BioMap2

Guiding Land Conservation for Biodiversity in Massachusetts

Lenox

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

Lenox

Lenox is located along the Housatonic River in central Berkshire County. Most of the town sits at fairly low elevations, lying below the Berkshire Plateau to the east and the Taconic Range to west. Two small areas of town are part of the Berkshire Highlands; one of these is in northeast Lenox, along October Mountain and the town's boundary with Washington, and the other is Lenox Mountain, which rises above the valley in the west, near the town's boundary with Richmond. The mainstem of the Housatonic River enters Lenox from Pittsfield and passes through the northeast portion of town. The river's course then forms Lenox's boundary with Lee until it reaches the southeastern part of town and continues further south. Large wetland areas extend throughout the floodplains of the Housatonic River, and also of lower Mill Brook, which flows west from Washington and enters the mainstem less than two miles south of the Pittsfield boundary. The lower reaches of Yokun Brook and Willow Creek, two low-lying streams that flow east from western Lenox to enter the Housatonic River in the central part of town, are also flanked by extensive wetland areas. Open marsh and forested wetlands are scattered throughout western Lenox, mostly between Route 20 and the eastern slopes of Lenox Mountain, and along the upper reaches of Yokun Brook and Marsh Brooks. Apart from the Housatonic River and its immediate surroundings, Lenox's landscape is hilly and largely forested with scattered wetland areas.

Along with neighboring Pittsfield and Lee, Lenox is historically one of the more heavily populated towns in the Berkshires region. Commercial and residential development occurs throughout town; many industrial operations are located directly along the Housatonic River, while residential areas generally fall further to the west and south. In the north, developed areas are concentrated along Route 20, which runs north to south and parallels the general course of the Housatonic River. The village of Lenox lies in the central part of town, with commercial and industrial development here extending west from the Housatonic River and Woods Pond in the town's southeast corner across the valley to the town's boundary with Stockbridge. Agricultural lands are scattered across the landscape, although they are less prominent in Lenox than in the wider and more open parts of the Housatonic River valley further south. The only fully undeveloped areas are in the highlands along the northeastern and west-

Lenox at a Glance

- Total area: 13,877 acres (21.7 square miles)
- Human Population in 2009: 5,082 people
- Open space protected in perpetuity: 3,472 acres, or 25.0% of total area*

BioMap2 Components

Core Habitat

- 14 Aquatic Cores: 1,261 acres
- 2 Forest Cores: 1,728 acres
- 3 Vernal Pool Cores: 115 acres
- 35 Wetland Cores: 956 acres
- 1 occurrence of 1 Exemplary Natural Community: 10 acres
- 18 occurrences of 7 Priority Natural Community types: 132 acres

Species of Conservation Concern**

- 1 snail, 5 insects, 4 amphibians, 1 reptile, 4 birds, 1 mammal, 24 plants

Critical Natural Landscape

- 8 Upland Buffers of Aquatic Cores: 1,914 acres
- 6 Upland Buffers of Wetland Cores: 1,868 acres
- 2 Landscape Blocks: 6,286 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 Lenox

Snails
- Boreal Marstonia (*Marstonia lustrica*), Endangered

Insects
- Arrow Clubtail (*Stylurus spiniceps*), Threatened
- Early Hairstreak (*Erora laeta*), Threatened
- Mustard White (*Pieris oleracea*), Threatened
- Rapids Clubtail (*Gomphus quadricolor*), Threatened
- Zebra Clubtail (*Stylurus scudderi*), 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
- Wood Turtle (*Glyptemys insculpta*), Special Concern

Birds
- American Bittern (*Botaurus lentiginosus*), Endangered
- Bald Eagle (*Haliaeetus leucocephalus*), Threatened
- Common Moorhen (*Gallinula chloropus*), Special Concern
- Sora (*Porzana carolina*), SWAP

