Core Habitat featuring Wetland Core.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are...
most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Core 1110
A <1-acre Core Habitat featuring Wetland Core.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Core 1111
A 92-acre Core Habitat featuring a Species of Conservation Concern.

Adult and juvenile Blue-spotted Salamanders inhabit upland forests during most of the year, where they reside in small-mammal burrows and other subsurface retreats. Adults migrate during late winter or early spring to breed in vernal pools and fish-free areas of swamps, marshes, or similar wetlands. Larvae metamorphose in late summer or early fall, whereupon they disperse into upland forest.

Core 1119
A 147-acre Core Habitat featuring a Species of Conservation Concern.

Adult and juvenile Marbled Salamanders inhabit upland forests during most of the year, where they reside in small-mammal burrows and other subsurface retreats. Adults migrate during late summer or early fall to breed in dried portions of vernal pools, swamps, marshes, and other predominantly fish-free wetlands. Eggs are deposited under logs, leaf-litter, or grass tussocks and hatch after being inundated by fall rains. Larvae metamorphose during late spring, whereupon they disperse into upland forest.

Core 1124
A 2-acre Core Habitat featuring Wetland Core.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Core 1127
A 564-acre Core Habitat featuring Wetland Core, Aquatic Core, and Species of Conservation Concern.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are...
most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

The Two-striped Cord Grass Moth inhabits open wetlands including fens, marshes, and wet meadows. Larval host(s) are undocumented, but are likely grasses (Poaceae) and/or sedges (Cyperaceae).

Four-toed Salamanders live in forested habitats surrounding swamps, bogs, marshes, vernal pools, and other fish-free waters that are used as breeding sites. Most breeding sites in MA are characterized by pit-and-mound topography with significant sphagnum-moss cover. Eggs are typically laid in mounds or patches of sphagnum moss that overhang water. Upon hatching, the larvae wriggle through the moss and drop into the water, where they will develop for several weeks prior to metamorphosis.

Least Bitterns are heron-like birds that typically nest in cattail marshes interspersed with open water and are very sensitive to disturbance.

**Core 1164**

A 17-acre Core Habitat featuring Aquatic Core.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

**Core 1167**

A <1-acre Core Habitat featuring a Priority Natural Community.

Acidic Rocky Summits are open communities of shrubs, scattered grasses, mosses, lichens and occasional trees found on exposed rocky summits. These areas are dry with little soil, and can often be found as patches within other ridgetop communities. This good-sized example of Acidic Rocky Summit occurs along a ridgeline that is a mosaic of natural communities. They are free of human disturbance and have intact potential for natural ecosystem processes, such as fire.

**Core 1168**

A 24-acre Core Habitat featuring Wetland Core.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.
Core 1170

A <1-acre Core Habitat featuring a Priority Natural Community.

Acidic Rocky Summits are open communities of shrubs, scattered grasses, mosses, lichens and occasional trees found on exposed rocky summits. These areas are dry with little soil, and can often be found as patches within other ridgetop communities. This good-sized example of Acidic Rocky Summit occurs along a ridgeline that is a mosaic of natural communities. They are free of human disturbance and have intact potential for natural ecosystem processes, such as fire.

Core 1177

A 28-acre Core Habitat featuring Wetland Core.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Core 1178

A <1-acre Core Habitat featuring a Priority Natural Community.

Acidic Rocky Summits are open communities of shrubs, scattered grasses, mosses, lichens and occasional trees found on exposed rocky summits. These areas are dry with little soil, and can often be found as patches within other ridgetop communities. This good-sized example of Acidic Rocky Summit occurs along a ridgeline that is a mosaic of natural communities. They are free of human disturbance and have intact potential for natural ecosystem processes, such as fire.

Core 1191

A 1-acre Core Habitat featuring a Priority Natural Community.

Acidic Rocky Summits are open communities of shrubs, scattered grasses, mosses, lichens and occasional trees found on exposed rocky summits. These areas are dry with little soil, and can often be found as patches within other ridgetop communities. This good-sized example of Acidic Rocky Summit occurs along a ridgeline that is a mosaic of natural communities. They are free of human disturbance and have intact potential for natural ecosystem processes, such as fire.

Core 1206

A 96-acre Core Habitat featuring Aquatic Core and a Species of Conservation Concern.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.
Bridle Shiners are small (<5 cm) minnows that are found in clear water in slack areas of streams and rivers and are also found in lakes and ponds.

**Core 1208**

A 128-acre Core Habitat featuring Aquatic Core and Species of Conservation Concern.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Strong populations of Spotted Turtles in good habitat - large, unfragmented, protected open space - continue to be of interest for the conservation of this species. This small, dark-colored turtle with yellow spots on its carapace inhabits a variety of wetlands year-round and nests in nearby uplands during spring. Road and collection are the primary conservation concerns.

American Bitterns are heron-like birds that nest primarily in large cattail, tussock or shrub marshes and are very sensitive to disturbance.

**Core 1213**

A 433-acre Core Habitat featuring Wetland Core, Aquatic Core, and a Species of Conservation Concern.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Bridle Shiners are small (<5 cm) minnows that are found in clear water in slack areas of streams and rivers and are also found in lakes and ponds.

