

DRAFT

LAND MANAGEMENT PLAN FOR

Heard Farm Conservation Area

In

WAYLAND, MASSACHUSETTS



William Giezentanner Mass Audubon Ecological Extension Service January 2020

> 781 259 2198 781 259 2398 (fax)

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773

Table of Contents

Introduction1
Land Management Plan Goals1
Heard Farm Conservation Area Goals and Challenges:1
Property Description2
Site Setting and Context2
Ecological Features4
Topography4
Soils4
Natural Communities6
Wildlife7
Permitted Uses
Safety Concerns
Threats and Opportunities9
Management Recommendations10
Description of Past Management Efforts11
Recommendations for Future Management13
Field Management Recommendations13
Control of Invasive Plants15
Wildlife Enhancement Management Recommendations16
Passive Recreation Management Recommendations17
Schedule of Management Activity18
Yearly ongoing Activities18
Short term Projects19
Long Term Projects
Appendix A – Control of Invasive Plants21
Appendix B – Estimated Costs and Priorities24
Appendix C – Birds of Heard Farm Conservation Area25

Mass Audubon protects more than 38,000 acres of land throughout Massachusetts, saving birds and other wildlife, and making nature accessible to all. As Massachusetts' largest nature conservation nonprofit, we welcome more than a half million visitors a year to our wildlife sanctuaries and 20 nature centers. We believe in protecting our state's natural treasures for wildlife and for all people—a vision shared in 1896 by our founders, two extraordinary Boston women. Today, Mass Audubon is a nationally recognized environmental education leader, offering thousands of camp, school, and adult programs that get over 225,000 kids and adults outdoors every year. With more than 135,000 members and supporters, we advocate on Beacon Hill and beyond, and conduct conservation research to preserve the natural heritage of our beautiful state for today's and future generations.

Mass Audubon's Ecological Extension Service (EES) assists cities and towns, land trusts, state and federal agencies, and other conservation partners with natural resource inventories, habitat restoration and management planning, and conservation planning. Through EES we can share the experience we have gained in managing our own network of wildlife sanctuaries across the commonwealth.

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773

Introduction

The intent of this plan is to provide management recommendations for the Heard Farm Conservation Area that foster ecological values, passive recreational uses, and aesthetic qualities. The site includes areas of forest, wetlands and significant areas of managed grasslands. The plan will address management of the fields for grassland birds, efforts to control invasive species, other wildlife enhancement opportunities, and management of passive recreation uses.

Land Management Plan Goals

The main management goals for this property are to improve the habitat value for species that require grasslands to fulfill all or a portion of their life cycle and to achieve this while allowing visitor use of the property.

Heard Farm Conservation Area Goals and Challenges:

Objectives for the site are to:

- Enhance grassland fields to improve habitat for grassland birds,
- restore and improve health of grasslands,
- improve habitat value of grasslands for all organisms (especially for pollinators),
- maintain shrubland and forest habitats,
- identify other species that could be attracted to Heard Farm's grasslands, shrublands and forests,
- improve designated access / trails and restrict unofficial access / trails,
- develop a mowing and grassland restoration schedule / timetable,
- suggest how to mitigate the negative effects of dogs (waste, wildlife disturbance, erosion, etc.), and
- suggest how to manage invasive species, both in fields and along the edges.

Challenges include

- maintaining mowing to enhance habitat for grassland birds
- enforcing leash regulations for dog walkers

Recommendations for addressing these goals and challenges are detailed below.

Property Description

Site Setting and Context

The Heard Farm Conservation Area consists of 86 acres of diverse land (forests, fields, and wetlands) bordering the Sudbury River. There are approximately 3.5 miles of maintained trails that are enjoyed by visitors throughout the year. The conservation area can be accessed from a small parking area at the end of Heard Road off Pelham Island Road. It is bordered on the East, South and West by the Great Meadows National Wildlife Refuge along the Sudbury River. Private residential areas boarder the site to the North (Figures 1 and 2). It is directly across the Sudbury River from the Greenways, another conservation area owned by the Town of Wayland and the Sudbury Valley Trustees. The site is located one-mile East of the Wayland/Sudbury town boundary and just one mile from the intersection of Boston Post Road (Route 20) and Cochituate Road (Route 27).

The close juxtaposition of agricultural fields, varied forest types, orchards, wetlands, the Sudbury River, Heard Pond, and potential vernal pools and its proximity to other conservation lands is a boon to wildlife and visitors. More than 200 species of birds have been recorded (see Appendix B).



Figure 1 - Pelham Island and Vicinity

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773



Figure 2 - Site Map

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773

Early successional plant species dominate the field edges including white pine, grey alder, and silky dogwood which slowly transition into floodplain forests along the river. Dominant invasive species found throughout the field edges and forest understories are multiflora rose, glossy and common buckthorn, and Oriental bittersweet. The more than 3.5 miles of trails allow access to field, forest, and wetland habitats as well as two small actively managed orchards. A short segment of the Bay Circuit Trail, a permanent recreation trail and greenway extending 230 miles through 37 towns in Eastern Massachusetts, linking parks and open spaces, runs along the northern boundary of Heard Farm. Access into the property is from the small parking area at the end of Heard Road and trail entrances from adjacent private land. The 86 acres, just minutes away from the center of town, is highly valued for the recreational opportunities they provide to the surrounding community. Any use for recreational opportunities needs to be balanced with preserving the diversity of habitats favored by ground nesting and migratory bird species. Examples include maintaining mowed trails that hug the forest edge to minimize disturbance to grassland bird nesting habitat, as well as smart meadow management including late season mowing and leash law enforcement for dog walkers especially during the nesting season.

Ecological Features

The site includes a variety of significant ecological features, including physical features such as topography and soils, and natural habitats.

Topography

As seen in Figure 3, the Heard Farm has gentle slopes running from just over 130 feet in the fields and sloping down to the Great Meadows National Wildlife Refuge along the Sudbury River. There are no steep slopes on the property, making it suitable for trails around the field edges and through the wooded sections. Water drains from the high areas in the fields toward the Sudbury River.