Mammals
- Water Shrew (*Sorex palustris*), Special Concern

Plants
- Adder's-tongue Fern (*Ophioglossum pusillum*), Threatened
- Back's Sedge (*Carex backii*), Endangered
- Bristly Buttercup (*Ranunculus pensylvanicus*), Special Concern
- Bur Oak (*Quercus macrocarpa*), Special Concern
- Bush's Sedge (*Carex bushii*), Endangered
- Chestnut-colored Sedge (*Carex castanea*), Endangered
- Crooked-stem Aster (*Symphyotrichum prenanthoides*), Threatened
- Dwarf Scouring-rush (*Equisetum scirpoides*), Special Concern
- Fen Sedge (*Carex tetanica*), Special Concern
- Foxtail Sedge (*Carex alopecoidea*), Threatened
- Gray's Sedge (*Carex grayi*), Threatened
- Handsome Sedge (*Carex formosa*), Threatened
- Hemlock Parsley (*Conioselinum chinense*), Special Concern
- Hill's Pondweed (*Potamogeton hillii*), Special Concern
- Hitchcock's Sedge (*Carex hitchcockiana*), Special Concern
- Intermediate Spike-sedge (*Eleocharis intermedia*), Threatened
- Labrador Bedstraw (*Galium labradoricum*), Threatened
- Long-styled Sanicle (*Sanicula odorata*), Threatened
- Narrow-leaved Spring Beauty (*Claytonia virginica*), Endangered
- Northern Bedstraw (*Galium boreale*), Endangered
- Pale Green Orchis (*Platanthera flava* var. *herbiola*), Threatened
- Small Dropseed (*Sporobolus neglectus*), Endangered
- Smooth Rock-cress (*Boechera laevigata*), Threatened
- Wapato (*Sagittaria cuneata*), Threatened

Exemplary Natural Communities
- Hemlock – Hardwood Swamp (Secure)

Priority Natural Communities
- Alluvial Red Maple Swamp (Vulnerable)
- Black Ash – Red Maple – Tamarack Calcareous Seepage Swamp (Imperiled)
- High-terrace Floodplain Forest (Imperiled)
- Major-river Floodplain Forest (Imperiled)
- Red Maple – Black Ash – Bur Oak Swamp (Imperiled)
- Rich, Mesic Forest (Vulnerable)
- Transitional Floodplain 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

ern boundaries of the town, where terrain is more mountainous and much of the land is forested.

Most of Lenox belongs to the Western New England Marble Valleys ecoregion (see Figure 1). This ecoregion runs along the east side of the Taconic Mountains, from northwest Connecticut up the Housatonic River valley, and north along the Hoosic River into the Hudson and Lake Champlain drainages. It is one of the more biologically rich ecoregions both in Massachusetts and throughout New England, and supports an impressively high percentage of Massachusetts' state-listed species and Priority Natural Communities. Some of these species and communities are restricted to the marble valleys, while others are more widespread and also occur in other ecoregions.

The Housatonic River and its expansive floodplains provide habitat for a large number or state-listed plant, insect, turtle, and bird species in Lenox. There is important breeding habitat for the state-endangered American Bittern, a marsh bird of the heron family. Aquatic larvae of the dragonfly Rapids Clubtail inhabit the sandy bottoms of the Housatonic River in north Lenox, while adults dwell in nearby upland forests. Wood turtles feed and nest in fields and forests during spring and summer months, and hibernate in riverbanks or stream bottoms during the winter. The valley also contains an extensive mosaic of various wetland types, including important floodplain forest communities. The presence of so many state-listed species and Priority Natural Communities is quite remarkable, as development and pollution in lowland areas of the town, particularly along the Housatonic River, have degraded and fragmented habitats for many years. Although some lowland areas in Lenox are protected, such as MassWildlife's George L. Darey Housatonic Valley Wildlife Management Area and the town's conservation lands, the valley as a whole contains far less protected land than the higher elevation areas along the town's perimeters.

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.

Highland areas of Lenox are less ecologically diverse than the valley; however, they support their own array of state-listed species, and contain tracts of forested habitat that are fragmented little by human development. They are also fairly well protected for conservation through various stewardships. These areas contain habitat for the Spring, Four-toed, and Jefferson Salamanders. All three are sensitive amphibian species that require a variety of habitats, including stream, wetland, vernal pool, and forested uplands, for reproducing and successfully carrying out their complex life cycles. Wetland areas in these highlands also support a wide variety of plant species, including many sedges and the perennial orchid Pale Green Orchis.

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

Overview

In this section, we outline areas in Lenox that warrant special focus of conservation efforts 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 acres 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 Lenox, although a given area of Core Habitat or Critical Natural Landscape listed here may extend outside of the town boundaries of Lenox and contain additional components.

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, up to six Town PCAs were identified. Each Town PCA contains part of at least one BioMap2 Core: in

