



**Land Management Plans for Grasslands and Meadows on  
Town-Owned Land in Boxborough, Massachusetts**

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to the

**Boxborough Conservation Commission**

By

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Ecological Extension Service**

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## Introduction

Early successional natural communities – grasslands, meadows, and shrublands – are an increasingly uncommon cover type in our region. In the natural process of succession, grasslands and meadows are pioneered by woody species, becoming shrublands; as tree species seed into the site and grow taller, shrublands succeed to forest. In order to maintain early successional habitat, some disturbance is required to continually set back the clock of succession. Natural disturbances that create early successional habitat include browsing, fire, wind damage, forest disease, and beaver damming. Some of these processes occur on our landscape, but some, such as large scale browsing by wild animals, and fire, have essentially been removed from our landscape. In addition, throughout Southern New England agricultural landscapes are being abandoned and allowed to revert to forest or developed for housing or commercial use. As a result, the Massachusetts landscape, which was as little as 20% forest at the height of land clearing in the 1850s is now nearly 80% forested. While forest makes fine habitat, a wide range of plants and animals require grasslands or shrublands for parts of their life cycles. With fewer natural processes allowed to set back the successional clock, humans must take an active role in managing for early successional cover.

In June, July and August of 2005, Jeffrey Collins and Liz Newlands of Mass Audubon's Ecological Extension Service conducted breeding bird and vegetation surveys of grasslands and meadows on eight town-owned properties in Boxborough, Massachusetts. The attached Land Management Plans are based on information gathered during those visits and in conversations with Boxborough Conservation Commission members and staff of the Boxborough Department of Public Works to develop an understanding of current management practices, and to learn about equipment availability for land management. The town-owned properties included in this study are: Steele Farm, Beaver Brook Meadow, Rolling Meadow, Flerra Meadow, Patch Hill, Flagg Hill, Have Not Pond and Hager Meadow. During our visits, Mass Audubon staff also assessed trail conditions and locations and wildlife habitat features of the property including the presence of invasive plant species, to inform our management recommendations.

We recommend that the Town manage the properties as four different types of early successional community:

- Grasslands – Flerra Meadows, Patch Hill, and the hayfield at Steele Farm should be managed as grassland by regular annual mowing after August 1<sup>st</sup>. Steele Farm and Flerra Meadows are the town's finest sites for grassland nesting birds, hosting Bobolinks which prefer these large hayfields. Patch Hill is too small for grassland-nesting birds, but is fine invertebrate habitat.
- Meadow – Rolling Meadow, Beaver Brook Meadow, Flagg Hill, and the fields at Have Not Pond should be managed as meadows with annual or bi-annual mowing after October 1<sup>st</sup>. This later and less frequent mowing will promote diversity of herbaceous species over grasses. Wet sections of these sites should be mown only in dry conditions.

- Pasture – Hager Meadow should be managed as grazed pasture. Grazing the site, as opposed to mowing, will create vegetative cover and structure unlike that on other town-owned sites, diversifying the town’s portfolio of early successional habitat types. If continued grazing is counter to the town’s overall goals for Hager Meadow, it might best be managed as grassland.
- Shrubland – The shrubby sections of Steele Farm and Rolling Meadow should be managed for a long-term cover of shrubs, to further diversify the range of habitat types on town-owned land.

At several of the sites we recommend modifications to the trail system and current management practices to minimize disturbance of wildlife and to enhance ecological function. These modifications include re-routing and closing some trails, narrowing trail width, and adjusting the timing and extent of mowing.

### **Breeding Bird Survey**

We conducted breeding bird censuses at seven of the eight study sites in June 2005. The breeding bird census at Hager Meadow was not completed. Surveys were conducted for 45-60 minutes between 6:00 AM and 9:00 AM hours under standard conditions (no strong winds or rain or high temperatures; minimal noise pollution). Observers walked through grassland habitat noting both the species observed and the location of individuals, including those birds observed flying overhead. Each census was conducted with an unlimited calling circle: all birds observed and heard were identified. Detailed results are given in the reports for each section.

The only record of a grassland nesting bird species was a pair of Bobolinks observed at Flerra Meadow. At least two pairs of Bobolinks were observed on a brief visit to Steele Farm in early summer of 2004, but none were observed in 2005. Blue-winged Warblers, which rely on early-successional shrublands for nesting, were recorded at both Steele Farm and Rolling Meadows. Past sightings of Woodcock at Rolling Meadow were reported by other observers, but none were observed on a single visit in late May 2005. They would be expected at Rolling Meadow and possibly Beaver Brook and Have Not Pond.

In addition to grassland- and shrubland-nesters, a wide diversity of avifauna depend on open habitats for other parts of their life cycles. American Goldfinch and American Woodcock fly high overhead across open landscapes advertising their mating songs and breeding displays. Indigo Buntings perch in the highest trees tops to broadcast their song out over fields, meadows, and shrublands. Tree Swallows and Barn Swallows soar over fields and meadows preying on insects while they feed on the wing. Flycatchers often perch on bare branches, swooping down to catch an insect and returning to the same perch time and again. And raptors feed on small mammals that find refuge and food sources deep in the grasses. Wild Turkey and Pheasant also rely on grasslands in which to forage for food. Recognizing the importance of grasslands to the full suite of wildlife, rather than focusing on the needs of grassland nesting species, will help to best guide and shape ecological management plans.

## **Vegetation Survey**

Walk-through surveys of the eight study sites were conducted in July and August of 2005. Mass Audubon staff noted the most abundant species present with particular attention focused on invasive species because of their growing adverse affects on native habitats and wildlife. Extensive but not exhaustive plant lists are reported parcel by parcel. Each list is given in relative order of abundance. The more abundant species (based on estimated percent cover) are generally given at the beginning of each list and less abundant species towards the end of the list. The lists indicate plants observed in flower (fl) or in fruit (fr) at the time of the survey, as well as invasive species (\*).

All grasslands visited are best classified as “cultural grasslands” as described in the Massachusetts Natural Heritage and Endangered Species Program’s *Classification of the Natural Communities of Massachusetts* (Swain and Kearsley, 2000). These plant communities are created and maintained as open habitats by humans, usually by mowing. They are dominated by grasses and tend to occur on well drained, low nutrient soils. In this report, we further characterize cultural grasslands based on plant species composition, which is often a function of soil moisture and management. Fields, hayfields and agricultural fields tend to have more well-drained soil and more frequent management which contribute to lower plant species diversity. Meadows are transitional areas, tending to have dry soils but higher species diversity than fields, frequently reflective of less-frequent management. Wet meadows occur in areas with slightly wetter soils and tend to have higher plant diversity. It is important to note here that wet meadows as we refer to them are not following Swain and Kearsley’s wet meadow community type which is characterized by 50% cover of tussock-forming sedges. Early successional shrubland habitats, such as those found on the study sites, are so variable that they are difficult to define as a natural community. They are not covered by Swain and Kearsley.

## **Adaptive Ecological Management Plans**

Specific recommendations for ecological management are made for each parcel and address particular concerns, issues and opportunities specific to that site at the time this report was written. Adaptive ecological management requires continued monitoring of ecological function, periodic assessment of goals and objectives, and adjustment of management plans as deemed necessary by site conditions. Landscapes change and ecological management plans often need to change with them.

Our recommendations for ecological management are based on parcel size, plant community type, and wildlife observations. As an overall goal, we suggest the Conservation Commission manage their portfolio of early successional sites to maximize diversity among the sites. If all sites were managed in the same way, overall diversity would be decreased. We recommend creating a mosaic of grassland community types within the town including hayfield-type grasslands for grassland nesting birds, smaller meadows for foraging birds and other wildlife, pasture with limited grazing, and early successional shrublands.

