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 (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
Conserving the Biodiversity of Massachusetts in a Changing World

ecologically important areas that are worthy of protection. The status of natural communities reflects the documented number and acreages of each community type in the state:

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

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

BioMap2: One Plan, Two Components

BioMap2 identifies two complementary spatial layers, Core Habitat and Critical Natural Landscape.

Components of Core Habitat

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.

Rare Species

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

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

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

Other Species of Conservation Concern

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

Priority Natural Communities

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

Vernal Pools

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

Forest Cores

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

Wetland Cores

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

Aquatic Cores

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

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

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

Upland Buffers of Wetland and Aquatic Cores
A variety of analyses were used to identify protective upland buffers around wetlands and rivers.

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

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

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

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

Ashburnham lies within the Worcester Plateau Ecoregion, 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.

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**Ashburnham at a Glance**

- Total Area: 26,209 acres (41.0 square miles)
- Human Population in 2010: 6,081
- Open space protected in perpetuity: 6,084 acres, or 23.2% percent of total area*
- BioMap2 Core Habitat: 4,051 acres
- BioMap2 Core Habitat Protected: 1,818 acres or 44.9%
- BioMap2 Critical Natural Landscape: 11,180 acres
- BioMap2 Critical Natural Landscape Protected: 4,729 acres or 42.3%.

**BioMap2 Components**

**Core Habitat**

- 7 Exemplary or Priority Natural Community Cores
- 14 Wetland Cores
- 7 Aquatic Cores
- 2 Vernal Pool Cores
- 16 Species of Conservation Concern Cores**
  - 3 birds, 1 reptile, 10 insects, 6 plants

**Critical Natural Landscape**

- 5 Landscape Blocks
- 16 Wetland Core Buffers
- 4 Aquatic Core Buffers

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* 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.

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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 Core Habitat and Critical Natural Landscape in Ashburnham

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

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 Ashburnham

Insects

Moths
Pitcher Plant Borer, (Papaipema appassionata), T
Two-striped Cord Grass Moth, (Macrochilo bivittata), Non-listed SWAP

Butterflies
Bog Elfin, (Callophrys lanoraicensis), T

Damselflies
New England Bluets, (Enallagma laterale), Non-listed SWAP species
Little Bluets, (Enallagma minusculum), Non-listed SWAP

Dragonflies
Subarctic Darner, (Aeshna subarctica), E
Ski-tipped Emerald, (Somatochlora elongata), SC
Forcipate Emerald, (Somatochlora forcipata), E
Incurvate Emerald, (Somatochlora incurvata), E
Zebra Clubtail, (Stylurus scudderi), Non-listed SWAP species

Reptiles
Smooth Green Snake, (Opheodrys vernalis), Non-listed SWAP

Birds
Long-eared Owl, (Asio otus), SC
American Bittern, (Botaurus lentiginosus), E
Common Loon, (Gavia immer), SC

Plants
Bartram's Shadbush, (Amelanchier bartramiana), T
Dwarf Mistletoe, (Arceuthobium pusillum), SC
Slender Cottongrass, (Eriophorum gracile), T
Pod-grass, (Scheuchzeria palustris), E
Sand Violet, (Viola adunca), SC
Algae-like Pondweed, (Potamogeton confervoides), T

Priority Natural Communities
Acidic Shrub Fen, S3
Level Bog, S3
Spruce-Fir Swamp, S3
Spruce-Tamarack Bog, S2

Exemplary Natural Communities
Acidic Rocky Summit/Rock Outcrop Community
Spruce - Fir - Northern Hardwoods Forest
Wet Meadow

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

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

**Core 2627**
- Wetland Core
- Vernal Pool Core

**Core 2675**
- Wetland Core

**Core 2708**
- Wetland Core
- Aquatic Core
- Vernal Pool Core
- Species of Conservation Concern
  - Algae-like Pondweed
  - Bartram’s Shadbush
  - Dwarf Mistletoe
  - Pod-grass
  - Sand Violet
  - Slender Cottongrass
  - Bog Elfin
  - Forcipate Emerald
  - Incurvate Emerald
  - Ski-tipped Emerald
  - Subarctic Darner
  - American Bittern
  - Common Loon

**Core 2762**
- Species of Conservation Concern
  - Bartram’s Shadbush

**Core 2767**
- Species of Conservation Concern
  - New England Bluet

**Core 2771**
- Wetland Core
Core 2778
Aquatic Core
Species of Conservation Concern
American Bittern  
*Botaurus lentiginosus*  
E

