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.

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.

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
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

Northbridge lies within the Southern New England Coastal Plains and Hills Ecoregion, an area comprised of plains with a few low hills. Forests are mainly central hardwoods with some transition hardwoods and some elm-ash-red maple and red and white pine. Many major rivers drain this area.

Northbridge at a Glance

- Total Area: 11,552 acres (18.1 square miles)
- Human Population in 2010: 15,707
- Open space protected in perpetuity: 1,291 acres, or 11.2% percent of total area*
- BioMap2 Core Habitat: 1,035 acres
- BioMap2 Core Habitat Protected: 263 acres or 25.4%
- BioMap2 Critical Natural Landscape: 770 acres
- BioMap2 Critical Natural Landscape Protected: 436 acres or 56.6%.

BioMap2 Components

Core Habitat
- 4 Exemplary or Priority Natural Community Cores
- 3 Wetland Cores
- 1 Aquatic Core
- 8 Species of Conservation Concern Cores**
  - 1 bird, 3 reptiles, 1 amphibian, 3 insects, 1 mussel, 3 plants

Critical Natural Landscape
- 1 Landscape Block
- 4 Wetland Core Buffers
- 1 Aquatic Core Buffer

* 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 Northbridge

![Map of BioMap2 Core Habitat and Critical Natural Landscape in Northbridge](image)

- **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 Northbridge

Mussels
   Triangle Floater, (Alasmidonta undulata), Non-listed SWAP species

Insects
   Butterflies
      Hessel's Hairstreak, (Callophrys hesseli), SC
   Dragonflies
      Brook Snaketail, (Ophiogomphus aspersus), SC
      Arrow Clubtail, (Stylurus spiniceps), Non-listed SWAP species

Amphibians
   Four-toed Salamander, (Hemidactylium scutatum), Non-listed SWAP

Reptiles
   Wood Turtle, (Glyptemys insculpta), SC
   Eastern Hognose Snake, (Heterodon platirhinos), Non-listed SWAP
   Northern Black Racer, (Coluber constrictor), Non-listed SWAP

Birds
   Grasshopper Sparrow, (Ammodramus savannarum), T

Plants
   Variable Sedge, (Carex polymorpha), E
   Climbing Fern, (Lygodium palmatum), SC
   Tall Nut-sedge, (Scleria triglomerata), E

Priority Natural Communities
   Alluvial Red Maple Swamp, S3
   Inland Atlantic White Cedar Swamp, S2
   Kettlehole Level Bog, S2
   Level Bog, S3

Other BioMap2 Components
   Aquatic Core
   Wetland 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 Northbridge

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

Core 1097
Species of Conservation Concern
Grasshopper Sparrow  
*Ammodramus savannarum*

Core 1109
Wetland Core

Core 1123
Wetland Core

Core 1129
Wetland Core

Core 1130
Wetland Core

Core 1131
Wetland Core

Core 1141
Wetland Core

Core 1148
Wetland Core

Core 1149
Wetland Core

Core 1156
Wetland Core

Core 1182
Species of Conservation Concern
Variable Sedge  
*Carex polymorpha*
Core 1214
Species of Conservation Concern
Tall Nut-sedge  *Scleria triglomerata*  E

Core 1222
Wetland Core

Core 1227
Species of Conservation Concern
Four-toed Salamander  *Hemidactylus scutatum*  Non-listed SWAP

Core 1232
Species of Conservation Concern
Four-toed Salamander  *Hemidactylus scutatum*  Non-listed SWAP

Core 1244
Species of Conservation Concern
Tall Nut-sedge  *Scleria triglomerata*  E

Core 1285
Species of Conservation Concern
Arrow Clubtail  *Stylurus spiniceps*  Non-listed SWAP
Triangle Floater  *Alasmidonta undulata*  SC
Climbing Fern  *Lygodium palmatum*  SC
Hessel’s Hairstreak  *Callophrys hesseli*  SC
Eastern Hognose Snake  *Heterodon platirhinos*  Non-listed SWAP
Northern Black Racer  *Coluber constrictor*  Non-listed SWAP
Wood Turtle  *Glyptemys insculpta*  SC
Bridle Shiner  *Notropis bifrenatus*  SC
Core Habitat Summaries

Core 1097
A 25-acre Core Habitat featuring a Species of Conservation Concern.

Grasshopper Sparrows nest in dry grasslands. Natural situations include sandplain grasslands, but they have adapted well to anthropogenic habitats such as airports and landfills. They are very sensitive to changes in plant composition and respond well to the effects of fire management.

