

*A Survey of Bobolinks  
in East Leverett Meadow  
June 2012*

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.

2012 METHODS

The survey took place on June 11. 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 18 minutes per point, depending on how much bobolink activity was going on.

The point surveys took place from 6:22 to 8:45 a.m. The temperature remained at 62° F the whole time. The sky was lightly overcast and there was no wind. The spring has been very wet, with more than 12" of rain so far this spring, but none in the last week.

I used binoculars to help spot birds. Observations were made from eight 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	2	0
Point 2	1	0
Point 3	2-3	0
Point 4	1	0
Point 5	4-5	1
Point 6	2-3	1
Point 7	2	0
Point 8	0	0
Point 9	1	0

#### Point 1: Hickory tree at south edge of meadow

##### 11 minute observation

2 males in a goldenrod patch in the SW quadrant; one flew to mid-central quadrant.

#### Point 2: Southwest corner of meadow

##### 5 minute observation

One male was still perched in the goldenrod patch in the SW quadrant.

#### Point 3: Middle of west edge of meadow

##### 18 minute observation

One male was perched in a tree along the west edge of the meadow. Another male was perched in the SW quadrant. A third sighting of a male was made in the SW quadrant, but it could possibly have been the same bird as one of the other two males seen.

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

##### 5 minute observation

One male was seen in the NW quadrant. Several very agitated red-winged blackbirds including 5 females were near point 4 and in the SW quadrant.

Point 5: Electric tower at north side of meadow

16 minute observation

A male-female pair was flying back and forth between the North-Central and Mid-Central quadrants, repeatedly returning to the same location in the Mid-Central quadrant. Three additional males were perched in the SW quadrant. A male was also spotted near the kestrel box in the Mid-Central quadrant, but I couldn't rule out that it was one of the males from the SW quadrant.

Point 6: Electric tower at NE corner of Mid-Central quadrant

13 minute observation

Two different males were seen in the NW and South-Central quadrants, A male was also seen in the Mid-Central quadrant, but I couldn't rule out that it was one of the other two males seen. A female was in the Mid-Central quadrant.

Point 7: SE corner of South-Central quadrant

10 minute observation

Two different males were seen: One remained in the Southwest quadrant, and the other flew from the Mid-Central quadrant to the edge of the North-Central quadrant, then down into the South-Central quadrant.

Point 8: Bench at trail junction on S side of meadow

6 minute observation

One male was seen in the Mid-Central quadrant.

Point 9: Same as Point 1

6 minute observation

One male was seen in the Mid-Central quadrant.

Other observations: Tree swallows were nesting in the kestrel box. No kestrels were seen.

Like last year, there seemed to a lot of red winged blackbird activity, especially from Point 4 west.

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

	Northwest	Southwest	North-Central	Mid-Central	South-Central	East	Max. observed simultaneously
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^	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:

In most observations, each bobolink did not remain visible for long, but instead appeared for a short time, then ducked down again or flew off. This made it difficult to tell if some individuals were the same as others. The minimum numbers I got were based on bobolinks that were observed simultaneously, and could therefore be confirmed as separate individuals. The true number of bobolinks could be higher than even the maximum observed if different bobolinks were observed each point.

At least 4 different males and possibly up to 5, were counted. Only 1 female was observed in any one observation, and this individual was always in the same area, so it was probably the same female. These numbers are similar to last year's.

### Timing of nesting:

The bobolinks I saw were either perching or flying directly from one point to another (no courtship flights were observed). I did not see any carrying of food, but the pair in the Mid-Central quadrant seemed somewhat agitated by my presence so it's likely there is a nest in that area. No fledglings were observed. According to Conserving Grassland Birds\* bobolinks in Massachusetts lay eggs between June 1-8 and the incubation period is 10-13 days, which would be within the range of June 11-21. With bobolinks, females do the incubation, so this could explain the low number of females seen.

### Sections of ELM used by bobolinks:

As in other years, the most consistent activity this year was in the SW quadrant, although no females were observed here. A male-female pair spent a lot of time in the Mid-Central quadrant. The NW, North-central and South-Central quadrants had a sparse bobolink presence, and in the East quadrant no bobolinks were observed. In 2011 bobolinks were seen using all quadrants, including the East one. In 2010, like this year, all quadrants except the East one were being used.

### Effect of Re-Seeding and of Inter-specific Avian Competition

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).

The vegetation I observed this year in the re-seeded area is predominantly dense Timothy (*Phleum pratense*), Quackgrass (*Agropyron repens*), Sweet Vernalgrass (*Anthoxanthum odoratum*) and Fescue (*Festuca sp.*) There are scattered clumps of Goldenrod (*Solidago sp.*)

which the bobolinks seemed to prefer for perching, and a little Hedge Bindweed (*Convolvulus sepium*) and Fragrant Bedstraw (*Galium borealis*). I did not observe any Canada Rye, Deer Tongue Grass, Big Bluestem or India Grass. A layer of thatch was present on the ground. This composition is quite different from what would be expected following the re-seeding, and the reason for this is unknown.

In the wetter NW quadrant, the predominant plant is Soft Rush (*Juncus effusus*). Even if the ground were drier here, this plant probably is unsuitable for nesting because it doesn't provide much cover.

The east half of the meadow, which was not re-seeded, is mostly Orchard Grass (*Dactylis glomerata*), some Smooth Brome Grass (*Bromus inermis*), scattered milkweed, and some of the same grasses in the Western section.

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 Gramma Grass and Broom-sedge.

Red-winged blackbirds were strongly present near point 4, an area which in previous years had been used by bobolinks. 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. The lack of many female bobolinks could also be because they were incubating and not visible above the grass, but I did not flush any females as I walked through the field.