Core 2781
Species of Conservation Concern
A data-sensitive species  
Identity not provided

Core 2782
Aquatic Core
Species of Conservation Concern
Algae-like Pondweed  
*Potamogeton confervoides*  
T
Little Bluet  
*Enallagma minusculum*  
Non-listed SWAP
New England Bluet  
*Enallagma laterale*  
Non-listed SWAP
Common Loon  
*Gavia immer*  
SC

Core 2793
Species of Conservation Concern
Ski-tipped Emerald  
*Somatochlora elongata*  
SC

Core 2794
Wetland Core
Aquatic Core
Priority & Exemplary Natural Communities
Acidic Shrub Fen  
S3
Level Bog  
S3
Species of Conservation Concern
Bartram’s Shadbush  
*Amelanchier bartramiana*  
T
Pitcher Plant Borer Moth  
*Papaipena appassionata*  
T
Incurvate Emerald  
*Somatochlora incurvata*  
E
American Bittern  
*Botaurus lentiginosus*  
E

Core 2808
Priority & Exemplary Natural Communities
Spruce-Tamarack Bog  
S2

Core 2824
Species of Conservation Concern
Ski-tipped Emerald  
*Somatochlora elongata*  
SC
Core 2826

Wetland Core
Priority & Exemplary Natural Communities
Level Bog
Species of Conservation Concern
Dwarf Mistletoe  
Arceuthobium pusillum

Core 2857

Wetland Core
Priority & Exemplary Natural Communities
Wet Meadow
Species of Conservation Concern
Bartram’s Shadbush  
Amelanchier bartramiana

Core 2858

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

Core 2859

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

Core 2867

Priority & Exemplary Natural Communities
Acidic Rocky Summit/Rock Outcrop Community
Spruce - Fir - Northern Hardwoods Forest

Core 2869

Priority & Exemplary Natural Communities
Spruce - Fir - Northern Hardwoods Forest

Core 2878

Wetland Core

Core 2886

Priority & Exemplary Natural Communities
Wet Meadow

Core 2893

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

For more information on rare species and natural communities, please see our fact sheets online at www.mass.gov/nhesp.
Spruce - Fir - Northern Hardwoods Forest

Core 2901

Priority & Exemplary Natural Communities
Spruce-Fir Swamp

Core 2911

Species of Conservation Concern
New England Bluet  Enallagma laterale  Non-listed SWAP

Core 2914

Wetland Core
Aquatic Core
Priority & Exemplary Natural Communities
Level Bog

Species of Conservation Concern
Algae-like Pondweed  Potamogeton confervoides  T
Pitcher Plant Borer Moth  Papaipena appassionata  T
Two-striped Cord Grass Moth  Macrochilo bivittata  Non-listed SWAP
New England Bluet  Enallagma laterale  Non-listed SWAP
Forcipate Emerald  Somatochlora forcipata  E
Incurvate Emerald  Somatochlora incurvata  E
Ski-tipped Emerald  Somatochlora elongata  SC
Subarctic Darner  Aeshna subarctica  E
Smooth Green Snake  Opheodrys vernalis  Non-listed SWAP
American Bittern  Botaurus lentiginosus  E

Core 2920

Wetland Core
Priority & Exemplary Natural Communities
Inland Atlantic White Cedar Swamp  S2
Level Bog  S3

Species of Conservation Concern
Brook Snaketail  Ophiogomphus aspersus  SC
Zebra Clubtail  Stylurus scudder  Non-listed SWAP
Long-eared Owl  Asio otus  SC

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

Core 2627
A 165-acre Core Habitat featuring Wetland Core and Vernal Pool 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.

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 2675
A 48-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 2708
An 851-acre Core Habitat featuring Wetland Core, Aquatic Core, Vernal Pool 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 152-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.

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.

Algae-like Pondweed is an aquatic plant with fine thread-like leaves. This plant is endemic primarily to the Atlantic coast plain and can be found in acidic lakes and ponds.

Bartram’s Shadbush thrives in mountain thickets, near sphagnum bogs and on high-elevation, steep, wooded, rocky slopes.
A member of the Christmas Mistletoe family, Dwarf Mistletoe is a very small fleshy shrub, usually no more than 0.8 inch tall, that parasitizes conifer trees. In Massachusetts, Dwarf Mistletoe occurs in peatlands varying from kettlehole peat bogs to spruce-fir-birch headwater swamps, generally on the branches of black spruce (*Picea mariana*).

