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

**Get your copy of the *BioMap2* report!** Download from [www.mass.gov/nhesp](http://www.mass.gov/nhesp) or contact Natural Heritage at 508-389-6360 or natural.heritage@state.ma.us.
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</th>
<th>Non-listed Species of Conservation Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammals</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Birds</td>
<td>27</td>
<td>23</td>
</tr>
<tr>
<td>Reptiles</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Amphibians</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Fish</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>Invertebrates</td>
<td>102</td>
<td>9</td>
</tr>
<tr>
<td>Plants</td>
<td>256</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>413</strong></td>
<td><strong>62</strong></td>
</tr>
</tbody>
</table>

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

Other Species of Conservation Concern

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

Priority Natural Communities

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

Vernal Pools

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

Forest Cores

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

Wetland Cores

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

Aquatic Cores

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

**Components of Critical Natural Landscape**

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

**Landscape Blocks**

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

**Upland Buffers of Wetland and Aquatic Cores**

A variety of analyses were used to identify protective upland buffers around wetlands and rivers.

**Upland Habitat to Support Coastal Adaptation**

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

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

**Legal Protection of Biodiversity**

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

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

Following the Town Overview, there is a descriptive summary of each Core Habitat and Critical Natural Landscape that occurs in your city or town. These summaries highlight some of the outstanding characteristics of each Core Habitat and Critical Natural Landscape, and will help you learn more about your city or town’s biodiversity. You can find out more information about many of these species and natural communities by looking at specific fact sheets at www.mass.gov/nhesp.

Additional Information

For copies of the full BioMap2 report, the Technical Report, and an interactive mapping tool, visit the BioMap2 website via the Land Protection and Planning tab at www.mass.gov/nhesp. If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program

By phone 508-389-6360
By fax 508-389-7890
By email natural.heritage@state.ma.us
By Mail 100 Hartwell Street, Suite 230
West Boylston, MA 01583

The GIS datalayers of BioMap2 are available for download from MassGIS at www.mass.gov/mgis.
Town Overview

Fairhaven lies on the border of the Bristol Lowland/Narragansett Lowland and the Cape Cod and Islands Ecoregions. The Bristol Lowland/Narragansett Lowland Ecoregion is 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. The Cape Cod and Islands Ecoregion was formed by three advances and retreats of the Wisconsin Ice Sheet. The resulting terminal moraines, outwash plains, and coastal deposits characterize the area with their sandy beaches, grassy dunes, bays, marshes, and scrubby oak-pine forests. There are numerous kettle hole ponds, swamps, and bogs. Much of the surface water is highly acidic.

Fairhaven at a Glance

- Total Area: 7,942 acres (12.4 square miles)
- Human Population in 2010: 15,873
- Open space protected in perpetuity: 1,497 acres, or 18.8% percent of total area*
- BioMap2 Core Habitat: 850 acres
- BioMap2 Core Habitat Protected: 495 acres or 58.2%
- BioMap2 Critical Natural Landscape: 2,710 acres
- BioMap2 Critical Natural Landscape Protected: 1,135 acres or 41.9%.

BioMap2 Components

Core Habitat
- 4 Exemplary or Priority Natural Community Cores
- 1 Forest Core
- 2 Wetland Cores
- 2 Aquatic Cores
- 7 Species of Conservation Concern Cores**
  o 4 birds, 3 reptiles, 1 plant

Critical Natural Landscape
- 1 Landscape Block
- 4 Wetland Core Buffers
- 2 Aquatic Core Buffers
- 20 Coastal Adaptation Areas
- 7 Tern Foraging Areas

* 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 Fairhaven
Species of Conservation Concern, Priority and Exemplary Natural Communities, and Other Elements of Biodiversity in Fairhaven

Reptiles
- **Diamond-backed Terrapin**, (*Malaclemys terrapin*), T
- **Eastern Box Turtle**, (*Terrapene carolina*), SC
- Eastern Ribbon Snake, (*Thamnophis sauritus*), Non-listed SWAP