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. This information is necessary to interpret possible causes for fluctuating bobolink numbers and distribution within the meadow at different stages of the breeding season.

Otherwise I propose changing the survey date to 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.

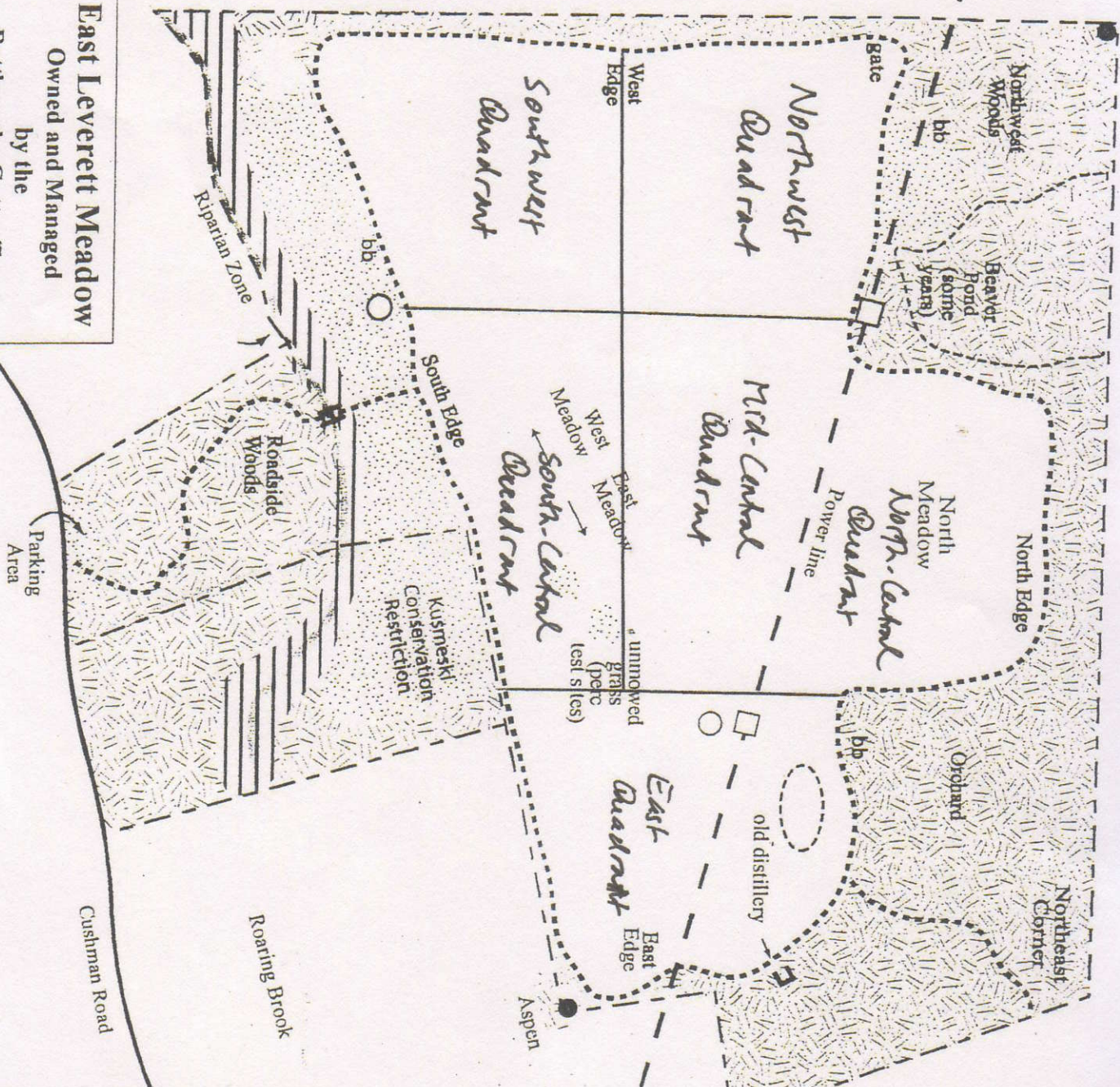
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Reference:

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.