Core 1109
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 1123
A 16-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 1129
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 1130
A 2-acre Core Habitat featuring Wetland Core.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.
BioMap2
Conserving the Biodiversity of Massachusetts in a Changing World

Core 1131
A 44-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 1141
An 11-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 1148
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 1149
A 2-acre Core Habitat featuring Wetland Core.

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

Core 1156
An 86-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 1182

A 9-acre Core Habitat featuring a Species of Conservation Concern.

Variable Sedge is a vigorous, grass-like herbaceous perennial plant that grows from large rhizomes into dense, spreading colonies. It is rarely found fruiting and flowering except when there is abundant light and little competition from other plants. Burning seems to stimulate flowering and seed production.

Core 1214

A 2-acre Core Habitat featuring a Species of Conservation Concern.

Tall Nut-sedge is at its northern limit in Massachusetts. Historically, this species is known from wet pine barrens and salt marshes. Its current rarity is likely due to lack of disturbance and fire.

Core 1222

A 17-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 1227

A 48-acre Core Habitat featuring a 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.

Core 1232

An 80-acre Core Habitat featuring a 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.
Core 1244

A 10-acre Core Habitat featuring a Species of Conservation Concern.

Tall Nut-sedge is at its northern limit in Massachusetts. Historically, this species is known from wet pine barrens and salt marshes. Its current rarity is likely due to lack of disturbance and fire.

Core 1285

A 353-acre Core Habitat featuring Species of Conservation Concern.

The Arrow Clubtail is a large dragonfly whose aquatic nymphs inhabit medium to large, swift-flowing, sandy-bottomed rivers and occasionally large lakes. The terrestrial adults inhabit riparian areas and the surrounding uplands, and return to the water body to mate and lay eggs.

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

Core 1288

A 1,538-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.

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 small example of Acidic Shrub Fen is in good condition but has nearby development, from which it has only a narrow wooded buffer. It is in a wetland mosaic with a Spruce-Tamarack Bog, which together identify an important ecosystem.

Alluvial Red Maple Swamps are a type of red maple swamp that occurs in low areas along rivers and streams. Regular flooding enriches the soil with nutrients, resulting in an unusual set of associated trees and plants. This young, moderate-sized example of Alluvial Red Maple Swamp appears to be free of exotic invasive species.

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

For more information on rare species and natural communities, please see our fact sheets online at www.mass.gov/nhesp.
peat overlies the mineral sediments. This example of Inland Atlantic White Cedar Swamp, though small, is in good condition.

Kettlehole Level Bogs are acidic dwarf-shrub peatlands with little water input or outflow that form in circular depressions left by melting ice blocks in sandy glacial outwash. The vegetation in Kettlehole Level Bogs usually grows in rings. This example of Kettlehole Level Bog, though quite small, is in excellent condition, shows no signs of human disturbance, and is surrounded by an intact natural forest ecosystem.

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 small example of a Level Bog is in good condition despite its proximity to nearby development.

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 small Spruce-Tamarack Bog is in a larger wetland mosaic that includes a nearby Acidic Shrub Fen: together these communities identify a sensitive ecosystem. Nearby residential development and gravel pits could alter water levels and increase nutrient input.

Climbing Fern does not have the characteristic overall shape of most ferns. Instead, it is an evergreen, ivy-like plant which sprawls over the ground or climbs clockwise short distances up shrubs and coarse herbs. Climbing Fern grows in moist pine-oak-maple woods with an open understory, in moist thickets, and along stream margins. This plant prefers acidic soils that are sandy and rich in humus, but nutrient-poor.

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.

Hessel’s Hairstreak, a butterfly, is restricted to Atlantic White Cedar Swamps and Bogs, where the larvae develop on new foliage of the Atlantic White Cedar trees.

Eastern Hognose Snakes are shy, slow-moving, thick-bodied snakes that specialize in feeding on toads, although they eat other amphibians or other small animals as well. They require sandy soils in their habitat; both wooded and open habitats are known.

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.

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.
BioMap2 Critical Natural Landscape in Northbridge

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

**CNL 575**  
Wetland Core Buffer

**CNL 587**  
Wetland Core Buffer

**CNL 621**  
Wetland Core Buffer

**CNL 645**  
Aquatic Core Buffer  
Landscape Block  
Wetland Core Buffer
Critical Natural Landscape Summaries

**CNL 575**
A 43-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 587**
A 367-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 621**
A 55-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 645**
A 2,992-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.