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

Easthampton 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 Habitats 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 of Conservation Concern</th>
<th>Non-listed Species of Conservation Concern</th>
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<tbody>
<tr>
<td>Mammals</td>
<td>4</td>
<td>5</td>
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<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.

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**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](https://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/endangered-species-act) (M.G.L. c.131A) and its implementing regulations ([321 CMR 10.00](https://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/endangered-species-act)). Wetland habitat of state-listed wildlife is also protected under the [Wetlands Protection Act](https://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/wetlands-protection-act) Regulations ([310 CMR 10.00](https://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/wetlands-protection-act)). The [Natural Heritage Atlas](https://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/natural-heritage-atlas) contains maps of [Priority Habitats](https://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/priority-habitats) and [Estimated Habitats](https://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/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](https://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.
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](http://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](http://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](http://www.mass.gov/mgis).
Town Overview

Easthampton lies on the border of the Berkshire Transition and the Connecticut River Valley Ecoregions. The Berkshire Transition Ecoregion shares characteristics with the Berkshire ecoregions and the Connecticut River Valley Ecoregion. Forests are transition hardwoods and northern hardwoods. This area drains to the Westfield and Connecticut River basins. The Connecticut River Valley Ecoregion, the borders of which are primarily defined by the bedrock geology, has rich soils, a relatively mild climate and low rolling topography. The valley floor is primarily cropland and built land. Central hardwoods and transition hardwood forests cover the ridges.

### Easthampton at a Glance

- **Total Area:** 8,707 acres (13.6 square miles)
- **Human Population in 2010:** 16,053
- **Open space protected in perpetuity:** 1,719 acres, or 19.7% percent of total area*
- **BioMap2 Core Habitat:** 2,210 acres
- **BioMap2 Core Habitat Protected:** 873 acres or 39.5%
- **BioMap2 Critical Natural Landscape:** 1,517 acres
- **BioMap2 Critical Natural Landscape Protected:** 606 acres or 40.0%.

### BioMap2 Components

#### Core Habitat

- 5 Aquatic Cores
- 4 Species of Conservation Concern Cores**
  - 2 birds, 2 reptiles, 3 amphibians, 1 fish, 7 insects, 3 mussels, 11 plants

#### Critical Natural Landscape

- 2 Landscape Blocks
- 4 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 Easthampton

[Map of Easthampton with BioMap2 Core Habitat and Critical Natural Landscape areas highlighted]

- **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 Easthampton

Mussels
- Yellow Lampmussel, (*Lampsilis cariosa*), E
- Eastern Pondmussel, (*Ligumia nasuta*), SC
- Triangle Floater, (*Alasmidonta undulata*), Non-listed SWAP species

Insects
Moths
- Orange Sallow Moth, (*Pyrrhia aurantiago*), SC

Dragonflies
- Spine-crowned Clubtail, (*Gomphus abbreviatus*), SC
- Midland Clubtail, (*Gomphus fraternus*), E
- Skillet Clubtail, (*Gomphus ventricosus*), T
- Brook Snaketail, (*Ophiogomphus aspersus*), SC
- Arrow Clubtail, (*Stylurus spiniceps*), Non-listed SWAP species
- Zebra Clubtail, (*Stylurus scudder*) , Non-listed SWAP species

Amphibians
- Jefferson Salamander, (*Ambystoma jeffersonianum*), SC
- Marbled Salamander, (*Ambystoma opacum*), T
- Northern Leopard Frog, (*Rana pipiens*), Non-listed SWAP

Fishes
- Shortnose Sturgeon, (*Acipenser brevirostrum*), E

Reptiles
- Wood Turtle, (*Glyptemys insculpta*), SC
- Eastern Box Turtle, (*Terrapene carolina*), SC

Birds
- Peregrine Falcon, (*Falco peregrinus*), E
- Bald Eagle, (*Haliaeetus leucocephalus*), T

Plants
- Green Dragon, (*Arisaema dracontium*), T
- Linear-leaved Milkweed, (*Asclepias verticillata*), T
- Green Rock-cress, (*Boechera missouriensis*), T
- Gray’s Sedge, (*Carex grayi*), T
- Purple Clematis, (*Clematis occidentalis*), SC
- Autumn Coralroot, (*Corallorhiza odontorhiza*), SC
- New England Blazing Star, (*Liatris scariosa var. novae-angliae*), SC
- Many-fruited False-loosestrife, (*Ludwigia polycarpa*), E
- Swamp Lousewort, (*Pedicularis lanceolata*), E

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).
Shining Wedgegrass, (Sphenopholis nitida), T
Spiked False-oats, (Trisetum spicatum), E

Other BioMap2 Components
Aquatic Core
Landscape Block
Aquatic Core Buffer

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 Easthampton**

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 Easthampton. The elements listed here may not occur within the bounds of Easthampton.