**Core 1223**

A 103-acre Core Habitat featuring Aquatic Core and a Species of Conservation Concern.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Bridle Shiners are small (<5 cm) minnows that are found in clear water in slack areas of streams and rivers and are also found in lakes and ponds.

**Core 1259**
A 43-acre Core Habitat featuring Wetland Core.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Core 1289

A 13-acre Core Habitat featuring Wetland Core.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Core 1529

A 3,001-acre Core Habitat featuring Aquatic Core, Priority Natural Communities, and Species of Conservation Concern.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Acidic Rocky Summits are open communities of shrubs, scattered grasses, mosses, lichens and occasional trees found on exposed rocky summits. These areas are dry with little soil, and can often be found as patches within other ridgetop communities. This example of Acidic Rocky Summit is large and diverse. It shows signs of human disturbance, but is in generally good condition and surrounded by other good community occurrences.

Circumneutral Rocky Summit/Rock Outcrops are small, open communities of grasses, sedges and herbaceous plants occurring on rocky summits, ridges or outcrops with exposed circumneutral (neither acidic nor calcareous) bedrock.

Two examples of Circumneutral Rocky Summit including one that is of very high quality, with good species diversity and natural disturbances such as windthrow that help this community persist. It is free of invasive species, and is well buffered by natural vegetation.

Circumneutral Talus Forest communities develop on boulder strewn slopes below slightly acidic cliffs or rock outcrops. There is often a gradient of vegetation density as the slope changes, with more trees on the lower slope.
Two examples of Circumneutral Talus Forest including on moderate-sized example that is in excellent condition, with tremendous floral diversity (over 200 species present), and is well buffered by naturally vegetated land.

Hickory-Hop Hornbeam Forests are open, hardwood forests dominated by various hickory species with significant hop hornbeam in the subcanopy. This community is characterized by a sparse shrub layer, and a nearly continuous cover of grasses and sedges. This large example of Hickory-Hop Hornbeam Forest occurs across a gradient of soil fertility which causes additional species diversity. It shows signs of past natural disturbance that has enhanced the species diversity found here.

Mixed Oak Forest is a broadly defined type of community dominated by tree oaks, that grades into other more narrowly defined communities. They often occur in areas that burn regularly, with dry soils and exposed slopes. This Mixed Oak Forest is the dominant community type in the area. This extensive occurrence has intact natural processes and widespread logging. There are few exotic species.

Oak-Hickory Forests are dominated by a variety of oak species, with hickories present in lower densities. They generally occupy upper slopes or ridgetops. A subcanopy commonly present includes hop hornbeam, flowering dogwood, and shadbush. This large example of Oak-Hickory Forest is in excellent condition, with no apparent threats, and is well buffered in a large naturally vegetated area.

The Ridgetop Pitch Pine-Scrub Oak community occurs on acidic bedrock along mountain ridges, often in a mosaic with one of the rocky summit communities. This fire-dependent community is tolerant of extremely severe growing conditions. This fair-sized Ridgetop Pitch Pine Scrub Oak community exhibits excellent structure and diversity, has no invasive species, is well-buffered by an unfragmented tract of 1000 acres of upland forest, and shows little sign of human disturbance.

Autumn Coralroot, a member of the Orchid family, is a brown-purple saprophyte, obtaining its nourishment from dead organic matter in the soil rather than from photosynthesis. It grows in either light soil or rich humus in open deciduous or mixed forests.

Climbing Fumitory is an herbaceous biennial vine that can reach lengths of 10 feet. It is usually found in the shade climbing over talus at the base of cliffs.

Green Rock-cress, a biennial mustard, inhabits non-acidic ledges in rocky woods and hills with full to filtered light exposure and mesic to dry soil.

Lion’s Foot is a short-lived perennial plant of the Aster family. It is associated with dry rocky summits or sand plains and heathlands.

Orange Sallow Moths inhabit dry, open oak woodlands on rocky uplands. Their eggs are laid on false foxgloves (Aureolaria spp.) where the larvae feed on the flowers and developing seeds.

Brook Snaketails are dragonflies whose nymphs can be found in clear, sand-bottomed streams with intermittent rapids, often flowing through dense woodland.
Larvae of Spine-crowned Clubtail dragonflies are aquatic and burrow just under the top of silty to sandy bottom sediments in medium to large rivers.

Adult and juvenile Blue-spotted Salamanders inhabit upland forests during most of the year, where they reside in small-mammal burrows and other subsurface retreats. Adults migrate during late winter or early spring to breed in vernal pools and fish-free areas of swamps, marshes, or similar wetlands. Larvae metamorphose in late summer or early fall, whereupon they disperse into upland forest.

Spring Salamander adults inhabit clean, cold, high-gradient brooks and headwater seeps in forest habitat, usually at elevation >100 m. Larvae are entirely aquatic and largely nocturnal, spending daylight hours buried below the streambed or hidden under stones. Adults are semi-aquatic and spend most of their time under cover objects along the margins of brooks, springs, and seeps; however, they will venture into upland forest during rainy weather.
BioMap2 Critical Natural Landscape in Brimfield

Critical Natural Landscape IDs correspond with the following element lists and summaries.
Elements of BioMap2 Critical Natural Landscapes

This section lists all elements of BioMap2 Critical Natural Landscapes that fall entirely or partially within Brimfield. The elements listed here may not occur within the bounds of Brimfield.

