

PROJECT BOBOLINK

Grassland Bird Conservation at Heaven Hill Farm
Prepared for the Henry Uihlein II & Mildred A. Uihlein Foundation
by the Paul Smith's College Adirondack Watershed Institute

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Project Bobolink

Grassland Bird Conservation at Heaven Hill Farm - 2020 Report to the Uihlein Foundation

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Introduction

Native grasslands, which support a number of grassland dependent bird species, are one of the most endangered ecosystems in the Americas (Renfrew et al. 2019). Grassland birds such as bobolinks (*Dolichonyx oryzivorus*) depend on these habitats in both their breeding and wintering grounds and must often find alternatives to native grasslands to meet their needs. In the Northeast US, hay meadows often provide ideal habitat for grassland specialist species including the bobolink, as well as the savannah sparrow (*Passerculus sandwichensis*), and the northern harrier (*Circus hudsonius*). Grassland birds as a group are exhibiting steep population declines throughout the Northeast as a result of a combination of factors related to habitat loss and fragmentation and intensification of agricultural practices on active farms. Hay mowing in particular is a challenge for grassland birds because cutting often coincides with breeding activity and results in significant mortality of nestlings and fledglings. The Paul Smith's College Adirondack Watershed Institute (AWI) has worked with the Henry Uihlein II and Mildred A. Uihlein Foundation since 2019 to address concerns related to grassland birds breeding at Heaven Hill Farm in Lake Placid.

In summer 2019, the Foundation generously supported AWI to examine how bobolinks and other bird species respond to farming practices in hay fields on Heaven Hill Farm. We conducted a project to assess the numbers of bobolink and savannah sparrow using the open fields in the mowed and set aside areas at Heaven Hill, identify potential nesting locations of these species, explore opportunities for habitat improvement on the set aside area, and provide management recommendations appropriate to Heaven Hill and nearby grassland habitats. We documented numerous passerine and woodpecker species, and



followed the behavior and activity of several male and female bobolinks and numerous savannah sparrows which enabled us to identify the areas of the property most used by these species and those which served as potential nest locations, make recommendations for minimizing the effects to these birds from hay mowing practices at Heaven Hill and other areas with appropriate grassland habitat, and to make recommendations for potential additional research, outreach, and conservation practices at Heaven Hill. Our work continued in 2020, with a specific focus on comparing findings with the previous year in terms of species and numbers of birds observed on the property, areas of highest activity, observed breeding behavior, and most likely nesting areas in order to inform ongoing efforts to address the needs of these birds at Heaven Hill and to assess any observed response to management. We also worked toward advancing the Uihlein Foundation's broader impacts related to grassland bird conservation via education and outreach and, in particular, through the acquisition of the former Cornell potato field parcel (Tablelands at Uihlein Farm). Tablelands is the focus of a separate standalone report.

Methods

As in 2019, we again used 3 methods to document birds and breeding activity at Heaven Hill Farm in summer 2020. Bobolinks appeared in the area in approximately mid-May and we began observations on





27 May. We visited the site multiple times throughout the season to observe occurrence and breeding activity of bobolinks and savannah sparrows until all apparent breeding activity had ended.

Point Counts

Point counts are a standard method for assessing occurrence and relative abundance of passerines (songbirds) and woodpeckers, though other types of birds are occasionally also detected. We used a set of points established in the grassland at Heaven Hill in 2019 and conducted 2 sets of counts again this season. Counts are 10 minutes in duration and document each individual bird that is seen or heard to include species, activity (S=singing, C=calling, I = individual seen), and whether the bird is within in 50 meters of the observer.

Informal Observations

Informal bird counts were used throughout the breeding season by recording every bird species heard or seen while walking the fields and other areas of the property and observing both the savannah sparrows and bobolinks. These data help to describe the entire bird community present on the property and are an opportunity to document occurrence of species that may not have been present on the specific occasions of the point counts.

Behavioral Observations

Our third method was behavioral observation of bobolinks and savannah sparrows conducted multiple times/week for a period of one to three hours each day throughout the breeding season. The majority of observations were made in the morning when the birds are more active. As in the previous season, we recorded all bobolinks detected, whether males or females, and documented behavior patterns and areas of the property where activity was concentrated. We are unable to readily distinguish male and female

savannah sparrows but we also recorded observations of this species on each visit. We paid close attention to the need to document breeding behaviors and locations, as well as response to hay cutting and other management activities.