### Core 1585

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<tr>
<th>Species of Conservation Concern</th>
<th>Name</th>
<th>Category</th>
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<tbody>
<tr>
<td>Wood Turtle</td>
<td>Glyptemys insculpta</td>
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</table>

### Core 1656

- Forest Core
- Wetland Core
- Aquatic Core
- Vernal Pool Core

#### Priority & Exemplary Natural Communities

- Circumneutral Rocky Summit/Rock Outcrop Community
- Circumneutral Talus Forest/Woodland
- Hemlock-Hardwood Swamp
- Hickory - Hop Hornbeam Forest/Woodland

#### Species of Conservation Concern

<table>
<thead>
<tr>
<th>Name</th>
<th>Category</th>
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<tr>
<td>Autumn Coralroot</td>
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<td>Corn-leaved Aster</td>
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<td>Dwarf Bulrush</td>
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<td>False Hop-sedge</td>
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<td>Green Rock-cress</td>
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<tr>
<td>Hairy Agrimony</td>
<td>Agrimonia pubescens</td>
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<td>Houghton’s Flatsedge</td>
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<td>Large-bracted Tick-trefoil</td>
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<td>Linear-leaved Milkweed</td>
<td>Asclepias verticillata</td>
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<td>Midland Sedge</td>
<td>Carex mesochorea</td>
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<td>Narrow-leaved Vervain</td>
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<td>New England Blazing Star</td>
<td>Liatris scariosa var. novae-angliae</td>
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<td>Nodding Chickweed</td>
<td>Cerastium nutans</td>
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<td>Philadelphia Panic-grass</td>
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<td>Shining Wedgegrass</td>
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<td>Smooth Rock-cress</td>
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<td>Spiked False Oats</td>
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<td>Toothcup</td>
<td>Rotala ramosior</td>
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Violet Wood-sorrel  Oxalis violacea  E
Wapato  Sagittaria cuneata  T
New Jersey Tea Inchworm  Apodrepanulatrix liberaria  E
Orange Sallow Moth  Pyrrhia aurantiago  SC
Pine Barrens Speranza  Speranza exonerata  SC
Pine Barrens Zanclognatha  Zanclognatha martha  T
Four-toed Salamander  Hemidactylium scutatum  Non-listed SWAP
Jefferson Salamander  Ambystoma jeffersonianum  SC
Marbled Salamander  Ambystoma opacum  T
Spring Salamander  Gyrinophilus porphyriticus  Non-listed SWAP
Eastern Box Turtle  Terrapene carolina  SC
Northern Black Racer  Coluber constrictor  Non-listed SWAP
Spotted Turtle  Clemmys guttata  Non-listed SWAP
Wood Turtle  Glyptemys insculpta  SC
Peregrine Falcon  Falco peregrinus  E

Core 1666
Aquatic Core
Species of Conservation Concern
Creeper  Strophitus undulatus  SC
Triangle Floater  Alasmidonta undulata  Non-listed SWAP
Brook Snaketail  Ophiogomphus aspersus  SC
Zebra Clubtail  Stylurus scudderi  Non-listed SWAP
Spotted Turtle  Clemmys guttata  Non-listed SWAP
Wood Turtle  Glyptemys insculpta  SC

Core 2943N
Wetland Core
Aquatic Core
Priority & Exemplary Natural Communities
Black Gum-Pin Oak-Swamp White Oak “Perched” Swamp  S2
Calcareous Rock Cliff Community  S3
Calcareous Talus Forest/Woodland  S3
Circumneutral Rock Cliff Community  S3
High-energy Riverbank  S3
High-Terrace Floodplain Forest  S2
Low-energy Riverbank  S3
Major-river Floodplain Forest  S2
Sandplain Grassland  S1
Small-river Floodplain Forest  S2
Transitional Floodplain Forest  S2
Wet Meadow
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<td>Frank's Lovegrass</td>
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<td>Gray's Sedge</td>
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<td>Minuartia michauxii</td>
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<td>Deschampsia cespitosa ssp. glauca</td>
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<td>Triangle Floater</td>
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<td>Yellow Lampmussel</td>
<td>Lampsilis cariosa</td>
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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).
<table>
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<tr>
<th>Scientific Name</th>
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Core Habitat Summaries

Core 1585

A 148-acre Core Habitat featuring a Species of Conservation Concern.

Wood Turtle habitat is streams and rivers, preferably with long corridors of undeveloped, connected uplands. They also use fields and early successional habitat extending up to 500 meters on both sides of the waterways. Mowing and roads are the primary causes of mortality. Collection is also a conservation concern.

