BioMap2

CONSERVING THE BIODIVERSITY OF MASSACHUSETTS IN A CHANGING WORLD

Bourne

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.

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

The Nature Conservancy
Protecting nature. Preserving life.™

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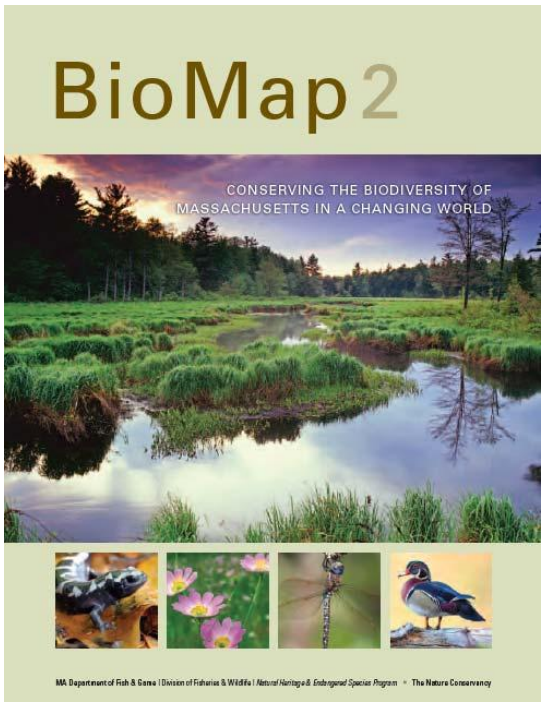
Introduction

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 (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

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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 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

B*ioMap2* 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

Bourne lies within the Cape Cod and Islands Ecoregion, an area 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.

Bourne at a Glance

- Total Area: 26,293 acres (41.1 square miles)
- Human Population in 2010: 19,754
- Open space protected in perpetuity: 11,988 acres, or 45.6% percent of total area*
- *BioMap2* Core Habitat: 11,112 acres
- *BioMap2* Core Habitat Protected: 8,346 acres or 75.1%
- Bio*Map2* Critical Natural Landscape: 14,197 acres
- *BioMap2* Critical Natural Landscape Protected: 9,995 acres or 70.4%.

BioMap2 Components

Core Habitat

- 1 Exemplary or Priority Natural Community
- 1 Forest Core
- 2 Wetland Cores
- 6Aquatic Cores
- 25 Species of Conservation Concern Cores**
  - 1 mammal, 7 birds, 6 reptiles, 2 amphibians, 1 fish, 16 insects, 1 mussel, 12 plants

Critical Natural Landscape

- 2 Landscape Blocks
- 2 Wetland Core Buffers
- 5 Aquatic Core Buffers
- 16 Coastal Adaptation Areas
- 15Tern 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 Bourne

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

Mussels

Tidewater Mucket, (*Leptodea ochracea*), SC

Insects

Moths

Coastal Heathland Cutworm, (*Abagrotis nefascia*), SC
Barrens Daggermoth, (*Acronicta albarufa*), T
Gerhard's Underwing, (*Catocala herodias gerhardi*), SC
Melsheimer's Sack Bearer, (*Cicinnus melsheimeri*), T
Chain Dot Geometer, (*Cingilia catenaria*), SC
Barrens Buckmoth, (*Hemileuca maia*), SC
Coastal Swamp Metarranthis, (*Metarranthis pilosaria*), SC
Water-willow Stem Borer, (*Papaipema sulphurata*), T
Pine Barrens Zale, (*Zale lunifera*), SC
Pine Barrens Speranza, (*Speranza exonerata*), SC

Butterflies

Frosted Elfin, (*Callophrys irus*), SC

Beetles

Purple Tiger Beetle, (*Cicindela purpurea*), SC

Damselflies

Pine Barrens Bluet, (*Enallagma recurvatum*), T
New England Bluet, (*Enallagma laterale*), Non-listed SWAP species

Dragonflies

Comet Darner, (*Anax longipes*), SC
Spatterdock Darner, (*Rhionaeschna mutata*), SC

Amphibians

Eastern Spadefoot, (*Scaphiopus holbrookii*), T
Four-toed Salamander, (*Hemidactylium scutatum*), Non-listed SWAP

Fishes

Bridle Shiner, (*Notropis bifrenatus*), SC

Reptiles

Diamond-backed Terrapin, (*Malaclemys terrapin*), T
Northern Red-bellied Cooter, (*Pseudemys rubriventris pop. 1*), E
Eastern Box Turtle, (*Terrapene carolina*), SC
Northern Black Racer, (*Coluber constrictor*), Non-listed SWAP
Smooth Green Snake, (*Opheodrys vernalis*), Non-listed SWAP
Spotted Turtle, (*Clemmys guttata*), Non-listed SWAP

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Birds

Grasshopper Sparrow, (*Ammodramus savannarum*), T
Upland Sandpiper, (*Bartramia longicauda*), E
Piping Plover, (*Charadrius melodus*), T
Northern Harrier, (*Circus cyaneus*), T
Vesper Sparrow, (*Pooecetes gramineus*), T
Least Tern, (*Sternula antillarum*), SC
Eastern Whip-poor-will, (*Caprimulgus vociferus*), SC

Mammals

New England Cottontail, (*Sylvilagus transitionalis*), Non-listed SWAP

Plants

Bushy Rockrose, (*Crocanthemum dumosum*), SC
Ovate Spike-rush or Spike-sedge, (*Eleocharis ovata*), E
Creeping St. John's-wort, (*Hypericum adpressum*), T
Weak Rush, (*Juncus debilis*), E
New England Blazing Star, (*Liatris scariosa* var. *novae-angliae*), SC
Adder's-tongue Fern, (*Ophioglossum pusillum*), T
Pondshore Knotweed, (*Persicaria puritanorum*), SC
Long-beaked Bald-sedge, (*Rhynchospora scirpoides*), SC
Plymouth Gentian, (*Sabatia kennedyana*), SC
Terete Arrowhead, (*Sagittaria teres*), SC
Broad Tinker's-weed, (*Triosteum perfoliatum*), E
American Sea-blite, (*Suaeda calceoliformis*), SC

Priority Natural Communities

Pitch Pine - Scrub Oak Community, S2

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.

