2014 Breeding Bird Habitat Report, Lawton Farm Recreation Area, Scituate Rhode Island

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1. Introduction

This report describes the results of a series of breeding bird point count surveys conducted at the Lawton Farm Recreation Area, Scituate, Rhode Island in summer 2014. Lawton Farm is a 54.4 acre parcel owned by the Scituate Land Trust and the Town of Scituate. The property is mostly open fields, except for approximately 20 acres of forested wetlands and a small stand of upland hardwoods in the southwest corner. An important conservation objective for the property is to maintain grassland habitat for the bobolink (*Dolichonyx oryzivorous*) and eastern meadowlark (*Sturnella magna*). For more information on the property, see the Lawton Farm Management Plan (Tremblay 2009).

The point counts were carried out as part of an ongoing study conducted by the University of Rhode Island and the Environmental Protection Agency to evaluate bird use of shrubland habitats generated through forest management practices.

2. Methods

The 2014 surveys were conducted in the three sites of Lawton Farm that were surveyed in 2012 (Buffum and McKinney) and 2013 (Payne et al.). These sites were selected for point count surveys to include different types of shrubland in addition to forest and meadow habitats (Table 1 and Figure 1).

Table 1. Lawton Farm Sampling Sites 2014

Site	Description
Site 1	Unmanaged shrubland, meadow, forest
Site 2	Shrubland created by recent removal of invasive plants, meadow, forest
Site 3	Shrubland created by irregular mowing of field, meadow, forest

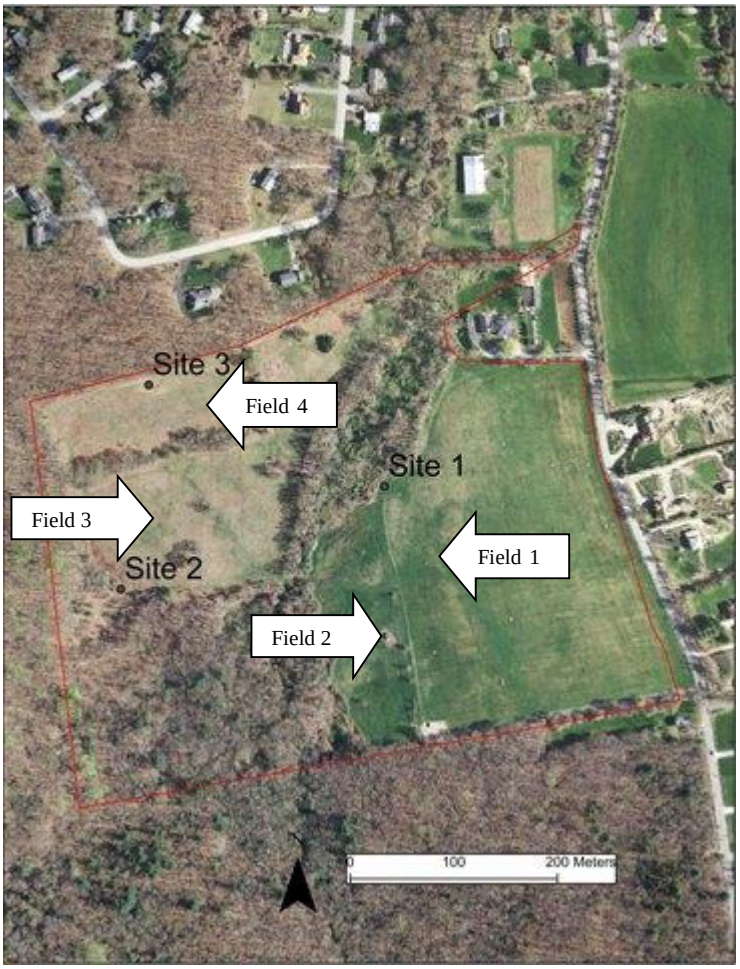
Site 1: The first survey site is located in the central portion of the property on the edge of Field 1 (Figure 1; 41.75792° N, 071.55652° W). The field is bordered by small patches of shrubland to the north and west. This site included a hedgerow of mature trees which was removed in 2012 to connect Fields 1 and 2 to improve habitat for bobolink and other grassland bird species. The eastern portion of the shrubland is dominated by multiflora rose (*Rosa multiflora*) which transitions into a small herbaceous wetland to the west. To the north of the shrubland is a small area of forest dominated by red maple (*Acer rubrum*) and white ash (*Fraxinus americana*). To the east and south of the sampling site is Field 1, which is mowed annually to maintain grassland habitat; mowing occurs in September to prevent disturbance of nesting birds. The hay bales are sold as construction hay.

