BioMap2

Guiding Land Conservation for Biodiversity in Massachusetts

Sheffield

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

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

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BioMap2: Guiding Land Conservation for Biodiversity in Massachusetts

Sheffield

Sheffield lies in south-central Berkshire County, where diverse and extensive natural habitat along the Housatonic River and its tributaries supports a notable wealth of native species and natural communities. The town ranks third in the Commonwealth for documented numbers of uncommon species and natural communities – more than 90 Species of Conservation Concern, as well as 17 Priority and Exemplary Natural Communities, are known to occur here. The Housatonic River passes through the town's central valley, meandering from north to south through wide, level floodplains and adjacent wetland areas. Oxbows at nearly every turn are signs of the river's dynamic nature; the stream channel has naturally and incrementally changed course over time as erosion and deposition have caused it to shift back and forth across the valley. Tributaries of the Housatonic River flow from mountains to the east and west to join the mainstem river in the valley. These streams include Hubbard Brook in the northwest, Ironwork Brook in the northeast, the Konkapot River in the southeast, and Schenob Brook in the southwest. Land along the lower reaches of these tributaries contributes to the town's significant acreage of wetlands and floodplains. The watershed of Schenob Brook, which comprises a large area in southwest Sheffield, is of particular conservation interest and was designated as an Area of Critical Environmental Concern over 20 years ago. This part of Sheffield contains extensive wetlands, including Calcareous Seepage Swamps and Calcareous Fens where many state-listed species grow.

Sheffield's significant biodiversity resources are largely a result of the town's location within the Western New England Marble Valleys ecological region (see Figure 1). Stretching from northwest Connecticut up through sections of the Hudson River and Lake Champlain watersheds, this ecoregion is one of the most distinct and biologically rich areas in Massachusetts, and New England in general. Its underlying calcareous geology and nutrient-rich soils support a remarkably diverse suite of plants and animals, like the ones found in the floodplain forests and wetlands along the Housatonic River in Sheffield. The floodplain forests here are dominated by silver maple trees and contain a diversity of herbaceous plants. These include many state-listed species, like Frank's Lovegrass and Great Blue Lobelia, and nine sedge species. Also found throughout Sheffield's floodplains are tree species such as Bur Oak that are restricted to areas with moist, calcareous soils. In addition, these areas provide habitat for many turtle and

Sheffield at a Glance

- Total area: 31,099 acres or 48.6 square miles
- Human population in 2009: 3,296 people
- Open space protected in perpetuity: 8,784 acres, or 28.2% of total area*

BioMap2 Components

Core Habitat

- 27 Aquatic Cores: 4,364 acres
- 3 Forest Cores: 2,471 acres
- 6 Vernal Pool Cores: 572 acres
- 24 Wetland Cores: 2,438 acres
- 17 Priority and Exemplary Natural Communities: 1,150 acres

Species of Conservation Concern**

- 2 freshwater molluscs, 1 freshwater amphipod, 9 insects, 2 fish, 4 amphibians, 3 reptiles, 1 snail, 4 birds, 56 plants

Critical Natural Landscape

- 19 Upland Buffers of Aquatic Cores: 7,116 acres
- 28 Upland Buffers of Wetland Cores: 595 acres
- 3 Landscape Blocks: 15,587 acres

*calculated using MassGIS data layer "Protected and Recreational Open Space—November 2010"
**see next page for complete list of species, natural communities, and other biodiversity elements

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

Invertebrates (non-insect)
- Creeper (*Strophitus undulatus*), Special Concern
- Northern Spring Amphipod (*Gammarus pseudolimnaeus*), Special Concern
- Slender Walker (*Pomatiopsis lapidaria*), Endangered
- Triangle Floater (*Alasmidonta undulata*), Special Concern

Insects
- Arrow Clubtail (*Stylurus spiniceps*), Threatened
- Brook Snaketail (*Ophiogomphus aspersus*), Special Concern
- Dion Skipper (*Euphyes dion*), Threatened
- Ghost Moth (*Sthenopis auratus*), not state-ranked, but globally rare
- Harpoon Clubtail (*Gomphus descriptus*), Endangered
- Ostrich Fern Borer (*Papaipema* sp. 2 nr. *pterisii*), Special Concern
- Skillet Clubtail (*Gomphus ventricosus*), Special Concern
- Spine-crowned Clubtail (*Gomphus abbreviatus*), Endangered
- Zebra Clubtail (*Stylurus scudderi*), Special Concern

Fish
- Bridle Shiner (*Notropis bifrenatus*), Special Concern
- Longnose Sucker (*Catostomus catostomus*), Special Concern

Amphibians
- Four-toed Salamander (*Hemidactylium scutatum*), SWAP
- Jefferson Salamander (*Ambystoma jeffersonianum*), Special Concern
- Northern Leopard Frog (*Rana pipiens*), SWAP
- Spring Salamander (*Gyrinophilus porphyriticus*), SWAP

Reptiles
- Eastern Box Turtle (*Terrapene carolina*), Special Concern
- Eastern Ribbon Snake (*Thamnophis sauritus sauritus*), SWAP
- Wood Turtle (*Glyptemys insculpta*), Special Concern

Birds
- American Bittern (*Botaurus lentiginosus*), Endangered
- Bald Eagle (*Haliaeetus leucocephalus*), Endangered
- Common Moorhen (*Gallinula chloropus*), Special Concern
- Least Bittern (*Ixobrychus exilis*), Endangered

Plants
- Andrew's Bottle Gentian (*Gentiana andrewsii*), Endangered
- Arborvitae (*Thuja occidentalis*), Endangered
- Autumn Coralroot (*Corallorhiza ondontorhiza*), Special Concern
- Barren Strawberry (*Waldsteinia fragarioides*), Special Concern
- Black Cohosh (*Actaea racemosa*), Endangered
- Black Maple (*Acer nigrum*), Special Concern
- Bur Oak (*Quercus macrocarpa*), Special Concern
- Bush's Sedge (*Carex bushii*), Endangered
- Canadian Sanicle (*Sanicula canadensis*), Threatened
- Cat-tail Sedge (*Carex typhina*), Threatened
- Culver's-root (*Veronicastrum virginicum*), Threatened
- Davis's Sedge (*Carex davisii*), Endangered
- Downy Arrowwood (*Viburnum rafinesquianum*), Endangered
- Drooping Speargrass (*Poa saltuensis* ssp. *languida*), Endangered
- Dwarf Scouring-rush (*Equistem scirpoides*), Special Concern
- Fen Cuckoo Flower (*Cardamine pratensis var. palustris*), Threatened
- Fen Sedge (*Carex tetanica*), Special Concern
- Fogg's Goosefoot (*Chenopodium foggii*), Endangered
- Foxtail Sedge (*Carex alopecoidea*), Threatened
- Frank's Lovegrass (*Eragrostis frankii*), Special Concern
- Giant St. John's-wort (*Hypericum ascyron*), Endangered
- Gray's Sedge (*Carex grayi*), Threatened
- Great Blue Lobelia (*Lobelia siphilitica*), Endangered
- Green Dragon (*Arisaema dracontium*), Threatened
- Hairy Agrimony (*Agrimonia pubescens*), Threatened
- Hairy Beardtongue (*Penstemon hirsutus*), Endangered
- Hairy Wild Rye (*Elymus villosus*), Endangered
- Hemlock Parsley (*Conioselinum chinense*), Special Concern
- Hitchcock's Sedge (*Carex hitchcockiana*), Special Concern
- Intermediate Spike-sedge (*Eleocharis intermedia*), Threatened
- Long-styled Sanicle (*Sanicula odorata*), Threatened
- Lyre-leaved Rock-Cress (*Arabidopsis lyrata*), Endangered
- Michaux's Sandwort (*Minuartia michauxii*), Threatened
- Mountain Spleenwort (*Asplenium montanum*), Endangered
- Mountain Winterberry (*Ilex montana*), Endangered
- Narrow-leaved Spring Beauty (*Claytonia virginica*), Endangered
- Northern Bedstraw (*Galium boreale*), Endangered
- Northern Wild Comfrey (*Cynoglossum virginianum* var. *boreale*), Endangered
- Pod-grass (*Scheuchzeria palustris*), Endangered
- Purple Cress (*Cardamine douglassii*), Endangered
- Rand's Goldenrod (*Solidago simplex* ssp. *randii* var. *monticola*), Endangered
- Red Mulberry (*Morus rubra*), Endangered
- Rigid Flax (*Linum medium var. texanum*), Threatened
- Sessile Water-speedwell (*Veronica catenata*), Endangered
- Shining Wedgegrass (*Sphenopholis nitida*), Threatened
- Slender Cottongrass (*Eriophorum gracile*), Threatened
- Small Dropseed (*Sporobolus neglectus*), Endangered
- Small-flowered Agrimony (*Agrimonia parviflora*), Endangered
- Smooth Rock-cress (*Boechera laevigata*), Threatened
- Swamp Birch (*Betula pumila*), Endangered
- Sweet Coltsfoot (*Petasites frigidus var. palmatus*), Endangered
- Tiny Cow-lily (*Nuphar microphylla*), Endangered
- Tuckerman's Sedge (*Carex tuckermanii*), Endangered
- Wapato (*Sagittaria cuneata*), Threatened
- Weft Bristle-fern (*Trichomanes intricatum*), Endangered
- Yellow Oak (*Quercus muehlenbergii*), Threatened

Exemplary Natural Communities
- Acidic Rocky Summit/Rock Outcrop (Secure)
- Hemlock Hardwood Swamp (Secure)
- Hemlock Ravine (Secure)
- Mixed Oak Forest (Secure)
- Northern Hardwoods – Hemlock – White Pine Forest (Secure)

Priority Natural Communities
- Black Ash – Red Maple – Tamarack Calcareous Seepage Swamp (Imperiled)
- Calcareous Pondshore/Lakeshore (Imperiled)
- Calcareous Rock Cliff (Vulnerable)
- Calcareous Rocky Summit/Rock Outcrop (Imperiled)
- Calcareous Seepage Marsh (Imperiled)
- Calcareous Sloping Fen (Imperiled)
- Calcareous Talus Forest/Woodland (Vulnerable)
- High-terrace Floodplain Forest (Imperiled)
- Kettlehole Level Bog (Imperiled)
- Major-river Floodplain Forest (Imperiled)
- Red Maple – Black Ash – Bur Oak Swamp (Imperiled)
- Ridgetop Pitch Pine – Scrub Oak (Imperiled)
- Transitional Floodplain Forest (Imperiled)
- Yellow Oak Dry Calcareous Forest (Imperiled)

Other BioMap2 Components
- Aquatic Cores
- Forest Cores
- Landscape Blocks
- Upland Buffers of Aquatic Cores
- Upland Buffers of Wetland Cores
- Vernal Pool Cores
- Wetland Cores

Biodiversity Studies in Massachusetts and the Housatonic River Watershed

BioMap2 is a statewide biodiversity conservation plan produced in 2010 by MassWildlife's Natural Heritage & Endangered Species Program and The Nature Conservancy. It is designed to guide strategic biodiversity conservation in Massachusetts over the next decade by focusing land protection and stewardship on the areas that are most critical for ensuring the long-term persistence of rare and other native species and their habitats, Priority Natural Communities, and a diversity of ecosystems. BioMap2 is also designed to include the habitats and Species of Conservation Concern identified in the State Wildlife Action Plan (SWAP).