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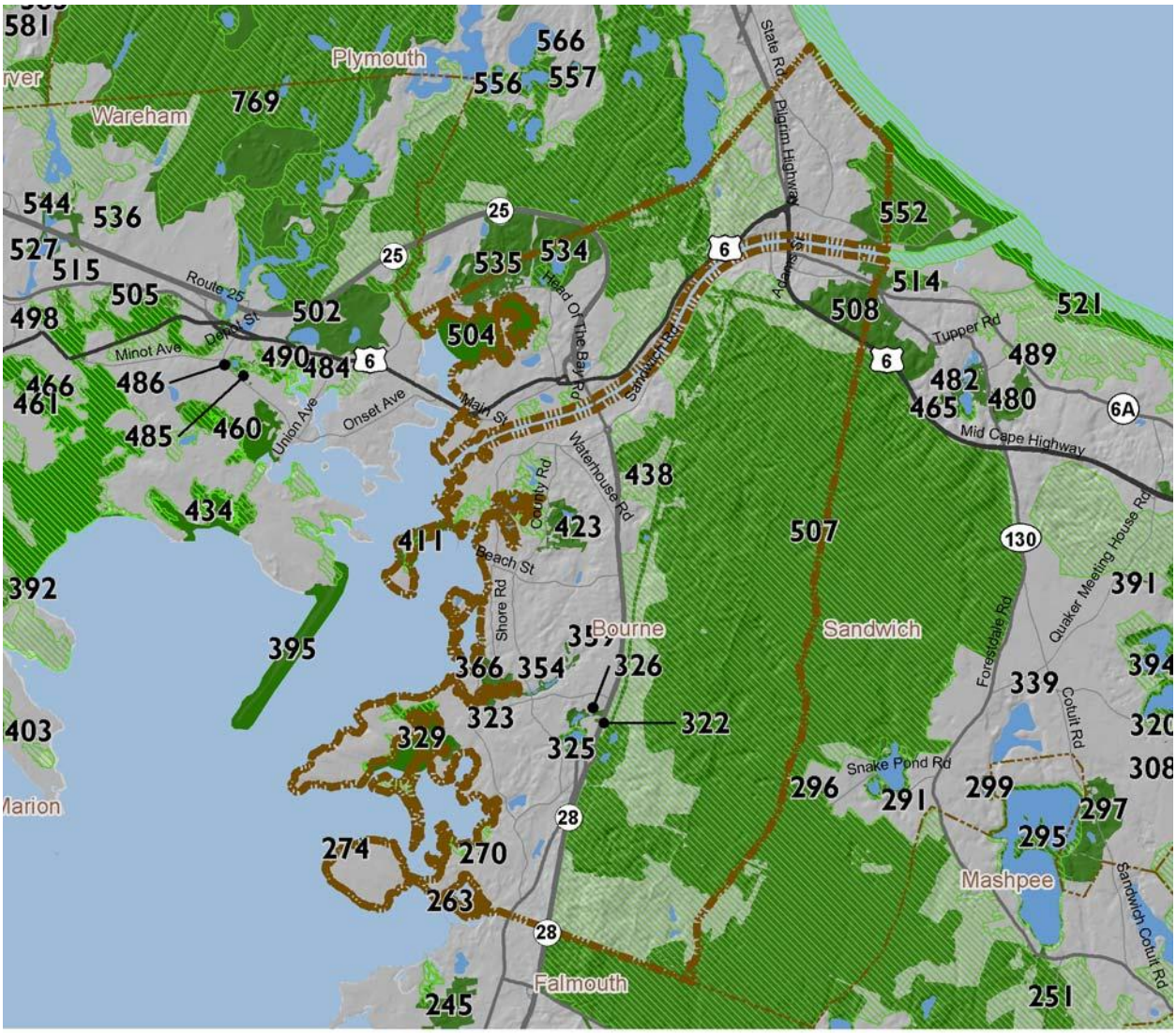
BioMap2 Core Habitat in Bourne

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

Core 263

Species of Conservation Concern		
New England Blazing Star	*Liatris scariosa* var. *novae-angliae*	SC

Core 270

Species of Conservation Concern		
Broad Tinker's-weed	*Triosteum perfoliatum*	E

Core 274

Species of Conservation Concern		
New England Blazing Star	*Liatris scariosa* var. *novae-angliae*	SC

Core 322

Species of Conservation Concern		
Pine Barrens Bluet	*Enallagma recurvatum*	T
Comet Darner	*Anax longipes*	SC
Spatterdock Darner	*Rhionaeschna mutata*	SC

Core 323

Species of Conservation Concern		
New England Blazing Star	*Liatris scariosa* var. *novae-angliae*	SC