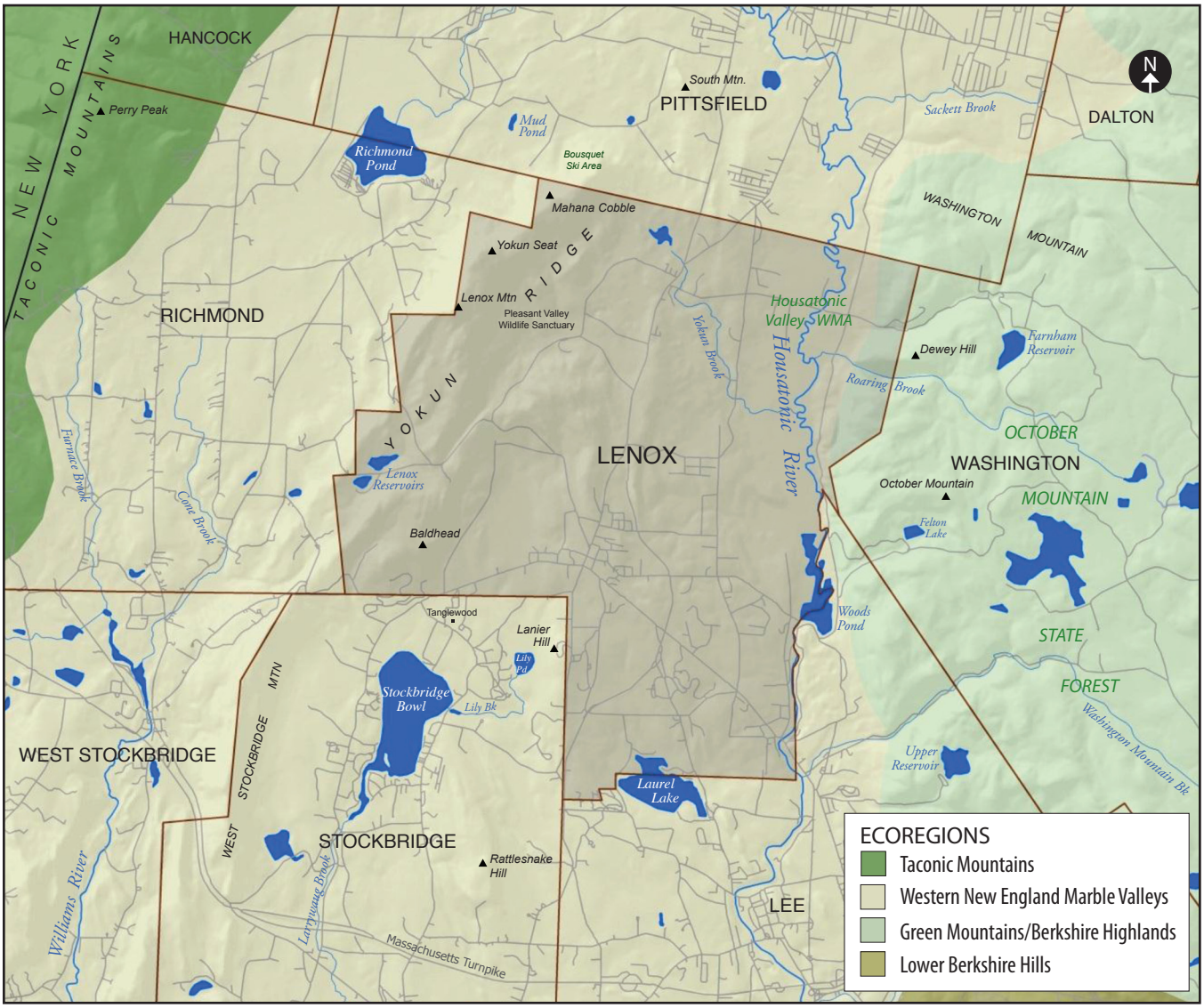

Figure 1. Town boundaries and ecoregions of Lenox, Massachusetts. Most of Lenox is part of the Western New England Marble Valleys ecological region; a small area in northeastern Lenox is part of the Berkshire Highlands.

Lenox, two Town PCAs were selected. Figure 3 illustrates how BioMap2 Core Habitat and Critical Natural Landscape relate to the distribution of Town PCAs in Lenox.

A larger scale prioritization was also conducted to select Regional PCAs of the highest conservation and stewardship value among all towns that fall within Massachusetts' portion of the Housatonic River watershed. Regional PCAs often cross town boundaries and can be quite large, ranging from 373 acres to more than 25,000 acres. Ecological connectivity within these Regional PCAs is important to biodiversity conservation; consequently, these large units 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. Parts of two Regional PCAs, Regional PCA 5 and Regional PCA 6, fall within Lenox. Each encompasses a Town PCA.

