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 ecologically important areas that are worthy of
BioMap2: One Plan, Two Components

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

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 protection. The status of natural communities reflects the documented number and acreages of each community type in the state:

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

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

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

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

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

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.
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/](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

Monroe lies within the Berkshire Highlands/Southern Green Mountains Ecoregion, an area drained by the Deerfield, upper Westfield, Hoosic, and Housatonic Rivers. Lakes and ponds are relatively abundant. This ecoregion has deep soils that support northern hardwoods and spruce-fir forests.

Monroe at a Glance

- Total Area: 6,904 acres (10.8 square miles)
- Human Population in 2010: 121
- Open space protected in perpetuity: 2,667 acres, or 38.6% percent of total area*
- BioMap2 Core Habitat: 1,576 acres
- BioMap2 Core Habitat Protected: 672 acres or 42.7%
- BioMap2 Critical Natural Landscape: 6,453 acres
- BioMap2 Critical Natural Landscape Protected: 2,667 acres or 41.3%.

BioMap2 Components

Core Habitat

- 3 Exemplary or Priority Natural Community Cores
- 1 Forest Core
- 2 Aquatic Cores
- 4 Species of Conservation Concern Cores**
  - 1 amphibian, 1 fish, 1 insect, 3 plants

Critical Natural Landscape

- 1 Landscape Block
- 2 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 Monroe

BioMap2 Core Habitat

BioMap2 Critical Natural Landscape

1 Mile
Species of Conservation Concern, Priority and Exemplary Natural Communities, and Other Elements of Biodiversity in Monroe

Insects

Dragonflies
Ocellated Darnet, (Boyeria grafiana), SC

Amphibians
Spring Salamander, (Gyrinophilus porphyriticus), Non-listed SWAP

Fishes
Longnose Sucker, (Catostomus catostomus), SC

Plants
Mountain Alder, (Alnus viridis ssp. crispa), T
Bristly Black Currant, (Ribes lacustre), SC
Large-leaved Goldenrod, (Solidago macrophylla), T

Exemplary Natural Communities
Northern Hardwoods - Hemlock - White Pine Forest
Spruce - Fir - Northern Hardwoods Forest

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

E = Endangered
T = Threatened
SC = Special Concern
S1 = Critically Imperiled communities, typically 5 or fewer documented sites or very few remaining acres in the state.
S2 = Imperiled communities, typically 6-20 sites or few remaining acres in the state.
S3 = Vulnerable communities, typically have 21-100 sites or limited acreage across the state.

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

Core IDs correspond with the following element lists and summaries.

![Map of Monroe with BioMap2 Core Habitat and Critical Natural Landscape](image)

- **BioMap2 Core Habitat**
- **BioMap2 Critical Natural Landscape**

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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).
Elements of BioMap2 Cores

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

Core 2938

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

Core 2942

Priority & Exemplary Natural Communities
Northern Hardwoods - Hemlock - White Pine Forest
Species of Conservation Concern
<table>
<thead>
<tr>
<th>Species</th>
<th>Scientific Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bristly Black Currant</td>
<td>Ribes lacustre</td>
<td>SC</td>
</tr>
<tr>
<td>Spring Salamander</td>
<td>Gyrinophilus porphyriticus</td>
<td>Non-listed SWAP</td>
</tr>
</tbody>
</table>

Core 2971

Aquatic Core
Priority & Exemplary Natural Communities
Northern Hardwoods - Hemlock - White Pine Forest
Species of Conservation Concern
<table>
<thead>
<tr>
<th>Species</th>
<th>Scientific Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bristly Black Currant</td>
<td>Ribes lacustre</td>
<td>SC</td>
</tr>
<tr>
<td>Mountain Alder</td>
<td>Alnus viridis ssp. crispa</td>
<td>T</td>
</tr>
<tr>
<td>Pale Green Orchis</td>
<td>Platanthera flava var. herbiola</td>
<td>T</td>
</tr>
<tr>
<td>Ocellated Darner</td>
<td>Boyeria grafiana</td>
<td>SC</td>
</tr>
<tr>
<td>Longnose Sucker</td>
<td>Catostomus catostonus</td>
<td>SC</td>
</tr>
</tbody>
</table>