BioMap2 identifies two complementary spatial layers, Core Habitat and Critical Natural Landscape. Core Habitat identifies key areas that are critical for the long-term persistence of rare species and other Species of Conservation Concern, as well as a wide diversity of natural communities and intact ecosystems across the Commonwealth. Protection of Core Habitats will contribute to the conservation of specific elements of biodiversity. Critical Natural Landscape identifies large 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.

In 2008 and 2009, field surveys were carried out to improve knowledge of the region's biodiversity resources in towns in the Housatonic River watershed in western Massachusetts. During these surveys, coordinated by the Natural Heritage and Endangered Species Program (NHESP) with funds from the Natural Resources Damage Assessment and Restoration (NRD) Program, researchers collected important information about state-listed species and Priority Natural Communities of 19 towns in the region. Surveys were conducted by NHESP staff, expert consultants, academic researchers, and graduate students. Information on the surveys' findings was added to the NHESP database, combined with other NHESP data, and incorporated into Core Habitat of BioMap2. BioMap2 data layers, complete with these data and other information, are now available for use in conservation planning at the town, regional, and state levels.

amphibian species. In the Housatonic River itself, larvae of dragonflies like the Skillet and Spine-crowned Clubtails burrow in sandy substrate at the river bottom, while adults dwell in nearby riparian areas. The freshwater mussels Creeper and Triangle Floater also burrow in streambottom sediments where they feed by filtering algae and bacteria from water.

Higher elevation areas flank Sheffield's central valley to the east and west. In the northeastern part of town are the slopes of East Mountain, which contain the headwaters of Ironwork Brook and Soda Creek. East Mountain is near the southern extent of the mountainous Berkshire Hills region, which runs from Vermont to Connecticut just east of the Taconic Mountains. In western Sheffield, along the town boundary with Mount Washington and Egremont, are the higher mountains of the Taconic Range, including Mount Everett and Mount Race; small parts of Mount Everett State Reservation fall within Sheffield and contain headwaters of Race Brook and Bear Rock Stream. These highland areas near Sheffield's perimeters support fewer state-listed species and Priority Natural Communities than the town's central valley. Still, they provide important habitat for species like the Jefferson, Four-toed, and Spring Salamanders. They also include large areas of intact forest habitat, and support state-listed plant species like Michaux's Sandwort and Red Mulberry. One other particularly notable upland habitat occurs along the border with Connecticut to the south: Bartholomew's Cobble. The low, calcareous hills of this site support a remarkably high number of plant species, including one of the most diverse assemblages of ferns in North America.

Sheffield's natural history has also shaped its human settlement patterns, farming and industrial activities over the years. Extensive agriculture, made possible by nutrient-rich soils along the Housatonic River, has been important to residents of the town's central valley since times before European settlement. Even today, Sheffield's agricultural land amounts to more than 5,500 acres – more than any other town in the Berkshires. For many years, the Housatonic River also powered sawmills, grist mills, and paper mills along the Housatonic River and its tributaries, particularly near Mill Pond and Ashley Falls. The town also contained limestone and marble quarries. Today this industrial activity has diminished, leaving Sheffield considerably less developed than nearby towns along the mainstem Housatonic River, such as Lee and Pittsfield.

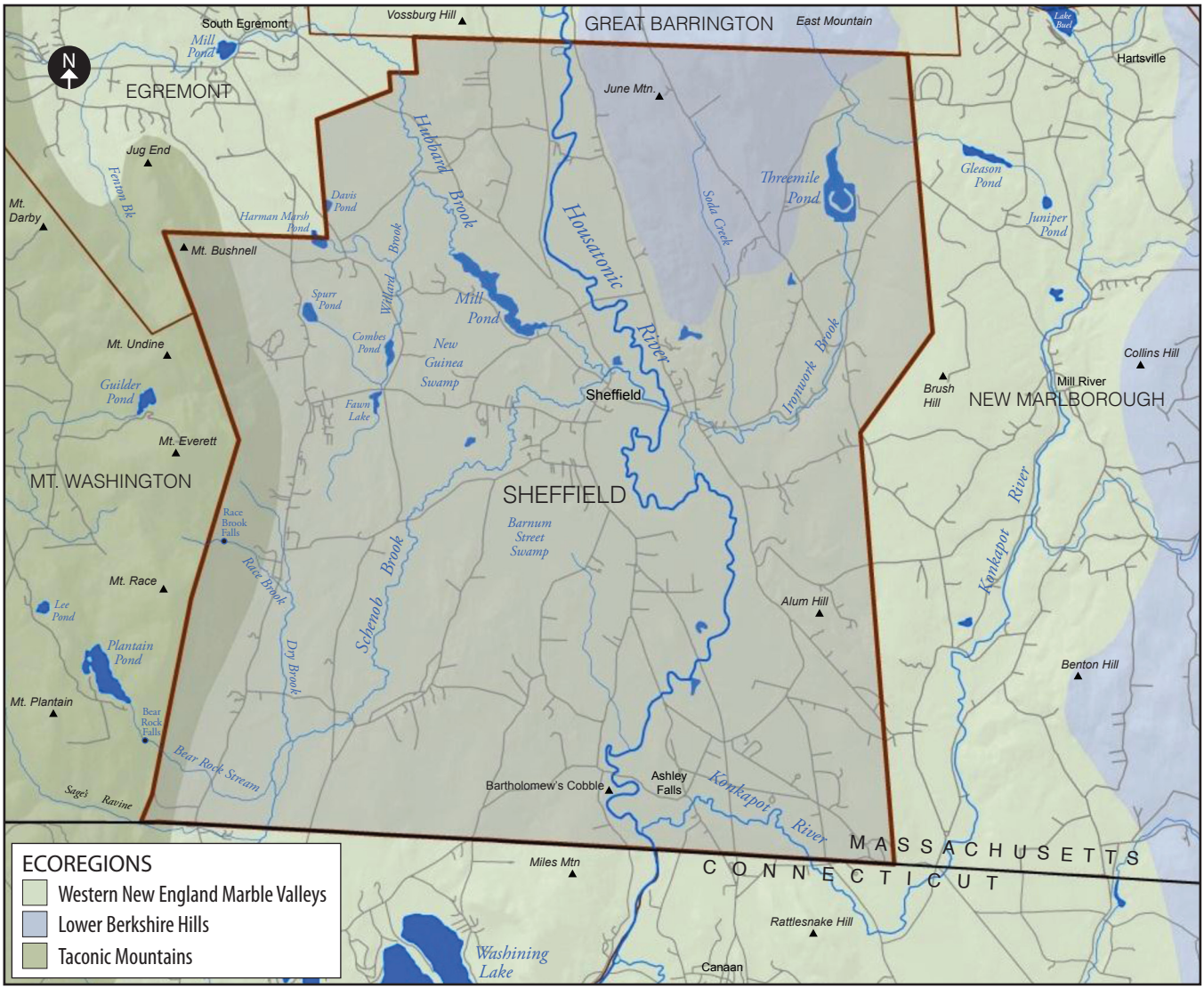


Figure 1. Sheffield is located mostly within the Western New England Marble Valleys ecoregion; however, East Mountain in northeast Sheffield is part of the Lower Berkshire Hills ecoregion, and the western edge of the town is part of the Taconic Mountains ecoregion. The town falls entirely within the Housatonic River watershed.

Intact natural ecosystems now support relatively undisturbed and highly diverse natural communities and species assemblages, particularly along the Housatonic River, its tributaries, and their floodplains.

BIODIVERSITY CONSERVATION TARGETS IN SHEFFIELD: CORE HABITAT, CRITICAL NATURAL LANDSCAPE, & PRIORITY CONSERVATION AREAS

Overview

In this section, we outline areas in Sheffield that are of exceptional biodiversity conservation value locally, regionally, and throughout the state. Components of the Natural Heritage & Endangered Species Program's (NHESP's) statewide BioMap2 project, which incorporates NHESP data and includes findings of studies funded by the Natural Resource Damages Assessment and Restoration Program (NRD) conducted in 2008 and 2009 as part of its Core Habitat and Critical Natural Landscape, were used to delineate and map these areas. The areas range in size from fewer than 10 to several thousand acres. Areas of Core Habitat, each called a BioMap2 Core (BC), and areas of Critical Natural Landscape (CNL), along with their associated components, are illustrated in Figure 2 and outlined in detail below. BioMap2 components described in this report are those that occur only in Sheffield, although a given area of Core Habitat or Critical Natural Landscape listed here may extend outside of the town boundaries of Sheffield and contain additional components.

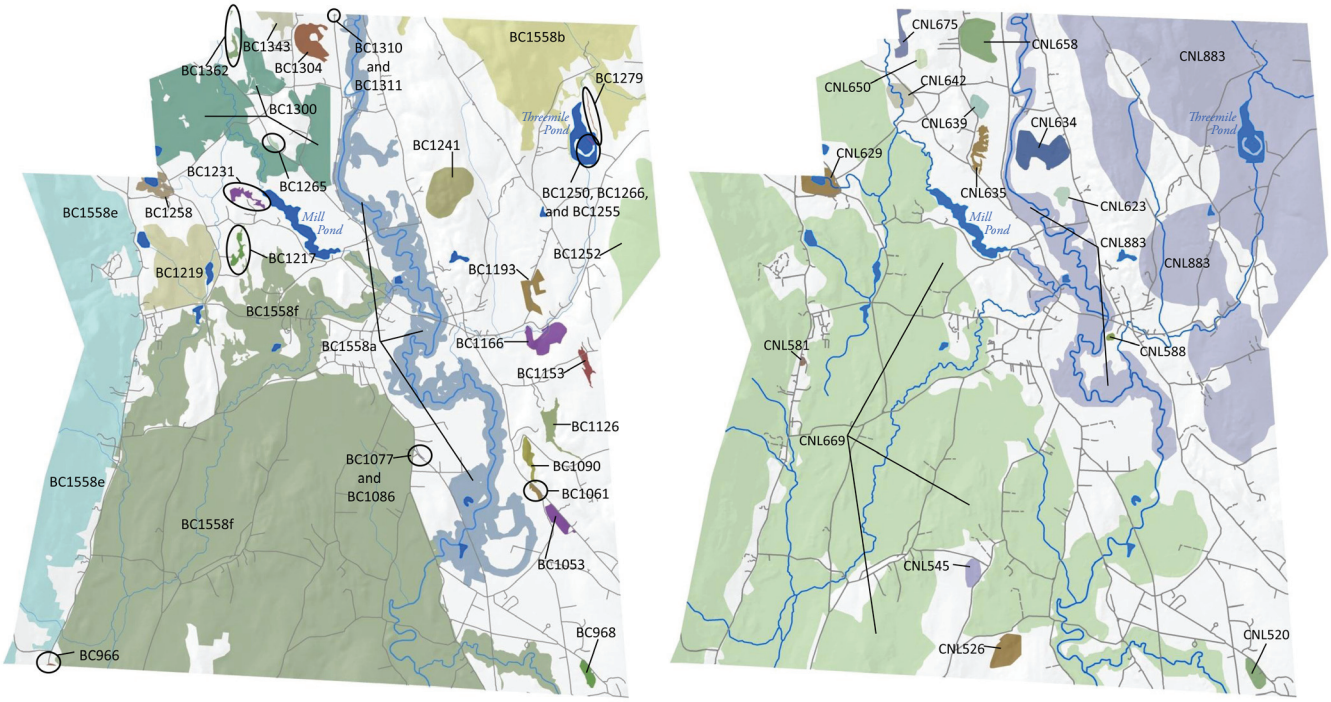


Figure 2. Sheffield includes 29 BioMap2 Cores (BCs; left) and 16 areas of Critical Natural Landscape (CNL; right). Overlap between these layers is shown in Figure 4.

