

*A Survey of Bobolinks  
in East Leverett Meadow  
June 2013*

## 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 a goal of the Trust is to encourage successful bobolink nesting at ELM. Annual monitoring of the bobolink population helps to determine the success of management techniques. Recent management includes the 2010 plowing and re-seeding of ELM in order to re-establish a vegetation community more favorable to bobolinks.

Annual surveys to assess bobolink activity in ELM have been conducted every year since 2000. Aaron Eilers conducted the 2000-2002 surveys and I conducted the surveys from 2003 to the present. The specific stated goals of these surveys are 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.

## 2013 METHODS

The survey took place on June 26. I used the same survey method as last year, except that the location and order of some of the observation points were slightly changed. This year I again worked without an assistant. Observation times at each point were not uniform and ranged between 5 and 9 minutes per point, depending on how much bobolink activity was going on.

The point surveys took place from 6:29 to 8:19 a.m. The temperature began at 70° F and rose to 78° F at the last survey point. The sky was lightly overcast and there was no wind. Like last year, the spring has been very wet, with about 13" of rain so far in May and June.

I used binoculars to help spot birds. Observations were made from nine 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 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 11, 2012**

	# males	# females
Point 1	0	0
Point 2	0	0
Point 3	0	0
Point 4	0	0
Point 5	1	0
Point 6	1	0
Point 7	1	1
Point 8	0	0
Point 9	0	0

Point 1: Hickory tree at south edge of meadow

9 minute observation

No bobolinks observed.

Point 2: Southwest corner of meadow

5 minute observation

No bobolinks observed.

Point 3: Middle of west edge of meadow

6 minute observation

No bobolinks observed.

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

6 minute observation

No bobolinks observed.

Point 5: Electric tower at north side of meadow

7 minute observation

One male was observed perched in the North-Central quadrant.

Point 6: Corner of East and North-Central quadrants

8 minute observation

One male observed at north edge of Mid-Central quadrant.

Point 7: Electric tower at edge of Mid-Central quadrant

9 minute observation

A male-female pair of bobolinks flew into the North Central quadrant from the south, but did not emerge from the grass after that.

Point 8: E end of East quadrant

### 6 minute observation

No bobolinks observed.

### Point 9: SE corner of South-Central quadrant

#### 10 minute observation

No bobolinks observed.

Other observations: No evidence of nesting in the kestrel box. Red-winged blackbirds, tree swallows, and a couple of barn swallows were the only other birds seen flying over the meadow, and were much more abundant than bobolinks. Red-winged blackbirds appeared to be nesting in the SW, NW, South-Central, and Mid-central quadrants.

### **Comparison of bobolink numbers and distribution in East Leverett Meadow 2000-2012**

	Northwest	Southwest	North-Central	Mid-Central	South-Central	East	Max. observed simultaneously
2013, June 26	No	No	Yes	Slightly	No	No	1 M 1 F
2012, June 11	Yes	Yes	Yes	Yes	Yes	No	4-5 M 1 F
2011, June 10	Yes	Yes	Yes	Yes	Yes	Yes	4 - 6 M 2 F
2010, June 15	Yes	Yes	Yes, south half	Yes	Yes, briefly	No	3 - 7 M 5 F
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 <sup>^</sup>	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						

<sup>^</sup> Mary Alice Wilson saw bobolink activity here on July 7

## DISCUSSION

### Estimated number of bobolinks:

I expect the lone male I saw from three different points was the same individual because he was in the same general vicinity each time. Only one female was observed. This is the lowest number of bobolinks seen in ELM since I began the surveys here.

It is likely that this low number is related to conditions at ELM because two 2013 Hadley bobolink surveys conducted by the Kestrel Trust at the Moody Bridge Road Conte Refuge site and at the Owl Property on North Maple Street produced numbers similar to previous years.

### Timing of nesting:

This year's survey was deliberately planned for the last week of June, to coincide with the period when young should be fledged and therefore more visible, along with their parents. But I saw no young or parents

carrying food. Only a very brief view was obtained of the female on the wing before she disappeared into the grass. The male was seen perched in two locations, where he stayed at each for several minutes. No courtship flights were observed. Perhaps the wet weather destroyed earlier nests, and this pair stayed to try a second time. If so they may still be incubating.