Core 325

Aquatic Core		
Species of Conservation Concern		
Creeping St. John's-wort	*Hypericum adpressum*	T
Pondshore Knotweed	*Persicaria puritanorum*	SC
Terete Arrowhead	*Sagittaria teres*	SC
New England Bluet	*Enallagma laterale*	Non-listed SWAP
Pine Barrens Bluet	*Enallagma recurvatum*	T
Comet Darner	*Anax longipes*	SC

Core 326

Species of Conservation Concern		
Pine Barrens Bluet	*Enallagma recurvatum*	T
Comet Darner	*Anax longipes*	SC
Spatterdock Darner	*Rhionaeschna mutata*	SC

Core 329

Species of Conservation Concern		
Diamond-backed Terrapin	*Malaclemys terrapin*	T

Core 348

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

Core 354

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

Core 359

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

Core 366

Species of Conservation Concern		
New England Blazing Star	*Liatris scariosa* var. *novae-angliae*	SC
Water-willow Stem Borer	*Papaipema sulphurata*	T
Diamond-backed Terrapin	*Malaclemys terrapin*	T

Core 411

Species of Conservation Concern		
American Sea-blite	*Suaeda calceoliformis*	SC
Piping Plover	*Charadrius melodus*	T

Core 423

Species of Conservation Concern		
New England Cottontail	*Sylvilagus transitionalis*	Non-listed SWAP

Core 438

Species of Conservation Concern		
Broad Tinker's-weed	*Triosteum perfoliatum*	E

Core 504

Species of Conservation Concern

Diamond-backed Terrapin	*Malaclemys terrapin*	T

Core 507A

Forest Core
Aquatic Core

Priority & Exemplary Natural Communities

Kettlehole Level Bog		S2

Species of Conservation Concern

Adder's-tongue Fern	*Ophioglossum pusillum*	T
Broad Tinker's-weed	*Triosteum perfoliatum*	E
Bushy Rockrose	*Crocanthemum dumosum*	SC
Dwarf Bulrush	*Lipocarpha micrantha*	T
Maryland Meadow Beauty	*Rhexia mariana*	E
Ovate Spike-sedge	*Eleocharis ovata*	E
Papillose Nut Sedge	*Scleria pauciflora*	E
Plymouth Gentian	*Sabatia kennedyana*	SC
Pondshore Knotweed	*Persicaria puritanorum*	SC
Sandplain Flax	*Linum intercursum*	SC
Terete Arrowhead	*Sagittaria teres*	SC
Torrey's Beak-sedge	*Rhynchospora torreyana*	E
Weak Rush	*Juncus debilis*	E
Tidewater Mucket	*Leptodea ochracea*	SC
Barrens Buckmoth	*Hemileuca maia*	SC
Barrens Daggermoth	*Acronicta albarufa*	T
Chain Dot Geometer	*Cingilia catenaria*	SC
Coastal Heathland Cutworm	*Abagrotis nefascia*	SC
Coastal Swamp Metarranthis Moth	*Metarranthis pilosaria*	SC
Gerhard's Underwing Moth	*Catocala herodias gerhardi*	SC
Melsheimer's Sack Bearer	*Cicinnus melsheimeri*	T
Pine Barrens Speranza	*Speranza exonerata*	SC
Pine Barrens Zale	*Zale lunifera*	SC
The Pink Streak	*Dargida rubripennis*	T
Unexpected Cycnia	*Cycnia inopinatus*	T
Water-willow Stem Borer	*Papaipema sulphurata*	T
Frosted Elfin	*Callophrys irus*	SC
Purple Tiger Beetle	*Cicindela purpurea*	SC
Little Bluet	*Enallagma minusculum*	
New England Bluet	*Enallagma laterale*	
Pine Barrens Bluet	*Enallagma recurvatum*	T
Scarlet Bluet	*Enallagma pictum*	T

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Comet Darner	*Anax longipes*	SC
Spatterdock Darner	*Rhionaeschna mutata*	SC
Eastern Spadefoot	*Scaphiopus holbrookii*	T
Eastern Box Turtle	*Terrapene carolina*	SC
Eastern Hognose Snake	*Heterodon platirhinos*	
Eastern Ribbon Snake	*Thamnophis sauritus*	
Northern Black Racer	*Coluber constrictor*	
Smooth Green Snake	*Opheodrys vernalis*	
Barn Owl	*Tyto alba*	SC
Eastern Whip-poor-will	*Caprimulgus vociferus*	SC
Grasshopper Sparrow	*Ammodramus savannarum*	T
Northern Harrier	*Circus cyaneus*	T
Upland Sandpiper	*Bartramia longicauda*	E
Vesper Sparrow	*Pooecetes gramineus*	T
New England Cottontail	*Sylvilagus transitionalis*	

Core 508

Species of Conservation Concern

Chain Dot Geometer	*Cingilia catenaria*	SC
Coastal Swamp Metarranthis Moth	*Metarranthis pilosaria*	SC
Eastern Box Turtle	*Terrapene carolina*	SC
New England Cottontail	*Sylvilagus transitionalis*	Non-listed SWAP

Core 514

Species of Conservation Concern

New England Cottontail	*Sylvilagus transitionalis*	Non-listed SWAP

Core 534

Wetland Core
Aquatic Core
Species of Conservation Concern

Long-beaked Bald-sedge	*Rhynchospora scirpoides*	SC
Plymouth Gentian	*Sabatia kennedyana*	SC
Spotted Turtle	*Clemmys guttata*	Non-listed SWAP