Core Habitat and Critical Natural Landscape Components in Lenox

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

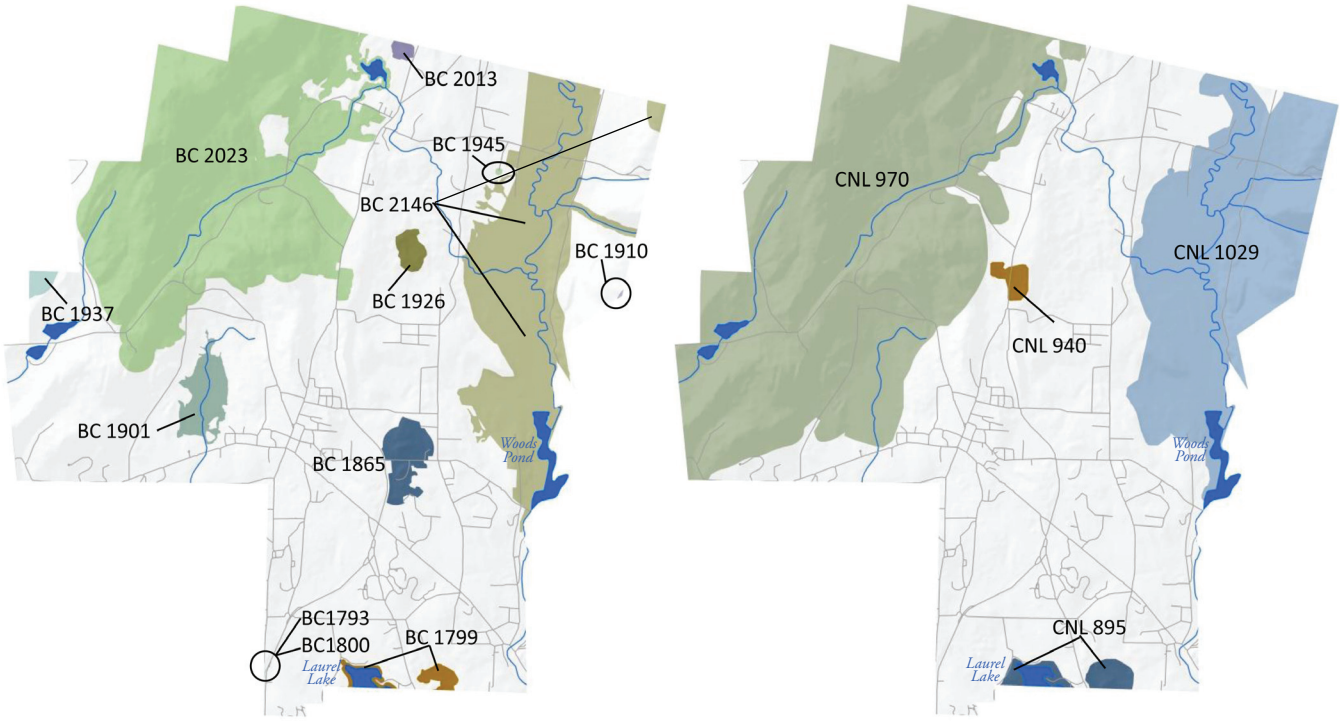

Figure 2. Lenox includes a total of 12 BioMap2 Cores (BCs; left) and four areas of Critical Natural Landscape (CNL; right).

BC1793, BC1800, BC1926, and BC2013 (No CNLs); and BC1945 and CNL1029

These BCs are mostly less than 10 acres and provide habitat for state-listed plant species. BC1793 and BC1800 are in southern Lenox; BC1926, BC1945, and BC2013 are in the northern part of town, in the vicinity of lower Yokun Brook. BC1945 has an Upland Buffer that connects it to the large CNL1029.

BC1799 and CNL895

BC1799 includes 224 acres in southern Lenox and northwestern Lee, and is surrounded by Upland Buffers of CNL895. Most of BC1799 is comprised of a combination of Aquatic Core at Laurel Lake and a large wetland area to the east of the lake, but it also contains the lake's nearby uplands. Populations of one state-listed plant and one state-listed invertebrate species occur in this core, as does one Priority Natural Community type, Black Ash – Red Maple – Tamarack Calcareous Seepage Swamp. Zebra Mussels were recently discovered in Laurel Lake and they may impact future aquatic diversity in the BC, along the outlet stream of Laurel Lake, and in the Housatonic River downstream.

Plant

Labrador Bedstraw (*Galium labradoricum*), Threatened: This slender perennial is an herbaceous plant of the madder family (Rubiaceae). In Massachusetts it is only known to occur in calcareous fens, wet meadows, and swamps in the upper Housatonic River watershed.

Snail

Boreal Marstonia (*Marstonia lustrica*), Endangered: This is a small snail with a translucent, light greenish or brownish shell. Individuals live on plants in lakes that are well vegetated and rich in nutrients, especially calcium and magnesium.

Priority Natural Community

Black Ash – Red Maple – Tamarack Calcareous Seepage Swamp (Imperiled): This Priority Natural Community is a mixed deciduous-coniferous forested swamp that occurs in areas with calcium-rich groundwater seepage. Its characteristic nutrient enrichment supports many state-listed calcium-loving plants, including several sedge species. The 36-acre example in this core is in good condition, despite the presence of some exotic plant species. It lies on the border between Lenox and Lee; 19 of the 36 acres fall in Lenox, with 17 in Lee.