#### Sections of ELM used by bobolinks:

This was the first year when no bobolinks were seen in the SW quadrant, which has always been the most heavily used by bobolinks. This is also the fourth year that bobolinks have been using the North-Central quadrant, an area which before 2010 had no observations of bobolinks in my surveys.

#### Vegetative Structure of the Meadow:

Changing vegetative structure is likely to be affecting bobolink use of ELM. The vegetation where the bobolink pair was found was markedly different from vegetation in the rest of the meadow.

Bobolinks were absent in the west half of ELM where timothy (*Phleum pratense*) is the most dominant species followed closely by Quackgrass (*Elytrigia repens* (former name *Agropyron repens*)). Much lesser amounts of orchard grass (*Dactylis glomerata*), Fescue (*Festuca* sp), goldenrod, sensitive fern and hedge bindweed were also present in this section. In this section, vegetation is tall, not clumped, and it is thick enough that it is hard to see the ground.

The North-Central quadrant, where the bobolinks were active, had a very different vegetation structure and composition. Here the grass was mostly a fine-hair leaved grass (*Festuca*?) in clumps, with a little orchard grass here and there. The overall ratio of grass to forbs was much lower. There were lots of small clumps of goldenrod, scattered milkweed throughout, and a significant amount of bedstraw (madder). Overall the vegetation was distinctly less dense, with the ground and its thatch covering easily visible between the plant stems. The East meadow resembled the North-Central Meadow, but with patches of smooth brome grass (*Bromus inermis*), more orchard grass, and more milkweed.

According to the publication Conserving Grassland Birds\* bobolinks prefer “a mosaic of grasses, sedges and scattered broad-leaved forbs with <25% shrub cover”. The cover should be relatively sparse, a situation that is more easily achieved with native warm season grasses that bunch together such as Little or Big Bluestem, Switchgrass, Poverty Grass, Tall Gama Grass and Broom-sedge. This description fits the North-Central quadrant pretty well, but does not fit the West meadow.

In the spring of 2010 the West Meadow, including the entire NW and SW quadrants and the west halves of the mid-central and south-central sections, was re-seeded with a mixture of cool season and warm season grasses. According to Sheila Seaman of RGT, the seed composition used was 35% Canada Rye-*Elymus canadensis*, 35% Timothy-*Phleum pratense* (cool season grasses) and 20% Deer Tongue-*Panicum clandestinum*, 5% Big Bluestem- *Andropogon gerardii*, and 5% India Grass- *Sorghastrum nutans* (warm season grasses). Even this original seed mixture is low on warm season species, which are the ones that grow in clumps, leaving gaps that decrease the stem density.

As I reviewed the vegetation descriptions at ELM from 2009 to this year, the initial effect of re-seeding was to replace most of the goldenrod and milkweed with grasses. The grass stem density was low the first year, but in 2011, I described the cover as mostly “dense timothy and clover”. By 2012, the composition was similar to this year. In none of the years was Canada Rye, Big Bluestem or India grass observed, and the only Deer Tongue grass was along the edges. Perhaps the seed mixture planted in 2010 contained *Elytrigia repens* instead of *Elymus canadensis*. In any case, warm season grasses were never more than a very minor component since the re-seeding. It is interesting that the North-Central Quadrant, which was not re-seeded, now appears to have more desirable conditions for bobolinks than the area that was re-seeded.

Formulating specific recommendations about whether to re-seed again and if so with what seed mix, method, timing, and continued management, is a project outside the scope of this survey. Conservation Works could do such work, or if you prefer to do the research yourselves, two publications that might be a starting point are submitted with this report as pdf files. They are:

[A Landowner's Guide to Native Warm-Season Grasses in the Mid-South](http://utextension.tennessee.edu/publications/Documents/PB1746.pdf), available at <http://utextension.tennessee.edu/publications/Documents/PB1746.pdf>

Early Successional Habitat Development/Management (Code 647), available from the Natural Resources Conservation Service in Greenfield, MA (PH) 413-772-0384 ext. 107

Other bird species present

Red-winged blackbirds were strongly present throughout the meadow, especially the western half. This and aggressive behavior of red-winged blackbirds at ELM in previous years, raises the question of whether red-winged blackbirds might have aggressive behavior against the bobolinks, and whether this could explain why only a single female bobolink was observed. For one trial year it would be worthwhile to do replicate surveys on consecutive or near-consecutive days, as well at different points through the breeding season to get a sense of how reliable a one-day survey is. It would also be worthwhile to coordinate compile annual bobolink survey results from various sites in Western Massachusetts.