Core 535

Species of Conservation Concern

New England Cottontail	*Sylvilagus transitionalis*	Non-listed SWAP

Core 552

Wetland Core
Species of Conservation Concern

Bushy Rockrose	*Crocanthemum dumosum*	SC

Gerhard's Underwing Moth	*Catocala herodias gerhardi*	SC
Four-toed Salamander	*Hemidactylium scutatum*	Non-listed SWAP
Northern Red-bellied Cooter	*Pseudemys rubriventris* pop. 1	E
Least Tern	*Sternula antillarum*	SC
Piping Plover	*Charadrius melodus*	T
New England Cottontail	*Sylvilagus transitionalis*	Non-listed SWAP

Core 769B

Forest Core		
Wetland Core		
Aquatic Core		
Vernal Pool Core		
Coastal plain pondshore		S2
Priority & Exemplary Natural Communities		
Forest Seep Community		
Kettlehole Level Bog		S2
Pitch Pine - Scrub Oak Community		S2
Sandplain Heathland		S1
Scrub Oak Shrubland		S1
Species of Conservation Concern		
Acadian Quillwort	*Isoetes acadiensis*	E
Dwarf Bulrush	*Lipocarpha micrantha*	T
Inundated Horned-sedge	*Rhynchospora inundata*	T
Long-beaked Bald-sedge	*Rhynchospora scirpoides*	SC
New England Blazing Star	*Liatris scariosa* var. *novae-angliae*	SC
New England Boneset	*Eupatorium novae-angliae*	E
Plymouth Gentian	*Sabatia kennedyana*	SC
Pondshore Knotweed	*Persicaria puritanorum*	SC
Redroot	*Lachnanthes caroliana*	SC
Reed Bentgrass	*Calamagrostis pickeringii*	E
Resupinate Bladderwort	*Utricularia resupinata*	T
Short-beaked Bald-sedge	*Rhynchospora nitens*	T
Subulate Bladderwort	*Utricularia subulata*	SC
Swamp Oats	*Sphenopholis pensylvanica*	T
Terete Arrowhead	*Sagittaria teres*	SC
Torrey's Beak-sedge	*Rhynchospora torreyana*	E
Walter's Sedge	*Carex striata*	E
Wright's Panic-grass	*Dichanthelium wrightianum*	SC
Tidewater Mucket	*Leptodea ochracea*	SC
Triangle Floater	*Alasmidonta undulata*	
Barrens Buckmoth	*Hemileuca maia*	SC
Barrens Daggermoth	*Acronicta albarufa*	T
Buchholz's Gray	*Hypomecis buchholzaria*	E
Coastal Heathland Cutworm	*Abagrotis nefascia*	SC

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Coastal Swamp Metarranthis Moth	*Metarranthis pilosaria*	SC
Drunk Apamea Moth	*Apamea inebriata*	SC
Gerhard's Underwing Moth	*Catocala herodias gerhardi*	SC
Melsheimer's Sack Bearer	*Cicinnus melsheimeri*	T
Pale Green Pinion Moth	*Lithophane viridipallens*	SC
Pine Barrens Speranza	*Speranza exonerata*	SC
Pine Barrens Zale	*Zale lunifera*	SC
Pine Barrens Zanclognatha	*Zanclognatha martha*	T
Pink Sallow	*Psectraglaea carnosa*	SC
Precious Underwing Moth	*Catocala pretiosa pretiosa*	E
Slender Clearwing Sphinx Moth	*Hemaris gracilis*	SC
Water-willow Stem Borer	*Papaipema sulphurata*	T
Waxed Sallow Moth	*Chaetaglaea cerata*	SC
Frosted Elfin	*Callophrys irus*	SC
Purple Tiger Beetle	*Cicindela purpurea*	SC
Little Bluet	*Enallagma minusculum*	
New England Bluet	*Enallagma laterale*	
Pine Barrens Bluet	*Enallagma recurvatum*	T
Scarlet Bluet	*Enallagma pictum*	T
Comet Darner	*Anax longipes*	SC
Four-toed Salamander	*Hemidactylium scutatum*	
Eastern Box Turtle	*Terrapene carolina*	SC
Eastern Hognose Snake	*Heterodon platirhinos*	
Northern Black Racer	*Coluber constrictor*	
Northern Red-bellied Cooter	*Pseudemys rubriventris pop. 1*	E
Smooth Green Snake	*Opheodrys vernalis*	
Bridle Shiner	*Notropis bifrenatus*	SC
Eastern Whip-poor-will	*Caprimulgus vociferus*	SC
New England Cottontail	*Sylvilagus transitionalis*	

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Core Habitat Summaries

Core 263

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

New England Blazing Star is an endemic, globally rare, perennial composite of dry, sandy grasslands and clearings. In Massachusetts, New England Blazing Star inhabits open, dry, low-nutrient sandy soils of grasslands, heathlands, and barrens. It thrives in fire-influenced natural communities that are periodically disturbed and devoid of dense woody plant cover.

Core 270

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

In general, Broad Tinker's-weed, a member of the honeysuckle family, is found in dry, open woods or thickets, usually shunning dense shade. Two populations in the state are on top of shell middens from Native American camp sites.

Core 274

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

New England Blazing Star is an endemic, globally rare, perennial composite of dry, sandy grasslands and clearings. In Massachusetts, New England Blazing Star inhabits open, dry, low-nutrient sandy soils of grasslands, heathlands, and barrens. It thrives in fire-influenced natural communities that are periodically disturbed and devoid of dense woody plant cover.

Core 322

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

Pine Barrens Bluets, small damselflies, are restricted to coastal plain ponds and similar wetlands.