To facilitate land protection and stewardship, NHESP further prioritized areas in each of the towns in the watershed using habitat size, habitat conditions, and other biodiversity indicators. Priority Conservation Areas (PCAs) were considered to be of high biodiversity value if they contained concentrations of state-listed species or Priority Natural Communities, or large areas of intact habitat. In each town, one to six Town PCAs were selected. Each Town PCA contains part of at least one BioMap2 Core. Sheffield contains five Town PCAs. Figure 4 illustrates how BioMap2 Core Habitat and Critical Natural Landscape relate to the distribution of Town PCAs in Sheffield.

A larger scale prioritization was also conducted to select Regional PCAs of the highest conservation and stewardship value among all towns in Massachusetts' portion of the Housatonic River watershed. Regional PCAs often cross town boundaries and are quite large, ranging from 373 acres to more than 25,000 acres. Ecological connectivity within these Regional PCAs is important to biodiversity conservation, and these large units often include select Town PCAs that are of particular biodiversity value to both the town and the region. In this way, biodiversity can be conserved at two scales: locally within each town and within a broader regional context. Sheffield is part of two Regional PCAs; within the town, one is along the Housatonic River, and the other along Schenob Brook and its floodplains.

Core Habitat and Critical Natural Landscape Components in Sheffield

Areas of Core Habitat in Sheffield, called BioMap2 Cores (BCs), are summarized here. Also described are the various components of each BC, which may include Species of Conservation Concern, Exemplary and Priority Natural Communities, or Aquatic, Forest, Vernal Pool, or Wetland Cores. Components of Critical Natural Landscape (CNL) associated with each BC are also provided. These include Upland Buffers of both Aquatic and Wetland Cores, as well as Landscape Blocks.

BC1053, BC1061, BC1077, BC1086, BC1090, BC1310, and BC1311 (no CNL); BC1193 & CNL883

Each of these eight small BCs (the largest is only 43 acres) located in eastern and central Sheffield contain various state-listed plant species. Most are independent of any CNL designation; only BC1193 is part of a Landscape Block of CNL883.

BC1126 and BC1153 (part of CNL883), and BC1217 and BC1231 (part of CNL669)

These four BCs, ranging from 15 to 40 acres, consist of moderate-size Wetland Cores and are surrounded by Upland Buffers in the Landscape Blocks of CNL883 and CNL669.

BC966 and CNL669

BC966 is a one-acre area just north of the Connecticut border, along and to the east of Route 41. Part of this BC is within a Landscape Block of CNL669. One salamander species is known to occur in this core:

Spring Salamander (*Gyrinophilus porphyriticus*), SWAP: Spring Salamanders inhabit clean, cold, high-gradient brooks and headwater seeps in forest habitat, usually at elevations above 300 feet. Larvae are entirely aquatic and largely nocturnal, spending daylight hours buried below the streambed or hidden under stones. Adults are semi-aquatic and spend most of their time under cover objects along the margins of brooks, springs, and seeps; however, they will venture into upland forest during rainy weather.

BC968 and CNL520

BC968 is a small core, just under 20 acres, and is located in southeastern Sheffield near the Connecticut line. It includes an Aquatic Core that contains a wetland complex. It is surrounded by forested land, but also falls near two roads in a low-density developed area. It is surrounded by a small Upland Buffer of CNL520.

BC968 includes two state-listed plants and one Priority Natural Community:

Pod-grass (*Scheuchzeria palustris*), Endangered: Pod-grass is a perennial grass-like plant that occurs in acidic bogs and other peatlands, often in open graminoid areas or areas of grass

Slender Cottongrass (*Eriophorum gracile*), Threatened: This peatland plant is a colonial, perennial sedge that requires open habitats but can tolerate a wide range of water chemistry.

Kettlehole Level Bog (Imperiled): This type of bog is an acidic, dwarf-shrub dominated peatland with little water input or outflow. It forms in circular depressions left by melting glacial ice blocks in sandy glacial outwash. The vegetation in Kettlehole Level Bogs usually grows in towards the center in concentric rings. In BC968, a large, well-developed example of this community supports several state-listed plant species. The bog grades into a small shrub swamp, and the entire wetland complex is somewhat buffered by natural vegetation.

BC1166 and CNL883

BC1166 occurs in a forested area in the east part of town on steep slopes, just south of County Road and Ironwork Brook. It lies within a large Landscape Block of CNL883. This BC includes two state-listed plant species:

Culver's-root (*Veronicastrum virginicum*), Threatened: This tall, showy, perennial herbaceous plant occurs in wet habitats, generally in open areas of calcareous regions.

Small Dropseed (*Sporobolus neglectus*), Endangered: Natural habitats of this grass include calcareous seeps, flat rock outcrops, riverside outcrops, and river shores. It is also occasionally found along roadsides and in other disturbed, open sites.

BC1219 and CNL669

BC1219 is north of Berkshire School Road between Gibberson Road and Route 41 in northwest Sheffield. The area is very rich in limestone and includes several habitats that, in Massachusetts, are restricted to southern Berkshire County. The hills here are limestone cobbles, or outcrops of calcareous bedrock, that support extremely uncommon habitats and natural communities. Some species that require high calcium availability in soil and water are relatively common only in such conditions. Some roads and residential areas are part of BC1219, however much of the area is forested and also supports the small stream outlet of Spurr Lake and associated wetlands. BC1219 occurs within a large Landscape Block of CNL669, and supports several Species of Conservation Concern, including four plant species and one salamander species, and three Priority Natural Communities.

Plants

Bur Oak (*Quercus macrocarpa*), Special Concern: This is a widespread tree species that reaches its eastern limit of its distribution in western Massachusetts, where it is restricted to wetlands near limestone hills or outcrops.

Hairy Agrimony (*Agrimonia pubescens*), Threatened: This is a perennial herbaceous plant that occurs at edges and openings on steep slopes, or on ledges within nutrient-rich, rocky woodlands, especially in areas with calcareous bedrock or soils.

Hairy Beardtongue (*Penstemon hirsutus*), Endangered: This is an erect, calciphilic, herbaceous plant that grows in dry, rocky forests with somewhat open canopies. It generally occurs in areas overlying calcareous bedrock.

Yellow Oak (*Quercus muehlenbergii*), Threatened: This is a Midwestern and southern tree species that occurs at the northeastern edge of its distribution in western MA, where it is primarily found on limestone cobbles.

Amphibians

Jefferson Salamander (*Ambystoma jeffersonianum*), Special Concern: This salamander breeds in vernal pools and fish-free areas of open water in marshes. The young hatch and develop in vernal pools where they are safe from predation, while adults spend most of their time in upland forest areas.

Priority Natural Communities

Calcareous Sloping Fen (Imperiled): This is an open, sedge-dominated wetland that occurs on slight to moderate slopes with calcareous groundwater seepage. Calcareous Sloping Fens are rare species "hot spots" and have many associated state-listed plants and animals. The small Calcareous Sloping Fen in BC1219 is surrounded by forests, but there are invasive species throughout the community itself and surrounding areas.

Red Maple – Black Ash – Bur Oak Swamp (Imperiled): This is a calcium-enriched (or circumneutral), forested wetland community. Trees are mostly deciduous. They grow on hummocks and form an almost continuous canopy over understory shrubs, and there is often a dense and diverse herbaceous layer. The 125-acre example in BC1219 occurs as large patches in wetlands between cobbles.

Yellow Oak Dry Calcareous Forest (Imperiled): This natural community usually occurs on well-drained slopes underlain by calcareous rocks. They are dry, often open oak and sugar maple dominated forests with rich understories. This example of Yellow Oak Dry Calcareous Forest has good species diversity, despite its moderate size of only four acres and the presence of invasive exotic species. It occurs as multiple patches in BC1219.

BC1241 (no CNL)

BC1241 is a 148-acre area in north-central Sheffield, high in the headwaters of Soda Creek. It contains a Vernal Pool Core, or area of clustered vernal pools and potential vernal pool habitat. Vernal pools provide important habitat for many sensitive species, including uncommon amphibians.

BC1252 and CNL883

BC1252 is 687 acres and falls on the boundary between Sheffield and New Marlborough; it is a relatively large area that lacks significant habitat fragmentation and constitutes a sizeable Forest Core. It also occurs within a Landscape Block of CNL883.

BC1250, BC1255, BC1266, BC1279 and CNL883

These small forested BCs, less than five acres each, are located in and around Threemile Pond. They include Wetland Cores (and BC1266 has an Aquatic Core), and all are surrounded by Upland Buffers within a Landscape Block of CNL883. Within these cores are two state-listed plant species and two Priority Natural Communities.

Bristly Buttercup (*Ranunculus pensylvanicus*), Special Concern: This herbaceous wetland plant grows in sunny to partly shaded edges and openings in floodplains. Because the site where it occurs is occasionally flooded, the population recedes and expands as the habitat changes.

Swamp Birch (*Betula pumila*), Endangered: This is a short shrub that grows in open and forested wetlands influenced by calcareous groundwater seepage. The population in these cores is quite vigorous and occurs with other bog dwelling species.

Priority Natural Communities

Calcareous Seepage Marsh (Imperiled): This Priority Natural Community type consists of marshy wetlands enriched by calcareous groundwater seepage. Of the three types of calcareous fen communities described in Massachusetts, Calcareous Seepage Marshes are intermediate in richness and in botanical rarities. This particular area is unusual in that it consists of three floating mats of vegetation in Three Mile Pond, which is underlain by calcareous bedrock. It comprises 11 acres, is in very good condition, and has an extensive buffer of natural vegetation.