This information would help with interpretation of possible causes for fluctuating bobolink numbers and distribution within the meadow at different stages of the breeding season and to determine in changes at ELM are site specific.

If a multiple-date survey is not possible, then a single survey date should be chosen during either the last week of May or the last week of June in an attempt to avoid the incubation period when females are less visible.

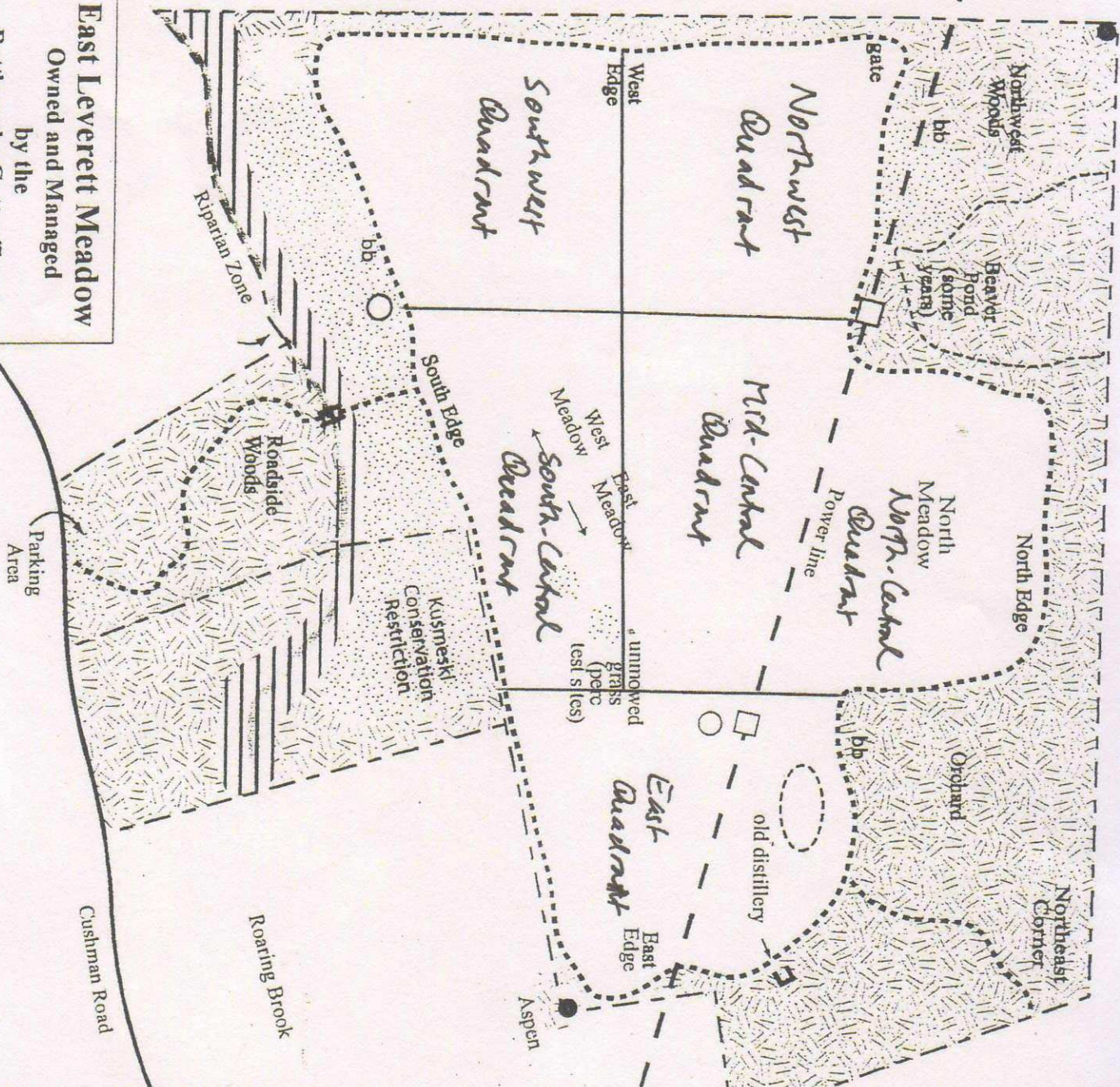
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Reference:

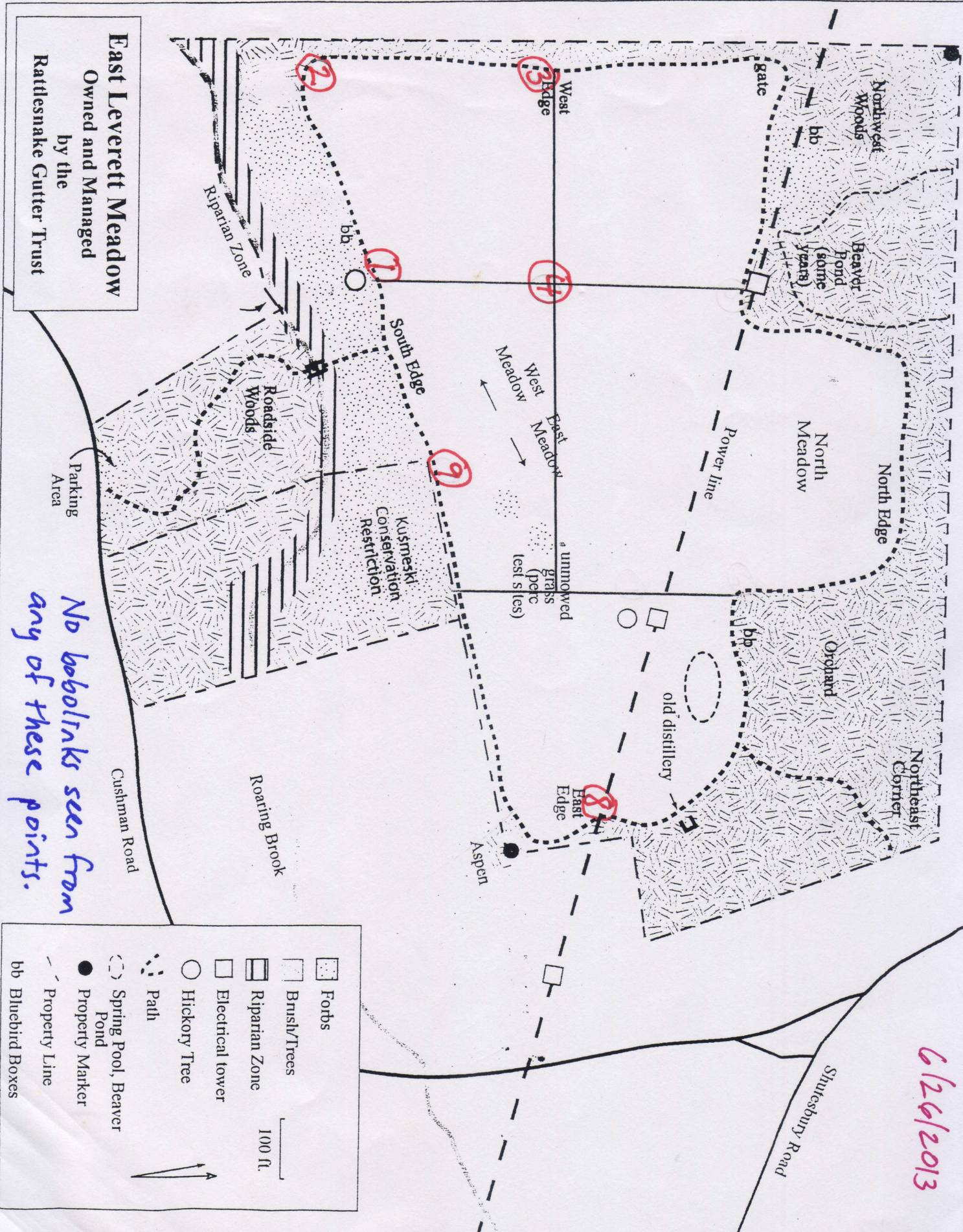
Conserving Grassland Birds: Managing Small Grasslands Including Conservation Lands, corporate headquarters, Recreation fields, and Small Landfills for Grassland Birds by Andrea L. Jones and Peter D. Vickery. No Publication Date Given. Published by the Grassland Conservation Program, Center for Biological Conservation, Massachusetts Audubon Society. Lincoln, MA, in collaboration with Silvio O. Conte National Fish and Wildlife Refuge and the USFWS North American Waterfowl Management Program.

