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.
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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, 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

Natural Heritage & Endangered Species Program

For more information on rare species and natural communities, please see our fact sheets online at www.mass.gov/nhesp.
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 sites or have very few remaining acres in the state.
- Imperiled communities typically have 6-20 sites or few remaining acres in the state.
- Vulnerable communities typically have 21-100 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 Habitat 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
Conserving the Biodiversity of Massachusetts in a Changing World

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 ecosystems.

Massachusetts Division of Fisheries and Wildlife
1 Rabbit Hill Road, Westborough, MA 01581
phone: 508-389-6360  fax: 508-389-7890

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

Barre lies on the border of the Lower Worcester Plateau and the Worcester Plateau Ecoregions. The Lower Worcester Plateau Ecoregion is comprised of open hills and transition hardwood and central hardwood forests. Most parts drain to the Chicopee and Quinebaug Rivers. The Worcester Plateau Ecoregion is an area that includes the most hilly areas of the central upland of Massachusetts with a few high monadnocks and mountains. The dominant forest types present are transition hardwoods and some northern hardwoods. Forested wetlands are common. Surface waters are acidic. Many major rivers drain this area.

Barre at a Glance

- Total Area: 28,563 acres (44.6 square miles)
- Human Population in 2010: 5,398
- Open space protected in perpetuity: 10,809 acres, or 37.8% percent of total area*
- BioMap2 Core Habitat: 3,469 acres
- BioMap2 Core Habitat Protected: 2,528 acres or 72.9%
- BioMap2 Critical Natural Landscape: 5,245 acres
- BioMap2 Critical Natural Landscape Protected: 4,525 acres or 86.3%.

BioMap2 Components

Core Habitats

- 3 Exemplar or Priority Natural Community Cores
- 1 Forest Core
- 8 Wetland Cores
- 8 Aquatic Cores
- 3 Vernal Pool Cores
- 16 Species of Conservation Concern Cores**
  - 2 birds, 2 reptiles, 2 amphibians, 1 fish, 4 insects, 2 mussels, 2 plants

Critical Natural Landscape

- 3 Landscape Blocks
- 7 Wetland Core Buffers
- 7 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 Barre

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

Mussels
- **Triangle Floaters**, (*Alasmidonta undulata*), Non-listed SWAP species
- **Creeper**, (*Strophitus undulatus*), SC

Insects
- **Moths**
  - *Slender Clearwing Sphinx Moth*, (*Hemaris gracilis*), SC
  - *Pink Sallow Moth*, (*Psectraglaea carnosia*), SC
- **Beetles**
  - *Twelve-spotted Tiger Beetle*, (*Cicindela duodecimguttata*), SC
- **Dragonflies**
  - *Stygian Shadowdragon*, (*Neurocordulia yamaskanensis*), SC

Amphibians
- **Four-toed Salamander**, (*Hemidactylium scutatum*), Non-listed SWAP
- **Blue-spotted Salamander**, (*Ambystoma laterale*), SC

Fishes
- **Bridle Shiner**, (*Notropis bifrenatus*), SC

Reptiles
- Northern Black Racer, (*Coluber constrictor*), Non-listed SWAP
- **Wood Turtle**, (*Glyptemys insculpta*), SC

Birds
- **Least Bittern**, (*Ixobrychus exilis*), E
- **Sora**, (*Porzana carolina*), Non-listed SWAP

Plants
- **Purple Clematis**, (*Clematis occidentalis*), SC
- **Sand Violet**, (*Viola adunca*), SC

Priority Natural Communities
- **Sandplain heathland**, S1
- **High-energy riverbank**, S3
- **Circumneutral talus forest/woodland**, S3

Other BioMap2 Components
- **Forest Core**
- **Aquatic Core**
- **Wetland Core**
- **Vernal Pool Core**
- **Landscape Block**
- **Aquatic Core Buffer**
- **Wetland Core Buffer**

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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).
BioMap2
Conserving the Biodiversity of Massachusetts in a Changing World

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.

For more information on rare species and natural communities, please see our fact sheets online at www.mass.gov/nhesp.
**BioMap2 Core Habitat in Barre**

Core IDs correspond with the following element lists and summaries.