Findings

Overall Bird Species Richness and Relative Abundance

Point counts were conducted throughout the open field habitat at Heaven Hill, with a minimum spacing of 250m between points. However, the open habitat structure at Heaven Hill is such that auditory detections of birds from farther than 250m away is frequent and we can often hear the same individuals from one count to the next. Informal observations of birds were made approximately every other day during the breeding season and, similarly, because songbirds are generally territorial and occupy the same territory throughout the breeding season, most records from our informal observations probably represent multiple detections of a small number of individual birds. Therefore, information from both bird survey methods should be considered primarily as a source of information for the types of species occurring at Heaven Hill and their relative, but not absolute abundance. We detected a total of 50 species through the course of the season (Table 1). Five species that we detected in 2019 were not detected this season (American kestrel, purple finch, red-tailed hawk, scarlet tanager, and white-breasted nuthatch). Conversely, 17 species were new this year including the wood thrush, a New York State designated Species of Greatest Conservation Need.



Table 1. Bird species detected at Heaven Hill Farm during May – August, 2020.

Common name	Scientific name	AOU** code	Point count	Informal	Total 2019	Total 2020
American crow	<i>Corvus brachyrhynchos</i>	AMCR	X	X	34	24
American goldfinch	<i>Spinus tristis</i>	AMGO	X	X	10	14
American kestrel	<i>Falco sparverius</i>	AMKE			2	0
American robin	<i>Turdus migratorius</i>	AMRO	X	X	9	15
Barn swallow	<i>Hirundo rustica</i>	BARS		X	2	9
Barred owl	<i>Strix varia</i>	BADO		X	1	1
Belted kingfisher	<i>Megaceryle alcyon</i>	BEKI	X	X	3	3
Blackburnian warbler	<i>Setophaga fusca</i>	BLBW	X		0	1
Black-capped chickadee	<i>Poecile atricapillus</i>	BCCH	X	X	8	6
Black-throated blue warbler*	<i>Setophaga caerulescens</i>	BTBW	X	X	2	2
Black-throated green warbler	<i>Setophaga virens</i>	BTNW	X		5	1
Blue jay	<i>Cyanocitta cristata</i>	BLJA	X	X	13	5
Blue-headed vireo	<i>Vireo solitarius</i>	BHVI	X	X	22	11
Bobolink*	<i>Dolichonyx oryzivorus</i>	BOBO	X	X	40+	40+
Canada goose	<i>Branta canadensis</i>	CAGO		X	2	1
Cedar waxwing	<i>Bombycilla cedrorum</i>	CEDW		X	2	5
Chestnut-sided warbler	<i>Setophaga pensylvanica</i>	CSWA	X	X	5	4
Chipping sparrow	<i>Spizella passerina</i>	CHSP	X	X	6	13
Common loon*	<i>Gavia immer</i>	COLO	X		1	1
Common raven	<i>Corvus corax</i>	CORA		X	2	1
Common yellowthroat	<i>Geothlypis trichas</i>	COYE		X	2	1
Eastern bluebird	<i>Sialia sialis</i>	EABL	X	X	17	15
Eastern kingbird	<i>Tyrannus tyrannus</i>	EAKI		X	0	1
Eastern phoebe	<i>Sayornis phoebe</i>	EAPH		X	2	4
Eastern wood pewee	<i>Contopus virens</i>	EWPE		X	0	2
Great blue heron	<i>Ardea herodias</i>	GBHE		X	0	1
Hermit thrush	<i>Catharus guttatus</i>	HETH	X	X	4	16
House finch	<i>Haemorhous mexicanus</i>	HOFI		X	0	1
Indigo bunting	<i>Passerina cyanea</i>	INBU		X	0	8
Least flycatcher	<i>Empidonax minimus</i>	LEFL	X	X	1	2
Mourning dove	<i>Zenaida macroura</i>	MODO		X	0	1
Northern flicker	<i>Colaptes auratus</i>	NOFL	X	X	10	12
Northern harrier*	<i>Circus hudsonius</i>	NOHA		X	2	2
Northern parula	<i>Setophaga americana</i>	NOPA		X	0	1
Ovenbird	<i>Seiurus aurocapilla</i>	OVEN	X	X	26	17
Pileated woodpecker	<i>Dryocopus pileatus</i>	PIWO		X	0	1
Purple finch	<i>Haemorhous purpureus</i>	PUFI	X	X	3	0
Red-breasted nuthatch	<i>Sitta Canadensis</i>	RBNU		X	7	1
Red-eyed vireo	<i>Vireo olivaceus</i>	REVI	X	X	4	14