BC1865 (no CNL)

This core is located on the east side of Route 20 near Housatonic Street. It is divided by roads and somewhat fragmented by development, but contains two Certified Vernal Pools where state-listed Jefferson Salamanders breed, and also upland forests where they live as adults.

Jefferson Salamander (*Ambystoma jeffersonianum*), Special Concern: Adults and juveniles of this species use upland forest during most of the year, where they reside in small-mammal burrows and other subsurface retreats. During late winter or early spring, adults migrate to breed in vernal pools and areas of swamps, marshes, or similar wetlands that are free of fish that would prey on eggs and juveniles. Larvae metamorphose in late summer or early fall, then disperse into upland forests.

BC1901 and CNL970

This BC is a 150-acre area along Marsh Brook in western Lenox. It contains a Wetland Core and is surrounded by an Upland Buffer of CNL970. It is also part of CNL790's large Landscape Block, which extends into Richmond, Pittsfield, and Stockbridge.

BC1910 and CNL1029

BC1910 is located just south of Roaring Brook along October Mountain. It is a 57-acre core embedded in a large Landscape Block of CNL1029; the majority of its area is within Washington. In includes a Vernal Pool Core in a forested area, and provides a diversity of habitats for breeding amphibians.

BC1937 and CNL970

This core is mostly in Richmond, but a small part of it extends into far western Lenox. It falls within a Landscape Block of CNL970 and includes habitat for Jefferson Salamanders.

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 areas of swamps, marshes, or similar wetlands that are free of fish that would prey on eggs. Larvae metamorphose in late summer or early fall and then disperse into upland forest.

BC2023, CNL970 and CNL940

BC2023 comprises just over 3,400 acres in total, with 2,992 acres in western Lenox, including areas near the upper reaches of Yokun, Marsh, and Lenox Mountain Brooks. It falls within a Landscape Block of CNL970, a large CNL that covers more than 8,000 acres in Lenox, Richmond, Stockbridge, and West Stockbridge. BC2023 also extends to overlap CNL940, a small CNL just east of CNL970 in central Lenox. BC2023 includes Aquatic, Wetland, and Vernal Pool Cores, as well as associated Upland Buffers in CNL940 and CNL 970. It also includes more than 1,700 acres of Forest Core. The following species of conservation concern and Priority Natural Communities occur in the Lenox portion of BC2023:

Plants

Adder's-tongue Fern (*Ophioglossum pusillum*), Threatened: This is a colonial fern whose primary habitat features seasonally wet, early successional conditions.

Back's Sedge (*Carex backii*), Endangered: This grass-like perennial plant occurs in open woods, often on steep slopes with shallow, rocky soil.

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

Chestnut-colored Sedge (*Carex castanea*), Endangered: This sedge species occurs in open to shaded, damp, calcareous forests and forest edges. It can tolerate some disturbance in its habitat.

Crooked-stem Aster (*Symphyotrichum prenanthoides*), Threatened: This perennial herbaceous plant occurs in open to semi-open conditions along naturally nutrient-rich rivers, streams, and seeps, as well as along open and semi-open roadsides near such habitats.

Dwarf Scouring-rush (*Equisetum scirpoides*), Special Concern: This is a perennial, evergreen plant that grows in a variety of cool, usually wet habitats, including hummocks in swamps, moist stream banks, and seeps associated with conifer tree species.

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

Handsome Sedge (*Carex formosa*), Threatened: This slender, grass-like perennial sedge grows in clumps and requires alkaline soil that is moist but not fully saturated. It frequently occurs in the transition zone between wetlands and uplands.

Hill's Pondweed (*Potamogeton hillii*), Special Concern: This submersed aquatic plant grows best in cold, shallow, slow-moving, and clean bodies of alkaline water over muddy substrates.

Hitchcock's Sedge (*Carex hitchcockiana*), Special Concern: This perennial woodland sedge occurs in Rich, Mesic Forests that are often on or at the base of steep-sloped hills.

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

Northern Bedstraw (*Galium boreale*), Endangered: This perennial herbaceous plant occurs in open, non-acidic meadows and fens dominated by grasses or sedges.

Pale Green Orchis (*Platanthera flava* var. *herbiola*), Threatened: This perennial orchid grows in a variety of habitats, usually near moving water.

Smooth Rock-cress (*Boechera laevigata*), Threatened: This herbaceous plant of the mustard family occurs in rocky woods, floodplains, and thickets.