Calcareous Pondshore/Lakeshore (Imperiled): These are sparsely vegetated communities found on exposed shores of calcareous ponds. They are saturated for a significant part of the year, and plants emerge during periods of low water. At nine acres in size, this particular occurrence is the largest example of Calcareous Pondshore/Lakeshore in Massachusetts. It is in relatively good condition despite the presence of an exotic invasive plant species.

BC1258 and CNL629

BC1258 falls on the boundary between Sheffield and Egremont; it is a small wetland area that lies within a larger area of agricultural lands. The wetland complex provides important habitat to a suite of marshbirds. It includes an Aquatic Core (47 acres) and is surrounded by an Upland Buffer of CNL629. BC1258 contains habitat for three state-listed marshbird species:

American Bittern (*Botaurus lentiginosus*), Endangered: This is a mottled brown, heron-like bird that feeds and nests primarily in large cattail, tussock, or shrub marshes. It is very sensitive to disturbance. Its coloring and particular behavior of pointing its bill skyward when threatened, sometimes swaying to mimic movement of grasses in the wind, allow it to be very well-camouflaged in marsh habitat.

Least Bittern (*Ixobrychus exilis*), Endangered: This is a small wading marshbird and member of the heron family. It has a long neck and bill, and a black crown. It typically nests in marshes with dense and tall vegetation, such as cattails, and in areas that are interspersed with open water. This species is very sensitive to habitat disturbances such as the encroachment of invasive marsh plants like Purple Loosestrife and Phragmites.

Common Moorhen (*Gallinula chloropus*), Special Concern: These are duck-like marshbirds that inhabit shallow freshwater marshes and typically nest in dense cattail beds adjacent to open water.

BC1558 (multiple CNLs)

BC1558 is one of the largest cores in the region, extending along the lower part of the Housatonic River mainstem in Great Barrington and Sheffield and including many tributary corridors and their sub-watersheds. It encompasses the rivers and streams themselves, as well as nearby uplands and floodplains. It also includes mountainous areas, such as East Mountain in Great Barrington and Sheffield. All of these areas are included as part of BC1558 because they are physically and ecologically connected; the particular ecological value of each part is enhanced by protection of their interconnections within the core. However, for ease of discussion, subdivisions were made within the very large core, resulting in six different sub-areas that are somewhat spatially and ecologically distinct. These areas are given letter sub-labels of BC1558a through BC1558f. Sheffield contains parts of BC1558a, BC1558b, BC1558e, and BC1558f, each of which is described in detail below.

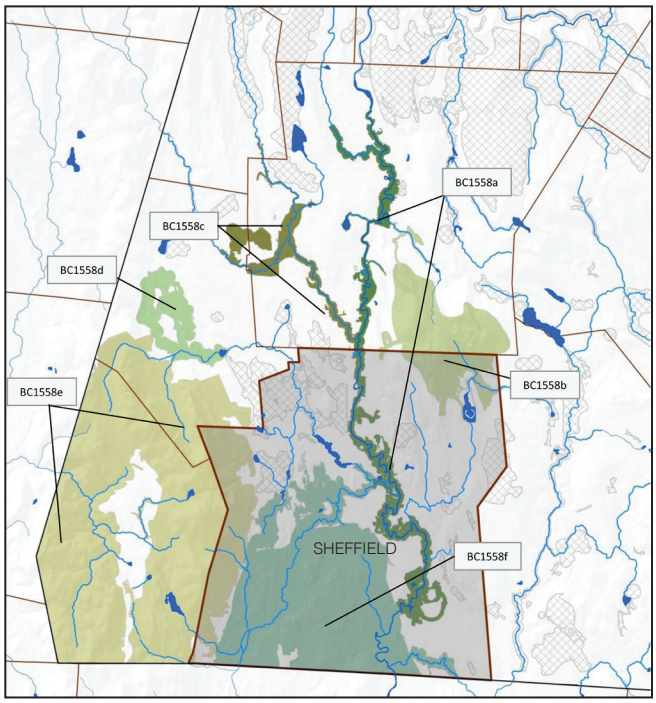


Figure 3. BC1558 is a large BioMap2 Core subdivided into six sub-areas (shown in color). The interconnections of the sub-areas are important, but each is somewhat spatially and ecologically distinct. Parts of four sub-areas (BC1558a, BC1558b, BC1558e, and BC1558f) fall partly within Sheffield. Other Core Habitat is depicted with grey hatching.

BC1558a (multiple CNLs)

This section of BC1558 contains areas of conservation importance in and near the Housatonic River mainstem in central Great Barrington and Sheffield. Most of it is surrounded by CNL883's Upland Buffer. Much of the Housatonic River here, along with its floodplains and immediate uplands, is delineated as BioMap2 Aquatic Core and supports many state-listed species. This wealth of diversity in the heart of Massachusetts' Housatonic River Valley is of significant value to the town of Sheffield, the region, and the state. This core contains many specialist river species, such as the freshwater mussels Creeper (*Strophitus undulata*) and Triangle Floater (*Alasmidonta undulata*), and the fish Longnose Sucker (*Catostomus catostomus*). It also includes uncommon plant species such as Wapato (*Sagittaria cuneata*) and Davis's Sedge (*Carex davisii*), which are often limited to moist alluvial soils of river floodplains, as well as more common species such as Frank's Lovegrass (*Eragrostis frankii*). Areas of highest species and habitat diversity within BC1558a typically occur along shores that are the least disturbed by human activities, have little impact from pollution or siltation, lie within a riparian buffer, and have the fewest invasive species. BC1558a includes many state-listed plant and animal species, as well as Priority Natural Communities.

Plants

Black Maple (*Acer nigrum*), Special Concern: This tree can grow to about 130 feet tall and has dark bark. It grows best in rich, moist soils.

Bristly Buttercup (*Ranunculus pensylvanicus*), Special Concern: This is an herbaceous wetland plant growing in sunny to partly-shaded edges and openings in floodplains.

Cat-tail Sedge (*Carex typhina*), Threatened: This is a perennial grass-like plant that grows in low areas of floodplain forests.

Culver's-root (*Veronicastrum virginicum*), Threatened: This is a tall, showy herbaceous plant that occurs in mesic to wet, generally open habitats in calcareous regions.

Davis's Sedge (*Carex davisii*), Endangered: This is a disturbance-adapted, grass-like perennial that occurs in floodplain forests with non-acidic soils.

Foxtail Sedge (*Carex alopecoidea*), Threatened: A very small population of this plant occurs along the river. In Massachusetts, Foxtail Sedge is typically found with other sedges, grasses, and herbs in open swales within floodplain forests.

Frank's Lovegrass (*Eragrostis frankii*), Special Concern: This species is an annual grass that grows in open sandy and silty riverbars and rivershores. In Massachusetts, it is found only along the Housatonic and Connecticut Rivers. In BC1558a, moderate populations of Frank's

Lovegrass grow with invasive exotic species in relatively intact landscapes, as well as in more disturbed locations in an agricultural landscape. One occurrence is the largest ever observed in the state.

Giant St. John's-wort (*Hypericum ascyron*), Endangered: This is a large, stout, perennial herbaceous plant that occurs in a variety of habitat types near flowing water.

Gray's Sedge (*Carex grayi*), Threatened: This is a perennial grass-like sedge that occurs in floodplain forests with calcareous or neutral soils.

Green Dragon (*Arisaema dracontium*), Threatened: This herbaceous plant grows in floodplain woodlands with open to filtered light, and occurs at moist alluvial sites that experience annual flooding. It is usually restricted to the lowlands along large rivers. Several populations of this herbaceous species grow in BC1558a, but are found amidst invasive species in disturbed floodplain forests within a fragmented landscape.

Intermediate Spike-sedge (*Eleocharis intermedia*), Threatened: In Massachusetts, this grass-like sedge is found on muddy, alkaline riverbanks and pondshores, usually visible during periods of low water when mud is exposed. BC1558a includes several populations that co-occur with abundant invasives in a fragmented landscape.

Long-styled Sanicle (*Sanicula odorata*), Threatened: This species is an herbaceous perennial plant that occurs in small openings, in shade or filtered light, on rich, mesic substrate. Such conditions are often found on floodplain terraces like those along the Housatonic River.

Narrow-leaved Spring Beauty (*Claytonia virginica*), Endangered: This is a short wildflower that is found primarily in rich forests along rivers, particularly on alluvial terraces. It is also found along streamside lowlands.

Purple Cress (*Cardamine douglassii*), Endangered: This is a perennial mustard that grows as a spring ephemeral in deciduous woodlands, living for only a few short weeks each year. It generally occurs on rich floodplains or along the upland edges of calcareous swamps.

Small Dropseed (*Sporobolus neglectus*), Endangered: This is an annual grass that grows in calcareous seeps and on flat rock outcrops, riverside outcrops, and river shores. It is also found occasionally along roadsides and in other open areas.

Tiny Cow-lily (*Nuphar microphylla*), Endangered: This is a perennial aquatic plant with floating leaves. It typically grows in shallow, non-acidic waters of ponds, and in slow-moving rivers.

Tuckerman's Sedge (*Carex tuckermanii*), Endangered: This is a perennial grass-like plant that grows in rich soils of oxbows and other depressions of river floodplains.

Wapato (*Sagittaria cuneata*), Threatened: This is an aquatic, herbaceous perennial plant found primarily in riverine floodplain habitats such as alkaline backwaters, oxbow ponds, and small shallow depressions with muddy substrates. Wapato particularly favors stagnant or very slow-moving water.

Insects

Arrow Clubtail (*Stylurus spiniceps*), Threatened: This dragonfly is part of the diverse Gomphidae family. Nymphs, or larvae, are aquatic and live on bottoms of swift-flowing, sandy rivers (as well as some lakes), while adults are terrestrial and inhabit riparian and upland areas.

Brook Snaketail (*Ophiogomphus asperses*), Special Concern: Aquatic larvae of this dragonfly species can be found in clear, sand-bottomed streams that contain intermittent rapids and often flow through dense woodlands. Adults dwell in nearby uplands.

Ostrich Fern Borer Moth (*Papaipema* sp. 2 nr. *pterisii*), Special Concern: One population of Ostrich Fern Borer Moth is found along this section of the river. This moth species inhabits floodplain forests with abundant stands of Ostrich Fern, upon which its larvae feed.

Spine-crowned Clubtail (*Gomphus abbreviates*), Endangered: A population of this dragonfly species occurs in one stretch of the river, at a site with fair landscape context. Spine-crowned Clubtails inhabit medium to large rivers with silty and sandy bottoms. The nymphs are aquatic and burrow just under the sediment of the river bottom.