Site 2: The second sampling site is located in the western portion of the property on the southwestern edge of Field 3 (41.75715° N, 071.55952° W) adjacent to a patch of shrubland which was managed in 2012 for invasive plant removal such as autumn olive (*Elaeagnus umbellate*), and is currently dominated by saplings of black cherry (*Prunus serotina*) with Oriental bittersweet (*Celastrus orbiculatus*). The sampling site also includes upland forest dominated by white ash and white oak (*Quercus alba*).

Site 3: The third sampling site is located in the northern boundary of the property on the northern edge of Field 4 (41.75745º N, 071.55952º W). Field 4 currently includes patchy regeneration of saplings of black cherry, American ash, and white oak. The sampling site includes upland forest to the north dominated by white oak and American ash.

The methodology used in the 2014 point count survey prescribed to the same protocol used in the 2012 and 2013 surveys. The purpose of the point count survey was to identify breeding birds within Lawton Farm and to evaluate habitat preferences of different species. The three selected sites were separated by a distance of greater than 100 m to preclude recording the same bird at more than one site. Point counts were preceded by a five minute wait period in order to minimize the disturbance to birds and to allow them to acclimate to the observers' presence. Point counts were conducted by a primary observer facing north (R. McKinney) and a secondary observer facing south (C. Glinka) in order to achieve a 360º view of the site. Species identification and abundance were recorded based on songs, calls, direct observations, and fly overs within 100 m of the observation site during each ten minute point count. Observers made distinctions between birds present ≤ 50 m from the site and those between 50 and 100 m from the site. Observers communicated to avoid recording the same bird twice and to clarify location and species. Each site was surveyed on three separate occasions on June 6th, 15th and July 2nd, 2014 and all were conducted between 0700 and 0900 hours.

Figure 1 Lawton Farm, Scituate Rhode Island: 2014 Sampling Sites



3. Results

We observed 35 unique bird species across the three sites during the three survey periods (Table 2). The most abundant species were bobolink (*Dilichonyx oryzivorus*), red-winged blackbird (*Agelaius phoeniceus*), song sparrow (*Melospiza melodia*) and common yellowthroat (*Geothylpis trichas*). Bobolinks continue to be observed at Lawton Farm in substantial numbers, in the large meadow (Field 1), where they presumably nest and use the area for foraging and cover. While the bobolinks were not observed at Sites 2 or 3, we noted their presence in Field 2 where they had previously not been observed. Red-winged blackbirds were observed in the greatest numbers at Site 1, with one observation at Site 2. Song sparrows appeared to favor Sites 1 and 3 equally and common yellowthroats were most abundant at Site 1.

Four species were present at all three sites: song sparrow, common yellowthroat, gray catbird (*Dumetlla carolinensis*), and American robin (*Turdus migratorious*). All of these species were recorded in survey years 2012 and 2013 and American robin is the only species to consistently occur at all three sites from 2012 to 2014.

The total species richness recorded this year (35) surpasses the species richness of both 2012 (28) and 2013 (25). There were 11 species that were recorded this year that had not been recorded in previous years: northern flicker (*Colaptes auratus*), eastern phoebe (*Sayornis phoebe*), barn swallow (*Hirundo rustica*), white-breasted nuthatch (*Sitta carolinensis*), brown thrasher (*Toxostoma rufum*), black-throated blue warbler (*Dendroica caerulescens*), chestnut-sided warbler (*Dendroica pensylvanica*), prairie warbler (*Dendroica discolor*), palm warbler (*Dendroica palmarum*), field sparrow (*Spizella pusilla*), and mourning dove (*Zenaida macroura*). There were 12 species that were recorded in 2012 or 2013 that were not observed during this year's survey: downey woodpecker (*Picoides pubescens*), hairy woodpecker (*Picoides villosus*), eastern wood-peewee (*Contupus virens*), willow flycatcher (*Empidonax traillii*), eastern kingbird (*Tyrannus tyrannus*), Great crested flycatcher (*Myiarchus crinitus*), cedar waxwing (*Bombycilla cedorum*), blue-winged warbler (*Vermivora pinus*), magnolia warbler (*Dendroica magnolia*), scarlet tanager (*Piranga olivacea*), house finch (*Carpodacus mexicanus*) and Baltimore oriole (*Icterus galbula*). Over the three consecutive years the surveys have been carried out, a total of 47 unique species have been recorded. Additionally, species abundance for this year (133) exceeded abundance recorded in 2012 (90) and 2013 (93).