Our recommendations often include suggestions for the management of invasive species on a property. We direct the Conservation Commission to the [Mass Audubon Invasive Species Management Handbook](#) for extensive information on management strategies and treatment regimes. This handbook is attached to this report as a CD.

Adaptive ecological management recommendations are also made for improving trails at the various properties. We recommend closing some trails and redirecting others to simplify wayfinding and limit impact to wildlife, while building others to improve visitor experience. These recommendations are given in the “Suggested Site Improvements” section for each parcel with a diagram of suggested changes and a brief narrative. Since specific and detailed trail site design and construction recommendations are beyond the scope of this project, further survey and planning work may be required should the Commission wish to implement suggested trail and site improvements.

## **Recreation and Grazing**

In addition to being attractive as wildlife habitat, well-managed early successional conservation lands are aesthetically pleasing and often perceived as the safest and most pleasant places for passive recreation. Common uses, all observed on sites included in this study, include dog walking, equestrian use, and non-motorized bicycle. An additional use that the Town grapples with is grazing. We do not view any of these uses as being inherently incompatible with sound ecological management of these properties, including management for grassland nesting birds. However, we suggest the following guidelines:

### Dog walking

Dogs present a few problems on conservation land including disturbance to wildlife, impact to water quality from droppings, and discomfort to other users. Several towns in the Boxborough area and other managers of conservation land deal with this issue. Disturbance of wildlife ranges from chasing deer to flushing birds from a nest to killing chipmunks.

One of the primary concerns expressed by members of the Conservation Commission was the potential impact of dogs on grassland nesting birds. This would appear to be an issue of some concern at Steele Farm and Flerra Meadows, both of which have hosted nesting Bobolinks and both of which are regularly used for dog walking. We do not see the need to ban or drastically limit dog walking at either site, but potential impacts to breeding birds could be reduced by re-aligning and narrowing some trails as suggested in our specific comments below, and by education dog owners – through signage, articles in local media, and on-site information – about the presence of bird nests and the impact of letting dogs run into the grasslands. Trail relocation and widening of un-mown buffers adjacent to wetlands at Flerra, Steele, and Flagg Hill would reduce potential impacts of droppings on water quality at those sites.

### Equestrian & Bicycle Use

The greatest concern about equestrian and bicycle use is trail damage, which can be a particular issue during a wet Spring. We suggest closing trails to both during the wettest months, typically mid-March through mid-May. The Commission might consider enlisting equestrian and mountain bike users in trail building and maintenance.

### Grazing

Within the context of Boxborough's portfolio of early successional properties, agricultural use is not in conflict with managing grasslands for wildlife. Well-managed grazing at a site can result in a grassland with a vegetation structure that can't be easily reproduced by mechanized control, thus increasing the biological diversity of the conservation lands portfolio. Continued grazing also helps the Town maintain a part of its agricultural heritage. Of course, grazing on conservation lands may not be compatible with recreational use.

### **Review of Current Management**

Liz Newlands met with Ken Marsh, Director of the Boxborough Department of Public Works (DPW), to discuss the current mowing schedule and equipment available for management of the study sites. A review of the current mowing regime is included in the discussion of each parcel. In addition to mowers, DPW has a brush hog, a bobcat tractor, chipper, and chainsaws available for property management.



## **Steele Farm Conservation Area**

Middle Road, Boxboro MA

### Site Description

The 25.2 acre section of the Steele Farm property included in this study is evenly divided between grassland and early successional shrubby habitat. Overall, hay fields comprise 11.2 acres of the property and early successional shrublands 11.1 acres. A small wet meadow and associated farm pond (1.0 acres), as well as a Gray Birch coppice (0.6 acres) and spruce plantation (1.3 acres) are also on the property. The hayfields of Steele Farm are, along with Flerra Meadows, the finest grassland nesting bird habitat on town-owned property. Bobolinks, which were observed during a casual visit in July 2004, were not observed on repeated visits to the site in 2005; however, the vegetation and size of the property are ideally suited for Bobolink nesting, and it should be managed with their return in mind. The shrubbier sections of the property create ideal cover for another suite of birds associated with thickets. Altogether, this should be touted as a destination for birding and conservation of bird habitat.

The hay fields of Steele Farm are dominated by Orchard Grass, Timothy and Sweet Vernal-grass, with occasional thick patches of Red clover and Wild Madder. Daisy Fleabane, Queen Anne's Lace, and Pigweed are scattered throughout. A wet meadow community at the base of the western slope is dominated by Reed Canary Grass with scattered rushes, Late and Rough-stemmed Goldenrod, Sensitive Fern and buttercups. At the time of the survey, Canada Lily was in full bloom at the eastern edge of the wet meadow. Several dead White Ash trees are immediately upslope of the wetland vegetation. A large spruce plantation lies at the southern edge of the wet meadow and to its east is a large dead-standing White Ash tree choked with invasive Glossy Buckthorn, Multiflora Rose, and Oriental Bittersweet.

The western slope of Steele Farm is less open and has indicators of old pasture habitat, such as occasional Common Juniper. Other shrubs and small trees are numerous (i.e. Beaked Hazelnut, Smooth Sumac, Bayberry), creating a patchwork of open grasslands and dense thickets. A large coppice of Gray Birch, with several spruce trees immediately to the west, lies at the crest of the hill near the property boundary. Invasive Glossy Buckthorn, Oriental Bittersweet and Multiflora Rose are scattered underneath and are most abundant at the edges. The structure of the Gray Birch coppice provides excellent habitat for early successional species such as Eastern Towhee, Blue-winged Warbler, and Pheasant. The stand provides yet another habitat on the property and is an important component of landscape.

The spruce plantation is dominated by introduced spruce trees, planted for Christmas tree harvesting. There is very low plant diversity in this section.

### Current Management

Steele Farm is mown in late July/early August each year by arrangement with a local farmer who uses the hay crop. In the past, the western hillside had been grazed by arrangements with a local farmer, but that use has been irregular in past years. DPW staff have mown this section periodically but with no set schedule.

### Suggested Site Improvements

From a habitat perspective, Steele Farm is Boxboro's premier town-managed grassland and early successional habitat. The property is also a tremendous passive recreation asset with adequate parking and potential for a system of trails of various lengths that pass through a variety of habitat types and connect to other conservation land.

Our main recommendation for best management of these multiple values is to move the main trail leading south out of the parking area from the center of the main hayfield east to the property boundary. This would enhance continuity of the grassland habitat and minimize disturbance to grassland nesting birds and the wetland from pedestrians and dogs.

### Ecological Management Recommendations

In the hayfield, we recommend the continuation of mowing on an annual basis to maintain the current grass-dominated species composition and structure and encourage the field's use by grassland nesting species such as Bobolink. To ensure that nestling and fledgling grassland birds are not adversely affected by mowing operations, mowing should occur no earlier than August 1<sup>st</sup>. On-going monitoring should make note of the spread of Wild Madder. It is nearly co-dominant with orchard grass in some areas, which may reduce the site's attractiveness for Bobolinks. A few years of earlier-season mowing, after carefully monitoring Bobolinks for fledging, could favor the target mix of grasses over the Wild Madder.

The early successional habitat on western slope can be maintained on a two or three year mowing schedule. However the removal of trees with trunks greater than two inches in diameter may be required more frequently to maintain the open habitat. We recommend building brush piles with stems and branches, roughly 15-20 feet across and 5-10 feet high at a density of one per acre, rather than removing or chipping all of the debris. Brush piles enhance the overall wildlife habitat value by creating places for refuge, nesting and feeding for birds and small mammals. The standing dead White Ash trees, or snags, at the base of the western slope and at the southern end of the hay field should not be removed. Snags provide excellent overlooks for perching birds, such as hawks, kingfisher, and flycatchers, and contribute to the overall structural diversity of the site. Furthermore, the rotting wood attract insects which in turn attract woodpeckers whose excavations often later provide holes for cavity nesting birds, such as Tree Swallows and Screech Owls. These trees are an important component of the wildlife habitat value at Steele Farm. With trails in their current alignment, or re-aligned as recommended above, these trees are no hazard to recreational users.