Red-tailed hawk	<i>Buteo jamaicensis</i>	RTHA			1	0
Red-winged blackbird	<i>Agelaius phoeniceus</i>	RWBL		X	2	1
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	RBGR		X	0	2
Ruby-throated hummingbird	<i>Archilochus colubris</i>	RTHU		X	0	2
Savannah sparrow	<i>Passerculus sandwichensis</i>	SAVS	X	X	40+	40+
Scarlet tanager*	<i>Piranga olivacea</i>	SCTA			1	0
Song sparrow	<i>Melospiza melodia</i>	SOSP	X	X	15	19
Tree swallow	<i>Tachycineta bicolor</i>	TRSW	X	X	8	13
Turkey vulture	<i>Cathartes aura</i>	TUVU		X	0	1
Veery	<i>Catharus fuscescens</i>	VEER	X		0	1
White-breasted nuthatch	<i>Sitta carolinensis</i>	WBNU			3	0
White-throated sparrow	<i>Zonotrichia albicollis</i>	WTSP		X	0	1
Wild turkey	<i>Meleagris gallopavo</i>	WITU	X	X	2	2
Winter wren	<i>Troglodytes hiemalis</i>	WIWR	X	X	0	4
Wood thrush*	<i>Hylocichla mustelina</i>	WOTH		X	0	1
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	YBSA		X	10	2
Yellow-rumped warbler	<i>Setophaga coronata</i>	YRWA	X		0	1

* Considered Species of Greatest Conservation Need in New York State by NYS Department of Environmental Conservation. ** American Ornithological Union 4 letter codes.

Heaven Hill remains a haven for grassland specialists like bobolink and savannah sparrow, as well as other birds favoring farmlands and open habitats such as American goldfinch, American robin, Eastern bluebird, chipping sparrow, and tree swallow. The surrounding woods also harbor numerous woodland species like hermit thrush, ovenbird, and red-eyed vireo. We were particularly excited this year by 3 new species and those were indigo bunting, Eastern wood pewee and wood thrush. The pewee and the bunting are not rare, but are nevertheless not overly common on most point counts and the bunting, in particular, is a spectacular bird to see. Wood thrush is a species of concern; it is more common in other parts of the state and has been in decline in northeastern states in recent years; it was nice to hear.

Bobolink and Savannah Sparrow

We visited the site on 42 different dates between May 27th and August 18th with the bulk of visits during the height of the season in June (20 days) and July (14 days) and the remainder in late May and early August. One of our primary aims in the 2020 season was to determine the extent to which our findings from 2019 were indicative of breeding activity in other years. The early part of 2019 was unusually cold and rainy and



we believe it influenced both the timing and overall numbers of breeding bobolinks at Heaven Hill for that year. This breeding season was both warmer and drier and our findings were very different indicating that bobolinks, in particular, may be influenced strongly by temperature and precipitation in the early part of the season. Last summer we observed 4 male bobolinks and approximately 3-4 females. This year, in contrast, we believed there may have been as many as 8-10 male and 6-8 female bobolinks on the site and they used nearly all areas of the property.

Breeding Evidence and Chronology

We used behavioral observations to record breeding behaviors indicative of possible nesting. Presence on site approximately every second day during June and July provided numerous observations that indicate the probability of breeding. Though pinpointing the location of nests remains a challenge in grassland habitats, we observed a number of behaviors that indicate probable breeding:

Singing – Song is used for several purposes including advertising presence, defending a territory, and attracting mates. In both bobolinks and savannah sparrows, males are the primary singers and sing often. Notably, male bobolinks often sing while in flight. Singing male birds, especially those present for more than 7 days, are indicators of breeding. Singing was observed throughout June and early July, and sporadic throughout the remainder of the season for both bobolink and savannah sparrow.