An additional four species were observed outside of the point count locations but within the property: alder flycatcher (*Empidonax alnorum*), European starling (*Sturnus vulgaris*), Carolina wren (*Thryothorus ludovicianus*), and great blue heron (*Ardea herodias*).

Table 2. Abundance of bird species observed within 100 m of the point count center during 10 minute counts at three sites within Lawton Farm Recreation Area, Scituate, Rhode Island, in 2012, 2013, and 2014. Observations were based on singing, calls, visual observation, and fly overs. Dark gray indicates species not recorded in 2014, light gray indicates species newly recorded in 2014.

Common name	Scientific name	Shrubland Birds	2012				2013				2014			
			All Sites	Site 1	Site 2	Site 3	All Sites	Site 1	Site 2	Site 3	All Sites	Site 1	Site 2	Site 3
Mallard	*Anas platyrhynchos*		0	0	0	0	3	0	3	0	5	3	2	0
Ring-necked pheasant	*Phasianus colchicus*		1	0	0	1	0	0	0	0	1	0	0	1
Red-bellied woodpecker	*Melanerpes carolinus*		1	1	0	0	0	0	0	0	2	0	2	0
Downey woodpecker	*Picoides pubescens*		0	0	0	0	1	1	0	0	0	0	0	0
Hairy woodpecker	*Picoides villosus*		1	0	1	0	0	0	0	0	0	0	0	0
Northern flicker	*Colaptes auratus*		0	0	0	0	0	0	0	0	1	1	0	0
Eastern wood-pewee	*Contopus virens*		2	0	1	1	1	1	0	0	0	0	0	0
Willow flycatcher	*Empidonax traillii*	Yes	1	1	0	0	0	0	0	0	0	0	0	0
Eastern kingbird	*Tyrannus tyrannus*		0	0	0	0	1	1	0	0	0	0	0	0
Great crested flycatcher	*Myiarchus crinitus*		1	0	0	1	0	0	0	0	0	0	0	0
Eastern phoebe	*Sayornis phoebe*		0	0	0	0	0	0	0	0	2	1	1	0
Blue jay	*Cyanocitta cristata*		2	0	2	0	2	0	2	0	1	1	0	0
American crow	*Corvus brachyrhynchos*		1	0	0	1	0	0	0	0	2	0	2	0
Tree swallow	*Tachycineta bicolor*		8	5	2	1	3	3	0	0	6	5	1	0
Barn swallow	*Hirundo rustica*		0	0	0	0	0	0	0	0	4	3	0	1
Tufted titmouse	*Baeolophus bicolor*		6	2	3	1	3	0	2	1	3	0	1	2
Black-capped chickadee	*Poecile atricapilla*		1	0	0	1	0	0	0	0	4	0	2	2
White-breasted nuthatch	*Sitta carolinensis*		0	0	0	0	0	0	0	0	1	1	0	0
House wren	*Troglodytes aedon*	Yes	0	0	0	0	2	0	0	2	2	0	0	2
Gray catbird	*Dumetella carolinensis*	Yes	3	2	1	0	5	3	2	0	5	1	3	1
Brown thrasher	*Toxostoma rufum*	Yes	0	0	0	0	0	0	0	0	1	0	0	1
American robin	*Turdus migratorius*		8	3	3	2	9	4	2	3	6	2	3	1
Wood thrush	*Hylocichla musteling*		0	0	0	0	1	0	0	1	2	0	1	1
Cedar waxwing	*Bombycilla cedorum*	Yes	4	3	1	0	2	2	0	0	0	0	0	0
Red-eyed vireo	*Vireo olivaceus*		2	0	1	1	4	1	2	1	3	0	2	1
Blue-winged warbler	*Vermivora pinus*	Yes	1	1	0	0	0	0	0	0	0	0	0	0
Black-throated blue warbler	*Dendroica caerulescens*		0	0	0	0	0	0	0	0	1	0	0	1
Yellow warbler	*Dendroica petechia*	Yes	2	2	0	0	7	6	0	1	3	3	0	0
Magnolia warbler	*Dendroica magnolia*	Yes	2	0	2	0	0	0	0	0	0	0	0	0
Common yellowthroat	*Geothlypis trichas*	Yes	2	2	0	0	1	0	0	1	7	4	2	1
Chestnut-sided warbler	*Dendroica pensylvanica*	Yes	0	0	0	0	0	0	0	0	1	1	0	0
Prairie warbler	*Dendroica discolor*	Yes	0	0	0	0	0	0	0	0	2	0	1	1
Palm warbler	*Dendroica palmarum*		0	0	0	0	0	0	0	0	1	0	1	0
Ovenbird	*Seiurus aurocapillus*		0	0	0	0	4	2	1	1	1	0	0	1
Scarlet tanager	*Piranga olivacea*		1	0	1	0	0	0	0	0	0	0	0	0

