BioMap2

Guiding Land Conservation for Biodiversity in Massachusetts

Tyringham

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

Tyringham

Tyringham is located in south-central Berkshire County. The forested Berkshire Hills rise in northeastern and southwestern parts of the town, framing the pastoral Hop Brook valley in the center. Headwater streams flow from these mountains to join Hop Brook down in the valley. Hop Brook is a significant tributary of the Housatonic River; it flows northwest and joins the mainstem of the Housatonic further north in the town of Lee. The village of Tyringham lies directly along Hop Brook in the central part of the town. In the northwest part of town, extensive riparian wetlands along Hop Brook total nearly 300 acres and support a diverse suite of rare species and natural communities. The northeast corner of Tyringham lies outside the Hop Brook watershed. Here, Cooper Brook flows into the mountain lake of Goose Pond along the town's boundary with Lee. The Appalachian Trail traverses Tyringham from the southwest to the northeast, meandering along the mountain ridges in the highlands and passing over the scenic ledges of Tyringham Cobble near the town center.

Tyringham is one of the least populated towns in western Massachusetts; it is home to just 340 people. Historically the town contained vacation residences for people from other areas of Massachusetts and Connecticut. Today, residential areas are primarily concentrated along Main Road, particularly in the village of Tyringham and along the periphery of Goose Pond. Extensive tracts of forestland are interspersed with the residential areas and are also scattered among the highlands on either side of the central valley. Tyringham lacks the more intense commercial and industrial development present in other towns in the region like Pittsfield or Lee, and consequently its natural ecosystems remain relatively undisturbed.

The Hop Brook valley is a part of the Western New England Marble Valleys ecological region, which runs along the east side of the Taconic Mountains from northwest Connecticut up the Housatonic River valley, and along the Hoosic River and other tributaries to the Hudson and Lake Champlain drainages to the north (see Figure 1). This is one of the most biologically rich ecoregions both in Massachusetts and throughout New England, supporting a remarkably large number of uncommon species and natural communities. In Tyringham, calcareous marshlands along Hop Brook and its floodplains provide breeding habitat for the state-endangered American Bittern, a marsh bird of the heron family. Wood Turtles feed

Tyringham at a Glance

- Total area: 12,068 acres (18.9 square miles)
- Human population in 2009: 340 people
- Open space protected in perpetuity: 4,157 acres, or 34.4% of total area*

BioMap2 Components

Core Habitat

- 2 Aquatic Cores: 1,194 acres
- 2 Forest Cores: 2,936 acres
- 9 Wetland Cores: 512 acres
- 4 Priority or Exemplary Natural Community Types: 81 acres

Species of Conservation Concern**

- 1 insect, 1 fish, 1 salamander, 1 turtle, 3 birds, 3 plants

Critical Natural Landscape

- 2 Upland Buffers of Aquatic Cores: 2,552 acres
- 11 Upland Buffers of Wetland Cores: 1,377 acres
- 1 Landscape Block: 10,330 acres

*calculated using MassGIS data layer "Protected and Recreational Open Space - Nov. 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 Tyringham

Insects
- Zebra Clubtail (*Stylurus scudderi*), Special Concern

Fish
- Bridle Shiner (*Notropis bifrenatus*), Special Concern

Amphibians
- Spring Salamander (*Gyrinophilus porphyriticus*), SWAP

Reptiles
- Wood Turtle (*Glyptemys insculpta*), Special Concern

Birds
- American Bittern (*Botaurus lentiginosus*), Endangered
- King Rail (*Rallus elegans*), Threatened
- Sedge Wren (*Cistothorus platensis*), Endangered

Plants
- Intermediate Spike-sedge (*Eleocharis intermedia*), Threatened

Plants (continued)
- Long-styled Sanicle (*Sanicula odorata*), Threatened
- Tuckerman's Sedge (*Carex tuckermanii*), Endangered

Natural Communities

Exemplary Natural Communities
- Deep Emergent Marsh (Secure)
- Hemlock – Hardwood Swamp (Secure)