Insects

Early Hairstreak (*Erora laeta*), Threatened: This butterfly species generally inhabits mature northern hardwood forest. Larvae typically live on beech trees.

Mustard White (*Pieris oleracea*), Threatened: This butterfly inhabits wet forest openings as well as wet meadows, field, and pastures. In Massachusetts, it only occurs in central Berkshire County; this is the southern extent of its natural range, which reaches north to Labrador and west across Canada. Its larvae feed on plants of the mustard family.

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, then disperse into upland forests.

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.

Priority Natural Community

Rich, Mesic Forest (Vulnerable): This natural community is a variant of northern hardwood forest that is dominated by sugar maple. It features a moist, nutrient-rich environment with a diverse herbaceous layer that includes many spring wildflowers. Two areas of Rich, Mesic Forest occur in BC2023. This first is 29 acres and is located just off West Mountain Road. It is of moderate size, but is in very good condition, with a lot of microtopographic relief – including rock outcrops and gullies – that provides a rich array of habitats for unusual plant species. The second area is smaller (six acres) and less established. It supports appropriate indicator species for this community type, but unfortunately also contains abundant invasive species.

BC2146 and CNL1029

At more than 7,000 acres, this large BC includes areas along the Housatonic River and its tributaries in Lenox, Pittsfield, Washington, and Lee. Within Lenox, it includes more area than any other BC, and includes the Housatonic River from the town boundary with Pittsfield south to Woods Pond. It includes the river's Aquatic Core and adjoining Wetland Cores, and is surrounded by Upland Buffers of CNL1029. A Vernal Pool Core also occurs within this BC, near the mouth of Yokun Brook, and areas of Aquatic Core and Upland Buffer also extend west along Roaring Brook. BC2146 includes a small section of Forest Core in the northeast corner of Lenox that extends into a large area of Forest Core in Pittsfield and Washington. All the following species of conservation concern and Priority Natural Communities are documented in the Lenox portion of BC2146:

Plants

Bristly Buttercup (*Ranunculus pensylvanicus*), Special Concern: This herbaceous wetland plant grows in sunny to partially shaded floodplain forest edges and openings.

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

Crooked-stem Aster (*Symphyotrichum prenanthoides*), Threatened: This perennial herbaceous plant occurs in open to semi-open conditions along naturally nutrient-rich rivers, streams, and seeps and along open and semi-open roadsides near such habitats.

Foxtail Sedge (*Carex alopecoidea*), Threatened: In Massachusetts, this plant is typically found with other sedges, grasses, and herbs in open swales of floodplain forests.

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

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

Long-styled Sanicle (*Sanicula odorata*), Threatened: This herbaceous perennial plant occurs in small openings in wooded areas, in shade or filtered light, and occurs on rich and moist substrates such as those of floodplains.

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

Wapato (*Sagittaria cuneata*), Threatened: This aquatic, herbaceous perennial plant is 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

Mustard White (*Pieris oleracea*), Threatened: This butterfly inhabits wet forest openings as well as wet meadows, fields, and pastures. In Massachusetts, it only occurs in central Berkshire County; this is the southern extent of its natural range, which reaches north to Labrador and west across Canada. Its larvae feed on plants of the mustard family.

Rapids Clubtail (*Gomphus quadricolor*), Threatened: Nymphs or larvae of this dragonfly inhabit clear, cold streams and rivers with sections of rocky rapids. Adults feed and rest in nearby uplands.

Amphibians and Reptiles

Four-toed Salamander (*Hemidactylium scutatum*), SWAP: This salamander species lives in forested habitats surrounding swamps, bogs, marshes, vernal pools, and other fish-free waters that are used as breeding sites. In Massachusetts, most of their breeding sites are characterized by pit-and-mound topography with significant Sphagnum moss cover. Eggs are typically laid in mounds or patches of moss that overhang water. Upon hatching, larvae wriggle through the moss and drop into the water, where they develop for several weeks before metamorphosis.

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, then disperse into upland forests.

Spring Salamander (*Gyrinophilus porphyriticus*), SWAP: This salamander inhabits 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.

Northern Leopard Frog (*Rana pipiens*), SWAP: Adult Northern Leopard Frogs are found in marshes, wet meadows, and peatlands in the narrow transition zone between open water and uplands; they retreat to the water of ponds and small streams when threatened. Tadpoles of this species are herbivorous and require open water of sufficient permanence for their development. Several observations of this frog have been documented in the Housatonic River watershed, which contains some of its best habitat in Massachusetts.