Birds
- **American Bittern**, (*Botaurus lentiginosus*), E
- **Piping Plover**, (*Charadrius melodus*), T
- **Common Tern**, (*Sterna hirundo*), SC
- **Least Tern**, (*Sternula antillarum*), SC

Plants
- **Mattamuskeet Panic-grass**, (*Dichanthelium dichotomum ssp. mattamuskeetense*), E

Priority Natural Communities
- **Sea-Level Fen**, S1
- **Coastal Forest/Woodland**, S3
- **Maritime Shrubland Community**, S3

Other BioMap2 Components
- **Forest Core**
- **Aquatic Core**
- **Wetland Core**
- **Landscape Block**
- **Aquatic Core Buffer**
- **Wetland Core Buffer**
- **Coastal Adaptation Area**
- **Tern Foraging Area**

- 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 Fairhaven

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

**Core 165**

<table>
<thead>
<tr>
<th>Species of Conservation Concern</th>
<th>Dichanthelium dichotomum ssp. mattamuskeetense</th>
</tr>
</thead>
</table>

**Core 181**

<table>
<thead>
<tr>
<th>Wetland Core</th>
<th>Aquatic Core</th>
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<tbody>
<tr>
<td>Species of Conservation Concern</td>
<td></td>
</tr>
<tr>
<td>American Bittern</td>
<td>Botaurus lentiginosus</td>
</tr>
<tr>
<td>Least Tern</td>
<td>Sternula antillarum</td>
</tr>
<tr>
<td>Piping Plover</td>
<td>Charadrius melodus</td>
</tr>
</tbody>
</table>

**Core 182**

<table>
<thead>
<tr>
<th>Priority &amp; Exemplary Natural Communities</th>
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</thead>
<tbody>
<tr>
<td>Coastal Forest/Woodland</td>
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</table>

**Core 184**

<table>
<thead>
<tr>
<th>Species of Conservation Concern</th>
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</thead>
<tbody>
<tr>
<td>Least Tern</td>
</tr>
<tr>
<td>Piping Plover</td>
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**Core 185**

<table>
<thead>
<tr>
<th>Priority &amp; Exemplary Natural Communities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea-Level Fen</td>
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</table>

**Core 188**

<table>
<thead>
<tr>
<th>Priority &amp; Exemplary Natural Communities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal Forest/Woodland</td>
</tr>
</tbody>
</table>

**Core 189**

<table>
<thead>
<tr>
<th>Priority &amp; Exemplary Natural Communities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maritime Shrubland Community</td>
</tr>
</tbody>
</table>

**Core 190**

<table>
<thead>
<tr>
<th>Species of Conservation Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Tern</td>
</tr>
</tbody>
</table>

For more information on rare species and natural communities, please see our fact sheets online at [www.mass.gov/nhesp](http://www.mass.gov/nhesp).
### Core 203

**Species of Conservation Concern**

<table>
<thead>
<tr>
<th>Diamond-backed Terrapin</th>
<th><em>Malaclemys terrapin</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Tern</td>
<td><em>Sterna hirundo</em></td>
</tr>
<tr>
<td>Least Tern</td>
<td><em>Sternula antillarum</em></td>
</tr>
</tbody>
</table>

### Core 225

**Species of Conservation Concern**

| Least Tern | *Sternula antillarum* |

### Core 298

**Aquatic Core**

### Core 309

**Forest Core**

**Wetland Core**

### Core 551

**Forest Core**

**Wetland Core**

**Aquatic Core**

**Priority & Exemplary Natural Communities**

<table>
<thead>
<tr>
<th>Alluvial Red Maple Swamp</th>
<th>S3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic White Cedar Bog</td>
<td>S2</td>
</tr>
<tr>
<td>Coastal Atlantic White Cedar Swamp</td>
<td>S2</td>
</tr>
<tr>
<td>Coastal Forest/Woodland</td>
<td>S3</td>
</tr>
</tbody>
</table>

