BioMap2

CONSERVING THE BIODIVERSITY OF MASSACHUSETTS IN A CHANGING WORLD

Salisbury

Produced in 2012

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 <u>not</u> intended for use in state regulations.

Commonwealth of Massachusetts Department of Fish & Game

Commonwealth of Massachusetts Division of Fisheries & Wildlife

Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries & Wildlife

The Nature Conservancy
Protecting nature. Preserving life.™

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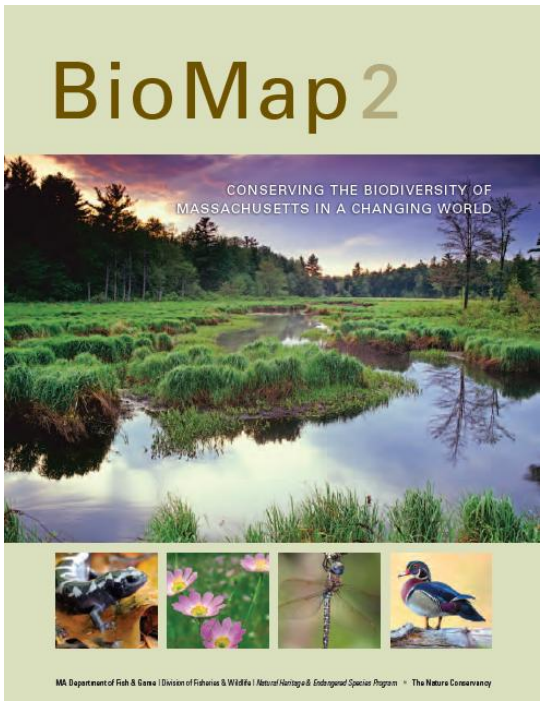
Introduction

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.



Get your copy of the *BioMap2* report! Download from www.mass.gov/nhesp or contact Natural Heritage at 508-389-6360 or natural.heritage@state.ma.us.

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, 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

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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 sites or have very few remaining acres in the state.
- Imperiled communities typically have 6-20 sites or few remaining acres in the state.
- Vulnerable communities typically have 21-100 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

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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*.

Taxonomic Group	MESA-listed Species	Non-listed Species of Conservation Concern
Mammals	4	5
Birds	27	23
Reptiles	10	5
Amphibians	4	3
Fish	10	17
Invertebrates	102	9
Plants	256	0
Total	**413**	**62**

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

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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.**

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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

Salisbury 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.

Salisbury at a Glance

- Total Area: 10,113 acres (15.8 square miles)
- Human Population in 2010: 8,283
- Open space protected in perpetuity: 1,548 acres, or 15.3% percent of total area*
- *BioMap2* Core Habitat: 3,166 acres
- *BioMap2* Core Habitat Protected: 1,018 acres or 32.2%
- *BioMap2* Critical Natural Landscape: 4,259 acres
- *BioMap2* Critical Natural Landscape Protected: 1,142 acres or 26.8%.

BioMap2 Components

Core Habitat

- 5 Exemplary or Priority Natural Community Cores
- 1 Wetland Core
- 1 Aquatic Core
- 5 Species of Conservation Concern Cores**
  - 6 birds, 2 fishes, 2 plants

Critical Natural Landscape

- 1 Landscape Block
- 1 Wetland Core Buffer
- 1 Aquatic Core Buffer
- 6 Coastal Adaptation Areas
- 2Tern 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.