Pod-grass, an erect, rush-like plant, inhabits open acidic peatlands, often in areas that are dominated by sedges and sphagnum mosses.

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.

Slender Cottongrass is a plant of swamps and peatlands. Habitats in Massachusetts include acidic and calcareous fens and portions of seepage swamps.

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.

The Forcipate Emerald, a large dragonfly, inhabits pools in bogs and small forested streams.

The Incurvate Emerald, a large dragonfly, inhabits sphagnum bogs.

Ski-tipped Emeralds are dragonflies that inhabit small to medium-sized streams that may have a moderate or very sluggish flow and dense or little emergent vegetation.

Subarctic Darners, large dragonflies, inhabit sphagnum bogs and deep fens with wet sphagnum. The nymphs are aquatic, living in soupy sphagnum pools and among aquatic vegetation.

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

Common Loons rely upon large, clear lakes as breeding habitat. They only leave the water to tend to their nests, which are either placed in shoreline vegetation, or upon specially designed nesting platforms built for them by conservationists. Their diet consists primarily of fish, and Common Loons have been shown to be particular vulnerable to human disturbance and toxins, especially mercury.

**Core 2762**

A 39-acre Core Habitat featuring a Species of Conservation Concern.

Bartram’s Shadbush thrives in mountain thickets, near sphagnum bogs and on high-elevation, steep, wooded, rocky slopes.

**Core 2767**

A 7-acre Core Habitat featuring a Species of Conservation Concern.

New England Bluets are damselflies whose habitat includes coastal plain ponds, open water in swamps, and other ponds and lakes. It occurs only in the northeastern United States and is most common from eastern Massachusetts into Connecticut.
Core 2771
A 39-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 2778
A 98-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.

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

Core 2781
A 54-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 2782
A 464-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.

Algae-like Pondweed is an aquatic plant with fine thread-like leaves. This plant is endemic primarily to the Atlantic coast plain and can be found in acidic lakes and ponds.

The Little Bluet, a very small damselfly, inhabits ponds with sparse emergent or aquatic vegetation and a sandy substrate.

New England Bluets are damselflies whose habitat includes coastal plain ponds, open water in swamps, and other ponds and lakes. It occurs only in the northeastern United States and is most common from eastern Massachusetts into Connecticut.

Common Loons rely upon large, clear lakes as breeding habitat. They only leave the water to tend to their nests, which are either placed in shoreline vegetation, or upon specially designed nesting platforms built for them by conservationists. Their diet consists primarily of fish, and Common Loons have been shown to be particular vulnerable to human disturbance and toxins, especially mercury.
Core 2793

A 25-acre Core Habitat featuring a Species of Conservation Concern.

Ski-tipped Emeralds are dragonflies that inhabit small to medium-sized streams that may have a moderate or very sluggish flow and dense or little emergent vegetation.

Core 2794

A 302-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 151-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.

Acidic Shrub Fens are shrub-dominated acidic peatlands found primarily along pond margins in the eastern and central part of the state. These wetland communities experience some groundwater and/or surface water inputs, but no calcareous seepage. This extensive Acidic Shrub Fen is in good condition, with minimal human disturbance, and is well buffered by an upland forest and a forested bog.

Level Bogs are dwarf-shrub peatlands, generally with pronounced hummocks and hollows in sphagnum moss. These wetland communities are very acidic and nutrient-poor because the peat isolates them from nutrients in groundwater and streams. This very nice, large bog has patches of dense shrubs above a continuous layer of Sphagnum supporting typical bog species on variably thick peat in a mosaic with other wetlands. It is in a largely natural setting.

Bartram’s Shadbush thrives in mountain thickets, near sphagnum bogs and on high-elevation, steep, wooded, rocky slopes.

Pitcher Plant Borer moths inhabit Sphagnum bogs with pitcher plants (Sarracenia purpurea). The larvae bore into and feed on the roots of pitcher plants, also consuming the foliage in later instars.

The Incurvate Emerald, a large dragonfly, inhabits sphagnum bogs.

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

Core 2808

A 3-acre Core Habitat featuring a Priority Natural Community.

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 example of Spruce-Tamarack Bog, though small and recovering from past disturbances, is one of only a few of its kind known in the state.

Core 2824

A 210-acre Core Habitat featuring a Species of Conservation Concern.

Ski-tipped Emeralds are dragonflies that inhabit small to medium-sized streams that may have a moderate or very sluggish flow and dense or little emergent vegetation.

