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 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.

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

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

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

Components of Core Habitat

Core Habitat identifies specific areas necessary to promote the long-term persistence of rare species, other Species of Conservation Concern, exemplary natural communities, and intact ecosystems.

Rare Species

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

<table>
<thead>
<tr>
<th>Taxonomic Group</th>
<th>MESA-listed Species of Conservation Concern</th>
<th>Non-listed Species of Conservation Concern</th>
</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>
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<td>Reptiles</td>
<td>10</td>
<td>5</td>
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<tr>
<td>Amphibians</td>
<td>4</td>
<td>3</td>
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<td>Fish</td>
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<td>17</td>
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<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

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, 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.

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

Raynham lies within the Bristol Lowland/Narragansett Lowland Ecoregion, an area of flat, gently rolling plains. Forests are mostly central hardwoods and some elm-ash-red maple and red and white pine. There are numerous wetlands, some cropland/pasture, and many cranberry bogs. Many rivers drain this area.

Raynham at a Glance

- Total Area: 13,288 acres (20.8 square miles)
- Human Population in 2010: 13,383
- Open space protected in perpetuity: 1,095 acres, or 8.2% percent of total area*
- BioMap2 Core Habitat: 2,332 acres
- BioMap2 Core Habitat Protected: 583 acres or 25.0%
- BioMap2 Critical Natural Landscape: 2,063 acres
- BioMap2 Critical Natural Landscape Protected: 497 acres or 24.1%.

BioMap2 Components

Core Habitat
- 4 Exemplary or Priority Natural Community Cores
- 1 Forest Core
- 7 Wetland Cores
- 3 Aquatic Cores
- 8 Species of Conservation Concern Cores**
  - 6 reptiles, 2 amphibians, 5 insects, 1 mussel, 3 plants

Critical Natural Landscape
- 3 Landscape Blocks
- 7 Wetland Core Buffers
- 3 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 Raynham

BioMap2 Core Habitat

BioMap2 Critical Natural Landscape

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

Mussels
Eastern Pondmussel, *Ligumia nasuta*, SC

Insects
Moths
Pale Green Pinion Moth, *Lithophane viridipallens*, SC
Water-willow Stem Borer, *Papaipema sulphurata*, T
Chain Fern Borer, *Papaipema stenocelis*, T

Butterflies
Hessel's Hairstreak, *Callophrys hesseli*, SC

Dragonflies
Kennedy's Emerald, *Somatochlora kennedyi*, E

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

Reptiles
Blanding's Turtle, *Emydoidea blandingii*, T
Wood Turtle, *Glyptemys insculpta*, SC
Eastern Box Turtle, *Terrapene carolina*, SC
Eastern Ribbon Snake, *Thamnophis sauritus*, Non-listed SWAP
Northern Black Racer, *Coluber constrictor*, Non-listed SWAP
Spotted Turtle, *Clemmys guttata*, Non-listed SWAP

Plants
Round-fruited False-loosestrife, *Ludwigia sphaerocarpa*, E
Climbing Fern, *Lygodium palmatum*, SC
Plymouth Gentian, *Sabatia kennedyana*, SC

Priority Natural Communities
Alluvial Red Maple Swamp, S3
Atlantic White Cedar Bog, S2
Coastal Atlantic White Cedar Swamp, S2
Acidic Graminoid Fen, S3
Other BioMap2 Components

- Forest Core
- 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 Raynham

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

Core 701
    Aquatic Core

Core 724
    Wetland Core
    Species of Conservation Concern
    Hessel's Hairstreak  Callophrys hesseli  SC
    Four-toed Salamander  Hemidactylium scutatum  Non-listed SWAP

Core 732
    Species of Conservation Concern
    Water-willow Stem Borer  Papaipema sulphurata  T

Core 743
    Species of Conservation Concern
    Climbing Fern  Lygodium palmatum  SC
    Water-willow Stem Borer  Papaipema sulphurata  T

Core 759
    Species of Conservation Concern
    Water-willow Stem Borer  Papaipema sulphurata  T

Core 761
    Species of Conservation Concern
    Water-willow Stem Borer  Papaipema sulphurata  T

Core 799
    Priority & Exemplary Natural Communities
    Coastal Atlantic White Cedar Swamp  S2

Core 823
    Forest Core
    Wetland Core
    Aquatic Core
    Vernal Pool Core
Priority & Exemplary Natural Communities
- Alluvial Atlantic White Cedar Swamp (S2)
- Alluvial Red Maple Swamp (S3)
- Coastal Plain Pondshore (S2)
- Kettlehole Level Bog (S2)