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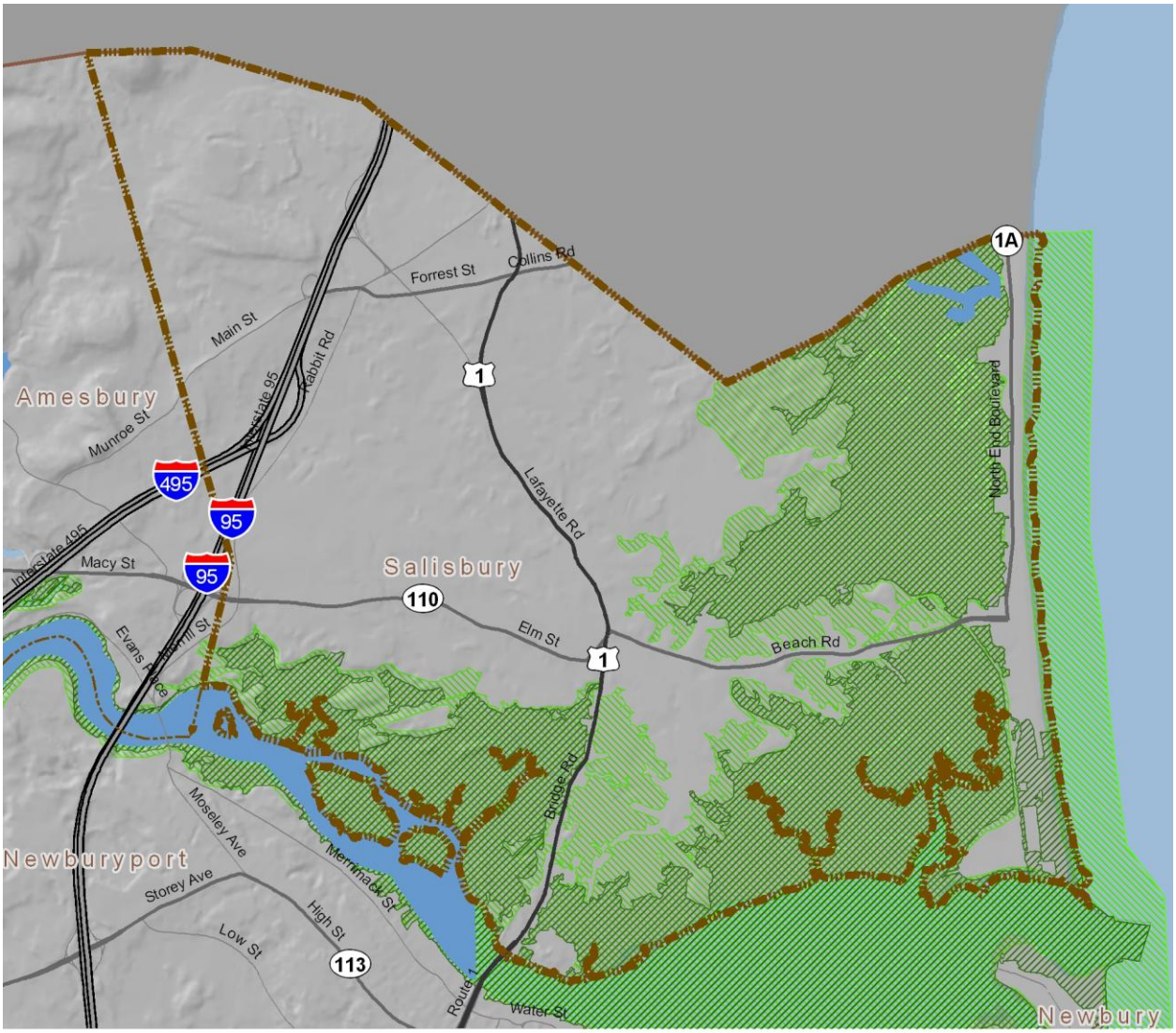
BioMap2 Core Habitat and Critical Natural Landscape in Salisbury



BioMap2 Core Habitat

BioMap2 Critical Natural Landscape

1 Mile

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

Fishes

Shortnose Sturgeon, (*Acipenser brevirostrum*), E
Atlantic Sturgeon, (*Acipenser oxyrinchus*), E

Birds

Saltmarsh Sharp-tailed Sparrow, (*Ammodramus caudactus*), Non-listed SWAP
Seaside Sparrow, (*Ammodramus maritimus*), Non-listed SWAP
Short-billed Dowitcher, (*Limnodromus griseus*), Non-listed SWAP
Common Tern, (*Sterna hirundo*), SC
Piping Plover, (*Charadrius melodus*), T
Bald Eagle, (*Haliaeetus leucocephalus*), T

Plants

Silverling, (*Paronychia argyrocoma*), E
Seabeach Needlegrass, (*Aristida tuberculosa*), T

Priority Natural Communities

Estuarine Intertidal: Brackish Tidal Marsh, S1
Marine Subtidal: Flats, S2
Coastal Forest/Woodland, S3
Estuarine Intertidal: Salt marsh, S3
Black Oak - Scarlet Oak Forest/Woodland, S3S4

Other *BioMap2* Components

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.