Core 1656

A 9,525-acre Core Habitat featuring Forest Core, Wetland Core, Aquatic Core, Vernal Pool Core, Priority Natural Communities, and Species of Conservation Concern.

The basalt bedrock of Mt. Tom and East Mountain juts up out of the lower Connecticut River valley in Massachusetts. These striking mountains are one of the the most important sites for rare species in western Massachusetts, supporting 41 rare and uncommon plants and animals, five of them globally rare. Surprisingly, these ridges have numerous vernal pools, in which several excellent breeding populations of Marbled and Jefferson Salamanders are found. The unusual circumneutral bedrock, in addition to small ecological disturbances such as wildfires and ice storms, supports many rare plants, such as Purple Clematis and Narrow-leaved Vervain on the talus slopes, or the Glaucescent Sedge and Shining Wedgegrass in the Hickory-Hop Hornbeam Woodland.

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. This Core has two examples of Circumneutral Rocky Summit in excellent condition, and very well buffered within a naturally vegetated landscape.

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. This Core has two examples of Circumneutral Talus Forest that are in good condition, with good diversity, no exotic invasive species, and are located within a large block of natural vegetation.

Hemlock-Hardwood Swamps are acidic forested swamps that have hemlock as the dominant canopy species. These forested wetlands occur on saturated soils in poorly drained basins throughout the state. This example of Hemlock - Hardwood Swamp, though small, has good species diversity and is well buffered by surrounding upland forest.

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 is of excellent quality and is associated with many state-listed rare species.

Forest Cores are the best examples of large, intact forests that are least impacted by roads and development. Forest Cores support many bird species sensitive to the impacts of roads and development and help maintain ecological processes found only in unfragmented forest patches.
Wetlands 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.

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.

**Core 1666**

A 1,422-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.

Creepers are freshwater mussels that inhabit low-gradient reaches of small to large rivers with sand or gravel substrates. Cool to warm water with diverse fish assemblages best support Creepers.

Triangle Floaters are freshwater mussels commonly found in low-gradient river reaches with sand and gravel substrates and low to moderate water velocities, although they are found in a wide range of substrate and flow conditions.

Brook Snaketails are dragonflies whose nymphs can be found in clear, sand-bottomed streams with intermittent rapids, often flowing through dense woodland.

The Zebra Clubtail dragonfly inhabits sand-bottomed streams and small rivers with riffles as larvae. Adults feed over the same streams. Surrounding upland forests provide protection while adults reach sexual maturity.

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.

Wood Turtle habitat is streams and rivers, preferably with long corridors of undeveloped, connected uplands. They also use fields and early successional habitat extending up to 500 meters on both sides of the waterways. Mowing and roads are the primary causes of mortality. Collection is also a conservation concern.

**Core 2943N**

A 27,102-acre section of a larger 93,990-acre Core Habitat featuring Wetland Core, Aquatic Core, Priority Natural Communities, and Species of Conservation Concern.
The mainstem of the Connecticut River is the spine of a much more extensive Core Habitat that connects many of the most biologically important sites in the river valley. Just in the mainstem and adjacent uplands, 91 rare and uncommon species have been found. This large, meandering river hosts seven species of rare dragonflies, including the globally rare Skillet Clubtail and the Midland Clubtail, which is found nowhere else in the state. Below the Turners Dam, the river supports the federally Endangered Shortnose Sturgeon, the state’s only population of Burbot, and Eastern Silvery Minnows. High above the river Bald Eagles soar; this river is a key breeding and wintering site for this bird in Massachusetts. On the Connecticut border, the extensive floodplain forests of the Fanny Stebbins Wildlife Refuge are home to seven rare and uncommon plants, including the Endangered Winged Monkey-flower.

Black Gum-Pin Oak-White Oak "Perched" swamps are an unusual type of wetland found in Massachusetts in one area of the Connecticut River Valley. This community type is dominated by red maple, with black gum, pin oak, and swamp white oak. This moderate-sized example of Black Gum-Pin Oak- Swamp White Oak "Perched" Swamp is of high-quality and is surrounded by both forested upland and agricultural fields.

Calcareous Rock Cliffs are sparsely vegetated cliff communities. Unusual, highly specialized plants and ferns grow in cracks and ledges in the calcium-rich cliff face. This type of cliff community has more species diversity than Acidic Rock Cliffs. This Core has two small examples of Calcareous Rock Cliff in good condition, largely free of exotic invasive species and with several unusual plant species present. One is well buffered by natural vegetation, the other has a minimal buffer to human disturbances.