Common name	Scientific name	Shrubland Birds	2012				2013				2014			
			All Sites	**Site 1**	**Site 2**	**Site 3**	**All Sites**	**Site 1**	**Site 2**	**Site 3**	**All Sites**	**Site 1**	**Site 2**	**Site 3**
Eastern towhee	*Pipilo erythrophthalmus*	Yes	5	0	2	3	3	0	2	1	4	0	0	4
Northern cardinal	*Cardinalis cardinalis*	Yes	1	0	0	1	4	1	1	2	2	1	1	0
Indigo bunting	*Passerina cyanea*	Yes	0	0	0	0	2	0	1	1	1	0	0	1
House finch	*Carpodacus mexicanus*		1	0	0	1	0	0	0	0	0	0	0	0
American goldfinch	*Carduelis tristis*	Yes	1	0	0	1	1	0	0	1	5	3	2	0
Song sparrow	*Melospiza melodia*	Yes	6	3	0	3	3	1	1	1	12	5	2	5
Chipping sparrow	*Spizella passerine*		0	0	0	0	1	0	1	0	1	0	0	1
Field sparrow	*Spizella pusilla*	Yes	0	0	0	0	0	0	0	0	3	0	0	3
Red-winged blackbird	*Agelaius phoeniceus*		21	12	4	5	7	4	2	1	19	18	1	0
Baltimore oriole	*Icterus galbula*		1	0	0	1	5	0	3	2	0	0	0	0
Bobolink	*Dilichonyx oryzivorus*		3	3	0	0	16	16	0	0	16	16	0	0
Mourning dove	*Zenaida macroura*		0	0	0	0	0	0	0	0	3	3	0	0
Total Abundance			**90**	**40**	**26**	**25**	**93**	**47**	**26**	**20**	**133**	**72**	**30**	**31**

Thirteen of the 35 bird species recorded on the property this year are classified as shrubland birds in southern New England (Table 3; Schlossber and King 2007). Four new shrubland species recoded this year are brown thrasher, chestnut-sided warbler, prairie warbler, and field sparrow. Four shrubland species that had been recorded in 2012 or 2013 were not recorded this year: blue-winged warbler, willow flycatcher, cedar waxwing and the magnolia warbler. Seventeen unique shrubland species were recorded over the three consecutive years of surveys.

Table 3. Number of Shrubland bird species observed at Lawton Farm Recreation Area, Scituate, Rhode Island, in 2012, 2013, and 2014. Dark gray indicates species not recorded in 2014, light gray indicates species newly recorded in 2014.

	2012				2013				2014			
Common name	**All Sites**	**Site 1**	**Site 2**	**Site 3**	**All Sites**	**Site 1**	**Site 2**	**Site 3**	**All sites**	**Site 1**	**Site 2**	**Site 3**
Willow flycatcher	1	1	0	0	0	0	0	0	0	0	0	0
Gray catbird	1	1	1	0	1	1	1	0	5	1	3	1
Cedar waxwing	1	1	1	0	1	1	0	0	0	0	0	0
Blue-winged warbler	1	1	0	0	0	0	0	0	0	0	0	0
Yellow warbler	1	1	0	0	1	1	0	1	3	3	0	0
Magnolia warbler	1	0	1	0	0	0	0	0	0	0	0	0
Common yellowthroat	1	1	0	0	1	0	0	1	7	4	2	1
Chestnut-sided warbler	0	0	0	0	0	0	0	0	1	1	0	0
Prairie warbler	0	0	0	0	0	0	0	0	2	1	1	0
Eastern towhee	1	0	1	1	1	0	1	1	4	0	0	4
Northern cardinal	1	0	0	1	1	1	1	1	2	1	1	0
Field Sparrow	0	0	0	0	0	0	0	0	3	0	0	3
Song sparrow	1	1	0	1	1	1	1	1	12	5	2	5
American goldfinch	1	0	0	1	1	0	0	1	5	3	2	0
House wren	0	0	0	0	1	0	0	1	2	0	0	2
Indigo bunting	0	0	0	0	1	0	1	1	1	0	0	1
Brown thrasher	0	0	0	0	0	0	0	0	1	0	0	1
Total Species	**11**	**7**	**4**	**4**	**10**	**5**	**5**	**8**	**48**	**19**	**11**	**18**

Note: Shrubland birds are defined by Scholssberg and King (2007) as species that would benefit from the creation of new shrubland habitat in New England.