Priority Natural Communities
- Calcareous Forest Seep (Imperiled)
- Rich, Mesic Forest (Vulnerable)

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

and nest in upland fields and forests during spring and summer months, and hibernate in riverbanks or streambottoms during the winter. Near the village of Tyringham, larvae of the state-listed dragonfly Zebra Clubtail dwell in sand along the bottom of Hop Brook year-round, and adults occupy riparian and upland breeding areas from July to September. The state-listed minnow Bridle Shiner hides in aquatic vegetation in slack backwaters of Hop Brook, as well as in Goose Pond. The central valley also contains more than 15 acres of the uncommon Alluvial Red Maple Swamp natural community, which features an extensive canopy of Red and Silver Maple trees, as well as a diversity of understory tree species.

The highlands of Tyringham contain large areas of forest habitat, and although these areas are typically not as rich in biodiversity as the neighboring marble valleys below, they do support ecologically important ecosystems and species. Some of these species, natural communities, and wetland areas are priorities for protection. Along Beartown Mountain in western Tyringham, headwater streams support the Spring Salamander, which is considered of conservation concern under the State Wildlife Action Plan. This region also supports several acres of undisturbed wetlands, as do areas in northeastern Tyringham. The Priority Natural Community Hemlock-Hardwood Swamp is also found in highlands in the northeast part of town, along the eastern perimeter of Goose Pond.

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

Overview

In this section, we outline areas in Tyringham that warrant species 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. 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 Tyringham, although a given area of Core Habitat or Critical Natural Landscape listed here may extend outside of the town boundaries of Tyringham 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)

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 state-listed 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.

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, a total of one to six Town PCAs were selected. Each Town PCA contains part of at least one BioMap2 Core; in Tyringham, one Town PCA was selected. Figure 3 illustrates how BioMap2 Core Habitat and Critical Natural Landscape relate to the location of this Town PCA in Tyringham.

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 ecological significance 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 one Regional PCA, Regional PCA 8, fall within Tyringham and also encompass the Town PCA.

Core Habitat and Critical Natural Landscape Components in Tyringham

Areas of Core Habitat in Tyringham, called BioMap2 Cores (BCs), are summarized here, as 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. All BCs in Tyringham are within CNL883.

BC1428 and CNL883

BC1428 is a 35-acre core that falls largely to the south of Tyringham, in Monterey and Otis; however, a very small part of it – less than an acre – occurs within the extreme southeast corner of Tyringham. Here, BC1428 consists of a Wetland Core and is surrounded by an Upland Buffer and is within the Landscape Block of CNL883.