Soils

Soil texture is classified by the relative composition of clay, silt and sand particles. Sandy soils tend to be well-drained and nutrient poor. Silt laden soils are described as "dusty" and commonly found in floodplains. Clay soils are typically poorly drained and are often heavy, dense and sticky, conditions which limit root growth in some plants. Ideal agricultural soil, a "loam", is a combination of sand, silt and clay with moderate drainage and nutrient availability, and density conducive to root growth and microbial community colonization. Loamy soils can retain moisture but drain moderately well so the soils do not remain saturated for longer periods of time. Most of the soils at Heard Farm are high quality agricultural soils.

Soils at Heard Farm include both poorly drained mucks (along the perimeter, adjacent to the Sudbury River), rich in organic material from decaying wetland plants, and moderately drained sandy loams (Figure 4). All the sandy loams (Merrimac, Saco, and Winsor soils types) are listed as "Prime Agricultural Soils" and are an important agricultural resource.

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773



Figure 4 - Soils

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773

Natural Communities

Natural communities are divisions in plant communities based on conditions determined by the entire landscape. Soil composition, slope, aspect, elevation and land use history are all factors that determine the distribution of natural communities on a site.

Heard Farm Conservation Area is comprised of open hay fields (about 46 acres), some small areas of old fields turning to shrubs (about 10 acres), mixed woodlands (about 30 acres), two small orchards, a small red maple swamp, a small cattail marsh, and other forested wetlands (mostly on adjacent land owned by the Federal Government). See figure 7 for a map of fields and forest areas.

Area	Acreage	
	(Approximate)	
Center field	8.3 acres	
Northwest field	5.4 acres	
Southwest field	12.2 acres	
North field A	1.2 acres	
North field B	2.6 acres	
Northeast field	5.7 acres	
Southeast field	8.6 acres	
Little field	1.8 acres	
Total for fields	45.8 acres	



Figure 5 - Field Habitat after September mowing

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773

The open fields are dominated by "cool season" grasses including Timothy, smooth brome, orchard grass, fescues, and others. The understory includes bedstraw, plantain, clovers, dandelion, common vetch, and a large variety of other wildflowers. Multiflora rose, reed canary grass, buckthorn, and ferns are also present.

The mixed woodlands are dominated by Red Maple and Silver Maple, interspersed with Grey Birch, White Oak, Red Oak, and White Pine. Glossy buckthorn, Common Buckthorn, and Multiflora Rose are present in the understory of much of the forested areas as well as along the field edges along with Black Cherry, Silky Dogwood, and Speckled Alder.

Wildlife

The Heard Farm Conservation Area includes Priority Habitats of Rare Species as defined by the 14th edition of the Massachusetts Natural Heritage Atlas on its North-eastern edge abutting the Great Meadows National Wildlife Refuge. There are no certified vernal pools and four potential vernal pools

located in the forested areas of the site. Heard Pond and the associated wetlands to the West of the conservation area are designated as part of a Massachusetts Noteworthy Scenic Landscape. These factors confirm the state-wide ecological and scenic significance of the site.

Heard Farm Conservation Area is a Cornell University/eBird "hotspot" and birdwatchers have reported more than 200 species of birds from the site (see Appendix B for the entire list). Shrublands and fields are critical wildlife habitats that are essential for the survival of many wildlife species. The loss of these habitats through conversion to other land uses, residential development or through succession, is resulting in the decline and disappearance of some wildlife dependent on early-successional habitats. See Mass Audubon's report on the State of The Birds for more details on these declines (https://www.massaudubon.org/our-conservation-



Figure 6 Bobolink

work/wildlife-research-conservation/statewide-bird-monitoring/state-of-the-birds) Grassland Birds

Grassland species including bobolink, American woodcock, savannah sparrow, Eastern meadow lark, and grasshopper sparrow have all been reported at the site. Bobolink and American woodcock appear to regularly nest at Heard Farm. All these species have seen dramatic declines in the Northeast and the rest of the country as the amount of farmland has decreased.

Shrubland Birds

Shrubland species including Eastern towhee, alder flycatcher, blue-winged warbler, brown thrasher, and white-throated sparrow have all been reported at Heard Farm. All these species have seen dramatic declines in the Northeast and the rest of the country as the amount of shrubland has decreased.

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773

8

Forest Birds

Forest species including Easter whip-poor-will, Canada warbler, and long-eared owl have all been reported at Heard Farm. These species too have seen dramatic declines in the Northeast.

Amphibians and Reptiles

The potential vernal pools, farm ponds, wetlands, and forests provide good habitats for a variety of amphibians and reptiles. The Massachusetts Herpetological Atlas Project¹, a seven-year effort, running from 1992 through 1998, reported 25 species of amphibians and reptiles in the vicinity of Wayland. Northern leopard frogs seem to occur at Heard Farm in good numbers. Other likely species at Heard Farm include American toad, bullfrog, common snapping turtle, Eastern garter snake, Eastern milk snake, gray treefrog, green frog, Northern water



Figure 7 - Spotted Salamander

snake, spotted salamander, and painted turtle. An inventory of amphibians and reptiles would be a good citizen science project.

Other Wildlife

The site also provides habitat for generalist species. Common habitat generalist mammals that are likely to occur within the Heard Farm Conservation area include: Virginia opossum, Eastern Gray Squirrel, Red Squirrel, Eastern chipmunk, Meadow vole, White-footed deer mouse, Eastern cottontail, Coyote, Red fox, Long-tailed weasel, Striped skunk, and White-tailed deer. Migratory bird species use a mix of forest, edge, and field habitats that are available within the site and surrounding habitats. Butterflies, bees and other insects help pollinate the apple orchards and wildflowers and are food for many of the small mammals and birds that use the habitats.