The Comet Darner is a large dragonfly that inhabits ponds with emergent vegetation as both larvae and adults. Surrounding upland forests provide protection while adults reach sexual maturity.

The Spatterdock Darner dragonfly inhabits vegetated ponds and pools, often with spatterdock, as both larvae and adults. Surrounding upland forests provide protection while adults reach sexual maturity.

Core 323

A 3-acre Core Habitat featuring a Species of Conservation Concern.

New England Blazing Star is an endemic, globally rare, perennial composite of dry, sandy grasslands and clearings. In Massachusetts, New England Blazing Star inhabits open, dry, low-nutrient sandy soils of

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grasslands, heathlands, and barrens. It thrives in fire-influenced natural communities that are periodically disturbed and devoid of dense woody plant cover.

Core 325

A 68-acre Core Habitat featuring Aquatic Core and Species of Conservation Concern.

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

In Massachusetts, Creeping St. John's-wort is a coastal plain species, primarily found on the shores of freshwater ponds and pondlets that are permanent bodies of water but which undergo pronounced seasonal fluctuations in water level.

Pondshore Knotweed is a globally rare, trailing, annual wildflower of the Buckwheat family, found on the upper shores of coastal plain ponds in the Northeast. In Massachusetts, Pondshore Knotweed inhabits the sandy, peaty, or cobble upper shores of acidic, low-nutrient, coastal plain ponds. It requires pronounced water level fluctuation, acidic, nutrient-poor water and substrate, and an open, exposed shoreline, free from major soil disturbance.

Terete Arrowhead is a perennial emergent aquatic plant of the water-plantain family, which grows in shallow water along the muddy, sandy, or peaty margins of coastal plain ponds.

New England Bluets are damselflies whose habitat includes coastal plain ponds, open water in swamps, and other ponds and lakes. It occurs only in the northeastern United States and is most common from eastern Massachusetts into Connecticut.

Pine Barrens Bluets, small damselflies, are restricted to coastal plain ponds and similar wetlands.

The Comet Darner is a large dragonfly that inhabits ponds with emergent vegetation as both larvae and adults. Surrounding upland forests provide protection while adults reach sexual maturity.

Core 326

An 8-acre Core Habitat featuring Species of Conservation Concern.

Pine Barrens Bluets, small damselflies, are restricted to coastal plain ponds and similar wetlands.

The Comet Darner is a large dragonfly that inhabits ponds with emergent vegetation as both larvae and adults. Surrounding upland forests provide protection while adults reach sexual maturity.

The Spatterdock Darner dragonfly inhabits vegetated ponds and pools, often with spatterdock, as both larvae and adults. Surrounding upland forests provide protection while adults reach sexual maturity.

Core 329

A 302-acre Core Habitat featuring a 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.

Core 348

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 354

A 2-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 359

A 4-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 366

A 181-acre Core Habitat featuring Species of Conservation Concern.

New England Blazing Star is an endemic, globally rare, perennial composite of dry, sandy grasslands and clearings. In Massachusetts, New England Blazing Star inhabits open, dry, low-nutrient sandy soils of grasslands, heathlands, and barrens. It thrives in fire-influenced natural communities that are periodically disturbed and devoid of dense woody plant cover.

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.

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.

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Core 411

A 108-acre Core Habitat featuring Species of Conservation Concern.

American Sea-blite is a succulent memebr of the saltwort family. This species is found associated with rocky or gravelly salt marshes and seashores.

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 423

A 132-acre Core Habitat featuring a Species of Conservation Concern.

The New England Cottontail is a medium-sized cottontail rabbit. It is is an early successional or thicket-dwelling species, once found statewide in Massachusetts, including in Dukes and Nantucket counties. Suitable habitat can be found in both forests and shrublands, where there is a dense understory with food and cover in close association. Typical habitats include native shrub associations, beaver flowages, old fields and pastures, and early successional forests.

Core 438

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

In general, Broad Tinker's-weed, a member of the honeysuckle family, is found in dry, open woods or thickets, usually shunning dense shade. Two populations in the state are on top of shell middens from Native American camp sites.

Core 504

A 420-acre Core Habitat featuring a 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.

Core 507A

A 20,462-acre section of a larger 24,490-acre Core Habitat featuring Forest Core, Aquatic Core, Priority Natural Communities, and Species of Conservation Concern.

From the Cape Cod Canal south through the Crane Wildlife Management Area, a wide sweep of barrens and Coastal Plain Ponds is home to 43 species of rare and uncommon plants and animals. Much of this area is the Massachusetts Military Reservation; its airfield supports one of the state's better populations of sandplain grassland birds - Grasshopper Sparrow, Vesper Sparrow, and Upland Sandpiper - while the

barrens to the north support of the best populations of Whip-poor-will state-wide. Crane WMA is the site of the state's largest population of the federally Endangered and globally imperiled Sandplain Gerardia. Three species of globally rare damselflies, Scarlet Bluet, Pine Barrens Bluet, and New England Bluet, as well as the large, showy, and rare Comet Darner, inhabit the Coastal Plain Ponds scattered across this landscape.

Kettlehole Level Bogs are acidic dwarf-shrub peatlands with little water input or outflow that form in circular depressions left by melting ice blocks in sandy glacial outwash. The vegetation in Kettlehole Level Bogs usually grows in rings. This example of Kettlehole Level Bog is significant as the only bog in Camp Edwards, but it has only fair species and structural diversity.

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

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

Core 508

A 501-acre Core Habitat featuring Species of Conservation Concern.