BC1634 and CNL883

BC1634 occurs near the Appalachian Trail in the north-

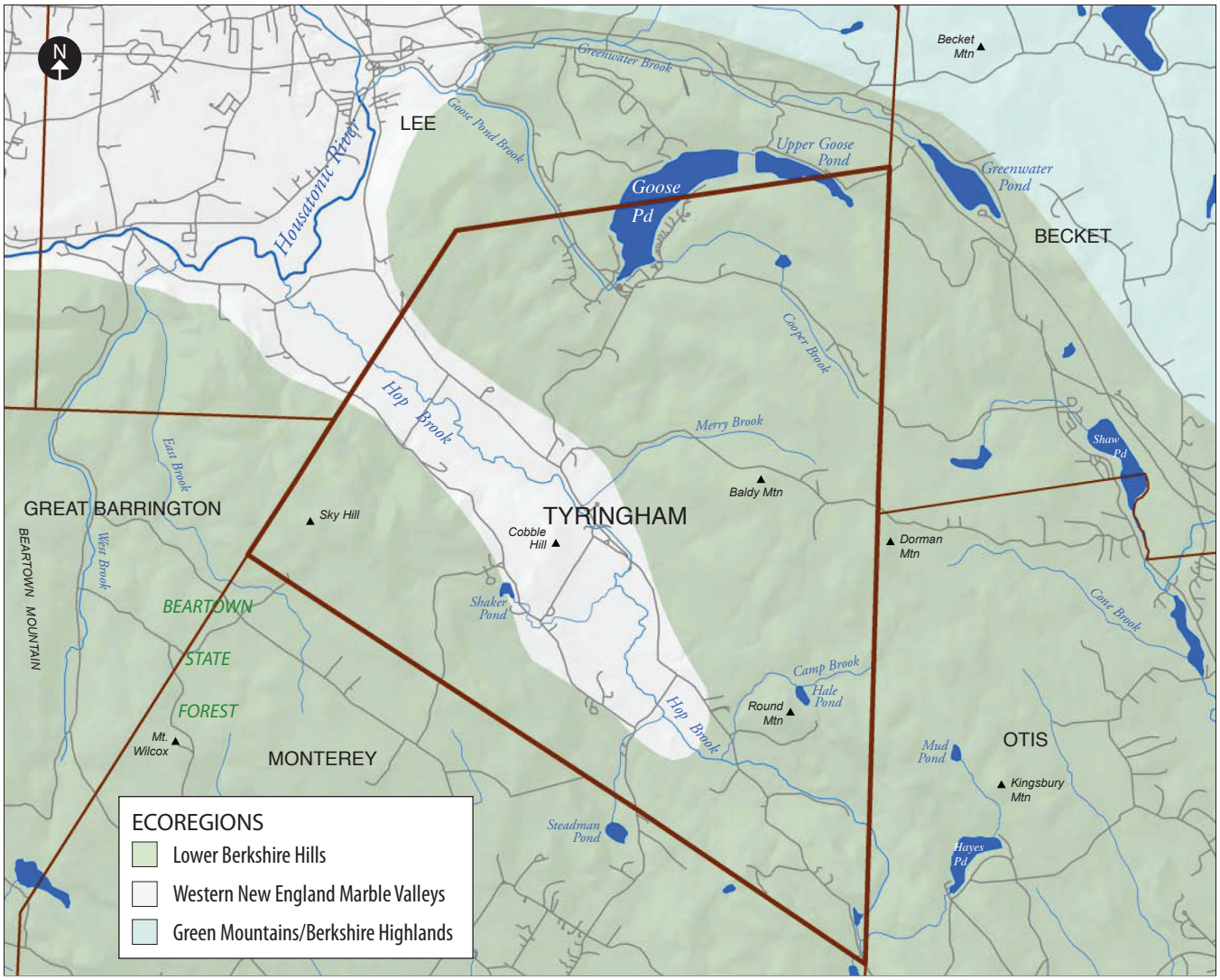

Figure 1. Town boundaries and ecoregions of Tyringham, Massachusetts.

eastern part of town. It is a small core (12.4 acres), consisting of a Wetland Core. It is surrounded by Upland Buffer and falls within a large Landscape Block of CNL883.

BC1658 and CNL883

This BC contains over 9,000 acres, covering much of northeast Great Barrington as well as parts of Stockbridge, Lee, and Tyringham. It includes three areas of Forest Core (nearly 4,000 acres in total). It also includes four Aquatic Cores, around Agawam, Konkapot, East, and West Brooks, and three Wetland Cores, all of which are surrounded by Upland Buffers of CNL883. As a whole, BC1658 is surrounded by a Landscape Block of the same CNL. 1,057 acres of BC1658 are in western Tyringham; its primary component here is a sizable area of Forest Core that includes parts of Beartown State Forest and section of the Appalachian Trail Corridor. It also contains a Wetland Core and populations of an uncommon salamander.

Spring Salamander (*Gyrinophilus porphyriticus*), SWAP: This salamander species 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 forests during rainy weather.