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).
Elements of BioMap2 Cores

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

Core 1867
Aquatic Core
Species of Conservation Concern
Twelve-spotted Tiger Beetle Cicindela duodecimguttata SC

Core 1895
Vernal Pool Core

Core 1942
Wetland Core

Core 1949
Wetland Core

Core 1952
Aquatic Core
Wetland Core
Species of Conservation Concern
Triangle Floater Alasmidonta undulata Non-listed SWAP
Stygian Shadowdragon Neurocordulia yamaskanensis SC

Core 1957
Wetland Core

Core 1960
Species of Conservation Concern
Wood Turtle Glyptemys insculpta SC

Core 1964
Wetland Core
Species of Conservation Concern
Sora Porzana carolina Non-listed SWAP

Core 1969
Wetland Core

For more information on rare species and natural communities, please see our fact sheets online at www.mass.gov/nhesp.
Core 1975

Aquatic Core
Priority & Exemplary Natural Communities
Spruce-tamarack bog S2

Species of Conservation Concern
New England Blazing Star Liatris scariosa var. novae-angliae SC
Coastal Swamp Metarranthis Moth Metarranthis pilosaria SC
Bog Elfin Callophrys lanoraicensis T
Purple Tiger Beetle Cicindela purpurea SC
Blue-spotted Salamander Ambystoma laterale SC
Four-toed Salamander Hemidactylium scutatum Non-listed SWAP
Northern Black Racer Ambystoma laterale SC
Bridle Shiner Notropis bifrenatus SC

Core 1976

Species of Conservation Concern
A data-sensitive species

Core 1977

Wetland Core

Core 1985

Wetland Core

Core 1996

Vernal Pool Core

Core 1998

Priority & Exemplary Natural Communities
Circumneutral talus forest/woodland S3

Species of Conservation Concern
Purple Clematis Clematis occidentalis SC

Core 2005

Species of Conservation Concern
Sand Violet Viola adunca SC

Core 2009

Species of Conservation Concern
Four-toed Salamander Hemidactylium scutatum Non-listed SWAP
Northern Black Racer Ambystoma laterale SC

Core 2010

Aquatic Core

Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
1 Rabbit Hill Road, Westborough, MA 01581
phone: 508-389-6360  fax: 508-389-7890
For more information on rare species and natural communities, please see our fact sheets online at www.mass.gov/nhesp.
### Species of Conservation Concern

<table>
<thead>
<tr>
<th>Name</th>
<th>Scientific Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Least Bittern</td>
<td><em>Ixobrychus exilis</em></td>
<td>E</td>
</tr>
</tbody>
</table>

### Core 2020

**Aquatic Core**

**Priority & Exemplary Natural Communities**
- High-energy riverbank

**Species of Conservation Concern**
- Northern Black Racer: *Coluber constrictor* Non-listed SWAP

### Core 2032

Vernal Pool Core

### Core 2040

**Aquatic Core**

**Wetland Core**

**Priority & Exemplary Natural Communities**
- Circumneutral talus forest/woodland
- Rich, mesic forest community

**Species of Conservation Concern**
- Climbing Fumitory: *Adlumia fungosa* SC
- Triangle Floater: *Alasmidonta undulata* Non-listed SWAP
- Twelve-spotted Tiger Beetle: *Cicindela duodecimguttata* SC
- Four-toed Salamander: *Hemidactylus scutatum* Non-listed SWAP
- Wood Turtle: *Glyptemys insculpta* SC

### Core 2045

**Aquatic Core**

**Wetland Core**

**Species of Conservation Concern**
- Creeper: *Strophitus undulatus* SC
- Triangle Floater: *Alasmidonta undulata* Non-listed SWAP
- Northern Black Racer: *Coluber constrictor* Non-listed SWAP
- Wood Turtle: *Glyptemys insculpta* SC
- American Bittern: *Botaurus lentiginosus* E
- Water Shrew: *Sorex palustris* SC

### Core 2046

Aquatic Core

### Core 2065

Wetland Core

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Massachusetts Division of Fisheries and Wildlife
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phone: 508-389-6360 fax: 508-389-7890

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).
Core 2079
Wetland Core

Core 2101
Wetland Core

Core 2152
Forest Core
Wetland Core
Vernal Pool Core
Priority & Exemplary Natural Communities
Sandplain heathland
Species of Conservation Concern
Pink Sallow \( Psectraglaea \ carnosa \) SC
Slender Clearwing Sphinx Moth \( Hemaris \ gracilis \) SC
Wood Turtle \( Glyptemys \ insculpta \) SC

Core 2249
Wetland Core
Core Habitat Summaries

Core 1867
A 14-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.