**Species of Conservation Concern**

<table>
<thead>
<tr>
<th>Eastern Pondmussel</th>
<th><em>Ligumia nasuta</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tidewater Mucket</td>
<td><em>Leptodea ochracea</em></td>
</tr>
<tr>
<td>Water-willow Stem Borer</td>
<td><em>Papaipena sulphurata</em></td>
</tr>
<tr>
<td>Marbled Salamander</td>
<td><em>Ambystoma opacum</em></td>
</tr>
<tr>
<td>Diamond-backed Terrapin</td>
<td><em>Malaclemys terrapin</em></td>
</tr>
<tr>
<td>Eastern Box Turtle</td>
<td><em>Terrapene carolina</em></td>
</tr>
<tr>
<td>Eastern Ribbon Snake</td>
<td><em>Thamnophis sauritus</em></td>
</tr>
<tr>
<td>Bridle Shiner</td>
<td><em>Notropis bifrenatus</em></td>
</tr>
</tbody>
</table>

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

Core 165
A 2-acre Core Habitat featuring a Species of Conservation Concern.
Mattamuskeet Panic-grass is found in seasonally wet, sunny habitats that are often created through some form of human disturbance or intervention. These include trails, powerlines, roadsides and ditches which have been opened up in or near a swamp, marsh, or streambed. The exposed, damp to wet soils are predominantly sandy, but often covered with a thin peaty or organic layer that indicates an originally bog-like habitat.

Core 181
A 252-acre Core Habitat featuring Wetland Core, Aquatic Core, and Species of Conservation Concern.
Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future. The Wetland Core here occurs on very low-elevation granite, one of the least common ecological settings for Wetland Cores in the state.

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

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

Diminutive yet feisty, the Least Tern is a spring and summer colonial nester on Massachusetts’ sandy beaches. For nesting, it favors for sites with little or no vegetation. In Massachusetts, the Least Tern nests on sandy or gravelly beaches periodically scoured by storm tides, resulting in sparse or no vegetation; it also takes advantage of dredge spoils. Along the coast, the Least Tern forages in shallow-water habitats, including bays, lagoons, estuaries, river and creek mouths, tidal marshes, and ponds.
Piping Plovers on the East Coast nest on sandy coastal beaches and relatively flat dunes with sparse vegetation. They typically lay their eggs in the narrow area of land between the high tide line and the foot of the coastal dunes. They can be particularly sensitive to anthropogenic disturbance, but the state’s population has responded very well to coordinated management.

Core 182
A 3-acre Core Habitat featuring a Priority Natural Community.
Coastal Forests are mixed deciduous communities, and are often shorter than forests further inland, but taller than maritime forests. They may have dense shrubs and vines. This community is found in sheltered areas along the coast. This example of Coastal Forest/Woodland, though small and somewhat fragmented, occurs within a larger mosaic of natural coastal ecosystems and is in good condition.

**Core 184**

A 31-acre Core Habitat featuring Species of Conservation Concern.

Diminutive yet feisty, the Least Tern is a spring and summer colonial nester on Massachusetts’ sandy beaches. For nesting, it favors for sites with little or no vegetation. In Massachusetts, the Least Tern nests on sandy or gravelly beaches periodically scoured by storm tides, resulting in sparse or no vegetation; it also takes advantage of dredge spoils. Along the coast, the Least Tern forages in shallow-water habitats, including bays, lagoons, estuaries, river and creek mouths, tidal marshes, and ponds.

Piping Plovers on the East Coast nest on sandy coastal beaches and relatively flat dunes with sparse vegetation. They typically lay their eggs in the narrow area of land between the high tide line and the foot of the coastal dunes. They can be particularly sensitive to anthropogenic disturbance, but the state’s population has responded very well to coordinated management.

**Core 185**

A 4-acre Core Habitat featuring a Priority Natural Community.

Sea-Level Fens are herbaceous/graminoid peatlands that occur at the upland edges of ocean tidal marshes. The combination of upland freshwater seepage and periodic brackish overwash produces a mixed plant community of freshwater and estuarine species. This example of Sea-Level Fen is of good size and in good condition, despite the presence of an exotic invasive species which may pose a future threat to its persistence.