Permitted Uses

Heard Farm Conservation Area is open for the public to enjoy multiple passive use opportunities including walking, hiking, Nordic skiing, snowshoeing, gardening, and wildlife watching. According to the town website, on leash dog walking is also permitted with the following restrictions:

• All dogs must be leashed in parking lots and conservation areas;

 ¹ Jackson, S.D., R.M. Richmond, T.F. Tyning and C.W. Leahy (eds). 2010. Massachusetts Herpetological Atlas 1992-1998, Massachusetts Audubon Society & University of Massachusetts (massherpatlas.org).
Ecological Extension Service 781 259 2198 Mass Audubon 781 259 2398 (fax)
208 South Great Road
Lincoln, Massachusetts 01773

- For the safety of nesting birds, all dogs must be leashed on prime grassland birding sites (Heard Farm and Cow Common²) from May 1-July 15 or until the fields are mowed;
- All dogs must be leashed or under voice control at all times;
- Visitors are allowed up to 3 dogs per person, but only 2 may be off leash at one time;
- Please keep your dogs on the trails for the safety of the area's wildlife and field nesting sites;
- Please bring plastic bags to pick up and properly dispose of all dog waste;
- Please leash your dogs when encountering other dogs or people, especially children;

Safety Concerns

There are few concerns about public safety relating to the condition of the property. The open fields could host stinging insects and ticks. Poison ivy was readily observed both in the forest understory and along the edges. Given the trails are along the field edges and within the forest, special efforts should be made after high wind events to survey the trails for fallen trees and hanging branches overhead and remove any hazards identified.

Concerns have been raised about aggressive or uncontrolled dogs. The Town of Weston in cooperation with the Sudbury Valley Trustees recruited volunteer "Bark Rangers" to walk some of the town's trails and spread the message about the negative impacts dogs can have on wildlife, water quality, and other visitors. Bark Rangers encouraged trail walkers to keep dogs under their command and on the trails and to "scoop the poop".

Hunting is not allowed on town conservation land but is allowed on adjacent land. Trail walkers should take care during the hunting season, especially near the perimeter of the site.

There have been occasional blooms of cyano-bacteria in ponds and other waterways. These bacteria can be a deadly danger for dogs and dog-walkers should be aware.

Threats and Opportunities

Invasive species pose one of the main threats to ecological integrity of the Heard Farm Conservation Area. Glossy buckthorn, common buckthorn, oriental bittersweet, bush honeysuckle, and multiflora rose edge the forest and grassland interface. Glossy buckthorn is the main invasive growing in the forest understory. Multiflora rose, reed canary grass, oriental bittersweet, and buckthorns are also present in the fields.

A 2014 report by Nicky Patterson, a Heard Farm volunteer noted that the hay fields were "...degrading at an alarming rate." He noted that woody species like buckthorns, oriental bittersweet, and multiflora rose were invading many of the fields. All these invasive, non-native species benefit by the late cutting of the fields that is intended to benefit the nesting bobolinks and other grassland dependent birds.

² Note: Cow Common is located on Old Sudbury Road about 1 mile north of Heard Farm on the Sudbury River.Ecological Extension Service781 259 2198Mass Audubon781 259 2398 (fax)208 South Great Road781 259 2398 (fax)Lincoln, Massachusetts 01773773

However, these invasive plants diminish the suitability of the fields for the birds. Measures to maintain the fields will be addressed in the section on management.

The eBird counts for 2019 for Heard Farm Conservation Area show 20 total bobolinks for the week of July 22 near the end of the breeding season. This is similar to counts for the five prior years. Interpreting trends for a single site with eBird data is complicated by a variety of factors. Weather, time of day, number of counters, etc. can all make interpretation difficult, still the data does indicate that Heard Farm is a productive site for bobolinks. Restricting harvests of hay from mid-May to mid-August has allowed Bobolinks to nest successfully.

Enforcing the regulations on dogs is another challenge. It is important to assure that dogs are kept on leash during the grassland bird breeding season. Measures to improve enforcement will be addressed in the section on management.

The Heard Farm Conservation Area is a very popular site for passive recreation at all seasons. This is an important opportunity to engage the public.

Management Recommendations

The following recommendations will address past management efforts, management of the fields for grassland birds, efforts to control invasive species, other wildlife enhancement opportunities, and management of passive recreation uses.

The management of natural resources has largely assumed a stable climatic background. Now there is widespread agreement among scientists that the climate is changing. Massachusetts is already experiencing the effects of climate change, from hotter summers, warmer winters with less snow cover, rising sea levels, more frequent severe weather events, and inland flooding.

Climate impacts that may affect open spaces are predicted to:

- increase the number of very hot days and degrade air quality
- compromise infrastructure like trails
- increase the risks from storm events
- increase vector-borne illnesses (West Nile and Lyme disease).

Some of these impacts are likely to affect the future management of conservation lands in complex ways. Manomet Center for Conservation Science and the Massachusetts Division of Fisheries and Wildlife have published a study³ promoting two primary objectives for the management of sites and habitats – managing resilience and managing change. Unfortunately, the report does not address the

<u>files/Climate%20Change%20and%20Massachusetts%20Fisheries%20and%20Wildlife%20Reports,%20Vol</u> .%203%20April%202010.pdf)

³ Manomet Center for Conservation Sciences & Massachusetts Division of Fisheries and Wildlife, <u>Habitat</u> <u>Management</u>, April 2010 (<u>https://www.manomet.org/wp-content/uploads/old-</u>

management of grasslands. Still, the concepts of resilience and managing change may be useful to keep in mind.

Description of Past Management Efforts

The conflict between harvesting hay at its prime and saving nesting birds has been noted in the past. A 2012 report⁴ by John Hines noted that mowing of the eastern fields at Heard Farm in mid- to late June resulted in 100% nesting failure for Bobolinks. The western fields at that time were being mowed later, but usually before July 15. He estimated a 60 to 80% nest failure in these fields.