The Chain Dot Geometer inhabits open coastal plain habitats, especially heathlands, shrubby dunes and bluffs, and acidic shrub swamps and bogs, occasionally also pitch pine/scrub oak barrens. Huckleberries (Gaylussacia spp.), blueberries (*Vaccinium* spp.), and bayberry and gale (Myrica spp.) are favored larval host plants, but this species is widely polyphagous, expecially during "outbreaks."

Coastal Swamp Metarranthis moths inhabit open, acidic wetlands with ericaceous vegetation, especially shrub swamps and bogs, often within sandplain pitch pine/scrub oak barrens. Cranberry (*Vaccinium* macrocarpon) is a documented larval host, leatherleaf (Chamaedaphne calyculata) is likely also used; in dry barrens habitat the most likely larval hosts are lowbush blueberries (*Vaccinium pallidum* and *V. angustifolium*).

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.

The New England Cottontail is a medium-sized cottontail rabbit. It is is an early successional or thicket-dwelling species, once found statewide in Massachusetts, including in Dukes and Nantucket counties. Suitable habitat can be found in both forests and shrublands, where there is a dense understory with food and cover in close association. Typical habitats include native shrub associations, beaver flowages, old fields and pastures, and early successional forests.

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Core 514

A 113-acre Core Habitat featuring a Species of Conservation Concern.

The New England Cottontail is a medium-sized cottontail rabbit. It is is an early successional or thicket-dwelling species, once found statewide in Massachusetts, including in Dukes and Nantucket counties. Suitable habitat can be found in both forests and shrublands, where there is a dense understory with food and cover in close association. Typical habitats include native shrub associations, beaver flowages, old fields and pastures, and early successional forests.

Core 534

A 346-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.

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.

Long-beaked Bald-rush is a slender inconspicuous annual sedge, 8 to 35 cm (3-15") tall, found on sparsely vegetated pond shores. This species is found on wet, sandy to peaty pond shores of coastal plain ponds where the water level fluctuates enough to keep the vegetation sparse.

Plymouth Gentian is a globally rare, showy perennial herb of the gentian family, with striking pink and yellow flowers and opposite lance-shaped leaves. It inhabits the sandy and peaty shorelines of coastal plain ponds.

Strong populations of Spotted Turtles in good habitat - large, unfragmented, protected open space - continue to be of interest for the conservation of this species. This small, dark-colored turtle with yellow spots on its carapace inhabits a variety of wetlands year-round and nests in nearby uplands during spring. Road and collection are the primary conservation concerns.

Core 535

A 438-acre Core Habitat featuring a Species of Conservation Concern.

The New England Cottontail is a medium-sized cottontail rabbit. It is is an early successional or thicket-dwelling species, once found statewide in Massachusetts, including in Dukes and Nantucket counties. Suitable habitat can be found in both forests and shrublands, where there is a dense understory with food and cover in close association. Typical habitats include native shrub associations, beaver flowages, old fields and pastures, and early successional forests.

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Core 552

A 989-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 285-acre Wetland Core is the 2nd largest in this ecoregion and among the largest 20% of Wetland Cores statewide.

Bushy Rockrose is a globally rare, bright yellow, perennial wildflower of coastal herbaceous grasslands and heathlands.

Gerhard's Underwing, a noctuid moth, inhabits xeric and open pitch pine/scrub oak barrens, especially scrub oak thickets on sandplains or rocky summits and ridges. The larvae feed on the catkins and new leaves of scrub oak (*Quercus ilicifolia*), and must complete feeding in the spring before the catkins drop off and the new leaves harden.

Four-toed Salamanders live in forested habitats surrounding swamps, bogs, marshes, vernal pools, and other fish-free waters that are used as breeding sites. Most breeding sites in MA are characterized by pit-and-mound topography with significant sphagnum-moss cover. Eggs are typically laid in mounds or patches of sphagnum moss that overhang water. Upon hatching, the larvae wriggle through the moss and drop into the water, where they will develop for several weeks prior to metamorphosis.

The Red-bellied Cooter is a large (10 -12 inches long) basking turtle that can weigh up to 10 pounds. In Massachusetts, the Red-bellied Cooter primarily inhabits freshwater ponds of varying sizes that have abundant aquatic vegetation. They can also be found along some riverways. For nesting, the Red-bellied Cooter requires sandy soil on land adjacent to the pond or river.

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.

The New England Cottontail is a medium-sized cottontail rabbit. It is is an early successional or thicket-dwelling species, once found statewide in Massachusetts, including in Dukes and Nantucket counties.

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Suitable habitat can be found in both forests and shrublands, where there is a dense understory with food and cover in close association. Typical habitats include native shrub associations, beaver flowages, old fields and pastures, and early successional forests.

Core 769B

A 34,577-acre section of a larger 37,136-acre Core Habitat featuring Forest Core, Wetland Core, Aquatic Core, Vernal Pool Core, Priority Natural Communities, and Species of Conservation Concern.