Skillet Clubtail (*Gomphus ventricosus*), Special Concern: Larvae of this dragonfly species are aquatic, living in the sandy bottoms of various-sized rivers. While potential habitat for the Skillet Clubtail is present throughout BC1558a, it is found in only select areas.

Zebra Clubtail (*Stylurus scudderi*), Special Concern: This dragonfly species inhabits lakes or mid-sized forested streams that are sandy-bottomed and feature slow to moderate stream flows with intermittent rapids. Its larvae are aquatic and live on stream bottoms, while adults are terrestrial and inhabit nearby uplands.

Freshwater molluscs

Triangle Floater (*Alasmidonta undulata*), Special Concern: This freshwater mussel is commonly found in low-gradient river reaches that have sand and gravel substrates and low to moderate water velocities, although it can occupy habitats with a variety of substrate and flow types. No young animals were found in this moderate-sized population, indicating reproduction may be limited.

Creeper (*Strophitus undulatus*), Special Concern: Although this species of freshwater mussel has been found at multiple survey sites in these sections of the river, overall abundance is low and most animals are old, indicating reproduction may be limited.

Amphibians

Northern Leopard Frog (*Rana pipiens*), SWAP: Adult North-

ern Leopard Frogs are found in marshes, wet meadows, and peatlands in the narrow band between open water and uplands. They retreat to the water of ponds and small streams when threatened. The herbivorous tadpoles require open water of sufficient permanence for their development. The Housatonic River watershed probably has the best habitat in the state for this species.

Reptiles

Wood Turtle (*Glyptemys insculpta*), Special Concern: This is a medium-sized turtle with a sculpted upper shell and orange coloration on its feet and neck. Ideal habitat for this species includes streams and rivers with long corridors of undeveloped, connected uplands

Fish

Longnose Sucker (*Catostomus catostomus*), Special Concern: This species is a torpedo-shaped fish, with a snout extending beyond its downturned mouth. It is typically found in cool, lower order streams and rivers with rocky substrates. These fish rely on clean and well-oxygenated gravel substrates to rear their eggs. In Massachusetts, they are found only in the western part of the state.

Birds

Bald Eagle (*Haliaeetus leucocephalus*), Endangered: This well-known bird of prey nests in tall trees along the large lakes and rivers. The bulk of their diet consists of fish. Large lakes and rivers also support important winter congregations of Bald Eagles.

Priority Natural Communities

High-terrace Floodplain Forest (Imperiled): This community type is a deciduous hardwood forest that occurs along riverbanks above the zone of annual flooding. Although it does not flood every year, flooding is frequent enough to moderately enrich soils with deposited nutrients. There are several patches of this community in Sheffield, totaling 12 acres: one moderate-sized occurrence has good species diversity and relatively few invasive plants, and is adjacent to an area of Major-river Floodplain Forest. Other patches are remnants of a community that was likely larger and more continuous at one time. This area now occurs near agricultural fields and a highway and contains abundant invasives.

Major-river Floodplain Forest (Imperiled): This Priority Natural Community is dominated by Silver Maple and found along the floodplains of large rivers. The soils are enriched with nutrients brought by annual floods, resulting in a diversity of plants and insects. Forty-six acres of this community type occur in four major patches along the Housatonic River in Sheffield. One moderate-size patch occurs on protected conservation land adjacent to forested land. Although some invasive species are present in these patches, native diversity is good and a natural flow regime results in periodic flooding. A second example of this community is of good size and condition, and is one of the few large remaining occurrences of floodplain forest along the Housatonic River.

Transitional Floodplain Forest (Imperiled): This is a riverside community type with a tree canopy composed primarily of Silver Maple, Green Ash, and American Elm. Transitional Floodplain Forests experience annual floods, but of the three floodplain forest types they are intermediate, with less recurrent flooding than Major-river Floodplain Forests and more frequent flooding than Small-river Floodplain Forests.

BC1558b and CNL883

BC1558b comprises much of East Mountain, including the headwaters of tributaries that flow northwest to the Housatonic River in Great Barrington, and those that flow south toward Ironworks Brook and the Konkapot River in Sheffield. This section of BC1558 incorporates over 2,000 acres of Forest Core, and includes smaller areas of Wetland Core and associated Upland Buffers, mostly in Great Barrington. Most of BC1558b is part of CNL883's very large Landscape Block. BC1558b incorporates the northeast corner of Sheffield, covering nearly 800 acres of Forest Core within the town. Much of this area is included within East Mountain State Forest and the Three Mile Pond Wildlife Management Area. A south-central portion of BC1558b includes an area of Aquatic Core and Upland Buffer along a small tributary just west of Three Mile Pond. Wetland Cores also occur within BC1558b; they are located in the vicinity of the Aquatic Core and Upland Buffer, as well as in a large area (165 acres) to the northeast of Three Mile Pond. All occur within a Landscape Block of CNL883. BC1558a includes one state-listed plant species, two uncommon salamanders, and two Exemplary Natural Communities:

Plants

Bristly Buttercup (*Ranunculus pensylvanicus*), Special Concern: This is an herbaceous wetland plant that grows in sunny to partly shaded edges of and openings within floodplain forests.

Amphibians

Jefferson Salamander (*Ambystoma jeffersonianum*), Special Concern: This salamander inhabits upland forests during most of the year, where it resides in small-mammal burrows and other subsurface retreats. Adults migrate during late winter or early spring to breed in vernal pools and fish-free areas of swamps, marshes, or similar wetlands. Larvae metamorphose in late summer or early fall, then disperse into upland forest.

Spring Salamander (*Gyrinophilus porphyriticus*), SWAP: Spring Salamander adults inhabit clean, cold, high-gradient

brooks and headwater seeps in forest habitat, usually at elevations above 300 feet. Larvae are entirely aquatic and largely nocturnal, spending daylight hours buried below the streambed or hidden under stones. Adults are semi-aquatic and spend most of their time under cover objects along the margins of brooks, springs, and seeps; however, they will venture into upland forest during rainy weather.

Exemplary Natural Communities

Northern Hardwoods – Hemlock – White Pine Forest (Secure): This common natural community type has a mix of evergreen and deciduous trees, with a closed, full canopy, and sparse shrub and herbaceous layers. It commonly occurs on north-facing slopes and ravines with moderately acidic soils. The example in BC1558b is quite large, occupying 960 acres, and is in excellent condition. It has good species and habitat diversity and is embedded within a large area without roads that is naturally vegetated.

Hemlock – Hardwood Swamp (Secure)

This widespread natural community type is an acidic forested swamp with Hemlock as a dominant tree canopy species. It occurs on saturated soils in poorly drained basins throughout the state. This example of Hemlock – Hardwood Swamp encompasses 29 acres, is in good condition, and occurs within a large, naturally vegetated landscape along East Mountain.

BC1558f (multiple CNLs)

BC1558f includes nearly 10,000 acres in south-central and southwest Sheffield. It includes much of the watershed of upper Schenob and Willard Brooks, as well as riparian areas and select wetland and floodplain areas along lower reaches of Schenob Brook in the central part of town. BC1558f also incorporates areas that drain directly to the Housatonic River in south-central Sheffield, particularly from the west side of the river. Geology of this area is dominated by underlying calcareous bedrock, which supports an extensive network of nutrient-rich marshes and waterways in the lowlands. Many state-listed plant and animal species are associated with these wetlands. At slightly higher elevations, in places like Bartholomew's Cobble, calcium-rich soils support a unique assemblage of upland plants and animals. BC1558f includes many areas of Aquatic and Wetland Cores and associated Upland Buffers. Over 30 Species of Conservation Concern and Priority Natural Communities are found in this core.

Plants

Andrew's Bottle Gentian (*Gentiana andrewsii*), Endangered: This tall perennial herbaceous plant with showy flowers occurs adjacent to wetlands in relatively moist habitats that are not entirely inundated. It is a member of the gentian family (Gentianaceae), and has vibrant blue-violet flowers that bloom in late summer to early autumn.

Arborvitae (*Thuja occidentalis*), Endangered: This tree is a medium-sized conifer that grows in or near calcium-rich wetlands.

Autumn Coralroot (*Corallorhiza odontorhiza*), Special Concern: This perennial orchid occurs in dry to vernally wet deciduous or mixed woods that are open with little herbaceous cover. It is usually found at the bottom of slopes.

Black Maple (*Acer nigrum*), Special Concern: This tree can grow to about 130 feet tall and has dark bark. It grows best in rich, moist soils.

Bristly Buttercup (*Ranunculus pensylvanicus*), Special Concern: This is an herbaceous wetland plant that grows in sunny to partly shaded edges and openings of floodplain forests.

Bur Oak (*Quercus macrocarpa*), Special Concern: This broadly distributed tree reaches the eastern limit of its distribution in western Massachusetts, where it is generally restricted to wetlands near limestone hills or outcrops.

Bush's Sedge (*Carex bushii*), Endangered: This is a slender, grass-like perennial that occurs in wet to dry open meadows or fields. It seems to benefit from grazing or mowing.

Canadian Sanicle (*Sanicula canadensis*), Threatened: This is a perennial herbaceous plant found in a variety of deciduous forest types, usually occurring on slopes with moist soils in stream valleys or along the edges of lakes.

Davis's Sedge (*Carex davisii*), Endangered: This is a disturbance-adapted, grass-like perennial that occurs in floodplain forests with non-acidic soils.

Dioecious Sedge (*Carex sterilis*), Threatened: This slender, grass-like perennial is restricted to open calcareous wetlands.

Drooping Speargrass (*Poa saltuensis* ssp. *languida*), Endangered: This grass inhabits dry, rocky, fertile soils derived from base-rich bedrock such as basalt, marble, or limestone. It typically occurs on slopes and ridge crests within deciduous forests and woodlands.

Dwarf Scouring-rush (*Equisetum scirpoides*), Special Concern: This perennial, evergreen fern-ally grows in a variety of cool, usually wet habitats, including hummocks in swamps, moist stream banks, and areas under conifers containing groundwater seeps.

Fen Cuckoo Flower (*Cardamine pratensis* var. *palustris*), Threatened: This species is a perennial herbaceous plant of calcium-rich seepage swamps.

Fen Sedge (*Carex tetanica*), Special Concern: This narrow-leaved perennial sedge grows in open calcareous fens.

Fogg's Goosefoot (*Chenopodium foggii*), Endangered: This inconspicuous herbaceous plant is an annual that oc-

curs on calcareous rock outcrops, cliff bases, and along sparsely wooded slopes.

Foxtail Sedge (*Carex alopecoidea*), Threatened: In Massachusetts, Foxtail Sedge typically grows with other sedges, as well as grasses and herbs, in open swales within floodplain forests.

Frank's Lovegrass (*Eragrostis frankii*), Special Concern: This is an annual grass that grows in open sandy and silty riverbars and rivershores. In Massachusetts, it is found only along the Housatonic and Connecticut Rivers.