BC1673 and CNL883

BC1673 contains over 400 acres and includes Goose Pond and its immediate uplands in northern Tyringham and southern Lee. It also includes the riparian areas of Cooper Brook, a small stream that drains into the west corner of Goose Pond from the south. Two small areas – one along Cooper Brook and the other at the eastern end of Goose Pond – are Wetland Cores, and are surrounded

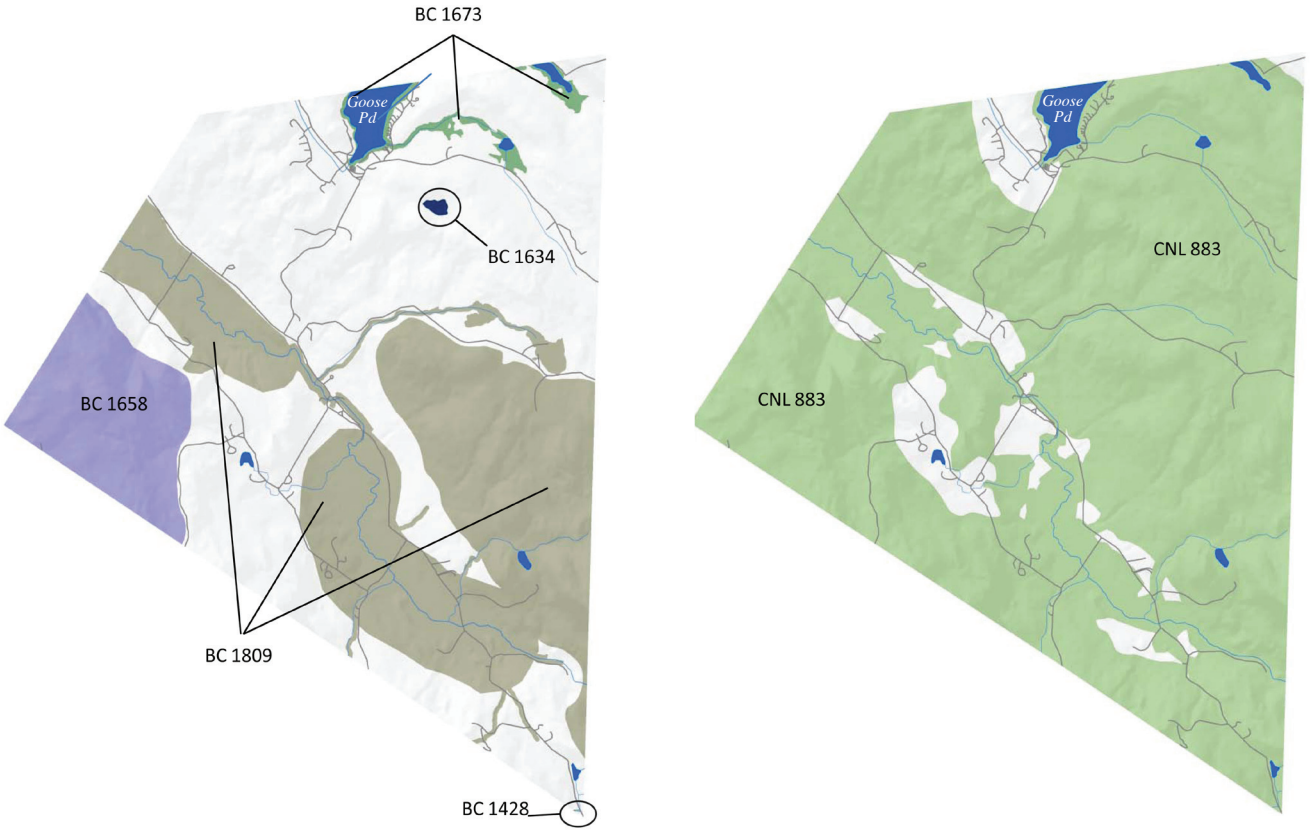

Figure 2. Tyringham includes a total of 5 BioMap2 Cores (BCs; left) and one area of Critical Natural Landscape (CNL; right).

by Upland Buffers of CNL883. These areas are part of a larger Aquatic Core that includes the mountain lake and its tributary. This Aquatic Core in turn is surrounded by a separate Upland Buffer and a Landscape Block of CNL883. BC1673 supports one state-listed species and one Exemplary Natural Community:

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. They are generally associated with submerged aquatic vegetation, but also school in areas of open water.