Invasive species management at Steele Farm can best be achieved by mowing. Frequent mowing appears to have kept grassland areas relatively free of invasives. Several invasive species are seeding into the old pasture from the abundant seed sources in the hedgerow between the hayfield and the pasture. A one to three year mowing schedule in the old pasture and continual monitoring for rapidly-spreading invasions should maintain the early successional habitat.

The invasive Reed-canary grass dominates sections of the small wetland lying between the hayfield and the pasture. This species often forms dense monocultures in wet areas and old agricultural fields. We do not recommend treatment or removal of this species at this time but suggest the commission monitor the stand on a yearly basis to document its spread and take action in the future if necessary.

The spruces at the far end of the field, though not invasive, are not native to the region, and we recommend their removal. Spruce stands can provide important breeding habitat in eastern Massachusetts for specialist species such as Golden-crowned Kinglets, but this stand is too small and not dense enough to afford suitable nesting habitat for species such as these. Removal of the stand and management for grassland or early successional cover would increase the area of useful habitat at the site.

## Steele Farm Breeding Bird Survey

14 and 16 June 2005

<u>Species</u>	<u>Location</u>
Great Blue Heron	Overhead
Chimney Swift	Overhead
Ruby-throated Hummingbird	Field near wetland
Downy Woodpecker	Edge
Northern Flicker	Dead tree
Eastern Kingbird	Pasture/edge
American Crow	Road
Tree Swallow	Field/wetland
Black-capped Chickadee	South edge
Tufted Titmouse	South edge
House Wren	East edge
American Robin	House
Gray Catbird	Edge/spruces
Northern Mockingbird	East edge/road
European Starling	House
Cedar Waxwing	Dead trees/spruces
Blue-winged Warbler	Edge
Yellow Warbler	Edge
Common Yellowthroat	West edge
Chipping Sparrow	Spruces
Song Sparrow	Field/spruces
Northern Cardinal	Edge
Indigo Bunting	Edge/field
Red-winged Blackbird	Edge
Common Grackle	Dead trees
Baltimore Oriole	Dead trees
American Goldfinch	Dead trees
House Sparrow	Near barn

### Locations:

Barn or House = the structures at the parking area

Edge = shrubby boundary between hayfield and pasture

Dead trees = the large dead white ashes along the edge

Spruces = the tight stand of Christmas trees at the southern end of the hayfield

Wetland = the moist section on the west side of the hayfield

South edge = the forest margin south of the spruces

West edge = the west side of the pasture

Pasture = the sloping, shrubby area west of the large dead ashes

East Edge = the line of trees on the east side of the hayfield

Road = Middle Road on north side of survey area.

Steele Farm Vegetative Survey  
July 2005

Orchard Grass	<i>Dactylis glomerata</i>	
Timothy	<i>Phleum pratense</i>	
Red clover	<i>Lespedeza sp.</i>	
Pig-weed	<i>Amaranth sp.</i>	
Queen Anne's Lace	<i>Daucus carota</i>	(fl)
Wild Madder	<i>Galium sp.</i>	(fl)
Daisy Fleabane	<i>Erigeron sp.</i>	(fl)
Yarrow	<i>Amaranth sp.</i>	(fl)
Vetch	<i>Vicia sp.</i>	(fl)
Carex species	<i>Carex spp.</i>	
White Pine	<i>Pinus strobus</i>	
Glossy Buckthorn	<i>Rhamnus frangula</i>	*
Autumn Olive	<i>Elaeagnus umbellata</i>	*
European Barberry	<i>Berberis vulgaris</i>	*
Reed Canary-grass	<i>Phalaris arundinacea</i>	*
Rush species	<i>Juncus sp.</i>	
Rough-stemmed Goldenrod	<i>Solidago</i>	
Late Goldenrod	<i>Solidago</i>	
Old-field cinquefoil	<i>Potentilla simplex</i>	
Multiflora Rose	<i>Rosa multiflora</i>	*
Sensitive Fern	<i>Onoclea sensibilis</i>	
Canada Lily	<i>Lilium canadense</i>	(fl)
Butercup species	<i>Ranunculus sp.</i>	
Common Juniper	<i>Juniperus communis</i>	
Hazelnut species	<i>Corylus sp.</i>	
Smooth Sumac	<i>Rhus glabra</i>	
Oriental Bittersweet	<i>Celastrus occidentalis</i>	*
Meadowsweet	<i>Spiraea sp.</i>	
Chokeberry	<i>Aronia sp.</i>	
Poison Ivy	<i>Toxicodendron radicans</i>	
Thistle species	<i>Centaurea sp.</i>	(fl)
Swamp Dewberry	<i>Rhubus hispidus</i>	
Bayberry	<i>Myrica pensylvanica</i>	
Gray Birch	<i>Betula populifolia</i>	
Spruce	<i>Picea sp.</i>	

- (fl) Plant observed in flower  
(fr) Plant observed in fruit  
\* Invasive species

## **Rolling Meadows Conservation Area**

Littlefield Road, Boxboro MA

### Site Description

Rolling Meadows exhibits the highest plant diversity of any of the sites surveyed. The presence of wet meadow along with dry upland meadow combine in a habitat mosaic that is not to be found on the other sites. As such, management efforts should be focused on maintaining the vegetation diversity by restricting mowing to late in the season, and by limiting the number of paths snaked through the wet meadow in particular.

Three distinct vegetation cover types make up the 8.6 acres of grasslands and early successional habitat at Rolling Meadows: 4.7 acres of shrublands; 3.5 acres of wet meadow; and a 0.4 acre stand of wetlands dominated by Reed Canary-grass. The majority of the wet meadow is a diverse mix of Sensitive Fern, Late and Rough-stemmed Goldenrod, Common Milkweed, Swamp-dewberry, Meadowsweet, Yarrow, St. Johnswort, and rushes and sedges. A small section is dominated by species that tend to tolerate wetter soils, such as Reed Canary Grass, Joe-Pye Weed, Marsh Fern and Elderberry. The northern half of the site is characterized by former pasture dotted with shrubs and small trees such as Common Juniper, Chokecherry, Smooth Sumac, Gray Birch, Trembling Aspen, as well as alders and oaks. This early successional habitat is more upland in nature than the open wet meadow with a higher abundance of species such as Queen Anne's Lace and Common Milkweed that prefer drier soils.

Existing trails in the wet meadow spur off the main trail which leads west. These wet meadow trails are located to the south of trailhead. A loop trail skirts the edge of the meadow, follows the stonewall along Littlefield Road and loops back around and bisects the wet meadow. We observed this section of the trail mown to roughly ten feet wide. Another north/south oriented trail lies further to the west, next to a hedgerow of White Pines, oaks and maples with an under story of invasive Glossy Buckthorn, honeysuckle species, and Oriental Bittersweet.

Woodcocks were not encountered on an evening visit on which their breeding display would have been expected. Anecdotal reports indicated that woodcock have used the wet meadow for breeding, and the habitat would support those reports.

### Current Management

Rolling Meadow receives a fall mowing once a year by DPW staff. The foot-trails in the meadows are mown with a brush hog up to ten feet wide due to concerns of exposing public to ticks and to provide access for emergency vehicles should any visitor require immediate assistance.

### Suggested Site Improvements

Parking is limited to parallel parking along Littlefield Road. Constructing two or three turnouts may better accommodate recreational users and be safer for street traffic. However, embankments and drops along the roadside, and the presence of historic stonewalls, create challenges and a simple pull-off for several cars would not easily be constructed. Therefore, specific site design and recommendations are beyond the scope of this project.

