

*A Survey of Bobolinks
in East Leverett Meadow
June 2009*

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BACKGROUND

East Leverett Meadow (ELM) is a 30-acre grass and forb meadow owned by the Rattlesnake Gutter Trust and located in Leverett, Massachusetts. Bobolinks (*Dolichonyx oryzivorus*) currently nest in ELM but this species has declined regionally since the early 1990's due in part to the loss of nesting habitat and early mowing for hay. For these reasons the Trust is trying to encourage successful bobolink nesting at this site by studying bobolink use of ELM and by altering the mowing regime.

To accomplish these goals, annual surveys to assess bobolink activity in ELM have been conducted from 2000 to 2009. Aaron Eilers conducted the 2000-2002 surveys and I conducted the surveys from 2003 to the present. The specific stated goals of these surveys were 1.) to identify the preferred habitat locations of bobolinks within ELM; 2.) to estimate the approximate number of bobolinks using ELM; and 3.) to compare data between years to determine whether the population is changing.

The ultimate purpose of the surveys is to plan a management regime that will have the greatest benefit to nesting bobolinks in ELM. Specifically the Trust is interested in knowing in which section of the meadow bobolink nests are located; how early ELM can be mowed or hayed without causing bobolink mortality, and whether the bobolink numbers each year are related to the mowing regime.

2009 METHODS

The survey took place on June 20. I used the same survey method as last year, except that the location and order of some of the observation points were changed. Observation times at each point were not uniform and ranged between 6.5 and 9 minutes per point, depending on how much bobolink activity was going on. This year I worked without an assistant.

The survey took place from 6:33 to 8:00 a.m. The temperature was 60° F at the start and 70° at the end. The weather was sunny and there was no wind. The spring has been rainier than average and the previous week there had been 6 inches of rain.

I used binoculars to help spot birds. Observations were made from seven points around the meadow. At each point two observation techniques were used. First I scanned with binoculars from one side of the meadow to the other, and could see bobolinks perched on the grass or flying. By scanning I could determine a minimum total number of male bobolinks because they would be visible simultaneously or in distinct parts of the meadow. The second observation technique was to observe where individual bobolinks were perched and map their locations by using compass bearings and estimating distances. I also mapped as many of the movements of individuals as possible.

I made no assumption that birds at one point were different individuals than those at another point. Instead from each point I made a separate count that I could compare against the others like snapshots from different angles and points in time.

RESULTS

Interpretation of maps

To aid in describing the different sections of the meadow, I divided a map of ELM into 6 sections: northwest, southwest, north-central, mid-central, south-central, and east (see map). Separate maps of the observations from each point are also included in this report. The maps show where bobolinks were observed perched. **Odd numbers indicate males and even numbers indicate females. Each different number represents different bobolinks and does not indicate number of bobolinks.** Numbers not connected by a straight line indicate either separate individuals or possibly an already observed individual that got counted more than once. Movements of a bobolink that I knew was a single individual are connected a straight line from the origin to the destination. The straight lines are not necessarily the actual flight path although this year most of the flight was directly from one point to another.

The observations from each point are shown in the table below and described in the following notes.

Bobolinks observed from each point on June 20, 2009

	# males	# females
Point 1	1	0
Point 2	0	0
Point 3	1	0
Point 4	1	2
Point 5	1	0
Point 6	1	0
Point 7	1	0

Point 1: Hickory tree at south edge of meadow

9 minute observation

1 male perched in SW quadrant, flew a short distance within the quadrant then returned to his original location.

Point 2: Southwest corner of meadow

6.5 minute observation

One bird perched at the east end of the SW quadrant but I couldn't tell if it was a bobolink

Point 3: Middle of west edge of meadow

8 minute observation

1 male in the SW quadrant. He flew 3 times but stayed within a small area.

Point 4: Between hickory tree and electric tower north of meadow

9 minute observation

1 male and 2 females observed in SW quadrant. All 3 were close together, then the male and one of the females flew to the north edge of the quadrant. The male then flew back to the other female.

Point 5: Electric tower at east side of meadow

9 minute observation

1 male observed in the SW quadrant. He made one flight within the quadrant.

Point 6: Hickory tree at east side of mid-central quadrant

6.5 minute observation

1 male observed in the SW quadrant. He did not fly during the observation period.

Point 7: North edge of Kusmeski Conservation Restriction

6.5 minute observation

1 male observed in the SW quadrant. He made one flight within the quadrant.

Other observations: Red-winged blackbirds were using all parts of the meadow EXCEPT the SW section where the bobolinks were. At least a dozen tree swallows were flying over all parts of the meadow along with a few barn swallows. One kingbird was also hunting in the meadow.