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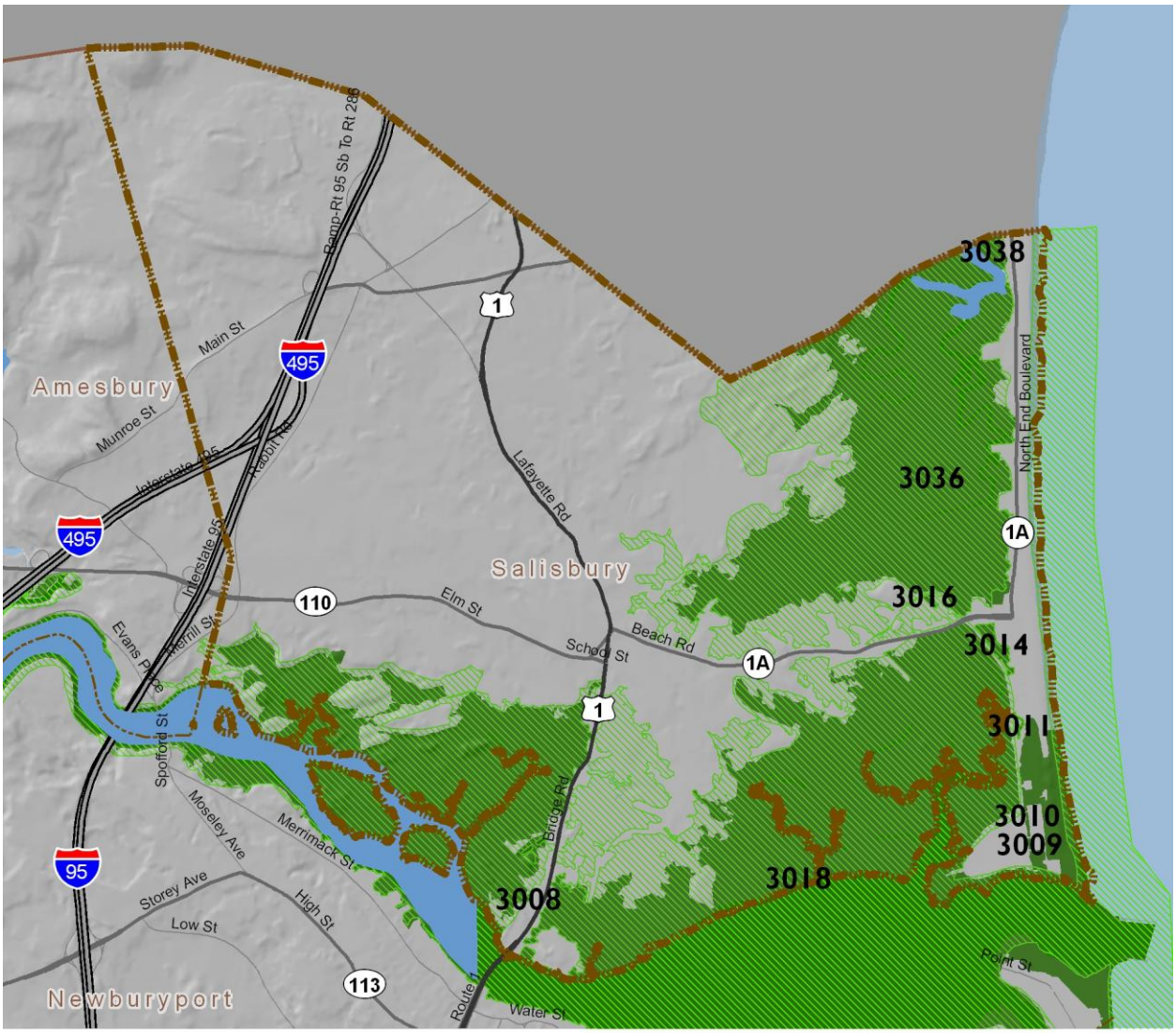
BioMap2 Core Habitat in Salisbury

Core IDs correspond with the following element lists and summaries.