**Core 188**

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

Coastal Forests are mixed deciduous communities, and are often shorter than forests further inland, but taller than maritime forests. They may have dense shrubs and vines. This community is found in sheltered areas along the coast. This example of Coastal Forest/Woodland, though small and somewhat fragmented, occurs within a larger mosaic of natural coastal ecosystems and is in good condition.

**Core 189**

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

Maritime Shrubland communities are dominated by patches of dense shrubs with scattered areas of more open low growth or bare ground. These communities are coastal and receive salt spray during storms. They occur on rocky headlands or behind dunes. This small example of Maritime Shrubland is found in a
mosaic of coastal natural communities, and is in good condition with no exotic invasive species. It is somewhat buffered within a small naturally vegetated area.

**Core 190**

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

The Common Tern is a small seabird that nests in colonies on sandy or gravelly islands and barrier beaches, but also occurs on rocky or cobbly beaches and salt marshes. It feeds on small fish, crustaceans, and flying insects in the open ocean, bays, tidal inlets, and between islands.

**Core 203**

A 356-acre Core Habitat featuring Species of Conservation Concern.

The Diamond-backed Terrapin, a medium-sized turtle, inhabits salt marshes which border quiet salt or brackish tidal waters. They can also be found in mud flats, shallow bays, coves, tidal estuaries and rivers mouths adjacent to salt water. Adjacent sandy dry upland areas are required for nesting.

The Common Tern is a small seabird that nests in colonies on sandy or gravelly islands and barrier beaches, but also occurs on rocky or cobbly beaches and salt marshes. It feeds on small fish, crustaceans, and flying insects in the open ocean, bays, tidal inlets, and between islands.

Diminutive yet feisty, the Least Tern is a spring and summer colonial nester on Massachusetts’ sandy beaches. For nesting, it favors for sites with little or no vegetation. In Massachusetts, the Least Tern nests on sandy or gravelly beaches periodically scoured by storm tides, resulting in sparse or no vegetation; it also takes advantage of dredge spoils. Along the coast, the Least Tern forages in shallow-water habitats, including bays, lagoons, estuaries, river and creek mouths, tidal marshes, and ponds.

**Core 225**

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

Diminutive yet feisty, the Least Tern is a spring and summer colonial nester on Massachusetts’ sandy beaches. For nesting, it favors for sites with little or no vegetation. In Massachusetts, the Least Tern nests on sandy or gravelly beaches periodically scoured by storm tides, resulting in sparse or no vegetation; it also takes advantage of dredge spoils. Along the coast, the Least Tern forages in shallow-water habitats, including bays, lagoons, estuaries, river and creek mouths, tidal marshes, and ponds.

**Core 298**

A 1,085-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 309
A 751-acre Core Habitat featuring Forest Core, Wetland Core.

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

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

Core 551
A 4,773-acre Core Habitat featuring Forest Core, Wetland Core, Aquatic Core, Priority Natural Communities, and Species of Conservation Concern.

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

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

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.

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 large and diverse example of Alluvial Red Maple Swamp is somewhat ecologically compromised by upstream and downstream alterations to its hydrology.

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 small example of an Atlantic White Cedar Bog occurs along a lakeshore and is well buffered within a naturally vegetated landscape.

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 example of Coastal Atlantic White Cedar Swamp is large, in good condition, and is well buffered by natural vegetation.
Coastal Forests are mixed deciduous communities, and are often shorter than forests further inland, but taller than maritime forests. They may have dense shrubs and vines. This community is found in sheltered areas along the coast. This example of Coastal Forest/Woodland is moderate-sized and has intact ecosystem processes, such as hydrology and maritime influence, which render it a good candidate for ecological restoration. It also has several exotic invasive species.

Eastern Pondmussels, large freshwater mussels, are most abundant in southeastern Massachusetts. They inhabit streams, rivers, and small to large lakes and ponds; they show no preference for substrate, depth, or flow conditions. As sedentary filter feeders they are vulnerable to the alterations of water bodies.