Comparison of bobolink numbers and distribution in East Leverett Meadow 2000-2008

	Northwest	Southwest	North-Central	Mid-Central	South-Central	East	Est. # bobolinks
2009, June 20	No	Yes	No	No	No	No	1 M 2 F
2008, July 11	Briefly, S section	Yes	No	No	No	No	1 M 2 F 4 fledglings
2007, June 10	Only S edge	Yes-heavily used	No	Slightly	No*	No	5 M 3 F
2006, June 11	Yes	Yes	Slightly, along S edge	Yes	Slightly, along N edge	No	2 – 3 M 1 F
2005, June 12	Yes	Yes	Slightly	Yes	Once, at edge of Kusmeski CR	No	2 - 4 M 2 F
2004, June 14	Yes	Yes	No	Yes	Yes	No	4 – 7 M 2 F
2003, June 24	Yes	Yes	No	Yes	Slightly, along N edge	No	5- 8 M 2 F
2002 (Eilers)	Data not clear about locations or numbers						
2001 (Eilers)	Yes	Yes	Slightly	Yes	Yes	Slightly	
2000 (Eilers)	Most activity in western half of meadow						

* Mary Alice Wilson saw bobolink activity here on July 7

DISCUSSION

Estimated number of bobolinks:

This year only 1 male was observed, along with 2 females. The one male was seen from every observation point except one. He made short flights direct flights but was not observed making any courtship or territorial flights. The females were observed only from point 4 and remained perched in one place the whole time. Numbers of males in previous years ranged from 1 to 8 and have been steadily declining since 2003.

In summary, because only one male was seen consistently from nearly every point, it is likely he is in fact the only male bobolink present. Bobolinks are polygynous so the two females seen were probably both his mates. This year's number of 1 male and 2 females is the same as that observed last year. This ties last year as the lowest number of males of any year I surveyed.

Compared with ELM I have observed higher numbers of bobolinks at several other sites I've visited this year, so I think it's likely that the low numbers here are due vegetation changes in ELM (see below). Other factors including mortality at the wintering grounds or during migration may also be occurring but if so they would be affecting populations at other sites as well.

Sections of ELM used by bobolinks:

This year's results are consistent with the contraction in the use of different sections of the meadow over the years. This is apparent from looking at the above table. The **southwest** section is the one area that has been consistently used every year, and this year the only observed bobolink activity was here. Most bobolink activity was in the western section of this quadrant. The **northwest** section was not observed being used at all this year by bobolinks whereas last year brief activity was observed there. Neither were bobolinks observed at all in any of the **central** sections or the **east** section. I have never observed bobolinks in the east section, though it is readily used by red-winged blackbirds.

The continuing contraction in the area used by the bobolinks in ELM is very likely to be due to changing vegetative composition over the years. In my subjective assessment, I estimated that in the area around Point 4 there is about 75% goldenrod, milkweed, and hedge bindweed, with less than 25% in grass. This year the whole northwest section was wet and the ruts between points 3 and 4 were filled with 6 inches of water. The ground was soggy in many sections of the meadow. The northwest section contains less grass and more bulrushes and sedges. Heading east from the southwest section the proportion of grass increases. Because these observations are so subjective, an investigation of the changing vegetative composition of ELM would require more quantitative methods to be really meaningful.

It is interesting and a bit surprising that the bobolinks keep choosing the section of the meadow with such a high proportion of forbs, when other sections have what would appear to be a more optimum mix of vegetation, with more grass. Maybe there is some other factor about that section of the meadow that keeps them out of there. For instance, maybe the distance from forest edge or tall trees (the hickory at point 6) is too small.

Because vegetation changes have occurred that may be making ELM less attractive for bobolinks, re-seeding of the western part of ELM with native warm-season grasses should be considered to restore a higher percentage of grass cover. However, bobolinks prefer hayfields at least 8 years old, so that there are some forbs (<25%) and a few scattered shrubs for perching. It would be beneficial to precede re-seeding by burning to remove excess thatch that has

accumulated and to get rid of the milkweed and goldenrod. Maybe the UMass forestry department could do a controlled burn here as a teaching model for land management students.

Implications for mowing or haying

Because of the large amount of goldenrod, milkweed and bindweed in the western half of ELM, I doubt the hay is desirable for anything except maybe mulch. The whole western half of the meadow has a large proportion of grass, and no bobolink activity, although red-winged blackbirds were using the east and north-central sections (probably nesting, but not confirmed). Mowing could be done in these areas at any time with a minimal chance of impacting bobolink nests. However, even though no bobolinks were observed flying into these areas, it is undetermined whether cutting here would impact the bobolinks' food supply.

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