4. Discussion

Lawton Farm Recreation Area is a unique property because it combines several different habitat varieties, including grassland, shrubland, and forest, that are suited to a diverse group of bird species. Grassland habitat in the northeast US is declining largely due to the decline in the agricultural industry in the northeast (U.S. Department of Agriculture 2010). The abandonment of farms has led to forest succession, varied land use development and fragmentation of grassland (U.S. Department of Agriculture 2010). Additionally, earlier and more frequent hay harvests do not provide sufficient time for grassland birds to complete their nesting cycle (U.S. Department of Agriculture 2010). These declines in grassland habitat have caused declines in bird species that are exclusively dependent on grassland, such as bobolink and eastern meadowlark. Bobolink populations in the northeast are locally common, but their population levels have been in decline since the early 1990s due to the loss of grasslands and agricultural fields (DeGraaf and Yamasaki 2001). Like other grassland birds, bobolink nest on the ground in dense stands of hay and grass and thus it is important that grasslands are not actively managed (e.g. mowed) during their nesting period that falls between early May and late June (DeGraaf and Yamasaki 2001). A key management priority of the Scituate Land Trust is to improve habitat for bobolink and eastern meadowlark, both of which are grassland-dependent species. Bobolinks prefer to nest in large meadows with tall grass (Herkert, 1994), Field 1 satisfies these habitat needs. Survey data from 2012-2014 shows that bobolink have been present each year at Site 1 adjacent to Field 1 and that their abundance increased in 2013 (from three to 16). Their abundance level held steady in 2014 with another 16 individuals recorded and their expansion into Field 2 was noted.

Although a stated goal of the Scituate Land Trust's management of Lawton Farm is to attract additional grassland species, such as eastern meadowlark, there have been no recorded observations of other grassland-dependent species. Grassland species require large areas of land to successfully breed and forage, and research has shown that despite proper management practices, grassland parcels less than 25 acres will have lower grassland species diversity (U.S. Department of Agriculture 2010). Territory sizes of eastern meadowlark nesting pairs range from 3 to 15 acres in moist lowlands and 4.3 to 7.9 acres in grasslands (Lanyon 1957; Wiens 1969). Therefore territory size requirements, and the size of the fields at Lawton, may play a role in the ability to attract additional grassland species to the property. In addition, grassland birds may exhibit a type of threshold effect where they won't inhabit a parcel of grassland unless it is of a certain size even though it technically could support the territory of a breeding pair.

In total, Lawton Farm is composed of approximately 55 acres, however, each of the four fields are fragmented by thin strips of forested area or recreational walking paths. Field 1 is the largest at approximately 17 acres. Therefore, while Lawton Farm's individual fields are not large enough to attract a high diversity and abundance of grassland species, certain management practices can be enacted to increase the attractiveness of the property to grassland species. Management practices that have been successful in attracting eastern meadowlarks and other grassland species include: 1) Promoting greater forb density and diversity by interseeding forb species in grassland plantings to improve overall habitat quality and food sources (Hull 1993; Klute 1994; Niesar 1994; Hull et al. 1996; Klute et al. 1997); 2) limiting the encroachment of woody vegetation within and along periphery grassland habitat to discourage predators and enlarge the amount of interior grassland (Herkert 1994; Sample and Hoffman 1989; Winter

1998); and 3) cutting after the breeding seasons (typically mid-August) to maintain the habitat as grassland and allow birds to have sufficient time to complete their nesting cycle (U.S. Department of Agriculture 2010). To maintain optimal conditions, fields should be cut annually with the hay and/or grass removed. This will keep succession of shrubs to a minimum and provide better conditions for spring grass growth (U.S. Department of Agriculture 2010). If hay stubble is not removed then forbs will out-compete grasses and the fields take longer to green up in the spring, making them less attractive to grassland species (U.S. Department of Agriculture 2010).

