

# BioMap and Living Waters

## Guiding Land Conservation for Biodiversity in Massachusetts

### Core Habitats of Sharon

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:

**Natural Heritage & Endangered Species Program  
Massachusetts Division of Fisheries and Wildlife  
Executive Office of Environmental Affairs  
Commonwealth of Massachusetts**

Produced in 2004



# BioMap and Living Waters: Guiding Land Conservation for Biodiversity in Massachusetts

## Table of Contents

### Introduction

- What is a Core Habitat?
- Core Habitats and Land Conservation  
In Support of Core Habitats

### Understanding Core Habitat Species, Community, and Habitat Lists

- What's in the List?
- What does 'Status' mean?

### Understanding Core Habitat Summaries

### Next Steps

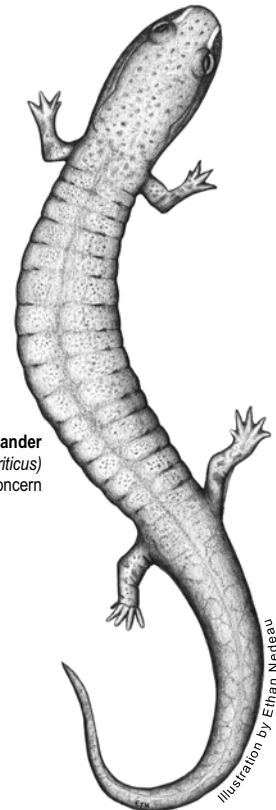
- Protecting Larger Core Habitats
- Additional Information

### Local Core Habitat Information\*

- BioMap: Species and Natural Communities
- BioMap: Core Habitat Summaries
- Living Waters: Species and Habitats
- Living Waters: Core Habitat Summaries

\* Depending on the location of Core Habitats,  
your city or town may not have all of these sections.

**Spring Salamander**  
(*Gyrinophilus porphyriticus*)  
Species of Special Concern



*Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.*



**Natural Heritage  
& Endangered Species  
Program**

**Massachusetts Division of Fisheries and Wildlife**  
North Drive, Westborough, MA 01581  
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821  
<http://www.nhesp.org>

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



# BioMap and Living Waters: Guiding Land Conservation for Biodiversity in Massachusetts

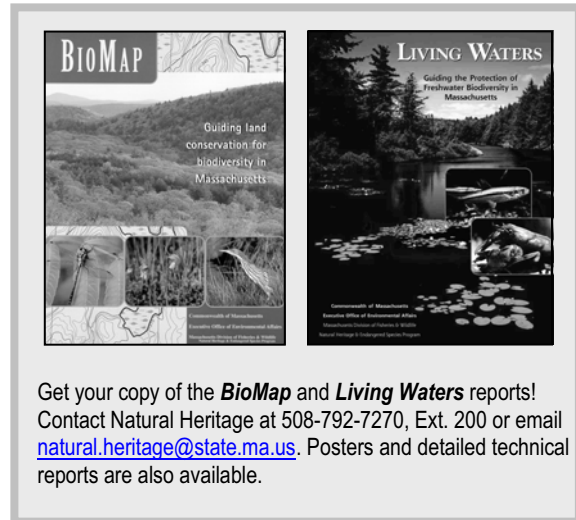
## Introduction

In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generations to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, *BioMap* and *Living Waters*. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

## What is a Core Habitat?

Both BioMap and Living Waters delineate *Core Habitats* that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.



## Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the *riparian areas*, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

## In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as *Supporting Natural Landscape* provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was



**Natural Heritage  
& Endangered Species  
Program**

**Massachusetts Division of Fisheries and Wildlife**  
North Drive, Westborough, MA 01581  
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821  
<http://www.nhesp.org>

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



# BioMap and Living Waters: Guiding Land Conservation for Biodiversity in Massachusetts

generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, *Critical Supporting Watersheds* highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from [www.mass.gov/mgis](http://www.mass.gov/mgis).

## Understanding Core Habitat Species, Community, and Habitat Lists

### What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at [www.nhesp.org](http://www.nhesp.org).

The list of species and communities within a Core Habitat contains only the species and

**Table 1.** The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap		
Biodiversity Group	Species and Verified Natural Community Types	
	Included in BioMap	Total Statewide
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types
Living Waters		
Biodiversity Group	Species	
	Included in Living Waters	Total Statewide
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant



**Natural Heritage  
& Endangered Species  
Program**

Massachusetts Division of Fisheries and Wildlife  
North Drive, Westborough, MA 01581  
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821  
<http://www.nhesp.org>

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



# BioMap and Living Waters: Guiding Land Conservation for Biodiversity in Massachusetts

species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

## 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, the Natural Heritage & Endangered Species Program 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 any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural

## Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The **Massachusetts Natural Heritage Atlas** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

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 Habitat to ensure continued protection.



## Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries and Wildlife  
North Drive, Westborough, MA 01581  
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821  
<http://www.nhesp.org>

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



# BioMap and Living Waters: Guiding Land Conservation for Biodiversity in Massachusetts

---

## Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, 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.nhesp.org](http://www.nhesp.org).

## Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

## Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be

very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

## Additional Information

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* 508-792-7270, Ext. 200

*by Fax:* 508-792-7821

*by Email:* [natural.heritage@state.ma.us](mailto:natural.heritage@state.ma.us).

*by Mail:* North Drive  
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: [www.mass.gov/mgis](http://www.mass.gov/mgis)

Check out [www.nhesp.org](http://www.nhesp.org) for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
  - \* Field guides
  - \* Natural Heritage Atlas, and more!