BioMap2 Core Habitat

BioMap2 Critical Natural Landscape

1 Mile

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Elements of *BioMap2* Cores

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

Core 3008

Priority & Exemplary Natural Communities		
Estuarine Intertidal: Salt Marsh		S3

Core 3009

Species of Conservation Concern		
Seabeach Needlegrass	*Aristida tuberculosa*	T

Core 3010

Species of Conservation Concern		
Seabeach Needlegrass	*Aristida tuberculosa*	T

Core 3011

Priority & Exemplary Natural Communities		
Estuarine Intertidal: Salt Marsh		S3

Core 3014

Priority & Exemplary Natural Communities		
Estuarine Intertidal: Salt Marsh		S3

Core 3016

Priority & Exemplary Natural Communities		
Estuarine Intertidal: Salt Marsh		S3

Core 3018B

Aquatic Core		
Wetland Core		
Priority & Exemplary Natural Communities		
Black Oak - Scarlet Oak Forest/Woodland		S3S4
Coastal Forest/Woodland		S3
Coastal Interdunal Marsh/Swale		S1
Estuarine intertidal: brackish tidal marsh		S1
Estuarine intertidal: salt marsh		S3
Marine subtidal: flats		S2
Maritime beach strand community		S3
Maritime dune community		S2
Oak - hickory forest		S4
Species of Conservation Concern		
Estuary Arrowhead	*Sagittaria montevidensis ssp. spongiosa*	E
Hemlock Parsley	*Conioselinum chinense*	SC

Long's Bulrush	*Scirpus longii*	T
Seabeach Dock	*Rumex pallidus*	T
Seabeach Needlegrass	*Aristida tuberculosa*	T
Silverling	*Paronychia argyrocoma*	E
Coastal Marsh Snail	*Littoridinops tenuipes*	SC
New England Siltsnail	*Floridobia winkleyi*	SC
Eastern Spadefoot	*Scaphiopus holbrookii*	T
Northern Leopard Frog	*Rana pipiens*	Non-listed SWAP
Atlantic Sturgeon	*Acipenser oxyrinchus*	E
Bridle Shiner	*Notropis bifrenatus*	SC
Shortnose Sturgeon	*Acipenser brevirostrum*	E
American Bittern	*Botaurus lentiginosus*	E
Bald Eagle	*Haliaeetus leucocephalus*	T
Barn Owl	*Tyto alba*	SC
Common Moorhen	*Gallinula chloropus*	SC
Common Tern	*Sterna hirundo*	SC
Eastern Whip-poor-will	*Caprimulgus vociferus*	SC
Grasshopper Sparrow	*Ammodramus savannarum*	T
King Rail	*Rallus elegans*	T
Least Bittern	*Ixobrychus exilis*	E
Least Tern	*Sternula antillarum*	SC
Northern Harrier	*Circus cyaneus*	T
Piping Plover	*Charadrius melodus*	T
Saltmarsh Sharp-tailed Sparrow	*Ammodramus caudactus*	Non-listed SWAP
Sanderling	*Calidris alba*	Non-listed SWAP
Seaside Sparrow	*Ammodramus maritimus*	Non-listed SWAP
Sedge Wren	*Cistothorus platensis*	E
Sharp-shinned Hawk	*Accipiter striatus*	SC
Short-billed Dowitcher	*Limnodromus griseus*	Non-listed SWAP
Sora	*Porzana carolina*	Non-listed SWAP
Upland Sandpiper	*Bartramia longicauda*	E

Core 3036

Priority & Exemplary Natural Communities		
Estuarine Intertidal: Salt Marsh		S3
Species of Conservation Concern		
Common Tern	*Sterna hirundo*	SC
Saltmarsh Sharp-tailed Sparrow	*Ammodramus caudactus*	Non-listed SWAP
Seaside Sparrow	*Ammodramus maritimus*	Non-listed SWAP

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Core 3038

Priority & Exemplary Natural Communities		
Estuarine intertidal: salt marsh		S3
Species of Conservation Concern		
Saltmarsh Sharp-tailed Sparrow	*Ammodramus caudactus*	Non-listed SWAP
Seaside Sparrow	*Ammodramus maritimus*	Non-listed SWAP

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Core Habitat Summaries

Core 3008

A 1-acre Core Habitat featuring a Priority Natural Community.

The Salt Marsh community type is a graminoid-dominated, tidally flooded, coastal community with several vegetative zones. Salt Marshes form in areas subject to oceanic tides, but sheltered from wave energy. At over 16,000 acres, this example of Salt Marsh is the largest in New England. It is generally in good condition and largely under conservation ownership.

Core 3009

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

Seabeach Needlegrass is an annual grass of medium height, usually found on stable dunes growing in association with beach heather.