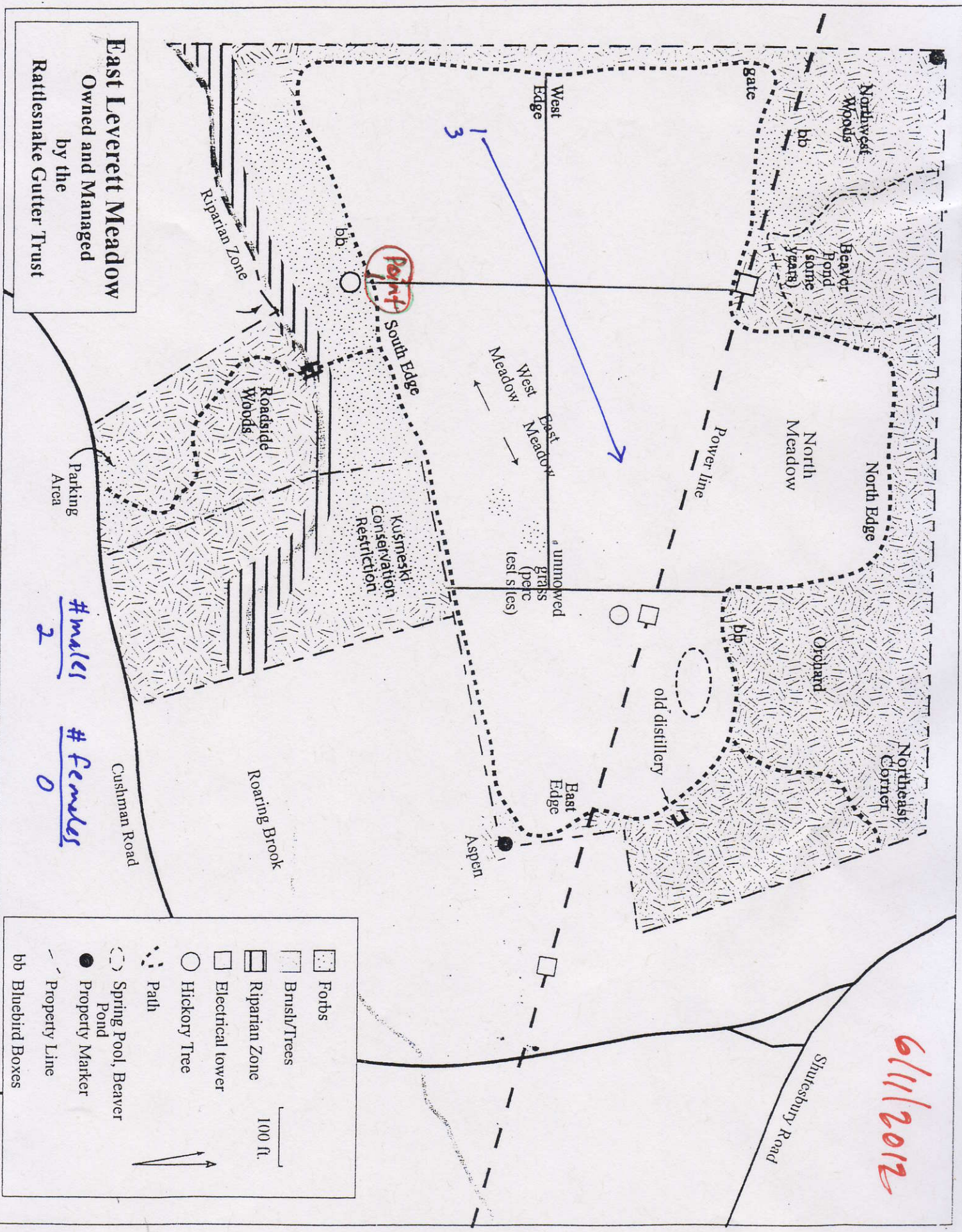
**East Leverett Meadow**  
 Owned and Managed  
 by the  
**Rattlesnake Gutter Trust**



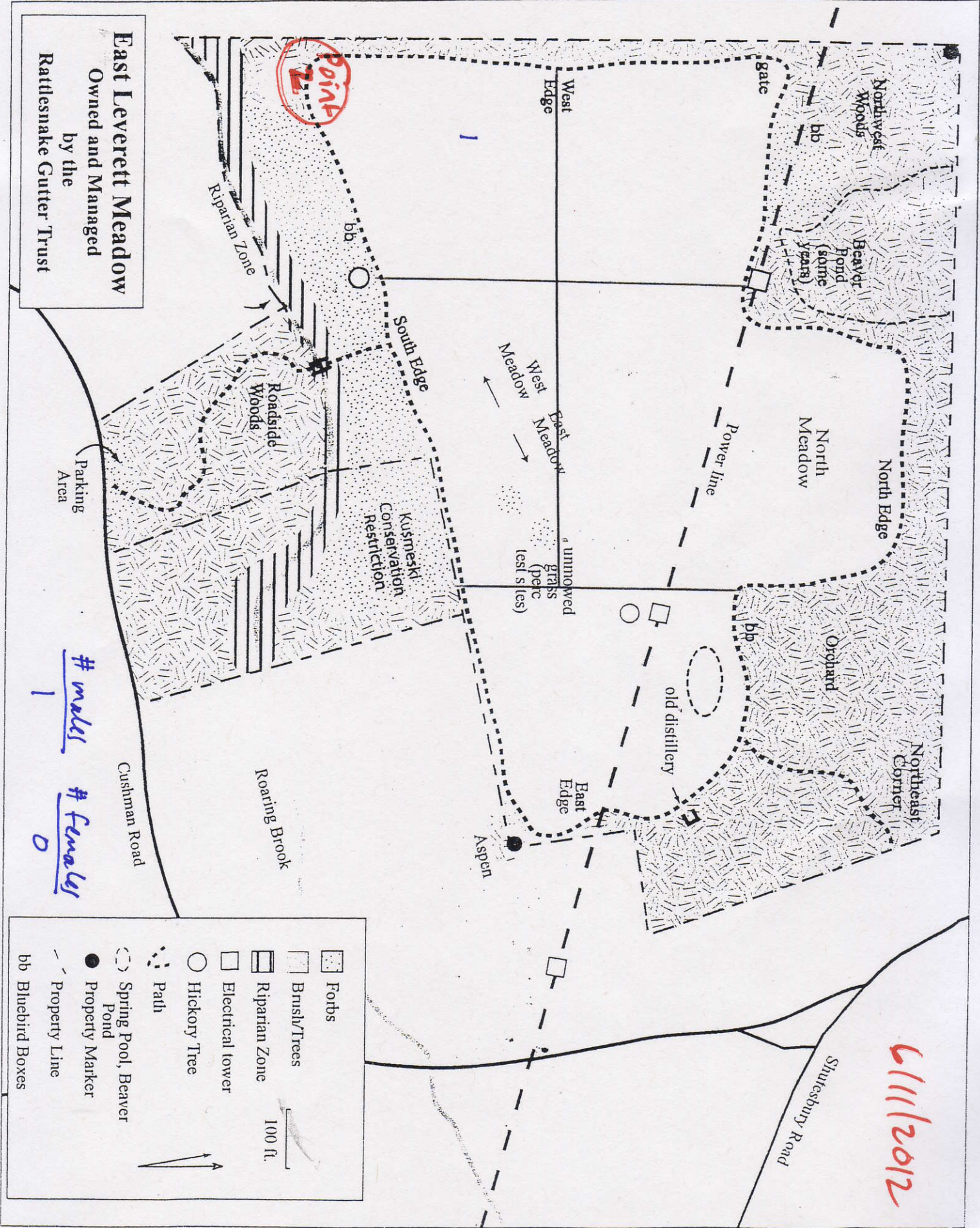
	Forbs
	Brush/Trees
	Riparian Zone
	Electrical tower
	Hickory Tree
	Path
	Spring Pool, Beaver Pond
	Property Marker
	Property Line
	Bluebird Boxes

100 ft.