**CNL 564**  
Wetland Core Buffer

**CNL 580**  
Aquatic Core Buffer  
Landscape Block  
Wetland Core Buffer

**CNL 591**  
Aquatic Core Buffer

**CNL 594**  
Wetland Core Buffer

**CNL 600**  
Wetland Core Buffer

**CNL 609**  
Aquatic Core Buffer

**CNL 613**  
Aquatic Core Buffer

**CNL 616**  
Aquatic Core Buffer  
Wetland Core Buffer

**CNL 620**  
Aquatic Core Buffer

**CNL 628**  
Wetland Core Buffer

**CNL 636**  
Landscape Block

**CNL 648**  
Wetland Core Buffer

**CNL 653**  
Aquatic Core Buffer

**CNL 687**  
Aquatic Core Buffer
Critical Natural Landscape Summaries

CNL 564

A 6-acre Critical Natural Landscape featuring Wetland Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

CNL 580

A 7,353-acre Critical Natural Landscape featuring Aquatic Core Buffer, Wetland Core Buffer and Landscape Block.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

Landscape Blocks, the primary component of Critical Natural Landscapes, are large areas of intact predominately natural vegetation, consisting of contiguous forests, wetlands, rivers, lakes, and ponds, as well as coastal habitats such as barrier beaches and salt marshes. Pastures and power-line rights-of-way, which are less intensively altered than most developed areas, were also included since they provide habitat and connectivity for many species. Collectively, these natural cover types total 3.6 million acres across the state. An Ecological Integrity assessment was used to identify the most intact and least fragmented areas. These large Landscape Blocks are most likely to maintain dynamic ecological processes such as buffering, connectivity, natural disturbance, and hydrological regimes, all of which help to support wide-ranging wildlife species and many other elements of biodiversity.

In order to identify critical Landscape Blocks in each ecoregion, different Ecological Integrity thresholds were used to select the largest intact landscape patches in each ecoregion while avoiding altered habitat as much as possible. This ecoregional representation accomplishes a key goal of BioMap2 to protect the ecological stages that support a broad suite of biodiversity in the context of climate change. Blocks were defined by major roads, and minimum size thresholds differed among ecoregions to ensure that BioMap2 includes the best of the best in each ecoregion.

CNL 591

A 47-acre Critical Natural Landscape featuring Aquatic Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river,
by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

**CNL 594**

A 73-acre Critical Natural Landscape featuring Wetland Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

**CNL 600**

A 122-acre Critical Natural Landscape featuring Wetland Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

**CNL 609**

An 86-acre Critical Natural Landscape featuring Aquatic Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

**CNL 613**

A 114-acre Critical Natural Landscape featuring Aquatic Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.
CNL 616
A 1,871-acre Critical Natural Landscape featuring Aquatic Core Buffer and Wetland Core Buffer.
A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

CNL 620
A 126-acre Critical Natural Landscape featuring Aquatic Core Buffer.
A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

CNL 628
A 118-acre Critical Natural Landscape featuring Wetland Core Buffer.
A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

CNL 636
A 2,328-acre Critical Natural Landscape featuring Landscape Block.
Landscape Blocks, the primary component of Critical Natural Landscapes, are large areas of intact predominately natural vegetation, consisting of contiguous forests, wetlands, rivers, lakes, and ponds, as well as coastal habitats such as barrier beaches and salt marshes. Pastures and power-line rights-of-way, which are less intensively altered than most developed areas, were also included since they provide habitat and connectivity for many species. Collectively, these natural cover types total 3.6 million acres across the state. An Ecological Integrity assessment was used to identify the most intact and least fragmented areas. These large Landscape Blocks are most likely to maintain dynamic ecological processes such as buffering, connectivity, natural disturbance, and hydrological regimes, all of which help to support wide-ranging wildlife species and many other elements of biodiversity.

In order to identify critical Landscape Blocks in each ecoregion, different Ecological Integrity thresholds were used to select the largest intact landscape patches in each ecoregion while avoiding altered habitat as much as possible. This ecoregional representation accomplishes a key goal of BioMap2 to protect the
ecological stages that support a broad suite of biodiversity in the context of climate change. Blocks were defined by major roads, and minimum size thresholds differed among ecoregions to ensure that BioMap2 includes the best of the best in each ecoregion.

**CNL 648**

A 58-acre Critical Natural Landscape featuring Wetland Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

**CNL 653**

A 265-acre Critical Natural Landscape featuring Aquatic Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

**CNL 687**

A 301-acre Critical Natural Landscape featuring Aquatic Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.
Help Save Endangered Wildlife!

Please contribute on your Massachusetts income tax form or directly to the Natural Heritage & Endangered Species Fund

To learn more about the Natural Heritage & Endangered Species Program and the Commonwealth’s rare species, visit our web site at www.mass.gov/nhesp.