According to the 2014 report⁵ by Heard Farm volunteer Nicky Patterson, the town of Wayland purchased Heard Farm in the early 1970s and leased the property to Watertown Dairy as a mixed-use farm. In the early 1980s the lease with Watertown Dairy was terminated and the fields were converted to hay. Bobolinks began nesting in the hayfields almost immediately after they were established, but most nests would be destroyed as a result of harvesting the hay during the nesting season as noted by the John Hines report. In about 1982, Heard Farm volunteers, Nicky Patterson and Bill Green, suggested that the town's Conservation Administrator have the farmer delay cutting until after the birds had a chance to nest successfully. Over time the cutting schedule for all fields (excluding North fields A and B which are too small to attract Bobolinks- see Figure 7) were delayed until after July 15. Nicky Patterson's report points out that the years of delayed cutting has resulted in several of the fields being degraded by woody invasive plants like buckthorn, multiflora rose, and bittersweet. These invasives reduce the quantity and quality of the hay and degrade the habitat for ground nesting birds. This has proven to be a general problem with many grassland management efforts. If sites are relatively large, it may be appropriate to rotate mowing schedules so that every 2 or 3 years a portion of a field where delayed mowing had previously occurred was, instead, mowed early in the season (May 20 might be an OK target, since any birds that were starting to nest would still have enough time to re-nest elsewhere).

The Bobolink Project (<u>https://www.bobolinkproject.com/</u>) is a cooperative effort between Mass Audubon, Audubon Vermont, and New Hampshire Audubon to encourage farmers to delay mowing hayfields until after July 15 to benefit grassland birds. Jon Atwood, Mass Audubon's Director of Bird Conservation, noted in a personal interview that the problem of woody invasives is also a concern for the Bobolink Project⁶. He made some suggestions to combat the problem that will be recommended below.

⁶ Personal interview with Jon Atwood, Nov. 19, 2019

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773

⁴ Hines, John, "Bobolink Narrative, 2012".

⁵ Patterson, Nicky. "Thoughts Regarding the Restoration of the Heard Farm Hay Fields and Why It's Needed". 2014



Figure 8- Hay Fields Yields

The Wayland Conservation Commission has an agreement with a local farmer for the open fields (approximately 50 acres) who cuts the hay once a year mostly to provide bedding for livestock. All other work including mowing and clearing of the trails (approximately 3.5 miles), cultivating trees in the orchards, and general maintenance of the land is performed by staff and volunteers.

The current management actions are limited to having the fields, maintaining the trails, improving the orchards, and some invasive plant management.

- Hay is usually harvested in late August. The harvested hay is currently used mostly for bedding, rolled hay bales are left along the field edges for a varying period before they are removed by the farmer.
- Trails are currently mowed every two weeks around the edges of the field and are 6-10 feet in width.

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773

 Invasive plants are being treated manually by cutting, mowing, or removing shrubs including root systems.

Recommendations for Future Management

The following recommendations will address field management, control of invasive plants, wildlife enhancement measures, and passive recreation uses.

Field Management Recommendations

Maintaining suitable habitat for bobolinks and other ground nesting birds should be the prime goal for managing the hay fields. For a general discussion of field management for grassland birds see Mass Audubon's report <u>Best Management</u> <u>Practices for Nesting Grassland Birds⁷</u>.

Grassland nesting birds are area dependent and edge sensitive: they will not nest in fields that are smaller than a certain size (generally 10 acres for bobolinks), and they tend to nest away from field edges, to avoid predation.

Wayland has generally followed the most important management prescription by not mowing during the nesting season (May 15 to August 15) since the late 1980s with exceptions in some years as noted above. As noted above this practice has encouraged the growth of forbs and woody vegetation which has reduced the quantity and quality of hay and degraded the habitat for the ground nesting birds.

Nicky Patterson's report notes that the Center Field has been the one most affected by the growth of invasives and now has



Figure 9 - Grasshopper Sparrow

far fewer bobolinks than in years past (See Figure 7). Early mowing of this field in order to reduce the woody vegetation and forbs for the coming season is one approach. Mowing before May 15 will help control the unwanted vegetation and still have the field available for nesting.

Fortunately, Heard Farm is large enough that this process of field restoration can be rotated to other fields in ensuing years always leaving fields for nesting undisturbed during the breeding season.

¹ <u>https://www.massaudubon.org/content/download/19413/274073/file/Best-Management-Practices Grasslands.pdf</u>
Ecological Extension Service 781
Mass Audubon 781
208 South Great Road
Lincoln, Massachusetts 01773



Figure 10 A 3-year strip disking rotation produces different stages of growth in proximity for use by wildlife.

Another more aggressive approach to improve the fields is strip disking. Strip disking simply involves purposely creating ground disturbance to release grass-bound fields, reduce litter and thatch accumulation, create bare ground, stimulate germination of desirable seed-producing plants, and increase insect populations for birds to feed upon. Strip disking should be done in long linear strips (10-15 feet minimum width and as long as possible) and always adjacent to good escape cover. To prevent erosion, strips should follow the contour of the land and be separated by un-disked strips 2-3 times the width of the disked area. The ground is simply disked deep enough to kill the existing vegetation (3-4 inches is usually adequate) then left alone. If the sod is too heavy to allow adequate soil disturbance with a disk, then plowing could be used to remove the thick mat of growth. After initial removal of the sod or litter layer, periodic disking prevents thick mats of vegetation from forming again and stimulates the growth of desirable annual plant species. Strip disking can be done after October 1 or in the early Spring before May 15. For more on strip disking see

<u>https://fw.ky.gov/Wildlife/Documents/stripdisking.pdf</u>. An advantage of this approach is that it can be done later in the Fall or earlier in the Spring with town staff and equipment.

Any of these field restoration methods can be used alone or together.

How the mowing is done also influences the wildlife. Mowing from the outside toward the center has the potential to trap small mammals, fledgling birds, reptiles, and amphibians in the center. Mowing from the middle and working outward allows more wildlife to have a chance to escape.



Figure 11 - When mowing start in the middle and work outward.

Another measure to assure the maximum area for the ground nesting birds is to keep pushing back the field edges and/or removing tree lines and trails that fragment, separate, or reduce the fields. Trees and shrubs along the interface between the fields and the forests are always seeking more sun by trying to grow out into or overhang the field edges. It is important to keep this from happening by trimming back the branches of the trees and shrubs. The hedge row between the Northwest and Southwest fields could be removed. Another means to improve the fields for nesting birds is to eliminate trails that fragment the fields (see Figure 8).