6/11/2012



6/11/2012



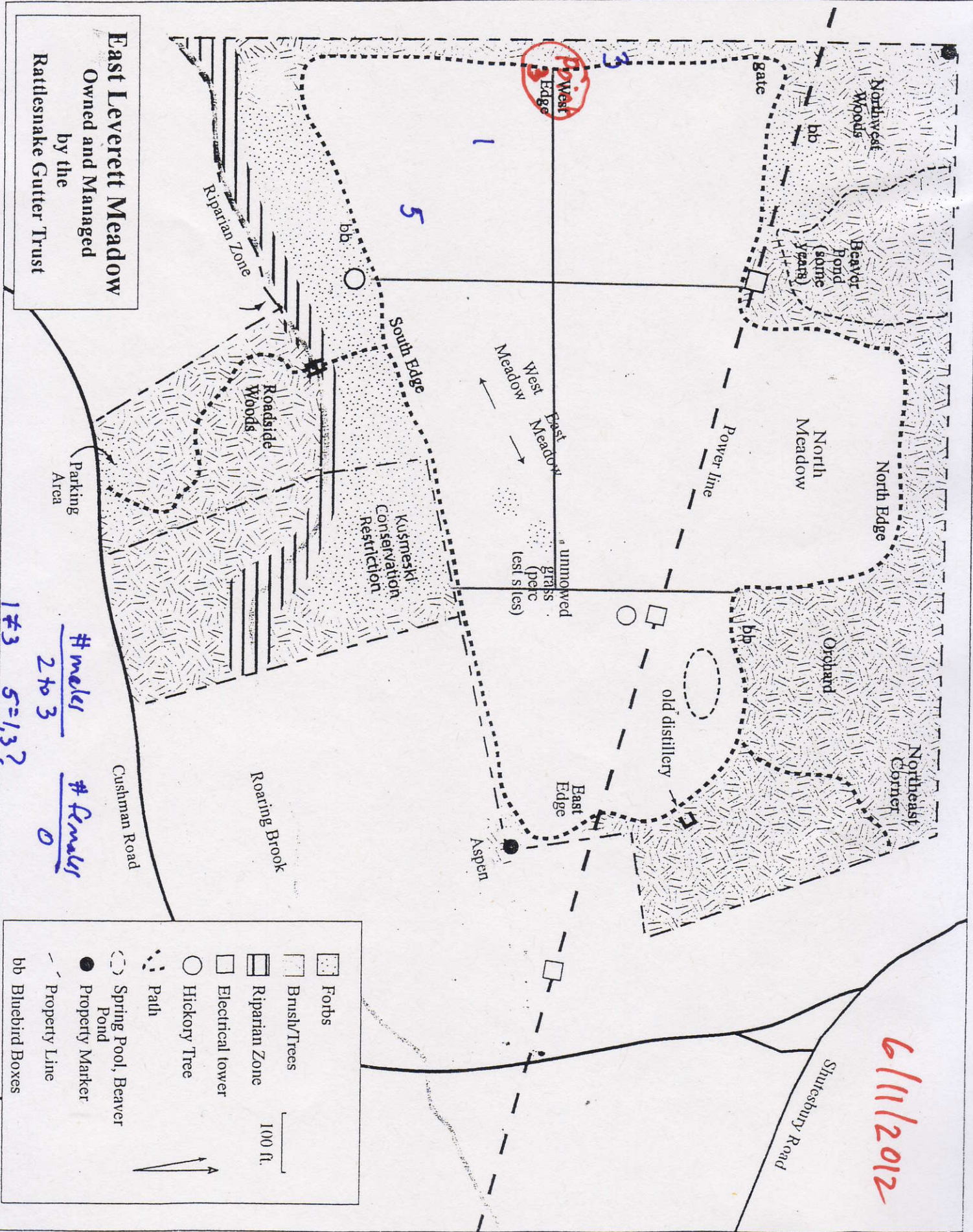
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# males 1  
# females 0