Wood Turtle (*Glyptemys insculpta*), Special Concern: Ideal habitat for this species includes mid-sized, slow-moving streams and rivers, generally with long corridors of undeveloped and connected uplands. These turtles are active from March to October, and hibernate during the winter in muddy banks, stream bottoms, woody debris, or abandoned muskrat burrows. The Housatonic River in Lenox has a small population with good potential for growth.

Birds and Mammals

American Bittern (*Botaurus lentiginosus*), Endangered: This mottled brown, heron-like bird 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, make it well-camouflaged in marsh habitat.

Common Moorhen (*Gallinula chloropus*), Special Concern: This duck-like marshbird inhabits shallow freshwater marshes and typically nests in dense cattail beds adjacent to open water.

Sora (*Porzana carolina*), SWAP: This species is a secretive marshbird that typically nests in dense cattail marshes that are adjacent to areas of open water.

Bald Eagle (*Haliaeetus leucocephalus*), Threatened: This well-known bird species nests in tall trees along large lakes and rivers. Its diet consists mainly of fish. Large rivers like the Housatonic support important winter congregations of Bald Eagles.

Water Shrew (*Sorex palustris*), Special Concern: This semi-aquatic shrew most commonly inhabits banks of swift, rocky-bedded streams in dense coniferous or mixed forests. The population in BC2146 occurs along the Housatonic River.

Exemplary Natural Community

Hemlock – Hardwood Swamp (Secure): This fairly common type of natural community is an acidic, forested wetland that occurs on saturated soils in poorly drained basins throughout the state. It is dominated by a canopy of hemlock trees, along with occasional hardwoods. This exemplary 11-acre occurrence of Hemlock – Hardwood Swamp is found within a large mosaic of several more uncommon Priority Natural Communities. Its plant species composition reflects the presence of high levels of nutrients and a somewhat reduced acidity.

Priority Natural Communities

Alluvial Red Maple Swamp (Vulnerable): This Priority Natural Community type is a swamp dominated by Red Maples, and it occurs in low areas along rivers and streams. Regular flooding enriches the soil with nutrients, re-

sulting in an unusual set of associated trees and plants. This Alluvial Red Maple Swamp community occurs as patches that total 29 acres, and it forms a mosaic with other floodplain and wetland communities, all on protected land. The canopy and subcanopy have good representation of species typical of the natural community type, but natural diversity in the shrub layer is limited by some invasive species.

High-terrace Floodplain Forest (Imperiled): This type of natural community is a deciduous hardwood forest that occurs along riverbanks above the zone of annual flooding. Although it does not flood every year, the soil is moderately enriched with nutrients. Along the Housatonic River in BC2146, six patches of this Priority Natural Community combine to total 18 acres. These patches are interspersed with other floodplain forest types and wetlands. Few invasive plants are present in this occurrence.

Major-river Floodplain Forest (Imperiled): This type of Priority Natural Community is dominated by Silver Maple and is generally found along the floodplains of large rivers. Soils are enriched with nutrients brought by annual floods, and result in a diversity of plants and insects. Four occurrences in BC2146 lie primarily on conservation lands, total 13 acres. These areas are diverse both in species and in habitat, and few invasive plant species are present.

Red Maple – Black Ash – Bur Oak Swamp (Imperiled): This Priority Natural Community type is a primarily deciduous forest with calcium-rich, slightly alkaline wetlands. Trees growing on hummocks form an almost continuous canopy over variable shrub layers and dense and diverse herbaceous layers. This occurrence of Red Maple – Black Ash – Bur Oak Swamp in BC2146 is different from other occurrences of its type in that it is located along a floodplain and occurs in a mosaic with several other floodplain communities.

Transitional Floodplain Forest (Imperiled): This is a riverside forest of Silver Maple, Green Ash, and American Elm trees that experiences annual floods. Of the three floodplain forest community types, the Transitional Floodplain Forest is intermediate in vegetation and soils. The nine-acre occurrence in BC2146 is buffered by forested land, has an unusual species mix, and includes areas of successional forest. Natural flooding regimes help to maintain it.

Priority Conservation Areas in Lenox

Lenox contains two areas identified as Priority Conservation Areas (PCAs) by NHESP. Each is a Town PCA and is also part of a larger Regional PCA that extends beyond the town boundaries:

Town PCA 1/Regional PCA 6: Town PCA 1 in Lenox is part of Regional PCA 6, which is an 8,927-acre area that extends from south-central Pittsfield, first along the boundary between Lenox and Richmond, then along the boundary between Stockbridge and West Stockbridge. Regional PCA 6 reaches its southern limit in those two latter towns, just north of the Massachusetts Turnpike. In Lenox, Regional PCA 6 and Town PCA 1 share the same boundaries and stretch east from Lenox's boundary with Richmond to the middle of town near Route 20. This area is just over 4,800 acres in size, and contains extensive tracts of unfragmented forestland, much of it Forest Core, along Lenox Mountain. Further east in the valley, it also contains the upper reaches of Marsh Brook and Yokun Brook, as well as their associated wetlands. The Town PCA includes 19 state-listed species and one Priority Natural Community. BC2023, BC2013, BC1937, and BC1901 are all part of this area.