Hemlock – Hardwood Swamp (Secure): This common natural community is an acidic forested swamp with hemlock as its dominant canopy tree. It occurs on saturated soils in poorly drained basins throughout Massachusetts. This occurrence, situated at the east end of Goose Pond, is species-diverse and disturbance-free. It is only eight acres, but it is well buffered and occurs within a large area of natural vegetation, free of invasive plant species.

BC1809 and CNL883

BC1809 is a large and diverse core, over 11,000 acres in total size, that occurs all along Hop Brook and the Housatonic River mainstem. It stretches west from the headwaters of Hop Brook in east Tyringham and west Otis to the Housatonic River mainstem in Lee and Stockbridge. It also includes sections of other tributaries, including Greenwater and Goose Pond Brooks in Lee, the upper Williams River in West Stockbridge, and the outlet of Mohawk Lake in Stockbridge. It lies almost entirely within CNL883. BC1809 is the largest in Tyringham and includes nearly 1,000 acres of Aquatic Core along Hop Brook in the central valley where it is surrounded by Upland Buffer. It is contained mostly within a large Landscape Block of CNL883. The core supports extensive wetland areas and habitat for a great diversity of plant, fish, insect, and bird species. BC1809 also contains a nearly 2,000-acre area of Forest Core that includes the watersheds of several small tributaries to Hop Brook. BC1809 supports state-listed plant, fish, reptile, and bird species:

Plants

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

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

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

Insect

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.

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 at 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. They are generally associated with submerged aquatic vegetation, but also school in areas of open water.

Reptile

Wood Turtle (*Glyptemys insculpta*), Special Concern: Ideal habitat for this species includes streams and rivers with long corridors of undeveloped, connected uplands extending on both sides of the waterways.

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, make it well-camouflaged in marsh habitat.

King Rail (*Rallus elegans*), Threatened: This bird is the largest rail species in Massachusetts. Its build is fowl-like, similar to that of a chicken. It is a secretive marshbird that inhabits large cattails beds and tussock marshes, and occasionally shrub marshes. While populations of this bird are stable in the southern United States, they are less common near the northern extent of their range here in New England.

Sedge Wren (*Cistothorus platensis*), Endangered: This is a perching bird species that nests in large wet meadows or shallow marshlands with sedge and grass vegetation. It is sensitive to the loss of wet meadow habitat due to certain incompatible agricultural practices, as well as disturbances such as the arrival of invasive plant species in its native habitat.

Exemplary Natural Community

Deep Emergent Marsh (Secure): This common natural community type is characterized by seasonally-flooded, grassy wetlands with saturated soils. It generally forms in broad, flat areas bordering slow rivers or along ponds and often grades into shrub swamps. There are two areas of Deep Emergent Marsh in BC1809, in the northwestern part of town. They are 23 acres and six acres, respectively. Despite the presence of invasive exotic species in these Deep Emergent Marshes, they are in excellent condition and have high plant species diversity, providing important habitat for several state-listed bird species.

Priority Natural Communities

Calcareous Forest Seep (Imperiled): This natural community is found on wet slopes where calcium-rich groundwater seeps out of the earth. Its overstory tree species are similar to those of surrounding, more common forest community types, but it is distinguished by the particular assemblage of wetland plant species it contains, including calcareous ferns and shrubs. This 4-acre example of Calcareous Forest Seep is very significant; it has excellent diversity and supports several state-listed plant species. It is threatened by potential disturbances such as the invasion of exotic plant species and trampling from users of a nearby hiking trail.

Rich, Mesic Forest (Vulnerable): This is a variant of northern hardwood forests that is dominated by sugar maple and supports a diverse array of herbaceous plants that includes many spring wild flowers, in a moist, nutrient rich environment. This 41-acre area of Rich, Mesic Forest is in good condition, and has exceptional species diversity. It is threatened by trampling from hikers, as well as by several exotic plant species.