Calcareous Talus Forest communities develop on loose rocky slopes below calcareous cliffs or rock outcrops. The soil between the boulders is usually moist and loamy. Trees are usually best established on lower slopes. This example of Calcareous Talus Forest is in good condition, despite its proximity to development. It is of moderate size and an invasive exotic species is present.

Circumneutral Rock Cliff communities consist of extremely sparse plants growing on small ledges and in crevices on a circumneutral cliff face. These communities tend to support a greater diversity of species than Acidic Rock Cliff communities. This example of Circumneutral Rock Cliff is open, dry, and west-facing, with many associated rare plants. Although these popular cliffs are somewhat disturbed by trampling, they remain a good-quality natural community.

High-Energy Riverbank communities are sparse, open graminoid communities found on cobble and sand deposits along fast-flowing rivers that experience severe flooding and ice scour. This Core has four small examples and one large example of High-Energy Riverbank. Each is pristine with good species diversity and two in particular are well-buffered and influenced by intact natural processes that perpetuate them.

High-Terrace Floodplain Forests are deciduous hardwood forests that occur along riverbanks, above the zone of annual flooding. Although they do not flood annually, they flood often enough for the soil to be moderately enriched. This Core has two examples of High-Terrace Floodplain Forest. A moderate-sized example is well-developed, with good structure and diversity and moderate levels of disturbance. The other is quite small and in somewhat degraded condition.

Low-Energy Riverbanks are open herbaceous communities occurring on sandy or silty mineral soils of river and streambanks that do not experience severe flooding or ice scour. One example is a high-quality, species-rich Low-energy Riverbank community, a different community with more grasses than is found on more northern islands in the Connecticut River. Another example is moderate-sized and is an unusual...
variant of this community type that experiences periodic flooding, resulting in an unusual species composition.

Major-River Floodplain Forests are dominated by silver maple. This community is found along the floodplains of large rivers. The soils here are enriched with nutrients brought by annual floods, resulting in a diversity of plants and insects. Seven examples of Major-River Floodplain Forest ranging from an extremely small remnant of a once larger forest, somewhat degraded by exotic invasive species, to a large example in excellent condition with good floral diversity, with the exception of some recreational use areas that have been trampled and are being invaded by exotic species. This Core includes the largest and highest-quality examples of Major-River Floodplain Forest currently known in Massachusetts.

Sandplain Grasslands are open, essentially treeless, grass-dominated communities that generally occur on sand or other dry, poor soils. Occurrences are maintained by fire, salt spray, and, now, mowing. This Sandplain Grassland is an unusual Connecticut River Valley variant of this community, which is found primarily in the Cape and Islands. It is succeeding to forest and is threatened by human disturbances including ORV use.

Small-River Floodplain Forests are silver maple/green ash forests occurring on alluvial soils of small rivers and streams. They occur on small tributaries of the Connecticut and Nashua Rivers and along some small rivers of eastern Massachusetts. This Core includes three of the top four examples of Small-River Floodplain Forest in Massachusetts. They are in excellent condition, with good structure and diversity.

Transitional Floodplain Forests are riverside silver maple-green ash-American elm forests that experience annual floods. Of the three floodplain forest community types, these communities are intermediate in vegetation and soils. This Core includes three examples of Transitional Floodplain Forest including the largest and best quality of its kind in Massachusetts. There are only five locations of this community type known in Massachusetts.

Wet Meadows are graminoid communities similar to Deep and Shallow Emergent Marshes except that they are temporarily rather than seasonally flooded. They occur in lake basins, wet depressions, along streams, and in sloughs along rivers. This small wet meadow is in very good condition, with high floristic diversity.

Wetlands 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.
**BioMap2 Critical Natural Landscape in Easthampton**

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 Easthampton. The elements listed here may not occur within the bounds of Easthampton.

**CNL 783**
- Aquatic Core Buffer
- Landscape Block

**CNL 825**
- Aquatic Core Buffer
- Landscape Block
- Wetland Core Buffer

**CNL 835**
- Aquatic Core Buffer

**CNL 850**
- Aquatic Core Buffer
- Landscape Block
- Wetland Core Buffer

**CNL 1322**
- Aquatic Core Buffer
- Landscape Block
- Wetland Core Buffer
Critical Natural Landscape Summaries

CNL 783
A 1,170-acre Critical Natural Landscape featuring Aquatic 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 825
A 2,279-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.

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**CNL 835**

A 130-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 850**

A 21,004-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.

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This largely forested Landscape Block is 19,465 acres and is among the largest 20% of all Blocks across Massachusetts. These large forested landscapes provide invaluable wildlife habitat and other ecosystem values such as clean drinking water and absorbing carbon from the atmosphere.

**CNL 1322**

A 288,370-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.

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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.