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



6/11/2012

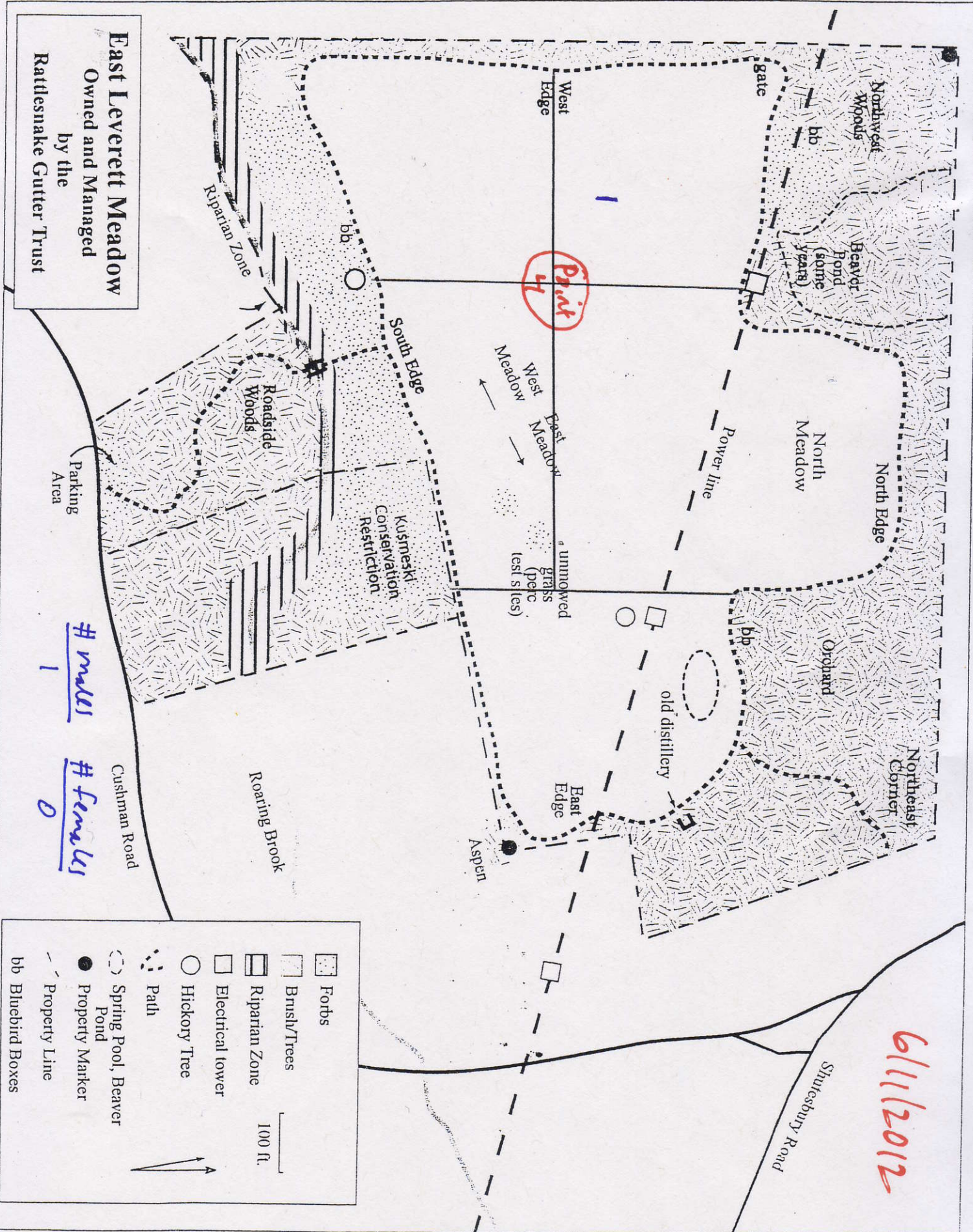


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# males 2 to 3  
# females 0  
 1 ≠ 3 5 = 1/3?

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

6/11/2012



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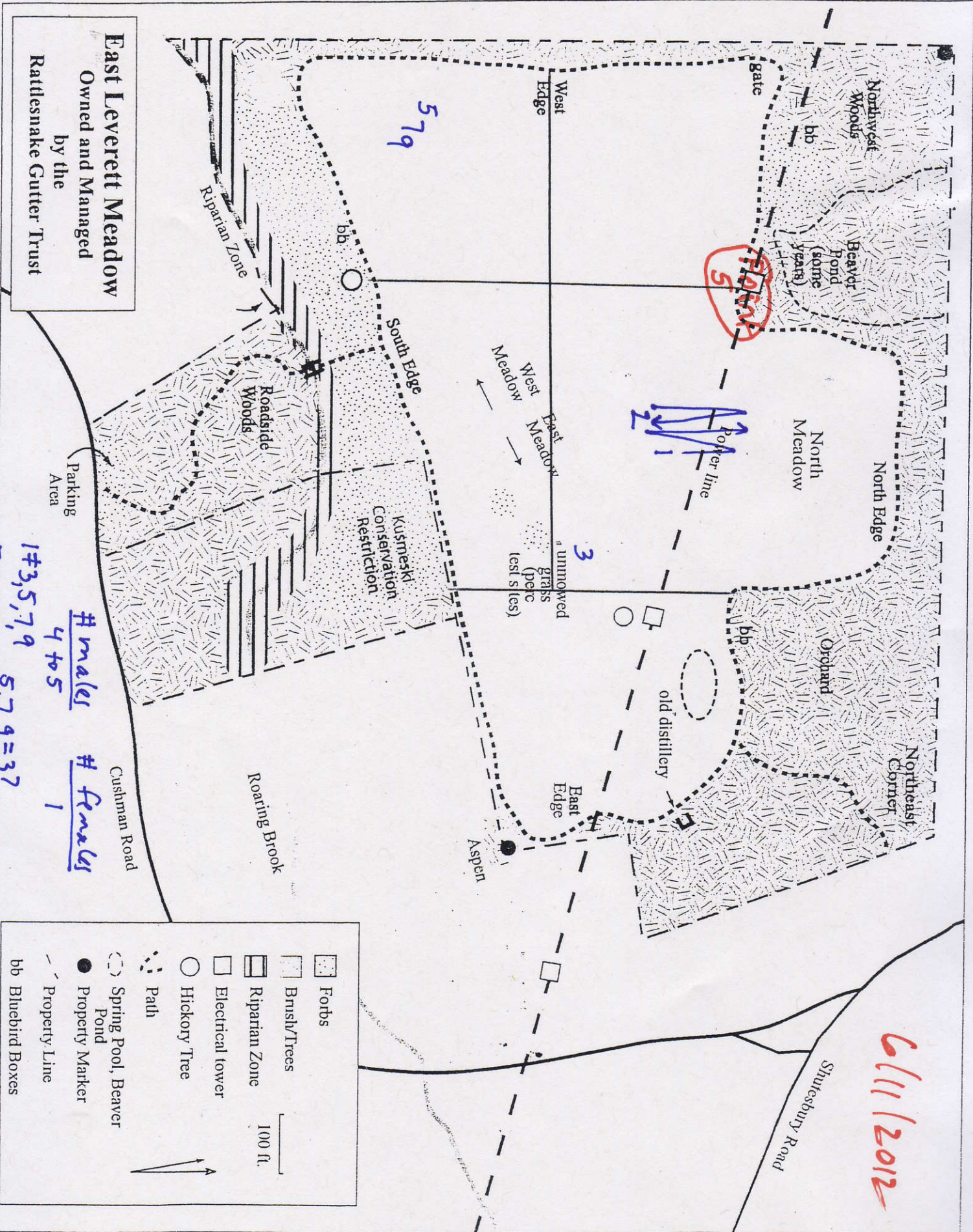
# males 1  
 # females 0