Species of Conservation Concern
- Dwarf Bulrush (Lipocarpha micrantha)
- Gypsywort (Lycopus rubellus)
- Long-leaved Panic-grass (Panicum rigidulum ssp. pubescens)
- Long’s Bitter-cress (Cardamine longii)
- Long’s Bulrush (Scirpus longii)
- Pale Green Orchis (Platanthera flava var. herbiola)
- Philadelphia Panic-grass (Panicum philadelphicum ssp. philadelphicum)
- Plymouth Gentian (Sabatia kennedyana)
- Pondshore Knotweed (Persicaria puritanorum)
- Round-fruited False-loosestrife (Ludwigia sphaerocarpa)
- Three-angled Spike-sedge (Eleocharis tricostata)
- Eastern Pondmussel (Ligumia nasuta)
- Tidewater Mucket (Leptodea ochracea)
- Triangle Floater (Alasmidonta undulata)
- Water-willow Stem Borer (Papaipema sulphurata)
- Pine Barrens Bluet (Enallagma recurvatum)
- Four-toed Salamander (Hemidactylium scutatum)
- Eastern Box Turtle (Terrapene carolina)
- Eastern Ribbon Snake (Thamnophis sauritus)
- Northern Black Racer (Coluber constrictor)
- Northern Red-bellied Cooter (Pseudemys rubriventris)
- Spotted Turtle (Clemmys guttata)
- Wood Turtle (Glyptemys insculpta)
- Atlantic Sturgeon (Acipenser oxyrinchus)
- Bridle Shiner (Notropis bifrenatus)
- Bald Eagle (Haliaeetus leucocephalus)
- Barn Owl (Tyto alba)
- Grasshopper Sparrow (Ammodramus savannarum)
- Least Bittern (Ixobrychus exilis)
- Northern Parula (Parula americana)

Core 868
- Forest Core
- Wetland Core
- Aquatic Core
- Priority & Exemplary Natural Communities
  - Acidic Graminoid Fen (S3)
  - Acidic Shrub Fen (S3)

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

For more information on rare species and natural communities, please see our fact sheets online at www.mass.gov/nhesp.
Atlantic White Cedar Bog          S2
Coastal Atlantic White Cedar Swamp S2
Red Maple Swamp

Species of Conservation Concern

<table>
<thead>
<tr>
<th>Species</th>
<th>Scientific Name</th>
<th>Status</th>
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</thead>
<tbody>
<tr>
<td>Gypsywort</td>
<td>Lycopus rubellus</td>
<td>E</td>
</tr>
<tr>
<td>Long’s Bulrush</td>
<td>Scirpus longii</td>
<td>T</td>
</tr>
<tr>
<td>Plymouth Gentian</td>
<td>Sabatia kennedyana</td>
<td>SC</td>
</tr>
<tr>
<td>Rigid Flax</td>
<td>Linum medium var. texanum</td>
<td>T</td>
</tr>
<tr>
<td>Round-fruited False-loosestrife</td>
<td>Ludwigia sphaerocarpa</td>
<td>E</td>
</tr>
<tr>
<td>Chain Fern Borer Moth</td>
<td>Papaipema stenocelis</td>
<td>T</td>
</tr>
<tr>
<td>Pale Green Pinion Moth</td>
<td>Lithophane viridipallens</td>
<td>SC</td>
</tr>
<tr>
<td>Two-striped Cord Grass Moth</td>
<td>Macrochilo bivittata</td>
<td>Non-listed SWAP</td>
</tr>
<tr>
<td>Water-willow Stem Borer</td>
<td>Papaipema sulphurata</td>
<td>T</td>
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<tr>
<td>Hessel’s Hairstreak</td>
<td>Callophrys hesseli</td>
<td>SC</td>
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<td>Scarlet Bluet</td>
<td>Enallagma pictum</td>
<td>T</td>
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<td>Kennedy’s Emerald</td>
<td>Somatochlora kennedyi</td>
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<td>Mocha Emerald</td>
<td>Somatochlora linearis</td>
<td>SC</td>
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<td>Blue-spotted Salamander</td>
<td>Ambystoma laterale</td>
<td>SC</td>
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<td>Four-toed Salamander</td>
<td>Hemidactylus scutatum</td>
<td>Non-listed SWAP</td>
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<td>Blanding’s Turtle</td>
<td>Emydoidae blandingii</td>
<td>T</td>
</tr>
<tr>
<td>Eastern Box Turtle</td>
<td>Terrapene carolina</td>
<td>SC</td>
</tr>
<tr>
<td>Northern Black Racer</td>
<td>Coluber constrictor</td>
<td>Non-listed SWAP</td>
</tr>
</tbody>
</table>
Core Habitat Summaries

Core 701

A 49-acre Core Habitat featuring Aquatic Core.