Chasing – Male bobolinks and savannah sparrows chase one another in the act of defending territories. Male bobolinks also frequently chase fertile females. We recorded at least 50 instances of chasing behavior.

Territorial defense – Most songbirds are strongly territorial; agnostic interactions such as chasing or fighting, most often between members of the same species, indicate defense of a territory. Numerous interactions were observed, primarily chasing, among bobolinks, but on occasion between bobolinks, savannah sparrows, and other species.

Whining – Fertile female bobolinks make a distinctive whine-like call to solicit males; a strong indicator of breeding activity. This call was detected on at least 5 occasions.

Carrying food – Birds may carry food to feed young or for courtship. Courtship feeding is seldom observed in songbirds except chickadees and

nuthatches; bobolinks and savannah sparrows carrying food can be assumed to have nestlings or fledglings. Food carrying by both bobolinks and savannah sparrows was observed on several occasions.

Visiting probable nest site – Birds observed to be repeatedly visiting the same location, especially if carrying food, are likely to be visiting a nest. We were able to pinpoint at least one location where we believe a bobolink nest was located, based on repeated visits by a female carrying food. This was in the set-aside area near a large, low rock (described below).

Fledglings/immature birds – Observation of nestlings, fledglings, and juvenile birds is evidence of successful breeding. Late season bobolinks lose their breeding plumage and can be difficult to distinguish from juvenile birds, but we believe we observed juvenile bobolinks and possibly savannah sparrows in the late part of the season.

The observed chronology of breeding followed what is generally known for both bobolinks and savannah sparrows, with young from first nests present in mid to late June for bobolinks and mid-May to mid-June for savannah sparrows (Figure 1). Past researchers have documented mean fledging dates for bobolinks of 23 June, 24 June, and 22 June for Ontario, Quebec, and upstate NY respectively (MacDonald 2017). Bobolinks in general normally nest only once per season, though second clutches are sometimes attempted if the first nest is lost. Savannah sparrows, on the other hand, frequently produce multiple broods per season.