Giant St. John's-wort (*Hypericum ascyron*), Endangered: This is a large, stout, perennial herbaceous plant that occurs in a variety of habitat types near flowing water.

Gray's Sedge (*Carex grayi*), Threatened: This is a perennial grass-like sedge that occurs in floodplain forests with calcareous or neutral soils.

Great Blue Lobelia (*Lobelia siphilitica*), Endangered: This tall perennial plant with showy flowers occurs in open circumneutral wetlands.

Hairy Agrimony (*Agrimonia pubescens*), Threatened: This is a perennial herbaceous plant occurs at forest edges and openings, typically on steep slopes or ledges where soils are rocky and rich in nutrients, particularly calcium.

Hairy Beardtongue (*Penstemon hirsutus*), Endangered: This species is an erect, calciphilic, herbaceous perennial plant that grows in dry, rocky forests with somewhat open canopies. It generally occurs in areas overlying calcareous bedrock.

Hairy Wild Rye (*Elymus villosus*), Endangered: In Massachusetts, this grass inhabits high-terrace floodplain forests with moist alluvial soils. It also occurs in rich, rocky, and open woods and thickets, in soils ranging from dry to wet.

Hemlock Parsley (*Conioselinum chinense*), Special Concern: Hemlock Parsley is a perennial herbaceous plant of forested swamps with sparse canopy cover. It generally grows in enriched soils overlying calcareous bedrock.

Hitchcock's Sedge (*Carex hitchcockiana*), Special Concern: This perennial woodland sedge occurs on or at the base of slopes in Rich, Mesic Forests.

Intermediate Spike-sedge (*Eleocharis intermedia*), Threatened: This densely-tufted, grass-like annual is found on muddy, alkaline riverbanks and pondshores, usually visible during periods of low water when mud is exposed.

Long-styled Sanicle (*Sanicula odorata*), Threatened: This is an herbaceous perennial plant that occurs in small openings in shade or filtered light, on rich, mesic substrate such as on floodplain terraces.

Michaux's Sandwort (*Minuartia michauxii*), Threatened: This perennial herbaceous plant grows on thin, dry soils of open summits, ledges, and outcrops of limestone, sandstone, or traprock.

Narrow-leaved Spring Beauty (*Claytonia virginica*), Endangered: This delicate spring wildflower typically grows in nutrient-rich, forested upper terraces of floodplains.

Northern Bedstraw (*Galium boreale*), Endangered: This perennial herbaceous plant occurs in open, non-acidic sedge-grass meadows and fens.

Purple Cress (*Cardamine douglasii*), Endangered: This is a perennial mustard that grows as a spring ephemeral in deciduous woodlands, living for only a few short weeks each year. It generally occurs on rich floodplains or along the upland edges of calcareous swamps.

Sessile Water-speedwell (*Veronica catenata*), Endangered: This perennial herbaceous plant grows along edges of alkaline to circumneutral swamps, wet meadows, and slow-flowing streams that are associated with springs.

Shining Wedgegrass (*Sphenopholis nitida*), Threatened: Shining Wedgegrass inhabits dry, rocky, fertile soils derived from base-rich bedrock such as basalt and marble. It typically occurs on steep upper slopes and ridge crests in deciduous forests.

Small Dropseed (*Sporobolus neglectus*), Endangered: Natural habitats of this grass include calcareous seeps, flat rock outcrops, riverside outcrops, and river shores. It is also occasionally found along roadsides and in other disturbed, open sites.

Small-flowered Agrimony (*Agrimonia parviflora*), Endangered: This plant inhabits open, flat, and moist meadows and shallow marshes on rich alluvial soils around streams and small rivers.

Smooth Rock-cress (*Boechera laevigata*), Threatened: This plant is a perennial herbaceous mustard of rocky woods, floodplains, and thickets.

Swamp Birch (*Betula pumila*), Endangered: This short shrub grows in open and forested wetlands that are influenced by calcareous groundwater seepage.

Sweet Coltsfoot (*Petasites frigidus* var. *palmatus*), Endangered: This is a perennial herbaceous plant that occurs in swampy, non-acidic forests with cold groundwater seepage.

Tiny Cow-lily (*Nuphar microphylla*), Endangered: This is a perennial aquatic plant with floating leaves. It typically grows in shallow, non-acidic waters of ponds, and in slow-moving rivers.

Tuckerman's Sedge (*Carex tuckermanii*), Endangered: This is perennial grass-like plant that grows in the rich soils of oxbows and other depressions along river floodplains.

Wapato (*Sagittaria cuneata*), Threatened: This is an aquatic, herbaceous perennial plant found primarily in riverine floodplain habitats such as alkaline backwaters, oxbow ponds, and small shallow depressions with muddy substrates. Wapato particularly favors stagnant or very slow-moving water.

Weft Bristle-fern (*Trichomanes intricatum*), Endangered: This fern lives only in the gametophyte phase of the fern life cycle, never producing a sporophyte, the leafy spore-producing phase that is most familiar to us. Consequently, it is small and made of dense entangled filaments that resemble steel wool. It grows in moist, deeply-shaded crevices in rocky substrates

Yellow Oak (*Quercus muehlenbergii*), Threatened: This oak is a Midwestern and southern tree species at the northeastern edge of its distribution in western Massachusetts, where it typically occurs in upland areas with underlying calcareous geology.

Amphipods

Northern Spring Amphipod (*Gammarus pseudolimnaeus*), Special Concern: This small freshwater crustacean is found in vegetated, calcium-rich springs and spring-fed streams. Individuals tend to aggregate in large numbers and remain hidden in organic debris and aquatic vegetation. The population of this species in southwestern Massachusetts is the only population known to occur in New England, perhaps a relict of the last glaciation.

Insects

Arrow Clubtail (*Stylurus spiniceps*), Threatened: This dragonfly is part of the diverse Gomphidae family. Nymphs, or larvae, are aquatic and live on bottoms of swift-flowing, sandy rivers and some lakes, while adults are terrestrial and inhabit riparian and upland areas.

Brook Snaketail (*Ophiogomphus asperses*), Special Concern: Aquatic larvae of this dragonfly species can be found in clear, sand-bottomed streams that contain intermittent rapids and often flow through dense woodlands. Adults dwell in nearby uplands.

Dion Skipper (*Euphyes dion*), Threatened: In Massachusetts, this butterfly typically inhabits sedge wetlands, as their larvae feed on sedges (plants of the genus *Carex*).

Ostrich Fern Borer Moth (*Papaipema* sp. 2 nr. *pterisii*), Special Concern: Ostrich Fern Borer Moth inhabits floodplain forests that have abundant Ostrich Fern needed to sustain its larvae, which feed on this plant.

Skillet Clubtail (*Gomphus ventricosus*), Special Concern: Larvae of this dragonfly species are aquatic, living in the sandy bottoms of rivers of various sizes.

Zebra Clubtail (*Stylurus scudderi*), Special Concern: This dragonfly species inhabits lakes or mid-sized forested streams that are sandy-bottomed and have slow to moderate stream flows with intermittent rapids. Its larvae are aquatic and live on stream bottoms, while adults are terrestrial and inhabit nearby uplands.

Freshwater molluscs

Creeper (*Strophitus undulatus*), Special Concern: Although this species of freshwater mussel has been found at multiple survey sites in these sections of the river, abundance is low and most animals are old, indicating reproduction may be limited.

Triangle Floater (*Alasmidonta undulata*), Special Concern: This freshwater mussel species is commonly found in low-gradient river reaches with sand and gravel substrates and low to moderate water velocities, although it can occupy habitats with a variety of substrate and flow types.

Snails

Slender Walker (*Pomatiopsis lapidaria*), Endangered: This snail lives on vegetation in moist areas along slow-flowing, calcareous brooks. Areas of suitable habitat are typically well-protected from direct sunlight.

Fish

Bridle Shiner (*Notropis bifrenatus*), Special Concern: The Bridle Shiner is a small, straw-colored minnow with a distinct dark lateral band that runs from the tip of the snout to the base of the tail. It is typically found in clear water in slack areas of streams and rivers, as well as in lakes and ponds, and is sensitive to turbidity, invasive plant species, and severe changes in flow regime. This fish is generally associated with submerged aquatic vegetation, but it also uses areas of open water to school.

Reptiles

Eastern Box Turtle (*Terrapene carolina*), Special Concern: This is a terrestrial turtle, inhabiting a variety of both dry and moist woodland habitats.

Wood Turtle (Glyptemys insculpta), Special Concern: This medium-sized turtle can be recognized by its sculpted shell and the orange coloration on its legs and neck. It is widespread in Massachusetts, and its habitat includes mid-sized, slow moving streams and rivers, generally with long corridors of undeveloped and connected uplands. They are active from March to October, and hibernate during the winter in muddy banks, stream bottoms, woody debris, or abandoned muskrat burrows.

Eastern Ribbon Snake (*Thamnophis sauritus sauritus*), SWAP: This slender, striped snake species occurs in wetlands and along edges of open water. It is an adept swimmer, and generally feeds on amphibians, particularly frogs, as well as some fish and insects.

Amphibians

Jefferson Salamander (*Ambystoma jeffersonianum*), Special Concern: Adult and juvenile Jefferson Salamanders inhabit upland forest during most of the year, where they reside in small-mammal burrows and other subsurface retreats. Adults migrate during late winter or early spring to breed in vernal pools and fish-free areas of swamps, marshes, or similar wetlands. Larvae metamorphose in late summer or early fall, whereupon they disperse into upland forest. BC1558f provides excellent habitat for several breeding populations of this salamander.

Northern Leopard Frog (*Rana pipiens*), SWAP: Adult Northern Leopard Frogs are found in marshes, wet meadows, and peatlands at the interface between open water and uplands; they retreat to the water of ponds and small streams when threatened. The herbivorous tadpoles require open water of some permanence for development.

Birds

American Bittern (*Botaurus lentiginosus*), Endangered: This species is a mottled brown heron-like bird that feeds and nests primarily in large cattail, tussock or shrub marshes, and is very sensitive to disturbance. Its coloring and unique behavior of pointing its bill skyward when threatened, sometimes swaying to mimic movement of grasses in the wind, allow it to be well-camouflaged in marsh habitat.

Bald Eagle (*Haliaeetus leucocephalus*), Endangered: This well-known bird of prey nests in tall trees along the large lakes and rivers. The bulk of their diet consists of fish. Large lakes and rivers also support important winter congregations of Bald Eagles.

Exemplary Natural Communities

Acidic Rocky Summit/Rock Outcrop (Secure): This common natural community consists of shrubs, scattered grasses, mosses, lichens, and occasional trees, and is found on exposed rocky summits. It is typically dry with little soil, and can often be found as patches within other ridgetop communities. This small example of Acidic Rocky Summit/Rock Outcrop is exemplary for its type; it is in very good condition with little evidence of human disturbance, it is associated with state-listed plant species, and it occurs within a diverse mosaic of other natural community types.