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

Core 724

A 493-acre Core Habitat featuring Wetland 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 277-acre Wetland Core is among the largest 20% of Wetland Cores statewide and in this ecoregion.

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.

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 Massachusetts 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 732

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

The Water-willow Stem Borer is a yellowish moth with purple-brown shading that inhabits shallow portions of coastal plain wetlands where water-willow grows. It is endemic to southeastern Massachusetts.

Core 743

A 63-acre Core Habitat featuring Species of Conservation Concern.

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.

The Water-willow Stem Borer is a yellowish moth with purple-brown shading that inhabits shallow portions of coastal plain wetlands where water-willow grows. It is endemic to southeastern Massachusetts.

**Core 759**

A 129-acre Core Habitat featuring a Species of Conservation Concern.

The Water-willow Stem Borer is a yellowish moth with purple-brown shading that inhabits shallow portions of coastal plain wetlands where water-willow grows. It is endemic to southeastern Massachusetts.

**Core 761**

A 104-acre Core Habitat featuring a Species of Conservation Concern.

The Water-willow Stem Borer is a yellowish moth with purple-brown shading that inhabits shallow portions of coastal plain wetlands where water-willow grows. It is endemic to southeastern Massachusetts.

**Core 799**

A 5-acre Core Habitat featuring a Priority Natural Community.

Coastal Atlantic White Cedar Swamps are acidic, low-nutrient basin swamps dominated by Atlantic white cedar in the overstory and a mixture of species in the understory. This community type typically occurs in basins on the Atlantic Coastal Plain. This large Coastal Atlantic White Cedar Swamp is part of an extensive mosaic of wetland types, and is well buffered within this natural vegetation.

**Core 823**

A 24,260-acre Core Habitat featuring Forest Core, Wetland Core, Aquatic Core, Vernal Pool Core, Priority Natural Communities, and Species of Conservation Concern.

A long and convoluted Core Habitat snakes through southeastern Massachusetts. The Assawompsett Ponds complex empties northward through the Nemasket River to the Taunton River, which flows southwest to Mount Hope Bay on the Rhode Island border. To the south, the Assawompsett Ponds have been diverted to drain through Squam Brook and the Acushnet River to New Bedford Harbor on Buzzards Bay. Twenty-six rare and uncommon species make their homes in this Core Habitat, including a few federally Endangered Atlantic Sturgeon in the lower reaches of the Taunton. An exceptional number of globally rare species are found in this Core, including Long’s Bitter-cress, Pine Barrens Bluet damselfly, Tidewater Mucket freshwater mussel, Bridle Shiner, Water-willow Borer Moth, Pondshore...
Knotweed, Plymouth Gentian, Long's Bulrush, and the federally Endangered Northern Red-bellied Cooter.

Alluvial Atlantic White Cedar Swamps occur along smaller rivers and ponds where Atlantic white cedar is co-dominant with red maple. They receive annual flooding, making them more mineral-rich than other Atlantic white cedar wetlands. This example of Alluvial Atlantic White Cedar Swamp, though small, is an interesting variant that is strongly influenced by groundwater seepage, which results in greater floristic diversity.

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. Four examples of Alluvial Red Maple Swamp generally have good floristic diversity. One is in excellent condition, with minimal anthropogenic disturbances and a large, naturally vegetated buffer. Others show negative impacts of recreational use and have exotic invasive species present.

Coastal Plain Pondshores are globally rare herbaceous communities of exposed pondshores with a distinct coastal plain flora. Water levels change with the water table, typically leaving an exposed shoreline in late summer where many rare species grow. This Core has two examples of Coastal Plain Pondshore which are in excellent condition, but one is threatened by illicit off-road vehicle traffic.

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 small example of Kettlehole Level Bog is in good condition, and is part of a larger mosaic of acidic wetland ecosystems. It is well buffered by natural vegetation.