To decrease disturbance to wildlife using the grassland, including any birds that may use the fields for nesting, we recommend closing the existing loop trail through the wet meadow. In its place we recommend creating a new trail to the north, following the edges of the early successional scrubland habitat that connects with the main trail near the woods. We further strongly recommend that mown trails be limited in width to 5 feet. The 10-foot and wider trails as currently mown unnecessarily impact on vegetation and habitat quality of the site.

### Ecological Management Recommendations

As with Steele Farm, we recommend annual mowing to maintain grassland species composition and structure. Mowing should take place no sooner than October 15<sup>th</sup> to minimize disturbance to grassland nesting bird species. Later mowing would also be beneficial for invertebrates such as dragonflies and butterflies, as well as migrating birds. The establishment of woody vegetation in the shrubland should be monitored for the occasional removal of trees with trunks greater than two inches in diameter. As at Steele Farm, we recommend building several brush piles for wildlife refuge, nesting and feeding rather than chipping or removing all woody debris.

Invasive plant species are limited to a few stands of Purple Loosestrife in the southeast corner of the field, and invasive Common Buckthorn, honeysuckle species, and Oriental Bittersweet harbored under trees in hedgerows and the old pasture. Since the overall distribution of Purple Loosestrife is low, hand pulling may be the best eradication technique at this property. The other invasive species present are best controlled with annual mowing which should keep these species from becoming established in the meadows. The Reed Canary-grass stand will also need to be monitored to prevent the establishment of a large monoculture.

### Rolling Meadow Breeding Bird Survey

16 June 2005

<u>Species</u>	<u>Location</u>
Rock Pigeon	Overhead
Chimney Swift	Overhead
Willow Flycatcher	Roadside across street
Eastern Kingbird	Treetops
Warbling Vireo	Edge
Black-capped Chickadee	Edge
Tufted Titmouse	Edge
Veery	Southeast edge
American Robin	Edge
Gray Catbird	Edge
Blue-winged Warbler	Across street
Yellow Warbler	Edge
Song Sparrow	Field/shrubs
Northern Cardinal	Edge
American Goldfinch	Treetops/overhead

Rolling Meadow Vegetative Survey  
July 2005

Sensitive Fern	<i>Onoclea sensibilis</i>	
Smooth Sumac	<i>Rhus glabra</i>	
Rough-stemmed Goldenrod	<i>Solidago rugosa</i>	
Common Milkweed	<i>Asclepia syriaca</i>	(fl)
Gray Dogwood	<i>Cornus racemosa</i>	(fr)
Raspberry species	<i>Rubus sp.</i>	
Meadowsweet	<i>Spiraea sp.</i>	(fl)
Yarrow	<i>Achillea millefolium</i>	(fl)
St. Johnswort species	<i>Hypericum sp.</i>	(fl)
Joe-Pye Weed	<i>Eupatorium maculatum</i>	(fl)
Swamp Dew-berry	<i>Rubus hispidus</i>	
Late Goldenrod	<i>Solidago gigantea</i>	
Wild Asparagus	<i>Asparagus officianalis</i>	
Purple Loosetrife	<i>Lythrum salicaria</i>	(fl) *
Wool-grass	<i>Scirpus cyperinus</i>	
Queen Anne's Lace	<i>Daucus carota</i>	(fl)
Canada Thistle	<i>Cirsium arvense</i>	*
Sedges	<i>Carex spp.</i>	
Marsh-fern	<i>Thelypteris palustris</i>	
Willow	<i>Salix sp.</i>	
White Pine	<i>Pinus strobus</i>	
Red Maple	<i>Acer rubrum</i>	
Alder	<i>Alnus sp.</i>	
Gray Birch	<i>Betula populifolia</i>	
White Birch	<i>Betula papyrifera</i>	
Juniper	<i>Juniperus communis</i>	
Apple species	<i>Malus sp.</i>	(fr)
Trembling Aspen	<i>Populus tremuloides</i>	
Common Buckthorn	<i>Rhamnus cathartica</i>	*
Goatsbeard	<i>Tragopogan pratensis</i>	(fr)
Vetch	<i>Coronilla varia</i>	(fl)
Daisy-fleabane	<i>Erigeron annus</i>	(fl)

(fl) Plant observed in flower  
(fr) Plant observed in fruit

\* Invasive species



## **Flerra Meadows**

Summer Road, Boxboro MA

### Site Description

The 20.6 acres of non-forested land at Flerra Meadows includes 5.1 acres of athletic fields, 2.4 acres of parking, and a 0.7-acre pond. The remaining 12.4 acres are divided into 1.1 acres of wet meadows and shallow marsh bordering the small pond and 11.3 acres of grasslands. These grassland acres are further divided into roughly 9.4 acres of hayfield that are mown once to three times annually and 1.8 acres of lawn that are mown almost weekly.

The section of hayfield located between Stow Road and the small pond is dominated by Orchard Grass, Timothy, and Red Clover with sedges and wildflowers such as Queen Anne's Lace, and Late and Rough-stemmed Goldenrods. This area appears to be mown at most annually. The somewhat more-frequently mown upland field, located between the pond and the busy athletic fields, is characterized by a homogeneous plant community typical of hayfields, dominated by Red Clover, Orchard Grass, Timothy, and Smooth Brome with patches of Common Cinquefoil and Wild Madder.

Sections of short-mown lawn – up to 100 feet wide adjacent to the entrance road and parking area, and up to 50 feet wide along paths within the fields – are almost entirely dominated by grasses. These sections appear to be mown regularly throughout the growing season.

The pond's edge is dominated by Purple Loosestrife, Woolgrass and Common Elderberry, with some cattail.

### Current Management

Flerra Meadow is mown 1-3 times per year and different sections are mown at different frequencies. The wide grassy swath at the entrance is kept short for overflow parking for athletic events, especially fall soccer games; it is mown on a regular basis throughout the growing season. The tall-grass field to the west of the pond is mown once annually in late summer or early fall. The short-grass field between the pond and the athletic field is mown for hay between one and three times per year by arrangement with local farmers. This field is also mown as necessary to accommodate large crowds that gather for fall festivals and town events. The trail bisecting this short-grass field is mown short and wide to protect recreational users from exposure to ticks. The trail immediately east of the pond is also mown short to accommodate recreational users. The wetland buffer between the pond and the trail remains more or less as a function of soil conditions: the tractor gets stuck in the mud and can not mow any closer to the pond's edge.

### Suggested Site Improvements

The trail that bisects a large section of the mown upland meadow, running from the northeast corner of the pond northeast to the forest edge, should be closed and relocated further west, along the edge of the meadow. This would maximize the contiguous area of grassland and the habitat value of that grassland while still meeting the needs of recreational users. Additional site improvements are made as a component of the ecological management recommendations below.

### Ecological Management Recommendations

The tall grass fields hosted the only pair of Bobolinks observed on Town property during this survey effort and are regularly used by swallows, Eastern Bluebirds, and other species for feeding. Along with Steele Farm, this is the Town's finest grassland-nesting bird habitat. Special care should be taken to manage Flerra Meadows in a way that maximizes wildlife habitat value while accommodating heavy passive recreational use.

It appears that the extensive mowing at Flerra Meadows is motivated primarily by aesthetics and accommodation of recreational functions. The view from Summer Road, sweeping across the tall-grass meadow near the roadside across the pond with the athletic fields in the distance is appealing, and the wide swath of low cut grass at the entry way has an estate-like feel. However, we strongly recommend the Commission work with DPW to establish a maintenance plan that would enhance ecological function of the area while maintaining aesthetic value.