There is no place on the mainland of Massachusetts more important for biodiversity than the Pitch Pine-Scrub Oak barrens and Coastal Plain Ponds of Plymouth, Carver, Wareham, and Bourne. An extraordinary 56 rare and uncommon species of plants and animals make their homes here, including the stronghold of the federally Endangered Northern Red-bellied Cooter. Because of the globally rare barrens and Coastal Plain Pond natural communities, numerous globally rare species are here, in addition to the cooter: New England Cottontail, Barrens Dagger Moth, Drunk Apamea Moth, Frosted Elfin, Gerhard's Underwing Moth, Precious Underwing, Waxed Sallow Moth, Northern Barrens Tiger Beetle, New England Bluet, Scarlet Bluet, Pine Barrens Bluet, New England Boneset, Slender Clearwing Sphinx Moth, Buchholz's Gray, Acadian Quillwort, Pine Barrens Speranza, Tidewater Mucket, New England Blazing Star, Coastal Swamp Metarranthis, Bridle Shiner, Water-willow Borer Moth (found nowhere else in the world except Massachusetts), Pondshore Knotweed, Pink Sallow Moth, Plymouth Gentian, Terete Arrowhead, and Pine Barrens Zale. This largest pine barrens in the state also supports the state's largest population of the rapidly dwindling Whip-poor-will. Conserving this complex biodiversity involves not just protecting the land from development, but also facilitating the ecological process - occasional fires - that maintains the Pitch Pine/Scrub Oak barrens in its natural state of a patchwork of early successional states.

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 includes forty examples of Coastal Plain Pond. Several examples are in excellent condition, with good diversity, little impact from human use or development, and large naturally vegetated buffers. Others heavily degraded by intensive recreational use and are surrounded by dense development.

Forest Seeps are in areas on wet slopes in hardwood forests where groundwater seeps out of the earth. The overstory is similar to that of the surrounding forest, but many typical wetland ferns, herbs, and shrubs occur as well. This regionally significant example of Forest Seep is exceptionally diverse and is in good condition, despite the presence of exotic invasive species. It is well buffered by natural vegetation.

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 cluster of Kettlehole Level Bogs is in pitted outwash surrounded by a large pitch pine/scrub oak community. The typical bog vegetation is consistent among the kettleholes.

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Pitch Pine/Scrub Oak Communities are globally rare, fire-dependent, shrub-dominated communities, with scattered trees and occasional openings. They provide habitat for many rare species, and develop on dry, poor, usually sandy, soils. This globally important example of Pitch Pine-Scrub Oak Community, at almost 17,000 acres, is the largest of its kind remaining in the northeast. Many other rare community types occur within it, as well as many state-endangered insects.

Sandplain Heathlands are open, shrub dominated, coastal communities. They share many species with Sandplain Grasslands, but also have many plants from the Heath family. They often have sparse clumps of plants with bare soil or lichen between them. This example of Sandplain Heathlands is in good condition, and is part of a mosaic of globally important sandplain natural communities. It is severely threatened by soil erosion and destruction by dirt bikes and off road vehicles.

Scrub Oak Shrublands, found within Pitch Pine-Scrub Oak Communities, are dominated by scrub oak. They are often found in depressions called frost bottoms and frost pockets, where extremely localized frosts keep out competing tree species. This Core has two examples of Scrub Oak Shrubland one of which is in very good condition, with good species diversity and intact natural processes such as fire and hydrology. It is well buffered by natural vegetation in a larger landscape.

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.

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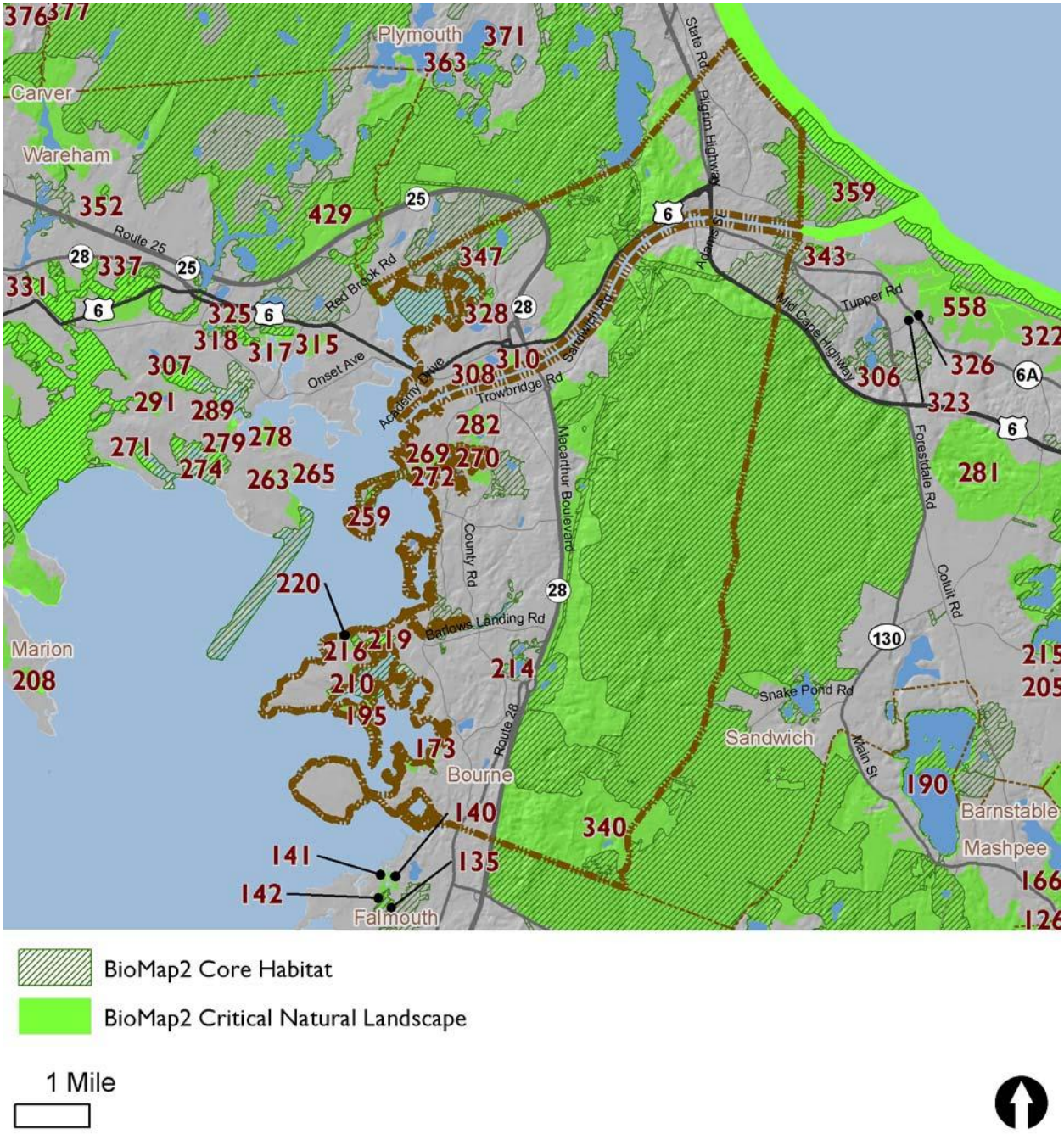
BioMap2 Critical Natural Landscape in Bourne