Core 3010

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

Seabeach Needlegrass is an annual grass of medium height, usually found on stable dunes growing in association with beach heather.

Core 3011

A 1-acre Core Habitat featuring a Priority Natural Community.

The Salt Marsh community type is a graminoid-dominated, tidally flooded, coastal community with several vegetative zones. Salt Marshes form in areas subject to oceanic tides, but sheltered from wave energy. At over 16,000 acres, this example of Salt Marsh is the largest in New England. It is generally in good condition and largely under conservation ownership.

Core 3014

An 11-acre Core Habitat featuring a Priority Natural Community.

The Salt Marsh community type is a graminoid-dominated, tidally flooded, coastal community with several vegetative zones. Salt Marshes form in areas subject to oceanic tides, but sheltered from wave energy. At over 16,000 acres, this example of Salt Marsh is the largest in New England. It is generally in good condition and largely under conservation ownership.

Core 3016

A 2-acre Core Habitat featuring a Priority Natural Community.

The Salt Marsh community type is a graminoid-dominated, tidally flooded, coastal community with several vegetative zones. Salt Marshes form in areas subject to oceanic tides, but sheltered from wave

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energy. At over 16,000 acres, this example of Salt Marsh is the largest in New England. It is generally in good condition and largely under conservation ownership.

Core 3018B

A 28,895-acre section of a larger 35,194-acre Core Habitat featuring Wetland Core, Aquatic Core, Priority Natural Communities, and Species of Conservation Concern.

All along the North Shore, from the mouth of the Merrimack River to the north shore of Cape Ann, stretches the Great Marsh, an extraordinary expanse of salt marsh. This marsh and its attendant barrier islands, such as Plum Island, support 25 MESA-listed rare species of birds, fish, snails, plants, and even the Eastern Spadefoot toad. The mouth of the Merrimack is home to a few federally Endangered Atlantic and Shortnose Sturgeons, as well as nesting and over-wintering Bald Eagles. On Plum Island, the North Pool, a freshwater impoundment in the salt marsh, is considered one of the most productive marsh bird sites in southern New England, supporting the entire suite of MESA-listed rare marsh birds, along with significant populations of Sora and Marsh Wren. A little to the south, the long barrier beach at Crane Beach is one of Massachusetts' major nesting sites for the federally Threatened Piping Plover, as well as strong numbers of Least Terns.

Black Oak-Scarlet Oak Forest is a fairly open oak/heath community maintained by regular fire. Often occurring on dry slopes, this community grades into Mixed Oak and Pine-Oak Forests. The subcanopy is sparse, and the shrub layer dense. This young occurrence of Black Oak - Scarlet Oak Woodland is on two upland islands in the Merrimack River with few exotics and good natural diversity.

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. These patchy occurrences of Coastal Forest are on marsh island uplands on conservation land succeeding from past agricultural use.

The Coastal Interdunal Marsh/Swale community is a graminoid- or shrub-dominated coastal community that occurs in shallow depressions between sand dunes. They occur as part of a dune system, and the best examples are complexes of numerous swales. This example of the Coastal/Interdunal Marsh/Swale community is in good condition, and is well buffered within a naturally vegetated landscape.

The Brackish Tidal Marsh community is often found in stretches of coastal rivers where salt and fresh water mix, and consists of mixed herbaceous vegetation that is flooded by daily tides. This Core includes three examples of Brackish Tidal Marsh including the largest in Massachusetts, which is well buffered in the landscape, although exotic invasive species are present.

The Salt Marsh community type is a graminoid-dominated, tidally flooded coastal community with several vegetative zones. Salt Marshes form in areas subject to oceanic tides, but sheltered from wave energy. At over 16,000 acres this example of Salt Marsh is the largest in New England. It is generally in good condition and largely under conservation ownership.

Marine Subtidal Flats, often called eelgrass beds, are offshore communities dominated by eelgrass (Zostera marina) that occur in shallow water. They provide important habitat for juvenile fish and invertebrates, and feeding grounds for shorebirds. This example of Marine Subtidal Flats is extremely

sparsely vegetated but has a rich diversity of invertebrate fauna that provide forage for many species of birds.