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

100 ft.

North Arrow

6/11/2012



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# males 4 to 5  
 # females 1

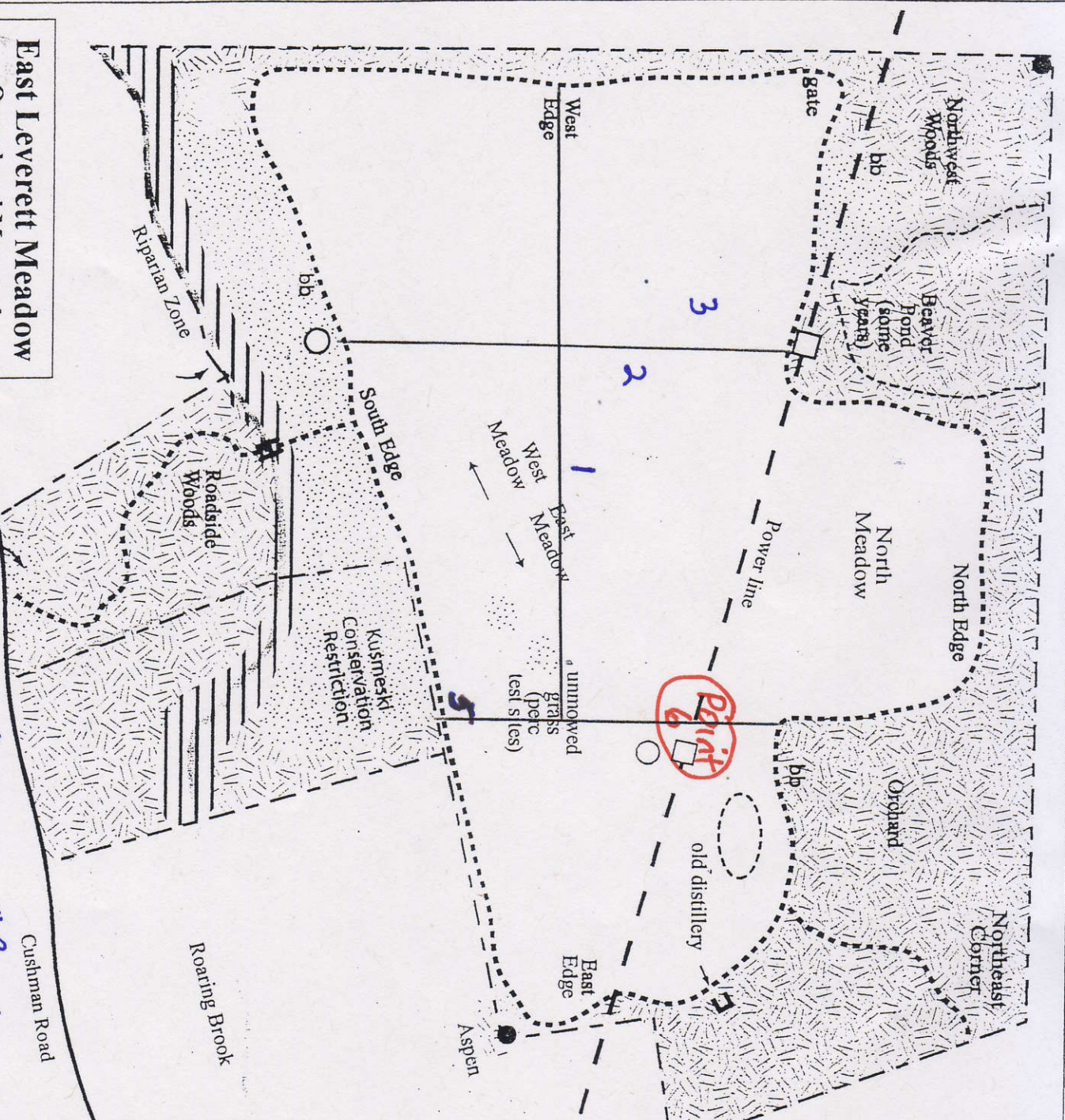
1#3,5,7,9 5,7,9=3?  
 5#7#9

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

100 ft.