Core 2826

A 59-acre Core Habitat featuring Wetland Core, a Priority Natural Community, 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.

Level Bogs are dwarf-shrub peatlands, generally with pronounced hummocks and hollows in sphagnum moss. These wetland communities are very acidic and nutrient-poor because the peat isolates them from nutrients in groundwater and streams. This example of Level Bog is of good-quality, with a small open sphagnum mat, and is well buffered by a forested swamp and upland woods.

A member of the Christmas Mistletoe family, Dwarf Mistletoe is a very small fleshy shrub, usually no more than 0.8 inch tall, that parasitizes conifer trees. In Massachusetts, Dwarf Mistletoe occurs in peatlands varying from kettlehole peat bogs to spruce-fir-birch headwater swamps, generally on the branches of black spruce (Picea mariana).

Core 2857

A 96-acre Core Habitat featuring Wetland Core, a Priority Natural Community, 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.

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 very nice and large Wet Meadow is in a beaver wetland system. The vegetation is variable and likely shifts over time as beaver activity changes.

Bartram's Shadbush thrives in mountain thickets, near sphagnum bogs and on high-elevation, steep, wooded, rocky slopes.
Core 2858
A <1-acre Core Habitat featuring a Priority Natural Community.
Acidic Rocky Summits are open communities of shrubs, scattered grasses, mosses, lichens and occasional trees found on exposed rocky summits. These areas are dry with little soil, and can often be found as patches within other ridgetop communities. This example of Acidic Rocky Summit is large, diverse, and important, but is sadly being severely degraded by intensive ATV use. This trampling and erosion is a serious threat to this community’s long term viability.

Core 2859
A 1-acre Core Habitat featuring a Priority Natural Community.
Acidic Rocky Summits are open communities of shrubs, scattered grasses, mosses, lichens and occasional trees found on exposed rocky summits. These areas are dry with little soil, and can often be found as patches within other ridgetop communities. This example of Acidic Rocky Summit is large, diverse, and important, but is sadly being severely degraded by intensive ATV use. This trampling and erosion is a serious threat to this community’s long term viability.

Core 2867
A 7-acre Core Habitat featuring Priority Natural Communities.
Acidic Rocky Summits are open communities of shrubs, scattered grasses, mosses, lichens and occasional trees found on exposed rocky summits. These areas are dry with little soil, and can often be found as patches within other ridgetop communities. This example of Acidic Rocky Summit is large, diverse, and important, but is sadly being severely degraded by intensive ATV use. This trampling and erosion is a serious threat to this community’s long term viability.

Spruce-Fir-Northern Hardwoods Forests are usually found in northern, higher parts of the state, on cool, rocky soils that are nutrient-poor, somewhat dry, and acidic. This example of this community is in good condition and is the eastern-most example of its type in the state.

Core 2869
A 2-acre Core Habitat featuring Priority Natural Communities.
Spruce-Fir-Northern Hardwoods Forests are usually found in northern, higher parts of the state, on cool, rocky soils that are nutrient-poor, somewhat dry, and acidic. This example of this community is in good condition and is the eastern-most example of its type in the state.

Core 2878
A 19-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 2886
An 8-acre Core Habitat featuring a Priority Natural Community.
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 moderate sized Wet Meadow is in a very nice wetland complex. The community composition is dynamic over time in response to varying water levels.

Core 2893
A 74-acre Core Habitat featuring Priority Natural Communities.
Acidic Rocky Summits are open communities of shrubs, scattered grasses, mosses, lichens and occasional trees found on exposed rocky summits. These areas are dry with little soil, and can often be found as patches within other ridgetop communities. This example of Acidic Rocky Summit is large, diverse, and important, but is sadly being severely degraded by intensive ATV use. This trampling and erosion is a serious threat to this community’s long-term viability.
Spruce-Fir-Northern Hardwoods Forests are usually found in northern, higher parts of the state, on cool, rocky soils that are nutrient-poor, somewhat dry, and acidic. This example of this community is in good condition and is the eastern-most example of its type in the state.

Core 2901
A 10-acre Core Habitat featuring a Priority Natural Community.
Spruce-Fir Boreal Swamps are forested wetlands dominated by red spruce and balsam fir. These swamps are typically found at stream headwaters or in poorly drained basins in the higher, western and north-central parts of the state. This nice but small mixed headwater Spruce-Fir Swamp has varied vegetation with a Sphagnum groundlayer. It is near but not on protected land.