**East Leverett Meadow**  
 Owned and Managed  
 by the  
**Rattlesnake Gutter Trust**



	Forbs	
	Brush/Trees	
	Riparian Zone	
	Electrical tower	
	Hickory Tree	
	Path	
	Spring Pool, Beaver Pond	
	Property Marker	
	Property Line	
	Bluebird Boxes	

6/26/2013

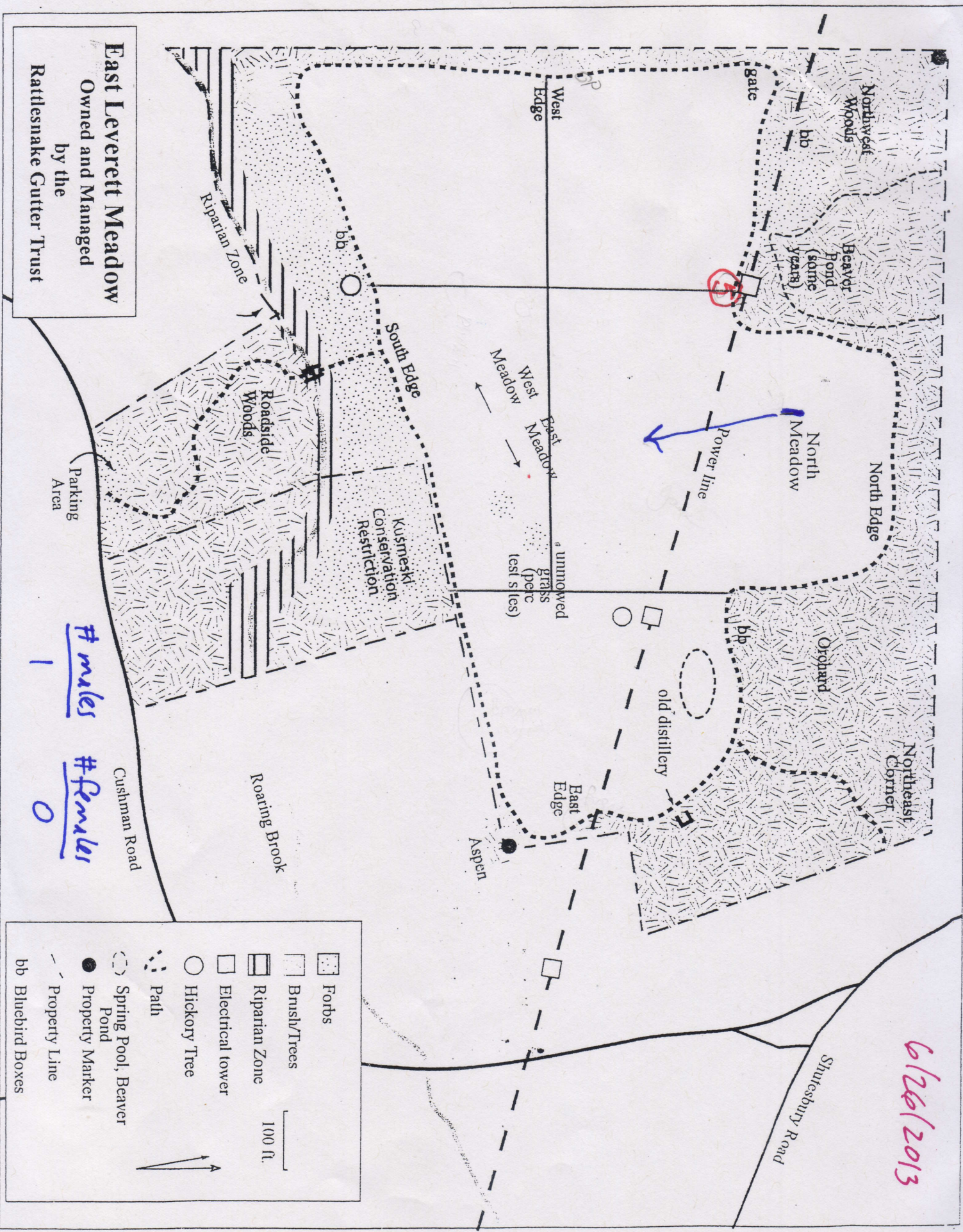


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*No bobolinks seen from  
 any of these points.*