Maritime Beach Strand communities are sparsely vegetated, narrow, wrack-strewn areas between the line of high tide and the foredunes. They are usually part of barrier beach systems and are found seaward of any dunes, but above daily high tides. This important example of Maritime Beach Strand extends over 2 miles. It is in very good condition despite heavy recreational use in some areas, provides important shorebird nesting habitat, and is well buffered by other coastal natural communities.

The Maritime Dune Community consists of patches of herbaceous plants interspersed with areas of bare sand and shrubs. It occurs on windswept dunes within the salt spray zone, and often grades into shrubland or woodlands on more sheltered back dunes. This Core has two examples of Maritime Dunes, one covering 600 windswept acres and the other 900 acres. The larger is poorly buffered from development and is heavily disturbed by human impacts and invasive plant species. At the smaller site, there are over a dozen Coastal Interdunal Marsh/Swales of various sizes and composition, another type of uncommon natural community.

Oak-Hickory Forests are dominated by a variety of oak species, with hickories present in lower densities. They generally occupy upper slopes or ridgetops. A subcanopy commonly present includes hop hornbeam, flowering dogwood, and shadbush. This Oak - Hickory Forest occurs as many small pockets in the upland edges around a large salt marsh. The salt marsh, brooks, other wetlands, and roads separate the patches. Old mining depressions occur throughout.

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.

Core 3036

A 1,131-acre Core Habitat featuring a Priority Natural Community and Species of Conservation Concern.

The Salt Marsh community type is a graminoid-dominated, tidally flooded, coastal community with several vegetative zones. Salt Marshes form in areas subject to oceanic tides, but sheltered from wave energy. At over 16,000 acres, this example of Salt Marsh is the largest in New England. It is generally in good condition and largely under conservation ownership.

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.

As its name suggests, the Saltmarsh Sharp-tailed Sparrow is a strictly coastal species, breeding from southern Maine to North Carolina, and wintering from Maryland to the Atlantic coast of Florida. It depends upon saltmarshes for both breeding and wintering habitat, building its nests in Spartina flats

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above the mean high tide line. The large coastal marshes of Massachusetts support some of the largest populations of Saltmarsh Sharp-tailed Sparrows in its range, especially the Great Marsh of Essex County.

The Seaside Sparrow is a relatively large, skulking sparrow of saltmarshes from southern New Hampshire to the Gulf Coast of Texas. They typically nest the taller vegetation of a saltmarsh, often in wet areas along channels or along the upper marsh. They are uncommon breeders in Massachusetts and rarely overwinter.

Core 3038

A 12-acre Core Habitat featuring a Priority Natural Community and Species of Conservation Concern.

The Salt Marsh community type is a graminoid-dominated, tidally flooded, coastal community with several vegetative zones. Salt Marshes form in areas subject to oceanic tides, but sheltered from wave energy. At over 16,000 acres, this example of Salt Marsh is the largest in New England. It is generally in good condition and largely under conservation ownership.

As its name suggests, the Saltmarsh Sharp-tailed Sparrow is a strictly coastal species, breeding from southern Maine to North Carolina, and wintering from Maryland to the Atlantic coast of Florida. It depends upon saltmarshes for both breeding and wintering habitat, building its nests in Spartina flats above the mean high tide line. The large coastal marshes of Massachusetts support some of the largest populations of Saltmarsh Sharp-tailed Sparrows in its range, especially the Great Marsh of Essex County.

The Seaside Sparrow is a relatively large, skulking sparrow of saltmarshes from southern New Hampshire to the Gulf Coast of Texas. They typically nest the taller vegetation of a saltmarsh, often in wet areas along channels or along the upper marsh. They are uncommon breeders in Massachusetts and rarely overwinter.