Core 2911
A 11-acre Core Habitat featuring a Species of Conservation Concern.
New England Bluets are damselflies whose habitat includes coastal plain ponds, open water in swamps, and other ponds and lakes. It occurs only in the northeastern United States and is most common from eastern Massachusetts into Connecticut.

Core 2914
A 562-acre Core Habitat featuring Wetland Core, Aquatic Core, a Priority Natural Community, 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.

Level Bogs are dwarf-shrub peatlands, generally with pronounced hummocks and hollows in sphagnum moss. These wetland communities are very acidic and nutrient-poor because the peat isolates them from nutrients in groundwater and streams. This fairly large Level Bog appears transitional in response to changes in water levels. The extensive Sphagnum peat mat has degraded areas and many of the trees are now snags. The resulting habitat mix includes species not normally found on bogs.

Algae-like Pondweed is an aquatic plant with fine thread-like leaves. This plant is endemic primarily to the Atlantic coast plain and can be found in acidic lakes and ponds.

Pitcher Plant Borer moths inhabit Sphagnum bogs with pitcher plants (*Sarracenia purpurea*). The larvae bore into and feed on the roots of pitcher plants, also consuming the foliage in later instars.

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

New England Bluets are damselflies whose habitat includes coastal plain ponds, open water in swamps, and other ponds and lakes. It occurs only in the northeastern United States and is most common from eastern Massachusetts into Connecticut.

The Forcipate Emerald, a large dragonfly, inhabits pools in bogs and small forested streams.

The Incurvate Emerald, a large dragonfly, inhabits sphagnum bogs.

Ski-tipped Emerals are dragonflies that inhabit small to medium-sized streams that may have a moderate or very sluggish flow and dense or little emergent vegetation.

Subarctic Darners, large dragonflies, inhabit sphagnum bogs and deep fens with wet sphagnum. The nymphs are aquatic, living in soupy sphagnum pools and among aquatic vegetation.

A small to medium-sized snake, adult Smooth Green Snakes are 14-20 inches long with a uniform light green back and yellow to white venter. The Smooth Green Snake is found in moist open or lightly forested habitat where grasses and shrubs are abundant (edges of marshes, wet meadows, fields, and forest edges or open forests, grasslands, blueberry barrens, pine barrens) and prefers to forage on the ground with activity in the daytime. Smooth Green Snake overwinter in rodent burrows, ant mounds and rock crevices, either singly or communally.

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

**Core 2920**

A 5,179-acre Core Habitat featuring Wetland 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.

Inland Atlantic White Cedar Swamps are forested wetlands dominated by Atlantic white cedar, with hemlock, spruce, red maple, and yellow birch. As in all Atlantic White Cedar swamps, water-saturated peat overlies the mineral sediments. This small example of an Inland Atlantic White Cedar Swamp is one of a very few high elevation sites in Massachusetts. It is an isolated wetland in good condition surrounded by working forest.

Level Bogs are dwarf-shrub peatlands, generally with pronounced hummocks and hollows in sphagnum moss. These wetland communities are very acidic and nutrient-poor because the peat isolates them from nutrients in groundwater and streams. This example of Level Bog is relatively large and in very good condition, with little evidence of human disturbance and a well-developed bog mat.

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.

For nesting, Long-eared Owls generally prefer dense coniferous or mixed forests or groves close to fields or other open areas suitable for foraging. Their diet is primarily of meadow voles, along with a small percentage of shrews, white-footed mice, and small songbirds.
BioMap2 Critical Natural Landscape in Ashburnham

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

**CNL 1204**
- Landscape Block
- Wetland Core Buffer

**CNL 1250**
- Aquatic Core Buffer
- Landscape Block
- Wetland Core Buffer

**CNL 1267**
- Wetland Core Buffer

**CNL 1268**
- Aquatic Core Buffer

**CNL 1271**
- Landscape Block
- Wetland Core Buffer

**CNL 1278**
- Wetland Core Buffer

**CNL 1291**
- Wetland Core Buffer

**CNL 1312**
- Aquatic Core Buffer
- Landscape Block
- Wetland Core Buffer
Critical Natural Landscape Summaries

CNL 1204
A 1,586-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.

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 1250
A 4,304-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 1267**

A 59-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 1268**

A 188-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 1271**

A 1,657-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.

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 1278**

An 11-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 1291**

An 81-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 1312**

An 8,707-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

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