Twelve-spotted Tiger Beetles are dark brown to black in color, with white markings on the elytra (wing covers). The beetle larvae dig burrows into dark clay and silt banks along river banks and pond shores. The adult beetles disperse widely and may be found far from their larval habitats, often in sand pits or along sandy roads and paths.

Core 1895
A 56-acre Core Habitat featuring Vernal Pool Core.

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 1942
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 1949
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 1952
A 251-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.

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.

Stygian Shadowdragons are dragonflies that are found on lakes with rocky shores and medium to large rivers that are relatively unvegetated.

Core 1957
A 3-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 1960
A 380-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 1964
An 18-acre Core Habitat featuring Wetland 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.

Soras are secretive marshbirds that typically nest in dense cattail marshes with interspersed open water.

Core 1969
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 1975

A 688-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.

Spruce-Tamarack Bog communities are acidic forested peatlands with an overstory of black spruce and tamarack and an understory of heath shrubs on sphagnum moss. They occur in kettlehole depressions, watershed divides, and along pond margins. This occurrence of Spruce-Tamarack Bog is the largest and best quality example of this community known in the state.

New England Blazing Star is an endemic, globally rare, perennial composite of dry, sandy grasslands and clearings. In Massachusetts, New England Blazing Star inhabits open, dry, low-nutrient sandy soils of grasslands, heathlands, and barrens. It thrives in fire-influenced natural communities that are periodically disturbed and devoid of dense woody plant cover.

Coastal Swamp Metarranthus moths inhabit open, acidic wetlands with ericaceous vegetation, especially shrub swamps and bogs, often within sandplain pitch pine/scrub oak barrens. Cranberry (Vaccinium macrocarpon) is a documented larval host, leatherleaf (Chamaedaphne calyculata) is likely also used; in dry barrens habitat the most likely larval hosts are lowbush blueberries (Vaccinium pallidum and V. angustifolium).

The Bog Elfin is a very small lycaenid butterfly. It inhabits black spruce (Picea mariana) swamps and bogs. Larvae feed on the new growth at the branch tips of black spruce.

Although the Purple Tiger Beetle may be found on sandy loam soils along farm roads, grass-strip runways, or on earthen dams, in Massachusetts it primarily inhabits sandplain grasslands and heathlands, and grass or heath openings in pitch pine-scrub oak barrens.

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.

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.

The Northern Black Racer is a snake of young upland forests, shrublands such as pitch pine/scrub oak communities and rock cliffs. Although relatively common, its range appears to be constricting and its abundance has been declining.
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 1976
A 22-acre Core Habitat featuring a data-sensitive Species of Conservation Concern.
The Natural Heritage & Endangered Species Program does not release information on particularly vulnerable species.

Core 1977
A 4-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 1985
A 51-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 1996
A 175-acre Core Habitat featuring Vernal Pool Core.
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 1998
A 20-acre Core Habitat featuring Priority Natural Communities and a Species of Conservation Concern.
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 example of Circumneutral Talus Forest is good, with diversity and only scattered exotic invasives. It is in a large forested area, but there is a road downslope 130m.
Purple Clematis is a graceful, woody vine of sub-acid rocky slopes and outcrops. A member of the buttercup family, it has opposite or whorled leaves and pendant bluish or purple flowers that bloom from May to June.
Core 2005

A 1-acre Core Habitat featuring a Species of Conservation Concern.

Sand Violet, a low-growing perennial herb with showy purple-violet flowers, grows in disturbed habitats, usually in full sun, on moist to very dry soils. It competes poorly with other plants and relies on periodic disturbance to remove potential competitors.

Core 2009

A 78-acre Core Habitat featuring Species of Conservation Concern.

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.

The Northern Black Racer is a snake of young upland forests, shrublands such as pitch pine/scrub oak communities and rock cliffs. Although relatively common, its range appears to be constricting and its abundance has been declining.

Core 2010

A 19-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.

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

Core 2020

A 11-acre Core Habitat featuring Aquatic Core, a Priority Natural Community, 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.