Control of Invasive Plants

The largest threat to the ecological integrity and economic value of the Heard Farm Conservation Area is the presence of invasive plant species. Manual or mechanical treatment (mowing) is effective management for the open areas of grassland. For dense infestation, wet areas, or particularly hard to treat species limited use of herbicide may be necessary. Dense infestations should be sprayed with backpack sprayers. Cut and paint herbicide application techniques should be used in wet areas and in areas where erosion is a concern. An outside contractor with a license can be hired, but it may be more economical for town staff to obtain and use the license.

- Obtain an herbicide applicator's license by staff
- Strategically treat invasive plants within the property:
 - Treat invasive plants along the trail system
 - Treat invasive plants along the edges of the fields
 - Treat invasive plants within the forested areas of the property working from the trail system towards the interior of the property.

See Appendix A for more information for treatment of various species.

Wildlife Enhancement Management Recommendations

Fields at Heard Farm Conservation Area are currently mowed to allow Bobolinks and other ground nesting birds to successfully nest. However, there are several other actions that can enhance wildlife habitat quality and make the conservation area a more interesting destination.

Brush piles

Strategically place piles of brush in the forested areas or at the edges of the fields can be assembled to provide resting/escape cover and den sites for wildlife. Brush piles are used for cover by eastern cottontails and other small mammals. Songbirds may use brush piles for perch sites, especially if the piles are located near feeding or nest sites. Also, if brush piles are adjacent to a water source, amphibians and reptiles may use them for breeding, feeding, or resting. See https://extension.psu.edu/management-practices-for-enhancing-wildlife-habitat for more information on steps for enhancing wildlife habitat.

Snags

Leaving dead or partially dead standing trees provide several important benefits to a variety of wildlife. Snags provide cavities for nesting and resting, perches for hunting and displaying, and an abundant supply of food for insect eaters. There are over numerous species of birds and mammals that use snags at some point in their life cycles. The best method to provide snags for wildlife is to retain existing snags in places where they will not create a dangerous situation for people using the nearby area for outdoor activities.

Nest boxes

Nest boxes, platforms, and other types of nesting structures provide nest sites for wildlife in areas where natural nest sites (particularly cavities) are absent or available only in low numbers. They are also used to attract wildlife to specific areas even when nest sites are not limited. Nest boxes can be used to provide nest sites for birds such as bluebirds, tree swallows, wrens, and wood ducks. Nest boxes also provide nest sites for mammals like squirrels and bats. Platforms and other structures are used to provide nest sites for species like the ospreys, eastern phoebe, barn swallow, and some waterfowl. Special colonial nest boxes can be erected for purple martins. Bat boxes can also be erected along the field edges. See Mass Audubon's website

shttps://www.massaudubon.org/learn/nature-wildlife/birds/birdhouses for instruction for building and placing nest boxes.

Vernal pools

According to MassGIS there are four potential vernal pools at Heard Farm Conservation Area. These areas may be critical for several species of amphibians and invertebrates. We recommend that they be investigated and certified if they meet the criteria.

Pollinator plantings

Pollinator-friendly plantings support numerous kinds of native bees, as well as honeybees, butterflies, hummingbirds, and other pollinators.

Planting a diverse mix of flowering plants that provides a sequence of blooms from early spring to late fall will have the most impact. Even a small patch of the right flowers can help, as it adds to the larger

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773





landscape mosaic in which the pollinators live and search for food. For a list of plants and guidelines for planting see <u>https://extension.unh.edu/resources/files/Resource005973_Rep8387.pdf</u>. Explore establishing a pollinator garden in the vicinity of the old orchard.

Shrubland

There are several small areas of shrubland, areas that were once fields and are now filling in with saplings and shrubs. These areas are important for a variety of birds and small mammals as they provide food and cover. Unless they are periodically maintained they will grow up into forest. We recommend periodic (every five years) mowing or selective cutting areas on the western boundary and other edges not used for hay to maintain them as shrubland. Cut and paint application of herbicide may also be used to reduce small trees. These actions can be taken during the off-season.

Passive Recreation Management Recommendations

Heard Farm Conservation Area is a popular destination for birders, walkers, dog-walkers, and just folks looking for a break without distractions. For the most part these activities and the conservation area's values for wildlife are in harmony. The only possible exception is dogs off-lease during the nesting season. Dogs and ground nesting birds don't mix without disastrous consequences for the birds. It is town policy that dogs be kept on lease during the nesting season, from May 1 until the fields are mowed in late July or August. Not all visitors observe this regulation and person power for enforcement is limited. Most people will obey the regulation if they have enough information to understand the harm that their pets may cause. Education is the key.

Several elements of a program to encourage keeping dogs on lease are recommended.

- First, some interpretive signs telling about the precarious state of bobolinks and the adverse impacts of loose dogs can be posted during the nesting season at the information kiosk and at the head of the trails leaving the parking area. Mass Audubon would be able to help develop such signage.
- Second, use symbolic fencing to indicate the boundaries of the field. The "fencing" can be made of simple posts and rope or string with signs to explain the importance of staying out of the nesting area.
- Third, try and have volunteer docents during busy weekends to show people the birds and explain a bit about their life cycle and long-distance migration from Argentina, and remind them of the importance of keeping their pets on-leash.
- Fourth, consider reducing the width of the mowed trails along the perimeter of the fields to no more than 6 feet during the nesting season.
- Consider a volunteer program like the "Bark Ranger" initiative begun last year by Weston and the Sudbury Valley Trustees.

The trail should be mown every two weeks and woody vegetation should be clipped back annually. Trails are currently being mowed 6-10 ft wide. A decrease in the width of the trail will save time and other town staff resources. Trails should be walked regularly but particularly after large storm events to remove down trees and make necessary repairs. Collaboration with Bay Circuit Trail is encouraged to jointly maintain the trail system on the northern boundary.