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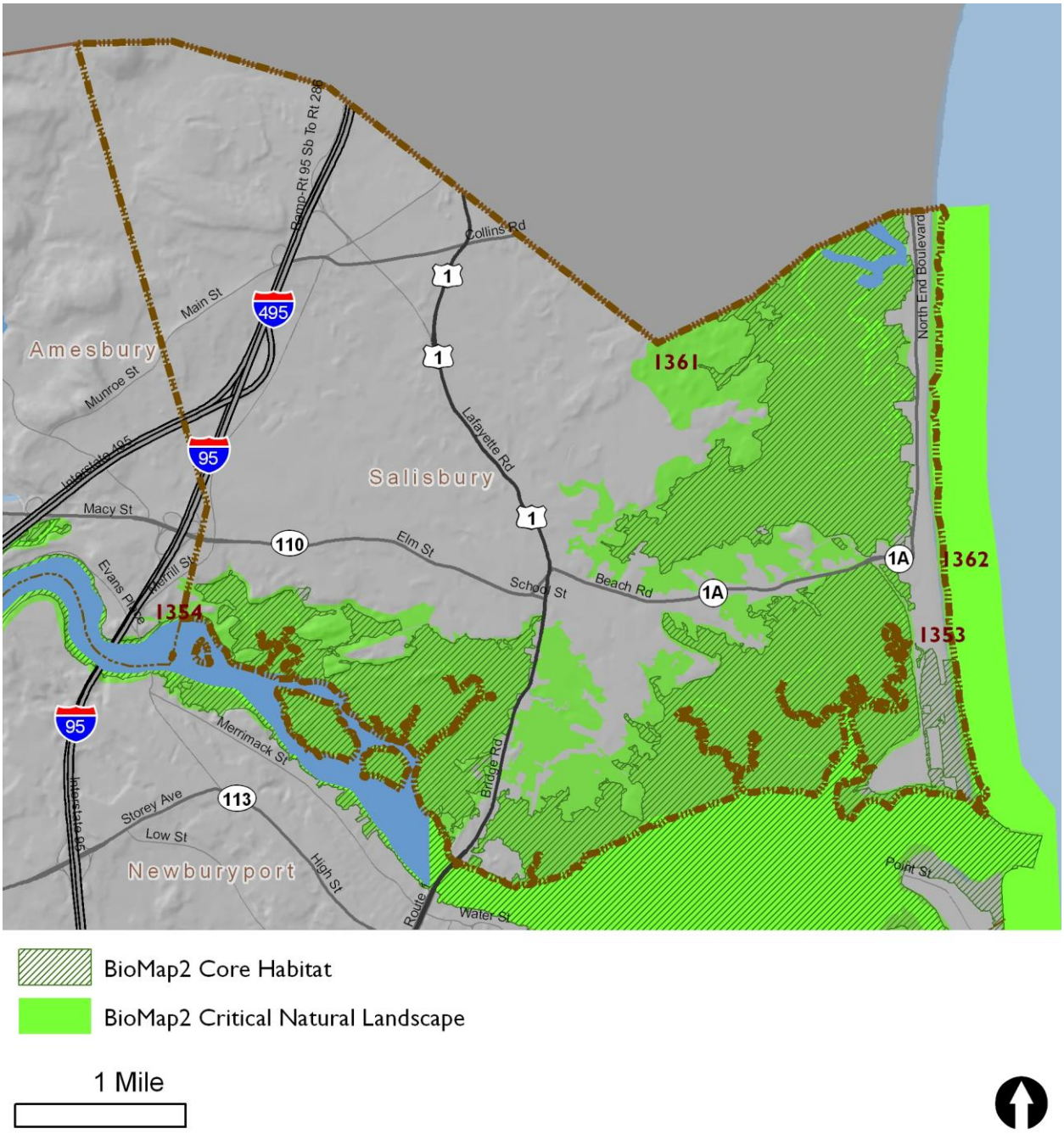
BioMap2 Critical Natural Landscape in Salisbury

Critical Natural Landscape IDs correspond with the following element lists and summaries.



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Elements of *BioMap2* Critical Natural Landscapes

This section lists all elements of *BioMap2* Critical Natural Landscapes that fall *entirely or partially* within Salisbury. The elements listed here may not occur within the bounds of Salisbury.

CNL 1353

Coastal Adaptation Area

CNL 1361

Coastal Adaptation Area
Landscape Block
Tern Foraging Area

CNL 1362

Aquatic Core Buffer
Coastal Adaptation Area
Landscape Block
Tern Foraging Area

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Critical Natural Landscape Summaries

CNL 1353

A 1-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 1361

A 1,751-acre Critical Natural Landscape featuring Landscape Block, Coastal Adaptation Area, and Tern Foraging Area.

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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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.

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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 1362

A 50,627-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.

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This 8,989-acre Landscape Block is the fourth largest of 62 Blocks in the ecoregion. Unlike Landscape Blocks in much of the state that are dominated by upland forests, this coastal Landscape Block is dominated by unique and important salt marsh, barrier beach, and estuary habitats.

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