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 small example of High-Energy Riverbank is in fair condition, but an exotic invasive species is present, and the natural hydrology has been altered by upstream dams.

The Northern Black Racer is a snake of young upland forests, shrublands such as pitch pine/scrub oak communities and rock cliffs. Although relatively common, its range appears to be constricting and its abundance has been declining.

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For more information on rare species and natural communities, please see our fact sheets online at www.mass.gov/nhsp.
Core 2032
A 61-acre Core Habitat featuring Vernal Pool Core.
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 2040
A 549-acre Core Habitat featuring Wetland Core, Aquatic Core, Priority Natural Communities, 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.
The 163-acre Wetland Core is among the largest 20% of Wetland Cores statewide and in this ecoregion.
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.
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 large roadless site has small patches of the Circumneutral Talus community within a Rich Mesic Forest. The talus areas have good species diversity and good setting.
Rich, Mesic Forests are a variant of northern hardwood forests, dominated by sugar maple with a diverse herbaceous layer that includes many spring wild flowers, in a moist, nutrient-rich environment. This large Rich, Mesic Forest is within a north-south corridor of working forest that includes other examples of priority forest types. The diversity of specialized species is good for central Massachusetts.
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.
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.
Twelve-spotted Tiger Beetles are dark brown to black in color, with white markings on the elytra (wing covers). The beetle larvae dig burrows into dark clay and silt banks along river banks and pond shores. The adult beetles disperse widely and may be found far from their larval habitats, often in sand pits or along sandy roads and paths.
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.

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 2045**

A 1,214-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.

The 230-acre Wetland Core is among the largest 20% of Wetland Cores statewide and in this ecoregion.

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.

The Northern Black Racer is a snake of young upland forests, shrublands such as pitch pine/scrub oak communities and rock cliffs. Although relatively common, its range appears to be constricting and its abundance has been declining.

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.

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

The Water Shrew habitat is near water - most commonly the banks of a swift rocky-bedded stream in a dense conifer or mixed forest.

**Core 2046**

A 1-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 2065
A 52-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 2079
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 2101
A 106-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.

The 106-acre Wetland Core is among the largest 20% of Wetland Cores statewide and in this ecoregion.

Core 2152
A 2,945-acre Core Habitat featuring Forest Core, Wetland Core, Vernal Pool Core, Priority Natural Communities, and Species of Conservation Concern.

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.

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.

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.
Sandplain Heathlands are open, shrub dominated, coastal communities. They share many species with Sandplain Grasslands, but also have many plants from the Heath family. They often have sparse clumps of plants with bare soil or lichen between them. This large, inland version of a Sandplain Heathland is on a sandplain with frost pockets. Grazing and fire have contributed to shaping the vegetation that grows naturally on the dry conditions.

The Pink Sallow Moth inhabits sandplain pitch pine/scrub oak barrens and heathlands, and possibly also ridgetop barrens and bogs; it is associated with ericaceous vegetation. Larval host plants are undocumented, but almost certainly include lowbush blueberries (*Vaccinium pallidum* and *V. angustifolium*).

The Slender Clearwing Sphinx is a day-flying “hummingbird moth” that inhabits pitch pine–scrub oak barrens and heathlands on sandplains or rocky summits and ridges (associated with lowbush blueberry); also, acidic bogs and swamps with ericaceous vegetation are sometimes used.

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 2249**

A 252-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.

The 252-acre Wetland Core is among the largest 20% of Wetland Cores statewide and in this ecoregion.
Barre

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

CNL 922
  Aquatic Core Buffer

CNL 941
  Aquatic Core Buffer

CNL 958
  Wetland Core Buffer

CNL 967
  Aquatic Core Buffer

CNL 992
  Aquatic Core Buffer
  Wetland Core Buffer

CNL 1010
  Aquatic Core Buffer
  Landscape Block
  Wetland Core Buffer

CNL 1040
  Landscape Block
  Wetland Core Buffer

CNL 1131
  Aquatic Core Buffer
  Landscape Block
  Wetland Core Buffer
Critical Natural Landscape Summaries

CNL 922
A 31-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 941
A 40-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 958
A 265-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 967
A 33-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 992

A 854-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 1010

A 7,796-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 1040

A 3,721-acre Critical Natural Landscape featuring 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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**CNL 1131**

A 12,384-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.
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](http://www.mass.gov/nhesp).