In contrast to the limited grassland species that Lawton Farm currently supports, there is a much higher species abundance and richness of shrubland species. Research has stressed the importance of creating shrubland habitat in New England (Chandler et al. 2009; DeGraaf and Yamasaki 2003; Schlossberg and King, 2007), as presently shrubland habitats are at or near historic lows in the northeast following an 80-year decline in anthropogenic and natural disturbances (King and Schlossberg 2012). The decline in shrubland habitat has caused the population levels of shrubland-dependent species to decline (Askins 1993). In New England 21 shrubland bird species have shown long- or short-term declines, with the most severe declines occurring in southern New England (King and Schlossberg 2012). Specifically in Rhode Island, shrubland habitat is expected to continue to decrease without more active forest management (Buffum et al. 2011). Shrubland habitats depend on disturbance to maintain their low shrub-dominant characteristics and otherwise revert to conditions unsuitable for shrubland birds within one to two decades due to natural forest succession (King and Schlossberg 2012).

Thirteen shrubland species were observed in surveys this year with a total of 17 species over the three consecutive survey years (2012-2014). These findings suggest that Lawton Farm is well suited for shrubland species. An important recent management finding regarding shrubland birds is that they do not prefer edge habitat as previously thought (King and Schlossberg 2012). Therefore, small or irregular patches of shrubland habitat with edges typically attract lower abundances of shrubland species than those habitats without edge (King and Schlossberg 2012). Another interesting aspect of shrubland species' habitat selection is the role of invasive plant species. While invasive plant species are typically considered a blight to bird habitat that must be removed (Site 2 of Lawton Farm underwent invasive plant species removal in 2012), several studies have demonstrated either equal nest success of shrubland species between native and non-native plant patches or increased nest success with the prevalence of invasive plant species (King and Schlossberg 2012). The improved nesting success tied to invasive plants may be attributed to the denser cover provided by invasive plants (King and Schlossberg 2012). Therefore, while management actions should favor native plants, the nesting success tied to the substrate function of invasive plants should be considered in management decisions (King and Schlossberg 2012). Additionally, while habitat preferences vary between different shrubland species, they generally require smaller territory ranges than grassland species (King and Schlossberg 2012).

Lawton Farm provides a number of unique habitats to a variety of bird species, and thus contributes to maintaining regional bird diversity. From a conservation point of view this is extremely valuable as this area is helping to maintain and enhance local and regional biodiversity. The property is particularly important to shrubland species and a single grassland

species, with both categories of birds suffering declines due to habitat loss and forest succession in recent years. Bobolinks and shrubland birds have strong site fidelity, meaning they return to the same breeding site year after year. If their nesting sites are destroyed these populations will often decline or die out (Schlossberg, 2009). Therefore, maintaining grassland and shrubland habitat is very important. Management strategies that the Scituate Land Trust can employ to maximize the appeal of Lawton Farm to grassland and shrubland species include:

1.) Annual mowing of the meadow fields (1 & 2) after mid-August to ensure that birds have completed their nesting cycle.
2.) Removal of edge habitat; both shrubland and grassland species avoid edges and Lawton Farm's fields are fragmented by thin stands of forest.
3.) Control the successional growth of woody vegetation; this may be a difficult balance to strike since grassland species decline in areas after woody shrubs have taken hold and shrubland species preferences are wider ranging. Some shrubland species prefer taller vegetation (<1.5 m) with abundant shrub cover while others prefer lower shrubs (<1.5 m) with fewer shrubs and more abundant forb cover (King and Schlossberg 2012). It will be prudent to decide which tracts of land should be managed for particular species groups and how large they should be, keeping in mind that grassland species require larger areas than shrubland species.
4.) Consider the value of invasive plants species to nesting shrubland birds in future invasive management plans. It may not be necessary to completely replace all invasive plants with native varietals.
5.) Ensure that people and pets who recreate at Lawton Farm stay on the trails during the spring and summer to avoid disturbing nesting birds. Since most shrubland and grassland birds nest on the ground they are particularly vulnerable to disturbance.

Overall the surveys conducted this year indicate that the diversity and abundance of birds nesting and foraging at Lawton Farm have increased from the previous year. While this is encouraging, inter-annual differences in birds detected at the sites may result from imperfect detection probabilities (e.g., some species will not be detected during a given survey or series of surveys even if present, skill level of surveyors), or from changes in the habitats (either through ecological succession or management action) during the course of the year. It is recommended that future annual surveys be conducted at Lawton Farm to continue monitoring the use of this valuable bird habitat.

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