Priority Conservation Areas in Tyringham

The town of Tyringham contains one large area identified as Town PCA by NHESP. It is also part of a larger Regional PCA.

Town PCA 1/Regional PCA 8: Town PCA1 is a 7,505-acre area that is part of Regional PCA 8. As a whole, Regional PCA 8 includes nearly 20,000 acres in parts of Pittsfield, Washington, Lee, and Lenox, encompassing highland areas and headwater streams to the Housatonic River mainstem throughout this region. In Tyringham, this area overlies a part of CNL883 and comprises much of the southern half of Tyringham. It contains extensive tracts of unfragmented forest in the highlands, as well as much of Hop Brook and its tributaries. BC1428, BC1658, and BC1809 are all part of Town PCA 1 and Regional PCA 8.

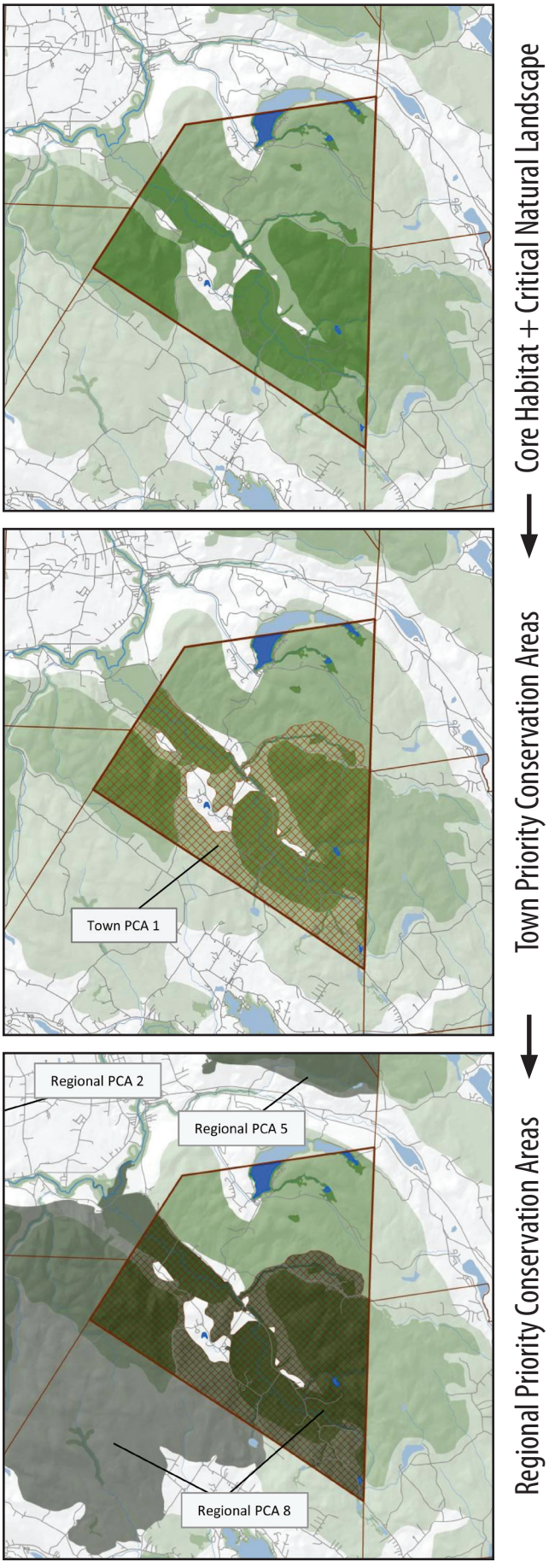

Figure 3. Core Habitat (dark green), Critical Natural Landscape (light green), Town Priority Conservation Area (PCAs; reddish-brown grid) and Regional Priority Conservation Area (transparent grey) in Tyringham. Town PCA 1 makes up 7,505 acres or 62.2 percent of the town's land area. Regional PCA 8 overlaps Town PCA 1 and incorporates nearly the same amount of land – 7,508 acres.

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.

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