	Forts	100 ft.
	Brush/Trees	
	Riparian Zone	
	Electrical tower	
	Hickory Tree	
	Path	
	Spring Pool, Beaver Pond	
	Property Marker	
	Property Line	
	Bluebird Boxes	

6/26/2013



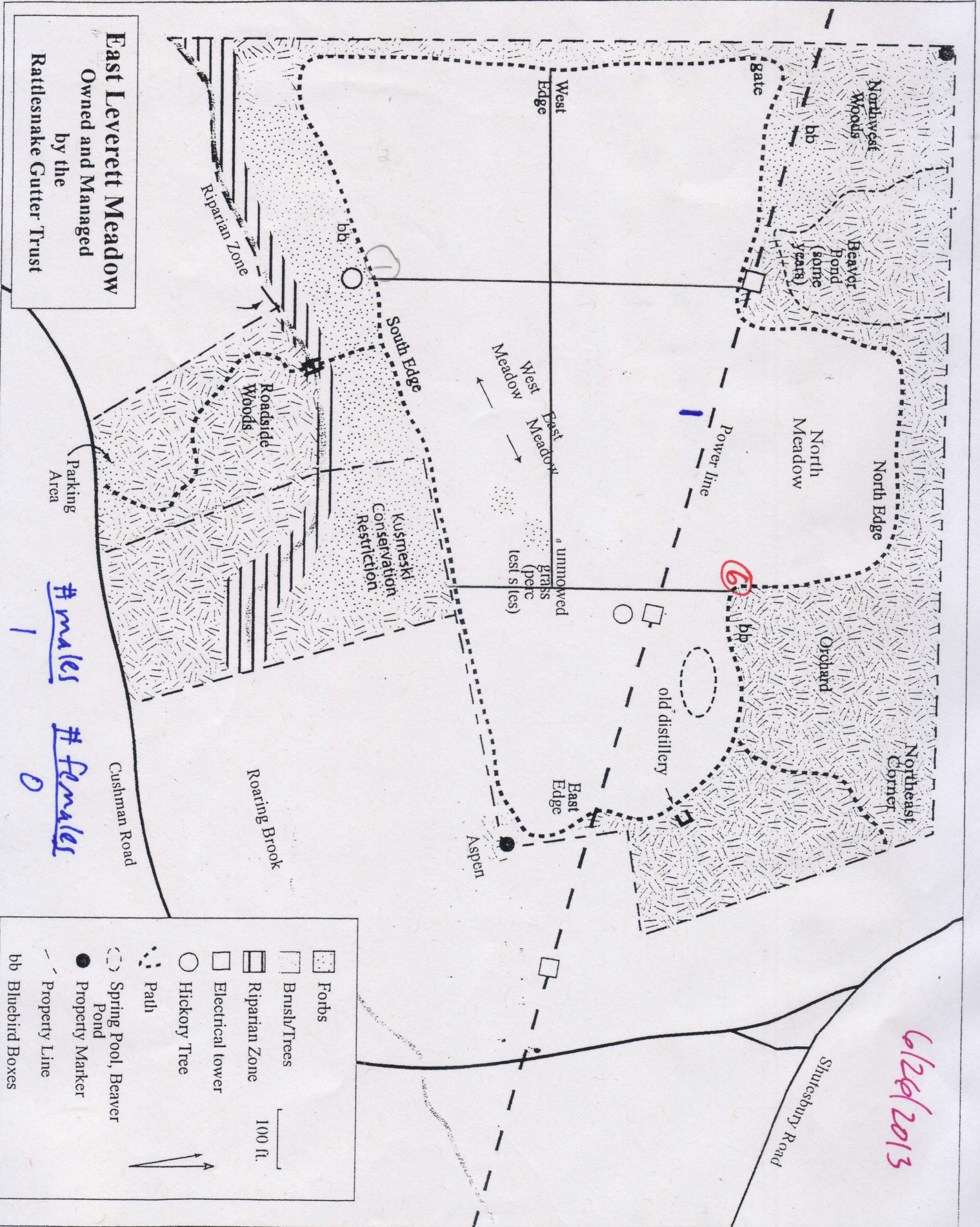
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# males 1  
# females 0

- Forbs
  - Brush/Trees
  - Riparian Zone
  - Electrical tower
  - Hickory Tree
  - Path
  - Spring Pool, Beaver Pond
  - Property Marker
  - Property Line
  - Bluebird Boxes
- 100 ft.