Priority Natural Communities

Black Ash – Red Maple – Tamarack Calcareous Seepage Swamp (Imperiled): This forested swamp community occurs in areas with calcium-rich groundwater seepage. It has a mix of deciduous and conifer trees and supports many state-listed calcium-loving plant species. Several examples are found in BC1558f. Most are in good condition and are well buffered by large, naturally-vegetated areas.

Calcareous Rock Cliff (Vulnerable): This community supports highly specialized plants and ferns that grow in cracks and ledges in the calcium-rich cliff face. This community type has more species diversity than Acidic Rock Cliffs. The example of Calcareous Rock Cliff in BC1558f is a small area (one acre) along lower Schenob Brook; however, it is in good condition, and densely vegetated with a diverse assemblage of plant species. Other community types – both Priority Natural Communities and more common ones – are located nearby.

Yellow Oak Dry Calcareous Forest (Imperiled): This Priority Natural Community type usually occurs on dry, well-drained slopes with underlying calcareous bedrock. It typically has an open canopy of oak and sugar maple, with a diverse understory. This small, 4-acre Yellow Oak Dry Calcareous Forest is in good condition, has few invasives, and shows very good regeneration of forest species. Despite its relatively small size, this occurrence is probably the best of its type in Massachusetts.

BC1558e and CNL669

BC1558e includes the eastern slopes of Mount Everett between Route 41 and the Sheffield town line. Part of this area is well-protected by a mix of land ownerships. Much of BC1558e is designated as Forest Core, and is the largest Forest Core area in Sheffield overall, at 1,320 acres. BC1558e includes three areas of Aquatic Core and is surounded by Upland Buffer of CNL669 that encompasses three headwater streams: Dry Brook, Race Brook, and Bear Rock Stream. BC1558e includes many Species of Conservation Concern and both Priority and Exemplary Natural Communities:

Plants

Autumn Coralroot (*Corallorhiza odontorhiza)*, Special Concern: This perennial orchid occurs in dry to vernally wet deciduous or mixed woods that are open with little herbaceous cover. It is usually found at the bottom of slopes.

Canadian Sanicle (*Sanicula canadensis*), Threatened: This is a perennial herbaceous plant found in a variety of deciduous forest types, usually occurring on slopes with moist soils in stream valleys or along the edges of lakes.

Hairy Agrimony (*Agrimonia pubescens*), Threatened: This is a perennial herbaceous plant that occurs at edges and openings on steep slopes, or on ledges within nutrient-rich, rocky woodlands, especially in areas with calcareous bedrock or soils.

Lyre-leaved Rock-Cress (*Arabidopsis lyrata*), Endangered: This small herbaceous perennial inhabits thin soils and crevices of calcareous rocky cliffs, outcrops, and ledges, in full to filtered sun.

Michaux's Sandwort (*Minuartia michauxii*), Threatened: This perennial herb grow on thin, dry soils of open ledges and outcrops of limestone, sandstone, or traprock.

Mountain Winterberry (*Ilex montana*), Endangered: This is a small tree that grows in acidic soils of mature forests

Rand's Goldenrod (*Solidago simplex* ssp. *randii* var. *monticola*), Endangered: This northern herbaceous perennial grows on open and sunny rock outcrops at high elevations.

Red Mulberry (*Morus rubra*), Endangered: This small tree grows on east facing, dry to mesic deciduous forests on limestone cobbles. In Massachusetts, it is at the northern edge of its existing range.

Smooth Rock-cress (*Boechera laevigata*), Threatened: This

plant is a perennial herbaceous mustard of rocky woods, floodplains, and thickets.

Invertebrates

Northern Spring Amphipod (*Gammarus pseudolimnaeus*), Special Concern: This small freshwater crustacean is found in vegetated, calcium-rich springs and spring-fed streams. Individuals tend to aggregate in large numbers and remain hidden in organic debris and aquatic vegetation.

Amphibians

Jefferson Salamander (*Ambystoma jeffersonianum*), Special Concern: This salamander breeds in vernal pools and fish-free areas of open water in marshes. The young hatch and develop in vernal pools where they are safe from predation, while adults spend most of their time in upland forest areas.

Spring Salamander (*Gyrinophilus porphyriticus*), SWAP: These salamanders inhabit clean, cold, high-gradient brooks and headwater seeps in forest habitat. Larvae are entirely aquatic and largely nocturnal, spending daylight hours buried below the streambed or hidden under stones. Adults are semi-aquatic and spend most of their time under cover objects along the margins of brooks, springs, and seeps; however, they will venture into upland forest during rainy weather.

Exemplary Natural Communities

Hemlock Ravine (Secure): This is an evergreen forest made up primarily of hemlocks, with dense, nearly closed canopies that cast deep shade so that very few plants grow below. This community type occurs on moist, north-facing slopes, or along north facing ravines. This example of Hemlock Ravine is the classic type, with good structural diversity and patches of old growth present. It is embedded within a very large, naturally vegetated roadless area, and is in very good condition. Only 1 acre of it occurs within Sheffield; however, the occurrence extends west to include 38 additional acres in Mount Washington.

Mixed Oak Forest (Secure): This is a broadly defined community type dominated by oak trees that grades into other more narrowly defined communities. It includes areas with open canopies, and often occurs in areas that burn regularly, with dry soils and exposed slopes. This example of Mixed Oak Forest is in good condition and has high potential for natural processes like fire to occur. It is also within a very large, roadless, and naturally vegetated area. It consists of seven acres in Sheffield but extends well into Egremont for a total of 42 acres.

Northern Hardwoods – Hemlock – White Pine Forest (Secure): This rather common natural community consists of a mix of evergreen and deciduous trees, and has a closed, full canopy with sparse shrub and herbaceous layers. It commonly occurs on north-facing slopes and in ravines with moderately acidic soils. This occurrence comprises one acre, and occurs along Sheffield's boundary with Mount Washington.

Priority Natural Communities

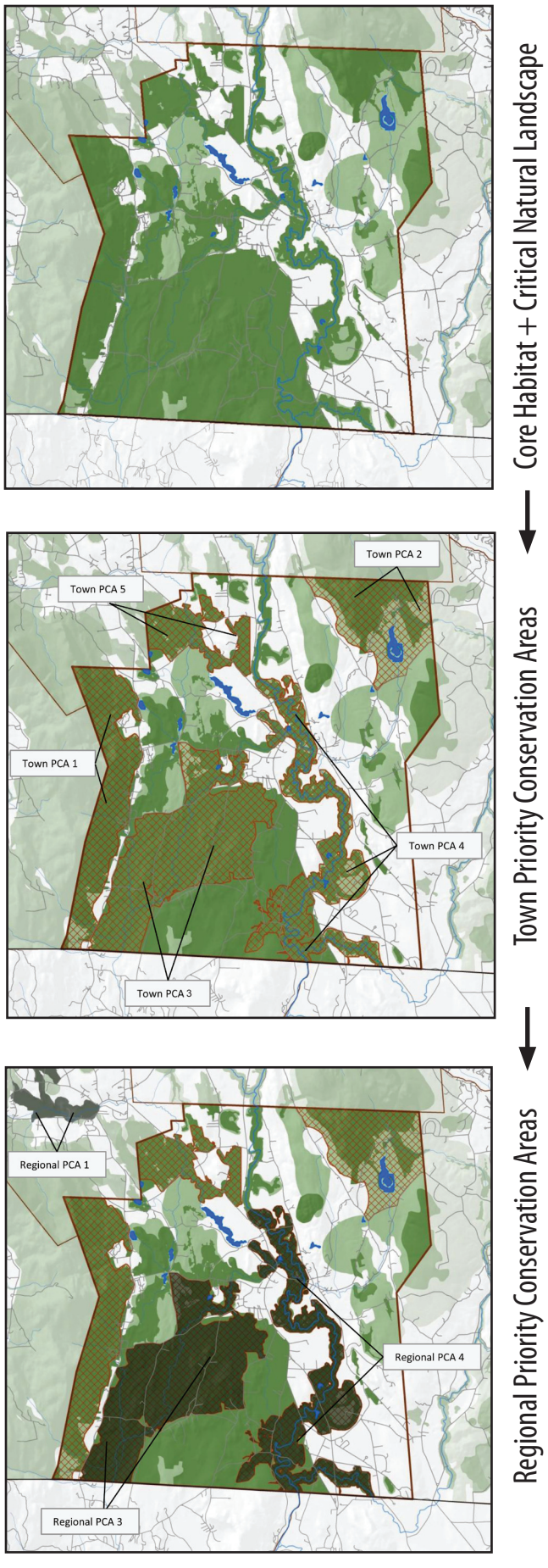
Calcareous Talus Forest/Woodland (Vulnerable): This Priority Natural Community lies along the loose, rocky slopes that develop below calcareous cliffs or rock outcrops. The soil between the boulders is usually moist and loamy, and trees tend to establish at the lower extent of slopes. Two large examples are found in BC1558e; one comprises 39 acres and is located just west of Undermountain Road. The other is part of a 27-acre example that falls mostly in Egremont (only two acres are within Sheffield). Both areas are in very good condition, support good species diversity, experience minimal human disturbance, have few exotic invasives, and occur within a large, relatively-intact forested buffer. One is found on an unusual type of bedrock for Massachusetts, and consequently has an unusual array of plant species for the community type.

Ridgetop Pitch Pine – Scrub Oak Community (Imperiled): This Priority Natural Community occurs on acidic bedrock along mountain ridges, often in a mosaic with a rocky summit community type. It is fire dependent and its species are tolerant of extremely severe growing conditions. This large example of Ridgetop Pitch Pine – Scrub Oak Community is in excellent condition, consisting of 15 acres in total, nine of which are in Sheffield. It also supports many state-listed species. The pines here are somewhat dwarfed due to extreme exposure, which restricts their growth, as is characteristic in this natural community.

Priority Conservation Areas in Sheffield

Sheffield contains five areas identified as priorities for conservation by NHESP. Five are town Priority Conservation Areas, and two of these five are also designated as Regional Priority Conservation Areas (see Figure 4):

Town PCA 1: The first PCA is located in western Sheffield, along the Taconic Mountains near the Mount Washington border, and its boundaries are similar to those of BC1558e. It is 2,355 acres and encompasses several Priority and Exemplary Natural Communities as well as several state-listed plants and one state-listed salamander species prioritized for conservation under SWAP. The area also consists of an extensive tract of Forest Core covering more than 1,300 acres, and sections of Aquatic Core and Upland Buffer around three headwater streams that flow east into Sheffield, all within a large Landscape Block.