Any programs or recreational opportunities open to the public will need to follow ADA regulations. Every recreational opportunity does not need to be ADA accessible. However, the town needs to provide people with disabilities equal opportunities to participate in programs and recreational opportunities in the town. This means, the town of Wayland should look at all of its trails and conservation areas and have an equal representation for the type of experience offered for that activiy that is accessible to people of all abilities. Not every trail has to be accessible nor can or should be made accessible if it would fundamentally alter the experience of that activity. The Conservation Commission will need to communicate with the designated ADA Coordinator in Wayland (Town Administrator) for official guidance on providing equal opportunities to the public.

Schedule of Management Activity

The following matrix is proposed for yearly management activities. Quantities and estimated costs will be shown in Appendix B.

Yearly ongoing Activities

	Winter	Spring	Summer	Fall
	Dec-	Mar-		Sep-
	Feb	May	Jun-Aug	Nov
Permitting for Planned Projects				
Monthly Property Visits				
Annual Work Plan with Staff and Stewards				
Safety Meeting with Staff, Stewards, Police and Fire Dept.				
Trail Walk/Clean Up (downed limbs, drainage issues, signage				
needs)				
Repair Equipment and tools				
Building Projects (kiosks, signposts, etc.)				
Invasive Plant Management				
Shrubland management				
Mowing for Grassland Birds and Haying (After August 15 th)				
Mowing/fertilizing or disking fields to improve habitat				
Boundary Walk (monitoring for encroachments, signage, etc.)				

Short term Projects

Field Management

- Continue having fields after mid-July
- Mow, lime, and fertilize "Center Field" to improve habitat or try strip disking in the Fall or early Spring
- Note that signage is probably important to clarify why this field is being mowed and fertilized or disked (whereas other fields are not)

Invasive plant management recommendations:

• Obtain an herbicide applicators license by staff

Wildlife enhancement management recommendations:

- Dependent on volunteer and staff resources
- Establish regular bird censusing effort, especially during the summer breeding season. Fixed point counts with a regular protocol. Mass Audubon could provide a "training manual", but then the work would depend on volunteers.
- Orchard care

Passive recreation management recommendations:

- Prepare and install interpretive signs at parking lot and trail heads to educate visitors about the importance of keeping dogs on-leash
- Reduce the width of the perimeter trails to 6 feet
- Install "symbolic fencing" and signs around fields
- Explore having volunteer docents to explain about the importance of bobolink habitat

Long Term Projects

Field Management

- Continue haying fields after mid-July
- Rotate efforts to improve field habitats

Invasive plant management recommendations:

- Maintain an herbicide applicators license by staff
- Strategically treat invasive plants within the property:
 - Treat invasive plants along the trail system
 - Treat invasive plants along the edges of the fields
 - Treat invasive plants within the forested areas of the property working from the trail system towards the interior of the property.

Wildlife enhancement management recommendations:

- Periodically (every five years) remove larger trees and shrubs from shrubland areas
- Orchard care

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773

• Other actions dependent on volunteer and staff resources

Passive recreation management recommendations:

- Mow trails on perimeter of fields to 6ft in width
- Walk trails after storm events to clear tree hazards and make repairs to boardwalks
- Initiate a volunteer "Bark Ranger" program

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773

Appendix A – Control of Invasive Plants

Several species of invasive plants are currently found within the Heard Farm Conservation Area and we have described their management as it pertains to specific goals and objectives outlined in this plan. In general, we recommend that the stewards assess threats from invasive species during annual monitoring and implement treatment according to specifications outlined by the town.

If herbicide is used, the exact concentration, chemical, and type of application should be decided by the applicator and approved by the town. The applicator should develop an Invasive Plant Management plan for the area and make recommendations to the town that are best suited for the site.

Glossy and Common Buckthorn

Manual, mechanical and chemical means are effective in controlling glossy buckthorn and is most effectively controlled by recognizing its appearance early and removing isolated plants before they begin to produce seed. With large infestations, remove the largest seed-producing plants first. At this time no means of biological control is available for controlling buckthorn. Hand pulling is effective in small infestations. Remove the entire root section or re-sprouting will occur. Weed wrenches can be very effective in uprooting buckthorn.

Chemical treatment is also an option. The type of herbicide determines the best time of year to apply based on how the chemicals disrupt the biological process of the plant. Triclopyr herbicides are much more effective early in the growing season. Glossy buckthorn retains its leaves late into the fall, so you can apply herbicide fairly late in the season. However, the application should not be too late, or the leaves will no longer be photosynthetically active (or minimally so) and will easily fall from the twigs without affecting the roots. During the growing season, cut the stems near ground level and apply a 20%-25% herbicide mixture to the stumps. Re-sprouts should be cut and treated again or sprayed with a hand sprayer of 1.5%. Foliar applications over non-water sites can also be used. Foliar application of herbicides using a backpack sprayer is effective, but less selective.

Common Reed – Phragmites

Control with herbicides is effective for controlling areas with large, established, populations of phragmites. Other options include mowing and prescribed burning. New stands of phragmites commonly occur when new wetlands are created, or the soil is disturbed. Minimizing land disturbances and water pollution helps deter this invasive species. Land management practices that guard against erosion, sedimentation, fluctuating water levels, and nutrient loading in wetlands are the best long-term solution.

Control of phragmites is difficult. Repeated cutting can slow its growth and possibly hinder its spread but will not eliminate it altogether. The best method to eliminate phragmites is the foliar application of a systemic herbicide when the plants are actively growing. At this time no means of biological control is available for treating phragmites infestations. Manual or mechanical cutting or pulling has been used

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773

successfully to control phragmites. Treatments usually need to be repeated annually. The best time to cut phragmites is at the end of July. Cutting at other times may increase stand density. Phragmites stems should be cut below the lowest leaf, leaving a 6" or shorter stump. Hand-pulling is an effective technique for controlling phragmites in small areas with sandy soils.