6/26/2013



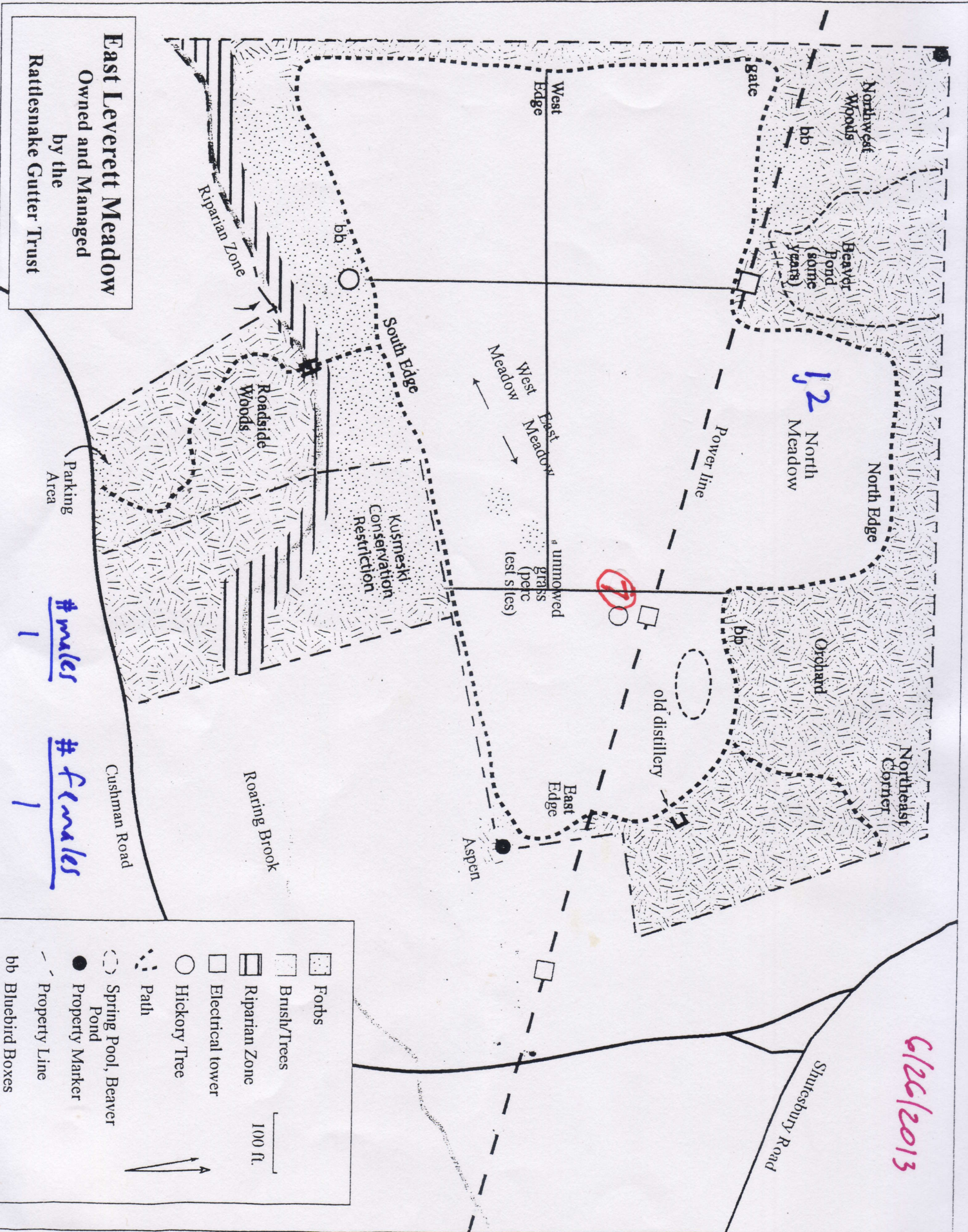
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# males 1  
 # females 0

	Forbs
	Brush/Trees
	Riparian Zone
	Electrical tower
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	Path
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	Property Marker
	Property Line
	Bluebird Boxes

100 ft.

6/26/2013



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#males 1  
 #females 1

	Forts
	Brush/Trees
	Riparian Zone
	Electrical tower
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	Path
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	bb Bluebird Boxes

100 ft.