**Natural Heritage  
& Endangered Species  
Program**

**Massachusetts Division of Fisheries and Wildlife**  
North Drive, Westborough, MA 01581  
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821  
<http://www.nhesp.org>

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

# BioMap: Species and Natural Communities

## Sharon

---

### Core Habitat BM1033

#### Invertebrates

Common Name

Scientific Name

Status

Oak Hairstreak

*Satyrium favonius*

Special Concern

### Core Habitat BM1052

#### Plants

Common Name

Scientific Name

Status

Small Site for Rare Plant

### Core Habitat BM1068

#### Natural Communities

Common Name

Scientific Name

Status

Level Bog

Vulnerable

### Core Habitat BM1078

#### Invertebrates

Common Name

Scientific Name

Status

Hessel's Hairstreak

*Callophrys hesseli*

Special Concern

### Core Habitat BM1094

#### Vertebrates

Common Name

Scientific Name

Status

Blue-spotted Salamander

*Ambystoma laterale*

Special Concern

Eastern Box Turtle

*Terrapene carolina*

Special Concern

Four-toed Salamander

*Hemidactylium scutatum*

Special Concern

Marbled Salamander

*Ambystoma opacum*

Threatened

Spotted Turtle

*Clemmys guttata*

Special Concern



**Natural Heritage  
& Endangered Species  
Program**

**Massachusetts Division of Fisheries and Wildlife**  
North Drive, Westborough, MA 01581  
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821  
<http://www.nhesp.org>

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

# BioMap: Core Habitat Summaries

## Sharon

---

### Core Habitat BM1033

#### Invertebrates

The oak woodland on the rocky hilltop between Interstate 95 and the powerline cut is unfragmented habitat for the Oak Hairstreak butterfly; the powerline cut provides an open, sunny area with nectar sources for the adult butterflies. The Core Habitat, although immediately adjacent to the Moose Hill Wildlife Sanctuary, appears unprotected. This population of the Oak Hairstreak is less than 10 km from the population at Foolish Hill in Foxborough, which probably allows for dispersal of individuals between these two locations.

### Core Habitat BM1068

#### Natural Communities

Although in a relatively developed landscape, this Core Habitat lies well within naturally forested land, and contains a good-quality Level Bog occurring at the headwaters of a stream. Level Bogs are dwarf shrub peatlands, generally with pronounced hummock and hollow formations. These wetland peatlands are our most acidic and nutrient-poor, because they receive little overland water input, and are not connected to the water table.

### Core Habitat BM1078

#### Invertebrates

The boggy perimeter of Wolomolopoag Pond and the Atlantic White Cedar swamp to the north is habitat for Hessel's Hairstreak butterfly. The Core Habitat is relatively small, but is unfragmented and located less than 5 km from the population at the Walpole Cedar Swamp and less than 10 km from the population at Witch Pond in Foxborough. This proximity may allow for occasional dispersal of individuals among these three locations. This Core Habitat appears to be unprotected.

### Core Habitat BM1094

#### Vertebrates

This Core Habitat contains a good interspersed of forested uplands, wetlands, small ponds, and vernal pools. Together these areas provide significant habitat for five rare species, namely Blue-spotted, Marbled, and Four-toed Salamanders, as well as Eastern Box and Spotted Turtles. The area encompasses much of Borderlands State Park and undeveloped and unprotected areas to the northeast and southwest. The southwest portion includes habitat bordering the Canoe River and some of its tributaries, while the northeast part of the Core Habitat encompasses upland forests and many vernal pools.



**Natural Heritage  
& Endangered Species  
Program**

**Massachusetts Division of Fisheries and Wildlife**  
North Drive, Westborough, MA 01581  
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821  
<http://www.nhesp.org>

*For more information on rare species and natural communities, please see our fact sheets online at [www.nhesp.org](http://www.nhesp.org)*

# Living Waters: Species and Habitats

Sharon

---

## Core Habitat LW139

### Exemplary Habitats

Common Name

Scientific Name

Status

Fish Habitat

-----

## Core Habitat LW217

### Invertebrates

Common Name

Scientific Name

Status

Eastern Pondmussel

*Ligumia nasuta*

Special Concern



**Natural Heritage  
& Endangered Species  
Program**

**Massachusetts Division of Fisheries and Wildlife**  
North Drive, Westborough, MA 01581  
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821  
<http://www.nhesp.org>

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

# Living Waters: Core Habitat Summaries

Sharon

---

## Core Habitat LW139

Traphole Brook supports a fish community typical of slow-moving streams with good water quality and abundant aquatic plants. The mostly native community is made up of Banded Sunfish, Brook Trout, Redfin Pickerel, Swamp Darter, and White Suckers. The diversity in the community suggests a diversity of underwater habitats. For example, the presence of Brook Trout suggests that parts of this underwater habitat are flowing, well-oxygenated, and cold, possibly associated with groundwater seeps.

## Core Habitat LW217

Massapoag Lake is a 353-acre pond that supports three of the state's freshwater mussel species, including the rare Eastern Pondmussel. The more robust populations of this rare mussel are found in some of the lakes and ponds in southeastern Massachusetts. This lake lies in a developed landscape, and receives heavy recreational use, both of which have the potential to threaten the aquatic species living here in the absence of careful lake and watershed management.



**Natural Heritage  
& Endangered Species  
Program**

**Massachusetts Division of Fisheries and Wildlife**  
North Drive, Westborough, MA 01581  
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821  
<http://www.nhesp.org>

*For more information on rare species and natural communities, please see our fact sheets online at [www.nhesp.org](http://www.nhesp.org)*

## Help Save Endangered Wildlife!

Please contribute on your Massachusetts income tax form or directly to the



Natural Heritage &  
Endangered Species Fund

To learn more about the Natural Heritage & Endangered Species Program and the Commonwealth's rare species, visit our web site at: [www.nhesp.org](http://www.nhesp.org).