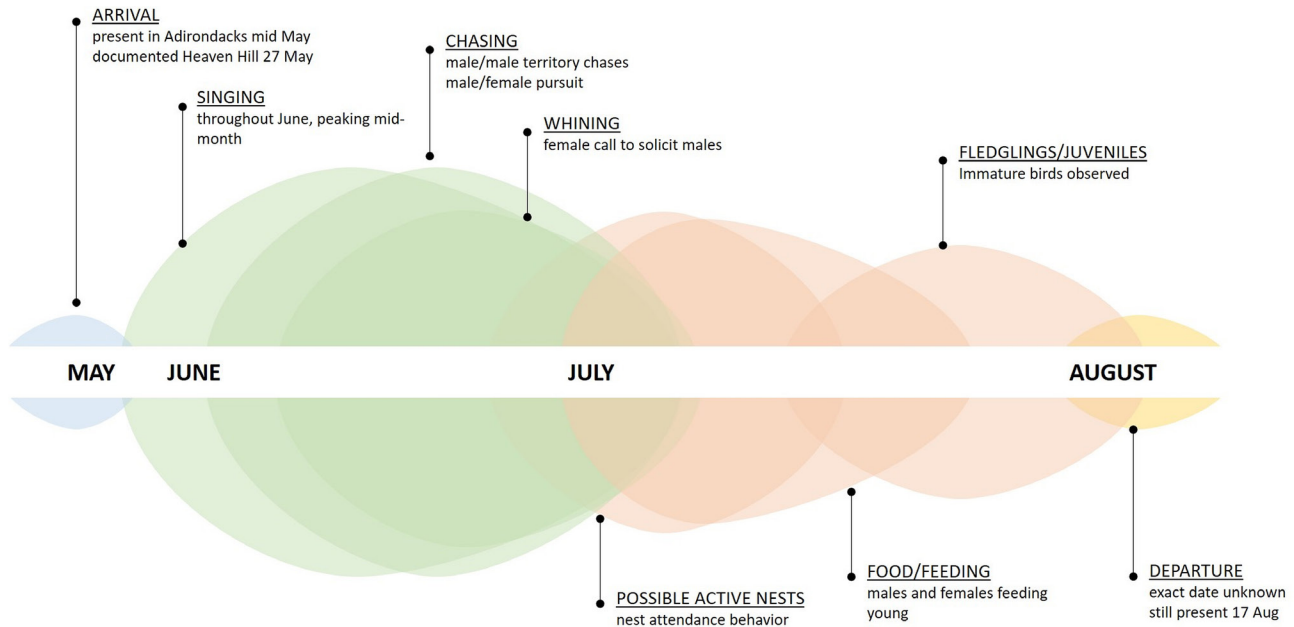
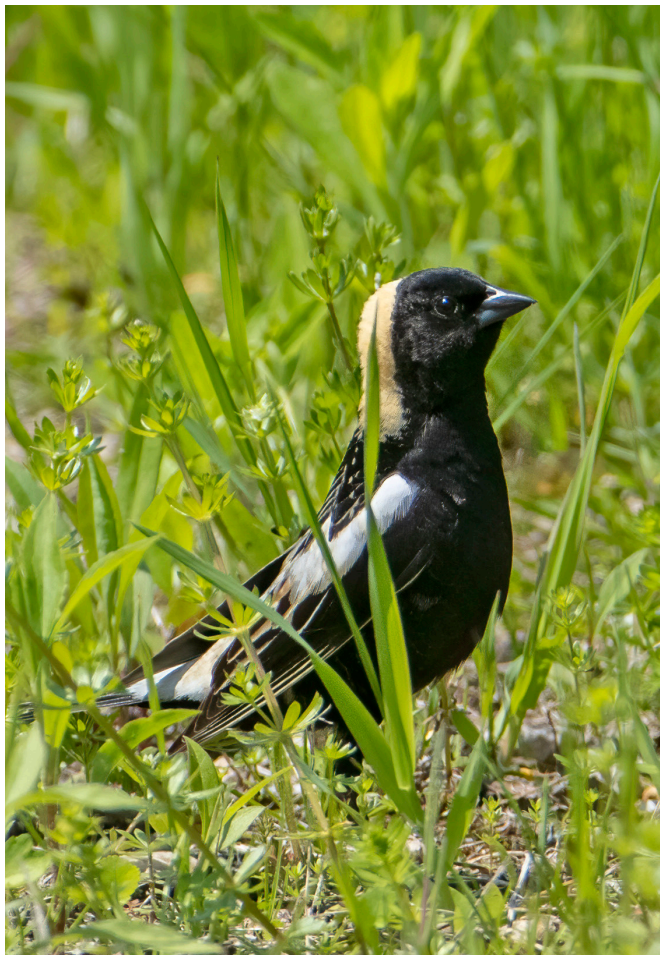


Figure 1. Chronology of bobolink breeding behavior observed at Heaven Hill Farm in Lake Placid, NY, 2020. Size of polygons indicates relatively frequency with which each behavior was observed. Mowing began on or around 19 June.



Space Use

In contrast to 2019, we observed bobolinks regularly throughout nearly all areas of the open fields at Heaven Hill in 2020 (Figure 2). The area of the most intense use remains similar to 2019, and that is partially located within the set aside where there are numerous perches in the form of rocks, shrubs, and a handful of small trees from which these birds prefer to sing and observe their surroundings. This area was still intensively used in 2020, especially in the later part of the season, but both male and female bobolinks in 2020 were observed throughout the property often singing from the small trees along the driveway and while in flight over all areas of the field. Savannah sparrows, similarly, seemed to use nearly all areas of the property in 2020, and again were observed to make high use of the small trees lining the driveway as singing perches. Neither species favors the woodland edge and both tend to avoid it, but both were observed in closer proximity to the forest edge than in 2020. The small area of set aside where the hiking trail wraps around the open field also remains an area of relatively low use, possibly because of the presence of hikers and dogs, some of which frequently come into the field if not leashed by their owners.



Figure 2. Heaven Hill with area of observed bobolink breeding activity (blue) in 2020. Inset indicates area of highest use in 2019. This area remained intensively used in 2020, but activity was observed throughout nearly all areas.