Core 2975

Forest Core
Aquatic Core
Priority & Exemplary Natural Communities
Acidic Rocky Summit/Rock Outcrop Community
High-energy Riverbank
High-terrace Floodplain Forest
Northern Hardwoods - Hemlock - White Pine Forest
Red Oak - Sugar Maple Transition Forest
Rich, Mesic Forest Community
Species of Conservation Concern
<table>
<thead>
<tr>
<th>Species</th>
<th>Scientific Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn Coralroot</td>
<td>Corallorhiza odontorhiza</td>
<td>SC</td>
</tr>
<tr>
<td>Bailey's Sedge</td>
<td>Carex baileyi</td>
<td>T</td>
</tr>
<tr>
<td>Bartram's Shadbush</td>
<td>Amelanchier bartramiana</td>
<td>T</td>
</tr>
<tr>
<td>Scientific Name</td>
<td>Common Name</td>
<td>Status</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Ribes lacastre</td>
<td>Bristly Black Currant</td>
<td>SC</td>
</tr>
<tr>
<td>Symphyotrichum prenanthoides</td>
<td>Crooked-stem Aster</td>
<td>SC</td>
</tr>
<tr>
<td>Myriophyllum farwellii</td>
<td>Farwell’s Water-milfoil</td>
<td>E</td>
</tr>
<tr>
<td>Solidago macrophylla</td>
<td>Large-leaved Goldenrod</td>
<td>T</td>
</tr>
<tr>
<td>Platanthera dilatata</td>
<td>Leafy White Orchis</td>
<td>T</td>
</tr>
<tr>
<td>Carex michauxiana</td>
<td>Michaux’s Sedge</td>
<td>E</td>
</tr>
<tr>
<td>Alnus viridis ssp. crispa</td>
<td>Mountain Alder</td>
<td>T</td>
</tr>
<tr>
<td>Triphora trianthophora</td>
<td>Nodding Pogonia</td>
<td>E</td>
</tr>
<tr>
<td>Sorbus decora</td>
<td>Northern Mountain-ash</td>
<td>E</td>
</tr>
<tr>
<td>Carex lenticularis</td>
<td>Shore Sedge</td>
<td>T</td>
</tr>
<tr>
<td>Trisetum spicatum</td>
<td>Spiked False Oats</td>
<td>E</td>
</tr>
<tr>
<td>Juncus filiformis</td>
<td>Thread Rush</td>
<td>E</td>
</tr>
<tr>
<td>Milium effusum</td>
<td>Woodland Millet</td>
<td>T</td>
</tr>
<tr>
<td>Pyrrhia aurantiago</td>
<td>Orange Sallow Moth</td>
<td>SC</td>
</tr>
<tr>
<td>Eorla laeta</td>
<td>Early Hairstreak</td>
<td>T</td>
</tr>
<tr>
<td>Cicindela duodecimguttata</td>
<td>Twelve-spotted Tiger Beetle</td>
<td>SC</td>
</tr>
<tr>
<td>Boyeria graifana</td>
<td>Ocellated Darter</td>
<td>SC</td>
</tr>
<tr>
<td>Sonatochlera elongata</td>
<td>Ski-tipped Emerald</td>
<td>SC</td>
</tr>
<tr>
<td>Gymnophilooporporyricticus</td>
<td>Spring Salamander</td>
<td>Non-listed SWAP</td>
</tr>
<tr>
<td>Notropis bifrenatus</td>
<td>Bridle Shiner</td>
<td>SC</td>
</tr>
<tr>
<td>Catostomus catostomus</td>
<td>Longnose Sucker</td>
<td>SC</td>
</tr>
<tr>
<td>Botaurus lentiginosus</td>
<td>American Bittern</td>
<td>E</td>
</tr>
<tr>
<td>Oporornis philadelphia</td>
<td>Mourning Warbler</td>
<td>SC</td>
</tr>
<tr>
<td>Accipiter striatus</td>
<td>Sharp-shinned Hawk</td>
<td>SC</td>
</tr>
</tbody>
</table>
Core Habitat Summaries

Core 2938

A 14-acre Core Habitat featuring a Priority Natural Community.

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 important example of Spruce-Fir-Northern Hardwoods Forest is considered old growth, with many trees 200-300 years old. It is in excellent condition with great structural diversity.

Core 2942

A 468-acre Core Habitat featuring Priority Natural Communities and Species of Conservation Concern.

Northern Hardwoods-Hemlock-White Pine Forests have a mix of evergreen and deciduous trees, with a closed, full canopy, and sparse shrub and herbaceous layers. It commonly occurs on north facing slopes and ravines with moderately acidic soils. Although small, this example of Northern Hardwoods-Hemlock-White Pine Forest contains one of Massachusetts’ few remaining old-growth stands. Within this forest, tree diameters exceed 1 meter, and Hemlocks have been aged at over 300 years.