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

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

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

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

Core 868

An 11,192-acre Core Habitat featuring Forest Core, Wetland Core, Aquatic Core, Priority Natural Communities, and Species of Conservation Concern.
The Hockomock Swamp, the largest freshwater swamp in Massachusetts, is home to 18 rare and uncommon species. Its lakes, ponds, and boggy wetlands support five rare dragonflies and damselflies, including the globally rare Scarlet Bluet and Ringed Boghaunter. Of statewide importance is a vigorous population of Blue-spotted Salamanders. Caterpillars of the globally rare Hessel’s Hairstreak butterfly feed on the needles of Atlantic White Cedar in the several large cedar swamps of this complex wetland. Other globally rare species found here include the Water-willow Borer Moth, Plymouth Gentian, and Long’s Bulrush.

Acidic Graminoid Fens are sedge- and sphagnum-dominated acidic peatlands that experience some groundwater and/or surface water flow but no calcareous seepage. Standing water is often present throughout much of the growing season. This Core has two very nice Acidic Graminoid Fens including the largest example in the state. The other is near the western edge of the five thousand acre Hockomock Swamp. It is adjacent to patches of Coastal Atlantic White Cedar Swamp and extremely dense Acidic Shrub Swamp, with all surrounded by Red Maple Swamp.

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 example of Acidic Shrub Fen is large and well-buffered by natural vegetation. It is in very good to excellent condition, with good species diversity, few exotics and little evidence of current human disturbance.

Atlantic White Cedar Bogs are characterized by a nearly continuous heath shrub layer and an open canopy dominated by Atlantic white cedar. This community type occurs in kettlehole depressions overlain with waterlogged peat soils and sphagnum moss. This excellent representation of the type occurs as patches within the large Hockomock Swamp. The patches are variable in types of locations: pond margins, basins, and parts of gradients from open peat, through shrub fens to swamp forest.

Coastal Atlantic White Cedar Swamps are acidic, low-nutrient basin swamps dominated by Atlantic white cedar in the overstory and a mixture of species in the understory. This community type typically occurs in basins on the Atlantic Coastal Plain. This large Coastal Atlantic White Cedar Swamp is part of an extensive mosaic of wetland types, and is well buffered within this natural vegetation.

Red Maple Swamps are acidic forested wetlands that are dominated by red maple. They are the most common forested wetlands in Massachusetts. This community type is highly variable in its species composition. This example of Red Maple Swamp is both mature and large, and is part of a much larger wetland complex in a 2300 acre roadless block.

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

Wetlands Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.
Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.
**BioMap2 Critical Natural Landscape in Raynham**

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

**CNL 432**
- Wetland Core Buffer

**CNL 457**
- Wetland Core Buffer

**CNL 468**
- Aquatic Core Buffer
- Coastal Adaptation Area
- Landscape Block
- Tern Foraging Area

**CNL 485**
- Aquatic Core Buffer
- Landscape Block
- Wetland Core Buffer
Critical Natural Landscape Summaries

**CNL 432**

A 307-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 457**

A 21-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 468**

A 64,735-acre Critical Natural Landscape featuring Aquatic Core Buffer, Landscape Block, Coastal Adaptation Area, and Tern Foraging Area.

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.

At 36,331 acres, this Landscape Block is the second largest in the ecoregion and the seventh largest in Massachusetts. This Landscape Block includes a rich mosaic of important habitats including extensive upland forest and a relatively high percentage of forested and open wetlands, lakes, and ponds, including a portion of the Assawompset Pond Complex. These large landscapes provide invaluable wildlife habitat and other ecosystem values such as clean drinking water and absorbing carbon from the atmosphere. This Block is only partially protected.

The coastal habitats of Massachusetts are particularly vulnerable to potential sea-level rise in the next century, which many estimates suggest is likely to exceed one meter. Therefore, in addition to prioritizing current coastal habitats, the creators of BioMap2 examined the landward side of salt marshes to determine where these habitats might move to as sea levels rise. Undeveloped lands adjacent to and up to one and a half meters above existing salt marshes were identified, and included as Critical Natural Landscapes with high potential to support inland migration of salt marsh and other coastal habitats over the coming century.

Terns range widely from their breeding colonies to forage. While the breeding and staging areas for Roseate, Arctic, Common, and Least Terns were included in the Species of Conservation Concern Core Habitat for BioMap2, tern foraging areas were included in BioMap2 as part of Critical Natural Landscape. The extent of foraging habitat for Arctic, Common, and Roseate Terns depends on the size of the breeding colony. For Least Tern, all shallow marine and estuarine waters within 2 miles of recent colony sites and up to 1 mile offshore were mapped as foraging habitat.

CNL 485

A 10,770-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.
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