Response to Mowing

Mowing appears to have occurred slightly earlier than last year and began between June 19 and June 22, with the smaller field on the north side of the driveway mowed first. By June 23, part of the larger field to the south was mowed and most of the mowing of the larger field was completed by June 27. During mowing, we observed agitation and high levels of vocalization from females in particular. Ms. Balliett noted birds in the center of the larger field and being flushed by the tractor as it approached, with both sexes apparently reluctant to leave the area of the tractor's path until it was unavoidable. Immediately following mowing, multiple female bobolinks were observed exhibiting agitated behavior in the cut areas. Additional species were also noted in the cut grass including savannah sparrow, eastern bluebird, and American robin. The agitated behavior of female birds and the reluctance on the part of both species to leave the area even as it

was being cut likely indicates that nests were present in the field. Crows, known to prey on nests recently impacted by mowing, were also present in large numbers. The presence of multiple bird species in the recently cut grass may indicate a temporary increase in available food resources if cutting results in disturbance and redistribution of insect prey. Immediately following mowing, bobolinks were observed singing from the cut grass and from the top of baled hay (AB, 27 June).

In contrast to bobolinks, savannah sparrows may be less impacted by mowing, for several reasons. Savannah sparrows winter in the southern part of the US and, as short distance migrants, are able to arrive on the breeding season earlier and remain later than the Neotropical migrant bobolinks. Nesting occurs earlier for this species and they are more likely than bobolinks to be able to complete a first clutch of eggs before mowing occurs. The savannah sparrows at Heaven Hill also seem to favor the areas adjacent

to the driveway. Although we have observed them throughout the fields and some nests are undoubtedly affected by mowing, nests placed adjacent to the driveway will be afforded some protection from the mowing and are perhaps more likely to survive. Shustack et al. (2010) documented a positive response to mowing on the part of savannah sparrows, finding that the species persisted and even immigrated into cut fields, appearing to be attracted to them. The reasons are unclear but savannah sparrows are known to be much more generalist in their habitat selection than bobolinks and will make use of hayfields with very short grass and large proportions of bare ground (Shustack et al. 2010).

Most of our effort during the month of June, when breeding activity is most concentrated, was focused at Heaven Hill. The recently transferred Tablelands at Uihlein Farm parcel, however, was also visited on a regular basis and, immediately following the mowing, we observed a number of bobolinks in that field. We had documented 2-3 individuals in the potato field parcel at the beginning of the season, but following the cutting at Heaven Hill, this number increased

to at least 2 males and possibly 2 females. Chasing behavior was observed (AB) at the potato field, as was singing. Whether these individuals attempted nesting at Tablelands is unknown but we surmise that the increased numbers of bobolinks there at the end of June was a direct response to mowing and was most likely comprised of birds from Heaven Hill. Savannah sparrows were noted in abundance in at Tablelands throughout the entirety of the season and are very likely nesting there.

Use of Set Aside

Heaven Hill maintains a set aside area for nesting birds in the western end of the field, and also retains strips of unmown vegetation along the sides of the driveway. Though small, these areas are important and contribute toward the successful nesting of both bobolink and savannah sparrow on the site. Savannah sparrows, as described, seem to favor the areas along the drive and are frequently observed singing from the small trees, shrubs, and other available perches. The unmown areas along the road are likely to harbor at least some nests of savannah sparrow. We observed



higher use of the portion of the set aside area west of the fence this year than we did last year. As described, the shaded area depicted in Figure 2 remains an area of high use, but birds also appeared in higher numbers in the uncut area to the west and south of that spot. This may be due to the higher abundance of birds on the site this season, or possibly a favorable response to fertilization of the set aside that took place in late 2019. We located what we believe to be the definitive location of one bobolink nest in the set aside area adjacent to a low rock (Figure 3). This is near the edge of the extent of the mowed area and is located among the high activity zone with multiple scattered rocks and shrubs that bobolinks appear to favor as singing perches.



Figure 3. Probable bobolink nesting location within the set aside area, view from the south looking northwest back toward the farmhouse; inset of closeup view from binoculars. We made multiple observations of the female sitting on the rock and on the goldenrod behind it with food in her mouth and dropping into the grass next to the rock, returning without the food. We also observed a male bobolink and potential juvenile bird in the same location.