Repeated mowing is effective at slowing the spread of established stands but is unlikely to kill the plant. Excavation of sediments may also be effective, but root fragments left in the soil may lead to reestablishment. Prescribed burning after the plant has flowered, either alone or in combination with herbicide treatment, is also effective. Burning after herbicide treatment also reduces standing dead stem and litter biomass which may help to encourage germination of native plants in the following growing season. Do not burn plants in the spring or summer before flowering as this may stimulate growth. Chemical treatments are effective in controlling established populations. If a population can be controlled soon after it has established the chances of eliminating the infestation are much higher because the below-ground rhizome network will not be as extensive. Herbicides are best applied in late summer/early fall after the plant has flowered either as a cut stem treatment or as a foliar spray. Repeat treatments are required for several years to prevent any surviving rhizomes from re-sprouting.

Multiflora Rose

Mechanical and chemical methods are effective methods for managing multiflora rose but may need to be combined with chemical treatment in large or persistent infestations. The most important steps to controlling multiflora rose are to destroy existing plants and begin a yearly program to control seedlings as they appear. Biological control is not yet available for management of multiflora rose. However, researchers are investigating several options, including a native viral pathogen (rose-rosette disease), which is spread by a tiny native mite, and a seed-infesting wasp, the European rose chalcid.

Manual and mechanical control consisting of frequent, repeated cutting or mowing three to six times per growing season for two to four years is effective in achieving high mortality of multiflora rose. In high quality natural communities, cut the individual plants to minimize habitat disturbance. Herbicides are successful in controlling multiflora rose, but follow-up treatments are required because of the longlived stores of seed in the soil. Apply systemic herbicides (such as glyphosate) late in the growing season to freshly cut stumps or to regrowth. In wetlands, where multiflora rose may occur, make sure to use a wetland-formulated concentrate. Use an active ingredient concentration of 25-35% when you apply herbicide to the cut stem. Plant growth regulators control the spread of multiflora rose by preventing fruit set.

Oriental Bittersweet

A combination of cutting followed by application of concentrated systemic herbicide to rooted, living cut surfaces is an effective approach for removing Oriental bittersweet. For large infestations spanning extensive areas of ground, a foliar herbicide is recommended over manual or mechanical methods, which would create soil disturbance to minimize soil disturbance. Manual, mechanical and chemical control methods are effective in removing and killing Oriental bittersweet. A combination of methods

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773

often yields the best results and may reduce potential impacts to native plants, animals and people. The method selected depends on the extent and type of infestation, the amount of native vegetation on the site, and the time, labor and available resources. No biological controls are currently available for this plant.

Manual Control of small infestations can be achieved by hand-pulling, but the entire plant should be removed including all the root portions. If fruits are present, collect, bag, and dispose of them in heavy garbage bags. Always wear gloves and long sleeves to protect your skin from poison ivy and barbed or spiny plants. Plants can also be controlled by cutting climbing vines near the ground at a comfortable height to kill upper portions and to relieve the tree canopy. Vines can be cut using pruning snips or a pruning saw for smaller stems, or a hand axe or chain saw for larger vines. Minimize the damage to the bark of the host tree. Rooted portions will remain alive and should be repeatedly cut to the ground or treated with herbicide. Cutting without herbicide treatment requires vigilance and repeated cutting because plants will re-sprout from the base. Begin treatment early in the growing season and repeat the treatment every two weeks until autumn

Systemic herbicides are absorbed into plant tissues and carried to the roots, killing the entire plant within about a week. This method is most effective if the stems are first cut and herbicide is applied immediately to the cut stem tissue.

Fall and winter applications will avoid or minimize impacts to native plants and animals. Repeated treatments will be required. Any herbicide applications should be carefully targeted to avoid damage to native, non-target species. If native grasses are intermingled with the bittersweet, triclopyr is better to use than glyphosate because it is selective for broad-leaved plants and will not harm grasses. Follow-up monitoring is required to ensure effective control.

Reed Canary Grass

Several small patches of reed canary grass (*Phalaris arundinacea*) were noted in the fields. This is a perennial, rhizomatous grass that has been identified as invasive. Mowing before seeds are set will help control its spread, but it also spreads by its rhizomes. Small stands of reed canary grass can be controlled through hand removal. Plants should be dug, taking care to remove as much of the root system as can be found. As even small fragments of the rhizomes can re-sprout, digging is only suitable if the time is taken to get all the roots possible. Plant parts should be disposed of responsibly, as any left in contact with water or moist ground has the potential to re-sprout.

Covering and mulching has been used with some success to control reed canary grass. The entire area should be covered with several layers of cardboard and several inches of mulch, or with a heavy woven plastic fabric anchored in place. The covering must be kept in place and intact for at least an entire growing season. The cover must also extend well clear of all sides of the reed canary grass site, as shoots will grow out from the edges to reach light. Any manual control methods will require careful monitoring of the site over multiple seasons to ensure regrowth does not occur. Chemical treatment is also an option but should only be used for large infestations.

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773

Recommendation	Priority Level	Cost Estimate	Variables
Monitoring trails after storm events	High	\$0- \$5,000	Volunteers, staff, Bay Circuit Trail Partner, number of repairs needed
Haying of fields	High	\$0	Agreement with farmer
Mowing of trails	High	\$500- \$1000 funded by donations	Staff, volunteers
Rehabilitate fields for ground nesting bird habitat	High	\$5,000	Rotate to rehabilitate part of one field per year as necessary
Manage small areas of shrubland	High	\$0- \$500	Staff, volunteers, contractor, amount of invasive species present and whether native plantings are needed
Maintain orchards	Medium	\$5,000	Volunteer effort
Obtain/ maintain herbicide applicators license	Medium	\$500- \$1,000	Availability of staff, how useful the license would be overall to the town
Control of field invasive plants	Medium	\$500-\$25k over five years	Volunteers, contractor, or staff and extent of follow up treatments needed
Control of forest invasive plants	Medium	\$500-\$25k over five years	Volunteers, contractor, or staff and extent of follow up treatments needed
		\$25,000/year average	

Appendix B – Estimated Costs and Priorities

The following list of more than 200 species was generated using eBird (ebird.org). It includes birds seen in the fields, forests, wetlands, the adjacent Sudbury River, and flying over the area.