Town PCA 2/Regional PCA 5: Town PCA 2 is part of Regional PCA 5. This Regional PCA incorporates much of western Washington, southeast Pittsfield, northeast Lenox, and northeast Lee. It contains many mountains and headwater streams east of the Housatonic River, including Roaring and Mill Brooks in Washington and Lenox, and Mountain and Commons Brooks, which flow west from October Mountain in Washington and Lee. It also contains a stretch of the Housatonic River, from central Pittsfield to Woods Pond in Lee. In Lenox, the Regional PCA comprises 2,217 acres in the northeast part of town that make up Town PCA 2. This area includes much of the mainstem of the Housatonic River and its floodplains and wetlands upstream of Woods Pond, as well as lower reaches of Yokun Brook and Mill Brook. It includes most of BC2146 and part of BC1945, and contains two Forest Cores that are embedded in a Landscape Block of CNL1029. This area also supports 20 state-listed plant and animal species.

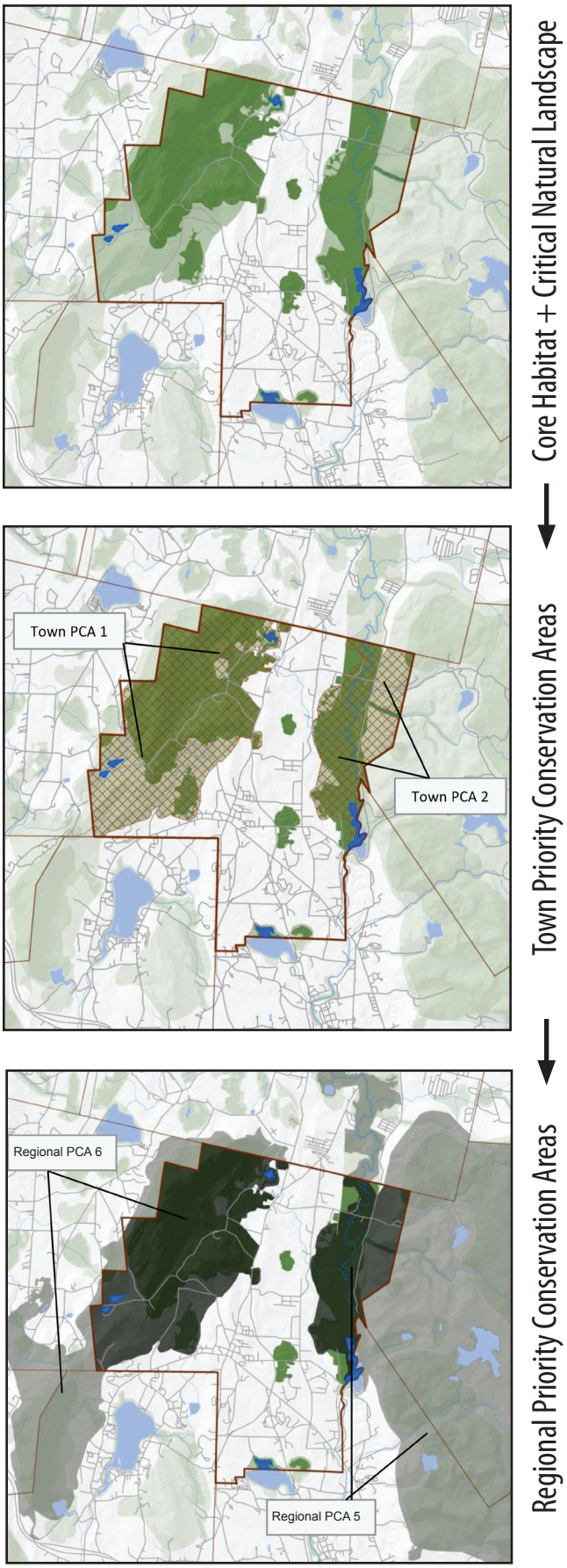

Figure 3. Core habitat (dark green), Critical Natural Landscape (light green), Town Priority Conservation Areas (PCAs; reddish-brown grid), and Regional Priority Conservation Areas (transparent grey) in Lenox. Town PCAs comprise 7,065 acres, or 60.0 percent of the town's total area. Regional PCAs encompass these Town PCAs almost exactly, totalling 7,072 acres in the town of Lenox.

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.