Recommendations

The future of grassland bird nesting and population growth depends on open grassland and the majority of grassland habitat in the Adirondack Park is privately owned, providing opportunities for management but also challenges in the form of achieving economic returns on harvested hay while still allowing for breeding to occur in these fields. In 2019, we provided a set of recommended best management practices for grassland birds compiled from the scientific literature (Atwood et al. 2017, Dechant et al. 1999, NRCS 1999, Ochterski 2006) and our own observations and conversations with a number of birders, bird

researchers, farmers, and conservation organizations. Those most relevant to Heaven Hill include:

- Abstaining from mowing between May 15 and August 15
- Collecting the cut hay at least every 3 years
- Discouraging growth of forbs and woody vegetation
- Reclaiming field edges and enlarging fields where possible
- Avoiding disturbance to birds during the breeding season
- Making use of mowing patterns that reduce mortality

These recommendations remain the best we can make with regard to management for bobolinks and savannah sparrows at Heaven Hill but we recognize that not all of them are possible or desirable on the site. Restricting cutting to once per season, ideally not until August, would strongly enhance survivorship of nests in the cut areas at Heaven Hill. However, if this is not possible, even a **delay until mid-July for the first cut** may increase the likelihood of successful breeding. We recognize that the cutting schedule is dependent upon weather and many other factors and may not be possible to change. Our next highest recommendation for Heaven Hill would be to **enlarge the area of the set aside**. As per our observations in 2019, the mowing overlaps on 2 edges with the area of highest bobolink activity on the property. We recommend **restricting the cutting to the zone depicted in Figure 4**. Last, we again recommend avoiding disturbance to birds during the breeding season by **restricting to the extent possible any use of the open field by people, dogs, or unauthorized vehicles** between May 15 and August 15.

Future

We remain engaged in two additional activities at Heaven Hill and hope that conditions in the future will allow these efforts to come to fruition. We have discussed several possibilities for interpretive signage on the site that would help visitors to understand the activities occurring at Heaven Hill and the high value of the set aside area for grassland bird conservation. In 2020, it was recommended to us that a best first step for educational and interpretive materials might be a description of the project and the Foundation's grassland bird conservation efforts on a website. This would provide the public with information and board members with the opportunity to consider whether additional signage on site is desired. We are developing content to be housed on PSC AWI's website with the ability to post or change any description of the Heaven Hill project as needed. We also remain interested in the notion of holding a workshop for nearby interested landowners to discuss best



Figure 4. Observed (orange) and recommended (green) mowed areas, with majority bobolink activity superimposed.

management practices for grassland birds. We have created a database of potential attendees and have reached out to the Vermont Center for Ecostudies who frequently host similar workshops and are very happy to provide assistance, but the current COVID-19 conditions and the overabundance of Zoom meetings in everyone's lives at the moment dampened our enthusiasm for holding this as an online event. We hope that it can be an in-person event in the future.

Conclusions

We appreciate the opportunity to work with the Uihlein Foundation again this season to document the use of Heaven Hill by grassland birds and other species. Conditions during this breeding season were warmer and drier throughout than they were in 2019 and we believe this resulted in increased use of the site by both bobolinks and savannah sparrows. We saw higher numbers of birds and we observed them using nearly all areas of the property. While this presents a challenge for recommendations with respect to management, at the same time we were able to document numerous breeding behaviors and believe there to have been at least one successful bobolink nest on site, possibly more. Savannah sparrows remain abundant throughout the site and also very

likely fledged a number of successful nests. If - as has been suggested as a possibility - Heaven Hill should no longer be managed for hay production in the future as the farmer rescales his beef operation, one cut per year in the late season will readily serve to maintain the site's open character and to protect the birds. It is also important to point out that the acquisition of the Tablelands at Uihlein Farm represents a tremendous achievement and is equally if not more valuable from a conservation standpoint due to its size alone. We also spent abundant time on that site, documenting grassland species including bobolink, savannah sparrow, American kestrel, and northern harrier as well as numerous other species of birds, mammals, and plants. We strongly congratulate the Foundation on this acquisition and describe our activities and findings at Tablelands in a separate report.

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