25

Waterfowl	Rails, Gallinules, and Allies	Vultures, Hawks, and Allies
Snow Goose	Virginia Rail Turkey Vulture	
Canada Goose	Sora	Osprey
Mute Swan	Common Gallinule	Northern Harrier
Wood Duck	American Coot	Sharp-shinned Hawk
Blue-winged Teal	Shorebirds	Cooper's Hawk
Northern Shoveler	American Golden-Plover	Sharp-shinned
Gadwall	Semipalmated Plover	Bald Eagle
American Wigeon	Killdeer	Red-shouldered Hawk
Mallard	Dunlin	Broad-winged Hawk
American Black Duck	Least Sandpiper	Red-tailed Hawk
Northern Pintail	Buff-breasted Sandpiper	Rough-legged Hawk
Green-winged Teal	Pectoral Sandpiper	Owls
Ring-necked Duck	Semipalmated Sandpiper	Eastern Screech-Owl
Lesser Scaup	American Woodcock	Great Horned Owl
Bufflehead	Wilson's Snipe	Barred Owl
Common Goldeneye	Spotted Sandpiper	Long-eared Owl
Hooded Merganser	Solitary Sandpiper	Northern Saw-whet Owl
Common Merganser	Greater Yellowlegs	Kingfishers
Ruddy Duck	Lesser Yellowlegs	Belted Kingfisher
Grouse, Quail, and Allies	Gulls, Terns, and Skimmers	Woodpeckers
Ring-necked Pheasant	Ring-billed Gull	Yellow-bellied Sapsucker
Wild Turkey	Herring Gull	Red-bellied Woodpecker
Grebes	Iceland Gull	Downy Woodpecker
Pied-billed Grebe	Great Black-backed Gull	Hairy Woodpecker
Pigeons and Doves	Loons	Pileated Woodpecker
Rock Pigeon	Common Loon	Northern Flicker
Mourning Dove	Cormorants and Anhingas	Falcons
Cuckoos	Great Cormorant	American Kestrel
Vellow-billed Cuckoo	Double-crested Cormorant	Merlin
Black-billed Cuckoo	Herons, Ibis, and Allies	Peregrine Falcon
Nightiars	American Bittern	Tyrant Flycatchers: Pewees,
Common Nighthawk	Least Bittern	Kingbirds, and Allies
Eastern Whin-poor-will	Great Blue Heron	Olive-sided Flycatcher
Swifts	Great Egret	Eastern Wood-Pewee
Chimpov Swift	Snowy Egret	Alder Flycatcher
	Cattle Egret	Willow Flycatcher
	Green Heron	Least Flycatcher
Ruby-throated Hummingbird	Black-crowned Night-Heron	Eastern Phoebe

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773 781 259 2198 781 259 2398 (fax)

Great Crested Flycatcher

Eastern Kingbird

Vireos

Yellow-throated Vireo Blue-headed Vireo Philadelphia Vireo Warbling Vireo Red-eyed Vireo

Shrikes

Northern Shrike

Jays, Magpies, Crows, and Ravens Blue Jay

American Crow Fish Crow Common Raven

Tits, Chickadees, and Titmice

Black-capped Chickadee Tufted Titmouse

Larks

Horned Lark

Martins and Swallows

Northern Rough-winged Swallow Purple Martin Tree Swallow Bank Swallow Barn Swallow Cliff Swallow

Kinglets

Golden-crowned Kinglet Ruby-crowned Kinglet

Nuthatches

Red-breasted Nuthatch White-breasted Nuthatch

Treecreepers Brown Creeper

Gnatcatchers

Blue-gray Gnatcatcher

Wrens

House Wren Winter Wren Sedge Wren Marsh Wren Carolina Wren

Starlings and Mynas European Starling

Ecological Extension Service Mass Audubon 208 South Great Road Lincoln, Massachusetts 01773 Catbirds, Mockingbirds, and Thrashers Gray Catbird Brown Thrasher Northern Mockingbird

Thrushes

Eastern Bluebird Veery Swainson's Thrush Hermit Thrush Wood Thrush American Robin

Waxwings

Cedar Waxwing

Old World Sparrows House Sparrow

Wagtails and Pipits American Pipit

Finches, Euphonias, and Allies

Evening Grosbeak Pine Grosbeak House Finch Purple Finch Common Redpoll Red Crossbill White-winged Crossbill Pine Siskin American Goldfinch

Longspurs and Snow Buntings

Snow Bunting

New World Sparrows

Grasshopper Sparrow Chipping Sparrow Clay-colored Sparrow Field Sparrow American Tree Sparrow Fox Sparrow Dark-eyed Junco White-crowned Sparrow White-throated Sparrow Savannah Sparrow Song Sparrow Lincoln's Sparrow Eastern Towhee

Yellow-breasted Chat

Yellow-breasted Chat

Blackbirds

Yellow-headed Blackbird Bobolink Eastern Meadowlark Orchard Oriole Baltimore Oriole Red-winged Blackbird Brown-headed Cowbird Rusty Blackbird Common Grackle

Wood-Warblers

Ovenbird Louisiana Waterthrush Northern Waterthrush **Blue-winged Warbler** Black-and-white Warbler **Tennessee Warbler Orange-crowned Warbler** Nashville Warbler Mourning Warbler Common Yellowthroat Hooded Warbler American Redstart Cape May Warbler Northern Parula Magnolia Warbler **Bav-breasted Warbler** Blackburnian Warbler Yellow Warbler Chestnut-sided Warbler **Blackpoll Warbler** Black-throated Blue Warbler Palm Warbler **Pine Warbler** Yellow-rumped Warbler Prairie Warbler Black-throated Green Warbler Canada Warbler Wilson's Warbler

Cardinals, Grosbeaks, and Allies

Scarlet Tanager Northern Cardinal Rose-breasted Grosbeak Indigo Bunting Dickcissel