Our first recommendation is to reduce the width of the grassy swath directly adjacent the driveway to twenty feet where grass may serve as overflow parking and to five feet in other areas. The remaining grass area, between the driveway and the woods to the south, and between the driveway and the wetland to the north of the entrance, should be mown once annually, after August 1<sup>st</sup>. We also recommend modifying the wide paths that circle the central field. Currently the paths are mown at widths approaching 50 feet, with a width of up to 100 feet directly east of the pond. These broad swaths of short grass provide very little habitat value, and directly impact the quality of the central field as Bobolink habitat by reducing the extent of contiguous grassland. The paths all the way around the central field should be reduced to ten feet wide and kept to the edge of the field as much as possible – adjacent to the parking area fence to the south, the athletic fields to the east, and the forest to the north. On the west side, the path should be set back from the pond edge by 100 feet, to create a wetland buffer. The grass is currently mown to within 10 feet of the pond edge. Conservation Commission and DPW staff could agree on one or two points where the grass is mown to the pond, allowing access to the water's edge for pond exploration. This would encourage a wider bordering vegetated wetland to grow around the pond's edge, protecting water quality and providing important wildlife habitat while accommodating recreational and educational use of the pond.

The best opportunity to improve the ecological function of the property is to allow the mown upland meadow to grow into a tall-grass field similar to the section on the west side of the pond. Limiting mowing to once annually would encourage the establishment of a plant community that supports greater species diversity and has a more complex structure to provide better habitat for grassland nesting birds and invertebrates in particular. If this section must be mown for specific events, that should be the only annual mowing, and that mowing should be no sooner than August 1<sup>st</sup>.

Flerra Meadow Breeding Bird Survey  
15 June 2005

<u>Species</u>	<u>Location</u>
Eastern Kingbird	
Tree Swallow	Field
Barn Swallow	Field
Eastern Bluebird	Using old nest box in north field
American Robin	Grass
Northern Mockingbird	Edge
Yellow Warbler	Edge
Common Yellowthroat	Northern edge
Northern Cardinal	Edge
Bobolink	Field
Red-winged Blackbird	Wetlands
Common Grackle	Edge
Baltimore Oriole	Northern trees
American Goldfinch	
House Sparrow	

Flerra Meadow Vegetation Survey  
July 2005

Red Clover	<i>Trifolium pratense</i>	(f1)
Common Cinquefoil	<i>Potentilla simplex</i>	
Queen Anne's Lace	<i>Daucus carota</i>	(f1)
Black-eyed Susan	<i>Rudbeckia hirta</i>	
Daisy-fleabane	<i>Erigeron annuus</i>	(f1)
Wild Madder	<i>Galium mollugo</i>	(f1)
Reed Canary-grass	<i>Phalaris arundinacea</i>	*
Purple Loosestrife	<i>Lythrum salicaria</i>	(f1)*
Spotted Touch-Me-Not	<i>Impatiens capensis</i>	(f1)
Woolgrass	<i>Scirpus cyperinus</i>	
Timothy	<i>Phleum pratense</i>	
Gray Dogwood	<i>Cornus racemosa</i>	
Red Maple	<i>Acer rubrum</i>	
White Campion	<i>Lychnis alba</i>	(f1)

(f1) Plant observed in flower

(fr) Plant observed in fruit

\* Invasive species

## **Beaver Brook Meadow**

Hill Road, Boxboro MA

### Site Description

The 3.5 acres of early successional cover at Beaver Brook are divided into 1.8 acres of wet meadow and 1.7 acres of old field meadow characterized by upland grasses and wildflowers. Reed Canary Grass, Joe-Pye weed, sedges and grasses dominate the wet meadows near the road and ditched stream. Late and Rough-stemmed Goldenrods, and grasses such as Timothy and Sweet Vernal grass dominate the gently sloping uplands on the eastern half of the property. Silky Dogwood, Smooth Alder and Red Maple border the ditched stream in the southeast corner of the property. Silky Dogwood also occurs in the dry meadow but is kept in check by regular mowing. A mown trail leads from the road edge to the northeast corner of the meadow and into the woods. Remnants of three other trails, tracing the outlines of an old horse riding ring, loop south from this trail into the eastern half of the meadow.

### Current Management

Beaver Brook Meadow receives fall mowing once per year. The foot trails are mown wide due to concerns of exposing public to ticks and providing access for emergency vehicles.

### Suggested Site Improvements

Access to this site is awkward. Parking at the site is limited to one or two cars pulled to the side of the road; there isn't room to actually pull off the road. On the Beaver Brook Meadow side of the road, the land drops down from the roadside to wet ground, limiting potential for creating off-road parking. Since the main trail connects to the Steele Farm property, it could be viewed as a "gateway" to the adjoining parcel. The creation of two or three off-road parking spaces somewhere along this stretch of Hill Road, and signage indicating the property's connection to Steele Farm, might increase the recreational value of the property.

We recommend improving the main trail crossing over the wet meadow. In its current configuration, the trail is wet in all but the driest times of year, and quite muddy in Spring. Something as simple as planks nailed to cross supports would suffice, reducing soil compaction and limiting trail widening that often results when pedestrians attempt to skirt wet and muddy areas. It appears equestrians use the trail. Providing a more robust crossing, or closing this trail entrance to horses during the "mud season" (roughly March 1st – April 15<sup>th</sup>) would further reduce trail erosion and siltation of the wetlands in this sensitive area.

Three north/south oriented trails cross the dry meadow and appear to have connected with each other at some time in the past. One trail runs along the wetland/upland margin, one runs along the forest edge on the east side of the dry meadow, and the third runs between these two; they all connect at the southern end of the dry meadow. These trails may be occasionally mown. The upland meadow section of this parcel is too small for even a short loop trail. We recommend closing the two westernmost trails to protect water quality and to minimize disruption to wildlife that use the meadow. The third trail is well sited in dry soils at the edge of the field and could be connected to trails leading east into the woods.

### Ecological Management Recommendations

The small size of this parcel limits its function as breeding bird habitat for grassland nesting species. However, it is an important foraging area for other birds and provides excellent invertebrate habitat. White-tailed Deer were observed here by Ecological Extension Service naturalists on more than one occasion. We recommend maintaining the meadow with mowing every second year. Mowing should occur after October 15<sup>th</sup> to provide optimal wildlife habitat for the full suite of species that rely on this grassland for parts of their life cycle.

### Beaver Brook Meadow Bird Survey

15 June 2005

<u>Species</u>	<u>Location</u>
Turkey Vulture	Flyby
Red-tailed Hawk	Overhead
Killdeer	On adjacent farm
Willow Flycatcher	Wet area near road
Eastern Phoebe	Edge
Warbling Vireo	Edge
Black-capped Chickadee	Edge
American Robin	Edge
European Starling	On adjacent farm
Yellow Warbler	Edge
American Redstart	Edge
Common Yellowthroat	Southern boundary
Song Sparrow	Edge
Northern Cardinal	Edge
Red-winged Blackbird	Wet section near road
Baltimore Oriole	Edge
American Goldfinch	Edge

Beaver Brook Meadow Vegetative Survey  
July 2005

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Reed Canary -grass	<i>Phalaris arundinacea</i>	*
Purple Loosestrife	<i>Lythrum salicaria</i>	(f1)*
Joe-Pye Weed	<i>Eupatorium purpureum</i>	(f1)
Rough-stemmed Goldenrod	<i>Solidago rugosa</i>	
Sedges	<i>Carex spp.</i>	
Rushes	<i>Juncus spp.</i>	
Tall Meadow Rue	<i>Thalictrum polygamum</i>	(f1)
Sensitive Fern	<i>Onoclea sensibilis</i>	
Iris	<i>Iris sp.</i>	(fr)
Wild Madder	<i>Galium mollugo</i>	
Timothy	<i>Phleum pratense</i>	
Swamp Dew-berry	<i>Rubus pubescens</i>	
Silky Dogwood	<i>Cornus amomum</i>	
Smooth Alder	<i>Alnus serrulata</i>	
High-bush Blueberry	<i>Vaccinium corymbosum</i>	(fr)
Wool-grass	<i>Scirpus cyperinus</i>	
Buttercup	<i>Ranunculus sp.</i>	(f1)
Meadowsweet	<i>Spiraea sp.</i>	(f1)
Sweet Vernalgrass	<i>Anthoxanthum odoratum</i>	
Red Clover	<i>Trifolium pratense</i>	(f1)
Vetch	<i>Coronilla varia</i>	(f1)
Common Milkweed	<i>Asclepia syriaca</i>	(fr)
Queen Anne's Lace	<i>Daucus carota</i>	(f1)
Poison Ivy	<i>Toxicodendron radicans</i>	
Raspberry	<i>Rubus sp.</i>	
Canada Goldenrod	<i>Solidago canadensis</i>	