Town PCA 2: Sheffield's second Town PCA is across the valley from Town PCA 1, on East Mountain in the northeastern part of town. It includes all of BC1558b in Sheffield, and parts of CNL883. It contains an 800-acre Forest Core, largely within East Mountain State Forest, that contains extensive habitat for Jefferson Salamanders (*Ambystoma jeffersonianum*). Town PCA 2 also includes several Wetland Cores and Upland Buffers, located near Three Mile Lake and its tributaries. Also near Three Mile Lake are several areas of the Priority Natural Communities Calcareous Pondshore/Lakeshore and Calcareous Seepage Marsh. These support state-listed plant species such as Swamp Birch (*Betula pumila*) and Bristly Buttercup (*Ranunculus pensylvanicus*).

Town PCA 3/Regional PCA 3: This is Sheffield's largest PCA, covering much of the central valley west of the Housatonic River mainstem and including large portions of BC1558f. The middle reaches of Schenob Brook and its floodplains are within this PCA, as is Barnum Street Swamp. The PCA's biodiversity resources are extensive and much area has already been protected for conservation under various landholdings. It includes many areas of Aquatic Core and Upland Buffer, particularly along Schenob Brook and its floodplains. It includes one Vernal Pool Core, located in the town-owned woods just west of the Mount Everett Regional High School. It also includes approximately 2,000 total acres of intact Wetland Core and associated Upland Buffers of CNL669, all within a large Landscape Block.

Town PCA 4/Regional PCA 4: This PCA consists of the Housatonic River and its floodplains, stretching from about a mile above Covered Bridge Lane in north-central Sheffield to the point downstream where the river crosses the southern boundary of Sheffield and enters Connecticut. It also includes the lower portion of the Konkapot River above its confluence with the Housatonic mainstem, near the Connecticut border in the southeast corner of Sheffield. This PCA includes much of BC1558a and its long stretches of Aquatic Core and Upland Buffer. Overall

Figure 4. Core habitat (dark green), Critical Natural Landscape (light green), Town Priority Conservation Areas (PCAs; reddish-brown grid), and Regional Priority Conservation Areas (transparent grey) in Sheffield. Town PCAs make up 12,654 acres in Sheffield, or 40.7 percent of the town's total area. The parts of Regional PCAs 3 and 4 in Sheffield constitute 7,226 acres, or 23.2 percent of the town's total area.

aquatic diversity is very high here and the area supports many state-listed species. Nearly 20 state-listed plants, two state-listed freshwater mussels, and several state-listed moths and dragonflies occur along the rivers within this PCA. State-listed reptiles and amphibians are documented at several locations, and several floodplain forest Priority Natural Community types.

Town PCA 5: Town PCA 5 includes BC1300, which consists of the extensive wetland areas that span much of Hubbard Brook and its tributaries, ultimately draining into Mill Pond to the southeast, and then the Housatonic River mainstem. Much of Town PCA5 is in the large Landscape Block that runs through Sheffield. Nearly all of the area is classified as Aquatic Core; it also contains more than 200 acres of Vernal Pool and Wetland Cores, and supports a variety of plant, insect, reptile, and amphibian species that are closely associated with its wetland and instream habitats.

Glossary

Aquatic Cores (in BioMap2, a component of Core Habitat) include intact river corridors within which important physical and ecological processes of the river or stream occur, delineated using integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern. To identify those areas integrally connected to each river and stream, each river segment was buffered 30 meters. All wetlands wholly or partially contained within this buffer were then included, and the combination of the river channel, the adjacent buffer, and the connected wetlands make up this riverine Core Habitat.

BioMap2 Cores (BCs) (called Core Habitats in BioMap2) identify 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.

Certified Vernal Pools are temporary ponds or other fishless wetlands that meet certain biological and physical criteria to be classified as essential breeding habitat for a number of amphibian and invertebrate species, such as Wood Frog, Spotted Salamander, Blue-spotted Salamander, Jefferson Salamander, Marbled Salamander, and Intricate Fairy Shrimp. The certification of vernal pool habitat in The Commonwealth is administered by the Natural Heritage & Endangered Species Program. A number of regulations incorporate protections for certified vernal pools (please see http://www.mass.gov/dfwele/dfw/nhesp/vernal_pools/pdf/vpcert.pdf for more information).

Critical Natural Landscape (CNL) (part of BioMap2) identifies large natural landscape areas 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.

Cobbles are small hills or rocky knolls made of marble and quartzite. The alkaline soils derived from the calcareous rocks support a distinct and diverse flora. Examples include Bartholomew's Cobble in southern Sheffield and Tyringham Cobble in Tyringham.

Critically Imperiled natural communities typically have five or fewer documented sites or have very few remaining acres in the state. Natural Community types ranked as Critically Imperiled are in the Priority Natural Communities category.

Disturbance, in an ecological sense, is an event that disrupts the normal structure and function of an ecosystem. Disturbances often produce bare soil and openings in forests where rapidly growing, sun-loving species, including invasive exotic species, can grow. Human activities have accelerated the number and types of disturbances in many ecosystems.

Ecoregions are areas of relatively homogeneous ecological systems, including vegetation, soils, climate, geology, and patterns of human uses.

Endangered species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts. Endangered is a category of state-listed species defined in the Massachusetts Endangered Species Act (M.G.L. c.131A) and listed in its regulations (321 CMR 10.00).

Exemplary Natural Communities are the best examples documented of relatively common (Secure) types of natural communities.

Forest Cores (in BioMap2, a component of Core Habitat) identify the best examples of large, intact forests that are least impacted by roads and development, providing critical "forest interior" habitat for numerous woodland species.

Fragmented Landscape, in ecological and conservation terms, refers to the idea that a large spatial area (the landscape) that in the past might have had connected habitats (for example, unbroken forest, continuous river, or undisrupted grasslands) have become interspersed with artifacts of human development that alter habitat and ecological processes – or that the human influence has come to dominate the land leaving patches, or fragments, of natural habitat surrounded by development.

Imperiled communities typically have 6-20 sites or few remaining acres in the state. Natural Community types ranked as Imperiled are included in the Priority Natural Communities category.

Landscape Blocks (component of BioMap2 Critical Natural Landscape), the primary component of Critical Natural Landscape, are large areas of intact and predominately natural vegetation, consisting of contiguous forests, wetland, rivers, lakes, and ponds, as well as coastal habitats such as

barrier beaches and salt marshes. Pastures and power-line right-of-way, which are less intensively altered than most developed areas, were also included since they provide habitat and connectivity for many species.

Landscape Context refers to taking the broadest view of the ability of ecosystems or species populations to maintain themselves where they are by considering the siting within the larger area. For example, a wooded area within a city park has a very different, urban context than a wooded area on a farm.

MESA (Massachusetts Endangered Species Act) (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00) provide regulatory protection of rare species and their habitats. MESA protects rare species and their habitats by prohibiting the "Take" of any plant or animal species listed as Endangered, Threatened, or Special Concern by the MA Division of Fisheries & Wildlife.

Natural Communities are assemblages of species that occur together in space and time. These groups of plants and animals are found in recurring patterns that are classified and described by their dominant biological and physical features.

Nymphs, sometimes informally referred to as larvae, are the young, immature form of dragonflies and some other invertebrates. Dragonfly nymphs are aquatic. On maturing, they change into the flying terrestrial adults that are seen along rivers and lakes, and nearby uplands.

Priority Natural Communities include types of natural communities with limited distribution, or relatively few occurrences, and/or low acreages in Massachusetts.

Protected in Perpetuity refers to land owned as conservation land by a public entity in Massachusetts whose lands come under the authority of Massachusetts Constitution Article 97, or federal land owned by a federal conservation agency, or by a non-profit dedicated to land conservation; or for which the conservation values have been protected by legal restrictions on the deed or by a conservation easement (conservation restriction).

Secure types of natural communities typically have over 100 sites or abundant acreage across the state; excellent examples are identified as Core Habitat to ensure continued protection and are referred to as Exemplary Natural Communities.

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. Special Concern is a category of state-listed species defined in the Massachusetts Endangered Species Act (M.G.L. c.131A) and listed in its regulations (321 CMR 10.00).

Species of Conservation Concern (in BioMap2, a component of Core Habitat) include those species that meet the criteria for listing under the Massachusetts Endangered Species Act, as well as a number of species that do not meet these criteria for listing, but are considered to be of conservation concern within Massachusetts, such as inclusion in the State Wildlife Action Plan (SWAP).

State-listed Species are species listed under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its regulations (321 CMR 10.00). – that is, Endangered, Threatened, or Special Concern species.

SWAP (State Wildlife Action Plan), approved in 2006, the Massachusetts Division of Fisheries and Wildlife's State Wildlife Conservation Strategy, most often referred to as the State Wildlife Action Plan (SWAP), is a comprehensive document to help guide wildlife conservation decision making for Massachusetts' wildlife for many years.

SWAP Species were identified as being those in greatest need of conservation in the Massachusetts Division of Fisheries and Wildlife' State Wildlife Conservation Strategy, most often referred to as the State Wildlife Action Plan (SWAP).

Threatened species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range. Threatened is a category of state-listed species defined in the Massachusetts Endangered Species Act (M.G.L. c.131A) and listed in its regulations (321 CMR 10.00).

Upland Buffers of Aquatic Cores (component of BioMap2's Critical Natural Landscape) identify protective upland areas adjacent to all Aquatic Cores. A variable width buffer, that extends deeper into surrounding unfragmented habitats than into developed areas, was used to include the most intact areas around Aquatic Cores. The conservation of wetland buffers will support habitats and functionality of each aquatic area, and also include adjacent uplands that are important for many species that move between habitat types.

Upland Buffer of Wetland Cores (component of BioMap2's Critical Natural Landscape) identify protective upland areas adjacent to all Wetland Cores. A variable-width buffer, that extends deeper into surrounding unfragmented habitats than into developed areas, was used to include the most intact areas around the Wetland Cores. The conservation of wetland buffers will support habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

Variant of a natural community refers to a named subtype of a more broadly defined type of community. In Massachusetts the term is not a formal designation, but rather is intended as an aid for understanding community relationships.

Vernal Pools, also known as ephemeral pools, autumnal pools, and temporary woodland ponds, typically fill with water in the autumn or winter due to rainfall and rising groundwater and remain ponded through the spring and into summer. They usually dry completely by the middle or end of summer each year. Vernal pools are unique wildlife habitats best known for the amphibians and invertebrate animals that use them to breed.

Vernal Pool Cores (BioMap2, component of Core Habitat) identify, based on a GIS model, the highest quality most interconnected clusters of Potential Vernal Pools (a dataset of likely vernal pools identified from interpretation of aerial photographs) and the habitat between them.

Vulnerable communities typically have 21-100 sites or limited acreage across the state. Natural Community types ranked as Vulnerable are in the Priority Natural Communities category.

Wetland Cores (BioMap2, component of Core Habitat) identify, based on a GIS model, the least disturbed wetlands within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated 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.

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.