In Massachusetts, the Tidewater Mucket, a freshwater mussel, prefers natural coastal freshwater ponds of several acres in size with clear, clean water and sandy substrates. It almost always occurs near the seacoast.

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.

Adult and juvenile Marbled Salamanders inhabit upland forests during most of the year, where they reside in small-mammal burrows and other subsurface retreats. Adults migrate during late summer or early fall to breed in dried portions of vernal pools, swamps, marshes, and other predominantly fish-free wetlands. Eggs are deposited under logs, leaf-litter, or grass tussocks and hatch after being inundated by fall rains. Larvae metamorphose during late spring, whereupon they disperse into upland forest.

The Diamond-backed Terrapin, a medium-sized turtle, inhabits salt marshes which border quiet salt or brackish tidal waters. They can also be found in mud flats, shallow bays, coves, tidal estuaries and rivers mouths adjacent to salt water. Adjacent sandy dry upland areas are required for nesting.

The Eastern Box Turtle is a terrestrial turtle, inhabiting many dry and moist woodland and early successional habitat. Development, roads, collection, and disease are the primary conservation concerns.

Eastern Ribbon Snakes are a medium-sized, very thin snake ranging from 7 to 34 inches long at maturity. They are active during the day and live in wetlands and edges of open water being comfortable in water and on land, eating amphibians, insects, and occasional fish. This species hibernates in ant mounds, rodent burrows, crayfish burrows, and bank burrows.

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 Fairhaven

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

**CNL 85**
- Coastal Adaptation Area

**CNL 86**
- Coastal Adaptation Area

**CNL 97**
- Tern Foraging Area
- Coastal Adaptation Area

**CNL 99**
- Tern Foraging Area
- Coastal Adaptation Area

**CNL 104**
- Coastal Adaptation Area

**CNL 105**
- Coastal Adaptation Area

**CNL 108**
- Coastal Adaptation Area

**CNL 121**
- Tern Foraging Area
- Coastal Adaptation Area

**CNL 124**
- Coastal Adaptation Area
- Tern Foraging Area

**CNL 125**
- Coastal Adaptation Area

**CNL 129**
- Coastal Adaptation Area

**CNL 130**
- Coastal Adaptation Area

**CNL 192**
- Aquatic Core Buffer
- Coastal Adaptation Area
- Tern Foraging Area
Critical Natural Landscape Summaries

CNL 85
An 8-acre Critical Natural Landscape featuring Coastal Adaptation Area.

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.

CNL 86
A <1-acre Critical Natural Landscape featuring Coastal Adaptation Area.

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CNL 97
A <1-acre Critical Natural Landscape featuring Coastal Adaptation Area and Tern Foraging Area.

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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 99
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CNL 104
A <1-acre Critical Natural Landscape featuring Coastal Adaptation Area.

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CNL 105
A <1-acre Critical Natural Landscape featuring Coastal Adaptation Area.

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CNL 108
A 14-acre Critical Natural Landscape featuring Coastal Adaptation Area.

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**CNL 121**

A 2-acre Critical Natural Landscape featuring Coastal Adaptation Area and Tern Foraging Area.

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**CNL 124**

A 134-acre Critical Natural Landscape featuring Coastal Adaptation Area and Tern Foraging Area.

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**CNL 125**

A 27-acre Critical Natural Landscape featuring Coastal Adaptation Area.

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**CNL 129**

A 15-acre Critical Natural Landscape featuring Coastal Adaptation Area.

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**CNL 130**

A 10-acre Critical Natural Landscape featuring Coastal Adaptation Area.

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**CNL 192**

A 1,169-acre Critical Natural Landscape featuring Aquatic Core Buffer, 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.

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CNL 468
A 64,735-acre Critical Natural Landscape featuring Aquatic Core Buffer, Landscape Block, Coastal Adaptation Area, and Tern Foraging Area.

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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 Assawompest 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.

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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.