(f1) Plant observed in flower

(fr) Plant observed in fruit

\* Invasive species

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## **Have Not Pond Conservation Area**

Hill Street, Boxboro MA

### Site Description

This property includes 6.7 acres of early successional grasslands and shrublands including: 3.5 acres of upland field in two sections, 2.8 acres of wet meadow, 0.4 acres of shrub-swamp. There is also a small (0.2 acre) sand scrape sparsely vegetated with grasses.

The property is divided into dry and wet sections along a shrubby stone wall bound running north-south between Have Not Pond and the cul-de-sac of Beaumont Road. The uplands are dominated by Orchard Grass, Timothy and other grasses and sedges, with Queen Anne's Lace, Black-eyed Susan, and Sweet Cicely. Several open grown White Pines and understory shrubs bisect the upland into a lower area sloping towards Have Not Pond and an upper area of flat meadow. The lower field is being invaded by Autumn Olive which, if not controlled, will take over the meadow in a matter of years severely degrading its habitat value. The upper field is too small to provide habitat for grassland specialists; however, the stand of pioneering Quaking Aspens in the northeast corner of this meadow, if allowed to expand as they will tend to do, could eventually provide good bird habitat for species such as Blue-Winged Warblers and Ruffed Grouse. A large patch of sparsely vegetated sand in the field between the cul-de-sac and the pond has excellent potential for turtle nesting habitat.

East of the stonewall bound, at the base of the hill, the vegetation is reflective of wet soil conditions. Sensitive Fern, Reed Canary-grass, Jerusalem Artichoke and Wild Geranium dominate the margin of Have Not Pond and a regularly-mown wet meadow northeast of the pond. Directly north of the pond is a shrub thicket dominated by Silky Dogwood.

Invasive species have a strong foothold in the grasslands at Have Not Pond. Oriental Bittersweet and Multiflora Rose are quite abundant in the hedgerow along the stonewall and are seeding into the dry meadow. Oriental Bittersweet runs prostrate over the ground, smothering forbs and climbing in tangles over the Multiflora Rose bushes scattered about. As mentioned above, Autumn Olive shrubs also dot the meadow. Several Purple Loosestrife plants at the wetland edge were in bloom at the time of the survey.

### Current Management

DPW reports that Have Not Pond currently receives trail maintenance only. The upper meadow was mown in early Summer of 2005, and the wet meadow appears to receive an occasional mowing.

### Suggested Site Improvements

There is adequate parking and good access to the fields and meadows at Have Not Pond, either from the signed entrance off of Hill Street or in three parking spaces at the cul-de-sac on Beauman Road. The parking off of Hill Street and the trail from this entrance to the pond would benefit from some attention such as trimming of branches. Wet sections of this trail, northeast and north of Have Not Pond, should be improved with better boardwalk structures or closed in the Spring. Simply raising the existing crossing structures would improve the crossing and protect water quality. We recommend erecting trailhead signs at the Beauman Road entrance and installation of clearly delineated trails to direct visitors to the town-owned section of the meadows and to keep

them off of abutter's property. This could be a primary trailhead to the Fisk and Delano conservation parcels. The trail from the pond to the northwest corner of the property bisects the field near the cul-de-sac. This trail should be moved to the field's edge to minimize disturbance to grassland wildlife.

#### Ecological Management Recommendations

Invasive species management is the highest priority at Have Not Pond. We recommend removal of the freestanding Autumn Olive and Multiflora Rose bushes in the lower dry field. The abundance of Oriental Bittersweet may make complete eradication impractical. However, maintaining an annual or bi-annual mowing schedule will help keep the Oriental Bittersweet from becoming established in the field. Since the abundance of Purple Loosestrife is limited, at this time it might be possible to manage it with hand pulling alone. Also of concern is the Honey Locust planted in the cul-de-sac at the end of Beauman Road. These trees are often used in landscaping for their rapid growth and the dense shade they provide. However, they readily self-seed and in a short time will likely be the next problematic invasive in the meadows. We recommend the Conservation Commission investigate removing these trees.

Finally, we present the Conservation Commission with two options for managing the small section of upland fields to the northwest of the cul-de-sac, and the wet meadow to the northeast of the pond. The Conservation Commission could continue mowing the upland field, or allow the Quaking Aspen to continue spreading and allow other shrubs to seed in, thereby encouraging the development of an early successional shrubland habitat. The benefits of creating a shrubland include a greater mix of wildlife habitats at the property and less intensive management of the parcel. Furthermore, the small size of this field limits its function as habitat for grassland species. Its small size also results in a high "edge ratio" making individuals vulnerable to predators taking cover in the nearby surrounding woods. Maintaining the old field would require annual or bi-annual mowing, whereas shrubland management would require mowing roughly every three years with the occasional removal of trees with trunk diameters greater than two inches. Shrubland requires less-frequent management, but may demand heavier equipment than is used to mow a meadow.

The wet meadow is also a candidate for management as shrubland. In addition to creating more early successional shrubland habitat, the discontinuation of mowing in the wet meadow would eliminate the need to drive mowing equipment across the wet sections of the entry trail, protecting water quality.



Have Not Pond Bird Survey,

15 June 2005

<u>Species</u>	<u>Location</u>
Mourning Dove	On house
Northern Flicker	Wet meadow
Willow Flycatcher	Wet meadow
Great Crested Flycatcher	Wet meadow
Eastern Kingbird	Wet meadow
Black-capped Chickadee	Edge of upper field
House Wren	Wet meadow
American Robin	Edge of upper field
Gray Catbird	Wet meadow
Cedar Waxwing	Edges: nesting in White Pine?
Yellow Warbler	Wet meadow
Song Sparrow	Field
Northern Cardinal	Field edge
Red-winged Blackbird	Field
Common Grackle	Wet meadow
Brown-headed Cowbird	Field
Baltimore Oriole	Overhead
House Finch	Field
American Goldfinch	Wet meadow
House Sparrow	Field