Bristly Black Currant is a low, bristly to spiny, straggling shrub measuring up to 3 feet in height. Bristly Black Currant is usually found in cool ravines and borders of swamps in upland regions of Massachusetts.

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

Core 2971

A 1,857-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.

Northern Hardwoods-Hemlock-White Pine Forests have a mix of evergreen and deciduous trees, with a closed, full canopy, and sparse shrub and herbaceous layers. It commonly occurs on north facing slopes and ravines with moderately acidic soils. This mature example Northern Hardwoods-Hemlock-White Pine Forest is of high-quality and is embedded within a large tract of unfragmented forest.

Bristly Black Currant is a low, bristly to spiny, straggling shrub measuring up to 3 feet in height. Bristly Black Currant is usually found in cool ravines and borders of swamps in upland regions of Massachusetts.
Mountain Alder in Massachusetts occurs in several habitat types which combine open, exposed areas and cool local temperatures. The most common habitat is exposed ledges, boulders, and cobble bars on the edges of the Connecticut and Deerfield Rivers. Many of these high-energy river shores are influenced by seasonal flooding.

In Massachusetts, Pale Green Orchis inhabits open to semi-shaded habitats in rich, moderately acidic, wet areas subject to seepage, intermittent flooding, or water level fluctuation.

Ocellated Darners are dragonflies whose nymphs inhabit clear, shallow, rocky, swift-flowing streams and large, rocky, poorly vegetated lakes. Adults also inhabit nearby uplands, often forests with mixed coniferous and deciduous trees.

In Massachusetts, the torpedo-shaped Longnose Sucker is found mainly in cool upper sections of streams and rivers with rocky to gravel substrates. These fish may swim miles to deposit their eggs on clean and well oxygenated gravel substrates.

Core 2975

A 25,569-acre Core Habitat featuring Forest Core, Aquatic Core, Priority Natural Communities, and Species of Conservation Concern.

The upper Deerfield River and several of its tributaries connect four Forest Cores in northwestern Massachusetts. This complex Core Habitat supports 29 rare and uncommon species, including three Endangered bats, seriously threatened by white-nose syndrome. As the river and brooks cut down through layers of ancient rocks, areas of richer bedrock were exposed. These scattered rich areas a number of rare plants, including Nodding Pogonia and Autumn Coralroot orchids.

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 large example of Acidic Rocky Summit/Rock Outcrop is in good condition, with evidence of the natural disturbance regime, fire, that can perpetuate this community type.

High-Energy Riverbank communities are sparse, open graminoid communities found on cobble and sand deposits along fast-flowing rivers that experience severe flooding and ice scour. This Core has two examples of High-Energy Riverbank with high species and habitat diversity. One is in excellent condition, and a large buffer of natural forest.

High-Terrace Floodplain Forests are deciduous hardwood forests that occur along riverbanks, above the zone of annual flooding. Although they do not flood annually, they flood often enough for the soil to be moderately enriched. This example of High-Terrace Floodplain Forest is in good condition, with moderate diversity and good buffering by natural vegetation.

Northern Hardwoods-Hemlock-White Pine Forests have a mix of evergreen and deciduous trees, with a closed, full canopy, and sparse shrub and herbaceous layers. It commonly occurs on north facing slopes and ravines with moderately acidic soils. This example of Northern Hardwoods-Hemlock-White Pine forest is large and unfragmented. Large tracts of this forest type are important habitat for Massachusetts' more common species such as bear, deer, moose, and neo-tropical migrant birds.
Red Oak-Sugar Maple Transition Forests have species typical of both northern hardwood forests (maples), and central hardwood forests (oaks). This widespread forest type is moderate in moisture, pH, and nutrient availability. This relatively large example of Red Oak-Sugar Maple Transition Forest is in very good condition, with many very old trees and the structural characteristics of an old growth forest.

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 small patch of Rich, Mesic Forest is a regional variant lacking the full species diversity of this community type. However it is in very good condition, with no exotic species, and is found within a very large naturally vegetated area.

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.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.
**BioMap2 Critical Natural Landscape in Monroe**

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

**CNL 1329**
- Aquatic Core Buffer
- Landscape Block
- Wetland Core Buffer
Critical Natural Landscape Summaries

CNL 1329
An 111,531-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.