6/11/2012

Shutesbury Road



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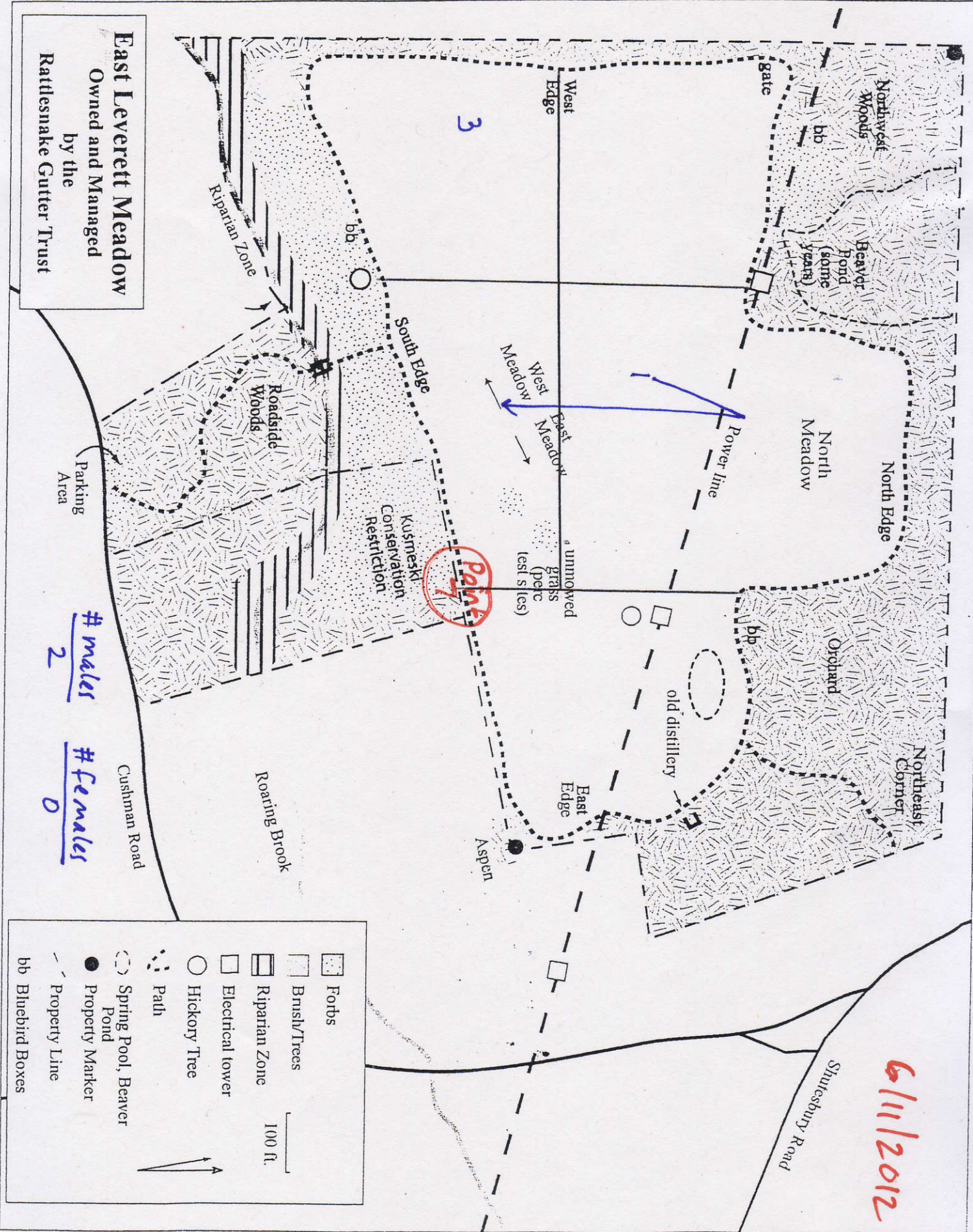
#males 2 to 3  
#females 1  
375 35 = 12

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

100 ft.

6/11/2012

Shutesbury Road



3

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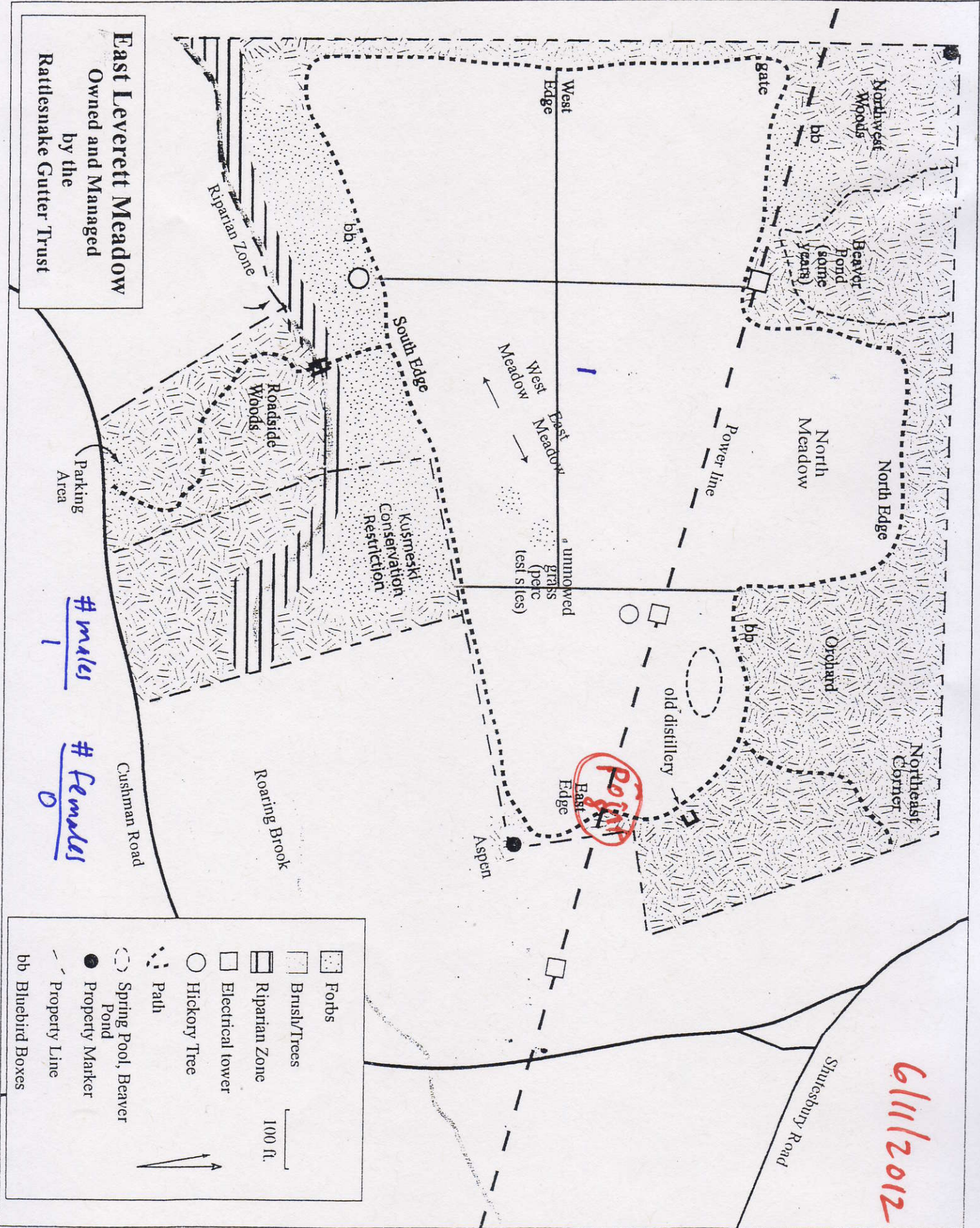
#males  
2