Have Not Pond Vegetative Survey  
July 2005

Queen Anne's Lace	<i>Daucus Carota</i>	(fl)
Common Milkweed	<i>Asclepia syriaca</i>	(fl)
Wild Madder	<i>Galium mollugo</i>	(fl)
Timothy	<i>Pleum pratense</i>	
Orchard Grass	<i>Dactylis glomerata</i>	
Red Clover	<i>Trifolium pratense</i>	(fl)
Canada Goldenrod	<i>Solidago canadensis</i>	
Multiflora Rose	<i>Rosa multiflora</i>	(fr)
Choke Cherry	<i>Prunus virginiana</i>	(fr)
Honeysuckle species	<i>Lonicera sp.</i>	(fr)*
Common Buckthorn	<i>Rhamnus cathartica</i>	(fr)*
European Barberry	<i>Berberis vulgaris</i>	(fr)*
Sweet Cicely	<i>Osmorhiza longistylis (cf)</i>	(fr)
Common Juniper	<i>Juniperus communis</i>	
Goatsbeard	<i>Tragopogan pratensis</i>	(fr)
Silky Dogwood	<i>Cornus anomum</i>	(fr)
Vetch	<i>Lathrus sp.</i>	
Sedges	<i>Carex spp.</i>	
Pigweed	<i>Amaranth sp.</i>	(fr)
Sensitive Fern	<i>Onoclea sensibilis</i>	
Reed Canary-grass	<i>Phalaris arundinacaea</i>	
Raspberry	<i>Rubus sp.</i>	
Poison Ivy	<i>Toxicodendron radicans</i>	
Wild Geranium	<i>Geranium maculatum</i>	
Joe-Pye Weed	<i>Eupatorium maculatu</i>	
Purple Loosestrife	<i>Lythrym salicaria</i>	(fl)*
Jerusalem Artichoke	<i>Helianthus tuberosus</i>	(fl)
Smooth Sumac	<i>Rhus glabra</i>	
Skunk Cabbage	<i>Symplcarpus foetidus</i>	
Wild Grape	<i>Vitis sp.</i>	
St. Johnswort	<i>Hypericum sp.</i>	(fl)
Black-eyed Susan	<i>Rudbeckia hirta</i>	(fl)
Autumn Olive	<i>Elaeagnus umbellata</i>	*
Oriental Bittersweet	<i>Celastrus orbiculatus</i>	*
White Pine	<i>Pinus strobus</i>	
Selfheal	<i>Prunella vulgaris</i>	
Wood Sorrel	<i>Oxalis sp.</i>	
Cat-tail	<i>Typha latifolia</i>	
Trembling Aspen	<i>Populus tremuloides</i>	
Gray Birch	<i>Betula populifolia</i>	

- (fl) Plants observed in flower  
(fr) Plants observed in fruit  
\* Invasive species

## **Flagg Hill**

Flagg Hill Road, Boxboro MA

### Site Description

Flagg Hill Conservation Area, at the corners of Flagg Hill Road and Windemere Drive, contains almost 2.5 acres of grasslands bordering open water. There is 1.2 acres of upland field on the east side of Windemere Drive and 1.3 acres of wet meadow on the west side. Sensitive Fern, Rough Goldenrod, and sedges and rushes dominate the herbaceous layer of the wet meadow habitat with several aster species and Swamp Dewberry also present. Some dry site plants, such as Blue Toadflax, Queen Anne's Lace, Black-eyed Susan and Pigweed are mixed in. These dry site species as well as grasses dominate the drier upland section.

The pond edge is dominated by Red Maple with occasional High-bush Blueberry and Speckled Alder. Several invasive species are tangled in and among the hedges, including Multiflora Rose, Glossy Buckthorn, and Oriental Bittersweet. These species, along with Purple Loosestrife, are seeding into the meadow.

### Current Management

DPW reports that Flagg Hill currently receives trail maintenance only. The entire site had been recently mown when visited in June, 2005.

### Suggested Site Improvements

There is adequate parking available at the site, although the current parking area is poorly defined. Bounding the parking spaces with small boulders or low wooden rails would confine the area where cars can park, limit the negative effects of compaction, and protect the meadow habitat. We also recommend removal of the two large sand piles that were dumped near the parking area.

### Ecological Management Recommendations

Though the small size of the fields limits their function as nesting habitat for grassland birds, they provide excellent foraging habitat for other birds and wildlife – especially for dragonflies because of the field's proximity to water. Annual mowing of the open areas will maintain habitat value and keep invasive species, such as Oriental Bittersweet and Glossy Buckthorn, from becoming well established in the meadow. On our initial survey visit, on July 20<sup>th</sup>, 2005, both sections of the site had been recently mown. Such an early mowing immediately reduces habitat value and may reduce late season wildflowers that serve as food plants for invertebrates. We recommend delaying mowing until after October 15<sup>th</sup> to optimize overall wildlife habitat values. Further, we recommend that a grass buffer 20 feet or wider be left unmown adjacent to the ponds to protect water quality. On the July visit we noted that vegetation had been mown directly to the pond edges.

Flagg Hill Breeding Bird Survey

16 June 2005. All species were observed throughout the site.

Species

Wood Duck

Mourning Dove

Tree Swallow

Black-capped Chickadee

Tufted Titmouse

American Robin

Gray Catbird

Yellow Warbler

American Redstart

Song Sparrow

Northern Cardinal

Red-winged Blackbird

Baltimore Oriole

American Goldfinch

Flagg Hill Vegetative Survey  
20 July 2005

Sensitive Fern	<i>Onoclea sensibilis</i>	
Hog Peanut	<i>Amphicarpa bractea</i>	
Rush species	<i>Juncus sp.</i>	(f1)
Sedges species	<i>Carex spp.</i>	
Wild grapes	<i>Vitis sp.</i>	
Purple Loosestrife	<i>Lythrum salicaria</i>	* (f1)
St. Johnswort	<i>Hypericum punctatum</i>	(f1)
Aster species	<i>Aster sp.</i>	
Bindweed	<i>Convolvus sp.</i>	
Rough-stemmed Goldenrod	<i>Solidago rugosa</i>	(f1)
Pigweed	<i>Amaranth hybridus</i>	(f1)
Smartweed	<i>Polygonum persicaria</i>	(f1)
Common Milkweed	<i>Asclepia syriaca</i>	
Reed Canary-grass	<i>Phalaris arundinacaea</i>	
Deadly Nightshade	<i>Circaea lutetiana</i>	(f1)
Toad Flax	<i>Linaria vulgaris</i>	(f1)
Oxeye Daisy	<i>Leucanthemum vulgare</i>	(f1)
Bedstraw	<i>Gallium palustre</i>	(f1)
Yarrow	<i>Achillea millefolium</i>	
Queen Anne's Lace	<i>Dacus carota</i>	
Wood-sorrel	<i>Oxalis sp.</i>	
Black-eyed Susan	<i>Rudbeckia hirta</i>	
Swamp Dew-berry	<i>Rubus hispidus</i>	
Selfheal	<i>Prunella vulgaris</i>	
Cow vetch	<i>Vicia cracca</i>	
Daisy-fleabane	<i>Erigeron annuus</i>	
Pinks	<i>Dianthus sp.</i>	
Red Maple	<i>Acer rubrum</i>	
Smooth Sumac	<i>Rhus glabra</i>	(f1)
White Pine	<i>Pinus strobus</i>	
Raspberry species	<i>Rubus sp.</i>	
Buttonbush	<i>Cephalanthus occidentalis</i>	
Oriental Bittersweet	<i>Celastrus orbiculatus</i>	*
Multiflora Rose	<i>Rosa multiflora</i>	*
Glossy Buckthorn	<i>Rhamnus frangula</i>	*

- (f1) Plant observed in flower  
(fr) Plant observed in fruit  
\* Invasive species

**Patch Hill - Robinson**  
Hill Street, Boxboro MA

Site Description

Although small (2.9 acres), Patch Hill is another fine example of agricultural hayfield, most similar in vegetation to Steele Farm and Flerra Meadows. It is dominated by Orchard grass, Timothy, Queen Anne's lace with a scattering of Red Clover, Pigweed and Cowvetch. Even though it is small, the field supports a good diversity of insects, including dragonflies and butterflies. A stand of Norway Maple, oak and hickory to the east of the field is choked with Oriental Bittersweet and Multiflora Rose that are seeding into the meadow. Norway Maple is also present in the hedgerows on the edges of the field, along with other invasives such as Winged Euonymus and Oriental Bittersweet.

Current Management

Patch Hill is mown for hay by a local farmer.