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



Natural Heritage & Endangered Species Program

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

CNL 165
- Coastal Adaptation Area

CNL 173
- Coastal Adaptation Area
- Tern Foraging Area

CNL 195
- Coastal Adaptation Area
- Tern Foraging Area

CNL 210
- Coastal Adaptation Area
- Tern Foraging Area

CNL 214
- Aquatic Core Buffer

CNL 216
- Coastal Adaptation Area

CNL 219
- Coastal Adaptation Area
- Tern Foraging Area

CNL 220
- Coastal Adaptation Area
- Tern Foraging Area

CNL 259
- Coastal Adaptation Area
- Tern Foraging Area

CNL 269
- Coastal Adaptation Area

CNL 270
- Coastal Adaptation Area
- Tern Foraging Area

CNL 272
- Coastal Adaptation Area
- Tern Foraging Area

CNL 282
Coastal Adaptation Area
Tern Foraging Area

CNL 308
Coastal Adaptation Area
Tern Foraging Area

CNL 310
Coastal Adaptation Area
Tern Foraging Area

CNL 328
Coastal Adaptation Area
Tern Foraging Area

CNL 340
Aquatic Core Buffer
Coastal Adaptation Area
Landscape Block
Tern Foraging Area

CNL 347
Aquatic Core Buffer
Wetland Core Buffer

CNL 359
Coastal Adaptation Area
Tern Foraging Area

CNL 429
Aquatic Core Buffer
Coastal Adaptation Area
Landscape Block
Tern Foraging Area

CNL 558
Aquatic Core Buffer
Coastal Adaptation Area
Landscape Block
Tern Foraging Area

Critical Natural Landscape Summaries

CNL 165

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 173

A 34-acre Critical Natural Landscape featuring Coastal Adaptation Area and Tern Foraging 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.

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 195

A 49-acre Critical Natural Landscape featuring Coastal Adaptation Area and Tern Foraging 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.

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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 210

A 22-acre Critical Natural Landscape featuring Coastal Adaptation Area and Tern Foraging 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.

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CNL 214

A 30-acre Critical Natural Landscape featuring Aquatic 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 216

A 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.

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CNL 219

A 34-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 220

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

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 259

A 23-acre Critical Natural Landscape featuring Coastal Adaptation Area and Tern Foraging 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.

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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 269

A 27-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 270

A 92-acre Critical Natural Landscape featuring Coastal Adaptation Area and Tern Foraging 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.

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 272

A 19-acre Critical Natural Landscape featuring Coastal Adaptation Area and Tern Foraging 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.

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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 282

A 65-acre Critical Natural Landscape featuring Coastal Adaptation Area and Tern Foraging 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.

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 308

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

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 310

A 20-acre Critical Natural Landscape featuring Coastal Adaptation Area and Tern Foraging 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.

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 328

A 24-acre Critical Natural Landscape featuring Coastal Adaptation Area and Tern Foraging 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.

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 340

A 40,353-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 26,176 acres, this Landscape Block is the third largest in the ecoregion and among the largest 20% of all Blocks statewide, which is especially important in the fragmented landscapes of Cape Cod. Unlike Landscape Blocks in much of the state that are dominated by upland forests, this coastal Landscape Block includes both extensive upland forest and a relatively high percentage of open lands and other important sandplain habitats. Much of this Block is protected by the Massachusetts Military Reservation. A very small portion of this Landscape Block occurs in Barnstable.

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 347

A 121-acre Critical Natural Landscape featuring Aquatic Core Buffer and 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.

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CNL 359

A 456-acre Critical Natural Landscape featuring Coastal Adaptation Area and Tern Foraging 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.

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 429

A 38,511-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.

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At 26,428 acres, this Landscape Block is the second largest in the ecoregion and among the largest 20% of all Blocks statewide, which is especially important in the fragmented landscapes of Southeastern Massachusetts. This Block, which supports globally important sandplain habitats, is centered around the Myles Standish State Forest, however significant portions of the Block remain unprotected.

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 558

A 97,955-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

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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 6,182 acres, this Landscape Block is the sixth largest in the ecoregion and is especially important in the fragmented landscapes of Cape Cod. 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 and barrier beach habitats, much of which is protected by the town of Barnstable.

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.

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