#females  
0

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

100 ft.

6/11/2012



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

100 ft.

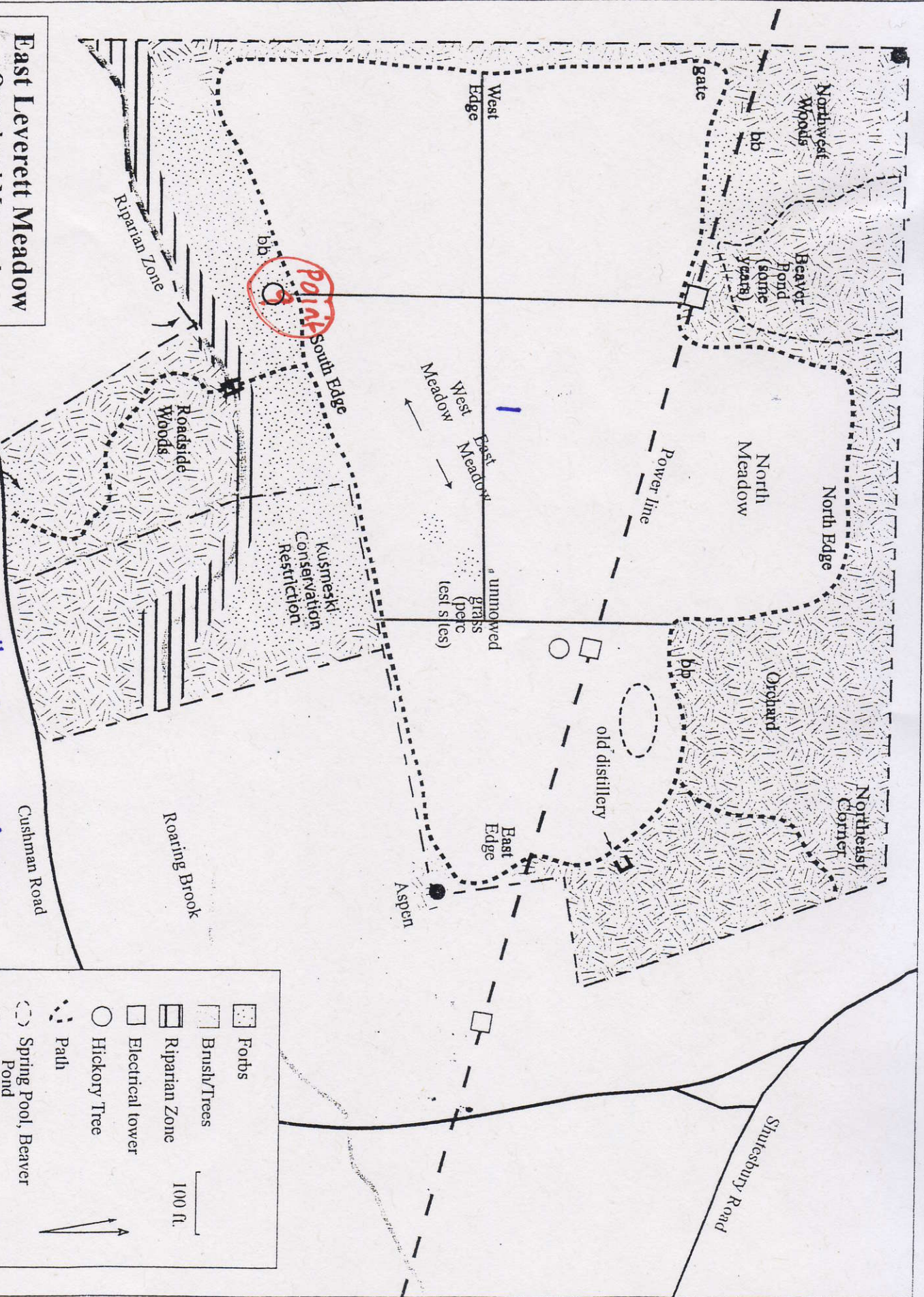
# males 1  
 # females 0

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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.



Shutesbury Road