Suggested Site Improvements

It is possible to park a single car off of the road at the site entrance along Hill Street in front of a low chain, however the entrance is currently un-maintained and somewhat uninviting. This site could serve as a major trailhead for the larger Patch Hill conservation area with a small parking area inside the meadow. Increasing the parking and posting trail signs and maps at the entryway would increase the recreation value of the property. Mowing a loop trail around the edge of this field would also enhance the recreational value of this site with no significant adverse affects to wildlife.

Ecological Management Recommendations

Although the size of this grassland limits its function as nesting habitat for grassland bird species, it is valuable as foraging habitat for birds and appeared to have the highest diversity of invertebrate use of all sites surveyed. We recommend annual mowing after October 15<sup>th</sup> to maintain the grassland structure and provide optimal habitat for the wildlife who use this parcel for part of their life cycle.

We also recommend shrub cutting along the outer boundary of the meadow, particularly on the northeast side. The hedgerow surrounding the field, largely consisting of invasive shrub species, is encroaching on the grassland habitat. Cutting the shrubs and small trees back to the property line will remove seed sources of invasive species and increase the overall grassland area of the property. This action will need to be repeated periodically. Additionally, there is an 'island' of trees in the middle of the field which consists mostly of invasive plants. Removing this stand of trees and shrubs would increase the area of grassland available as habitat and further reduce the seed source of invasives.

Patch Hill-Robinson Breeding Bird Survey

14 June 2005

<u>Species</u>	<u>Location</u>
Chimney Swift	Overhead
Eastern Phoebe	Edge
American Robin	Edge/island
Gray Catbird	Edge
Cedar Waxwing	Edge
Song Sparrow	Edge
Northern Cardinal	Edge
American Goldfinch	Edge/island
Monk Parakeet	Overhead flyby

Edge = forest margin around the field

Island = stand of trees in middle of field

Patch Hill-Robinson Vegetative Survey

July 2005

Orchard Grass	<i>Dactylis glomerata</i>	
Timothy	<i>Phleum pratense</i>	
Queen Anne's Lace	<i>Daucus carota</i>	(f1)
Common Milkweed	<i>Asclepia syriaca</i>	(f1)
Red Clover	<i>Trifolium pratense</i>	(f1)
Pigweed	<i>Amaranth sp.</i>	
Daisy flea-bane	<i>Erigeron annuus</i>	(f1)
Wild Madder	<i>Galium mullago</i>	(f1)
Meadow Pinks	<i>Dianthus sp.</i>	(f1)
Vetch	<i>Coronilla varia</i>	(f1)
Oriental Bittersweet	<i>Celastrus orbiculatus</i>	*
Multiflora Rose	<i>Rosa multiflora</i>	(fr)*
St. Johnswort species	<i>Hypericum sp.</i>	(f1)
Sweet Vernalgrass	<i>Anthoxanthum odoratum</i>	
Moth Mullein	<i>Verbascum thapsis</i>	(f1)
Rough-stemmed Goldenrod	<i>Solidago rugosa</i>	
Winged Euonymus	<i>Euonymus alata</i>	*

(f1) Plant observed in flower

(fr) Plant observed in fruit

\* Invasive species

## **Hager Meadow**

Hill Street, Boxboro MA

### Site Description

Grassland and early successional shrubland at Hager Meadow total 11.2 acres, the majority of which (9.6 acres) are agricultural fields historically used for grazing livestock. A section of former pasture (1.3 acres) has succeeded to a shrubland due to lack of grazing. A small wetland swale (0.3 acres) is found in the northernmost section of pasture. We did not complete a breeding bird inventory of Hager Meadow.

The town-owned section of this property is segmented into three pastures sloping gently downhill to the north. The road-side meadow at the entrance to Hager Meadow – which is not town-owned – is regularly mown and ranges from lawn to grassy hayfield in appearance and vegetation. The town-owned section has historically been used a cow pasture, and the vegetation structure and species mix reflect this. Timothy, Sweet Vernal Grass, Orchard Grass, Queen Anne’s Lace and clovers dominate the pastures, with scattered wild flowers such as Daisy fleabane, goldenrods, and thistles. Relatively sparse hedgerows of apple, Chokeberry, White Ash, Red Maple, and Paper Birch, Multiflora rose, and Oriental Bittersweet separate the pastures. Invasive Multiflora rose, Autumn Olive and Oriental Bittersweet are present in all four pastures and along the pasture edges. They are particularly abundant in the two northernmost pastures. Blackberries also form dense patches in these sections.

### Current Management

Hager Meadow currently has no mowing plan. In the past, the property was grazed by livestock owned by a local farmer. This practice has been inconsistent over the past few years. The soils and topography of the site would make the fields difficult to mow.

### Suggested Site Improvements

Below we comment that continued grazing could be compatible with management of this site for wildlife habitat. Grazing would most likely be incompatible with public access and recreational use, however Hager Meadow is not the town’s best passive recreational asset. The property connects to adjacent conservation land only along a narrow band of forest alongside Route 495, lacks adequate parking, and currently lacks any coherent trail network. Continuing with use of the site for pasture would require little in the way of site improvements.

### Ecological Management Recommendations

We conclude that agricultural use of this site is not in conflict with managing the pastures for wildlife. Maintaining any early successional habitat requires disturbance, be it mowing, fire, or selective removal of shrubs. Grazing is simply another type of disturbance, and one that creates a vegetation structure unlike that created by mowing. By allowing limited grazing at Hager Meadow, the Conservation Commission has the opportunity to create a different type of wildlife habitat – a grassland with varied grass heights and structure – which is favored by birds such as Killdeer and Eastern Meadowlarks. Limited grazing at Hager Meadows also allows the town to maintain a part of its agricultural heritage.



We do recommend that patches of invasive shrubs be removed from the meadows and that the hedgerows between pastures be thinned. Doing so will create contiguous rather than fragmented grassland habitat thereby increasing the wildlife value of the property. Also, a 1.3 acre, triangular patch of land east of the upper pasture succeeding from open land to shrub cover and will eventually fill in with trees. Clearing this patch will increase the overall grassland habitat and re-establish connection with the fields of the adjacent farm.

Hager Meadow Vegetation Survey  
July 2005

Queen Anne's Lace	<i>Daucus Carota</i>	(f1)
Timothy	<i>Phleum pratense</i>	
Sweet Vernalgrass	<i>Anthoxanthum odoratum</i>	
Orchard Grass	<i>Dactylis glomerata</i>	
Red Clover	<i>Trifolium pratense</i>	
Rough-stemmed Goldenrod	<i>Solidago rugosa</i>	
Daisy-fleabane	<i>Erigeron annus</i>	(f1)
Woolgrass	<i>Scirpus cyperinus</i>	
Thistle	<i>Cirsium sp.</i>	(f1)
Hawkweed	<i>Hieracium sp.</i>	(f1)
Pokeweed	<i>Phytolacca americana</i>	(fr)
Multiflora Rose	<i>Rosa multiflora</i>	(fr)*
Autumn Olive	<i>Elaeagnus umbellata</i>	*
European Barberry	<i>Berberis vulgaris</i>	(fr)*
Honeysuckle species	<i>Lonicera sp.</i>	(fr)*
Oriental Bittersweet	<i>Celastrus orbiculatus</i>	*
Chokecherry	<i>Aroneia</i>	
Ragweed	<i>Ambrosia sp.</i>	
Wood Sorrel	<i>Oxalis sp.</i>	(f1)
Vetch	<i>Lathyrus sp.</i>	
Self-heal	<i>Prunella vulgaris</i>	(f1)
Common Plantain	<i>Eriocaulon septangulare</i>	
Pigweed	<i>Amaranth</i>	(fr)
St. Johnswort	<i>Hypericum sp.</i>	(f1)
Sedge species	<i>Carex sp.</i>	
Swamp Dew-berry	<i>Rubus hispidus</i>	

- (f1) Plant observed in flower
- (fr) Plant observed in fruit
- \* Invasive species