A Survey of Bobolinks in East Leverett Meadow June 2010

Molly Hale

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 oryzivorous*) 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. In the spring of 2010 ELM was plowed and re-seeded in order to re-establish a vegetation community more favorable to bobolinks.

Annual surveys to assess bobolink activity in ELM have been conducted from 2000 to 2010. 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.

2010 METHODS

The survey took place on June 15. 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 8 and 30 minutes per point, depending on how much bobolink activity was going on. This year I worked without an assistant.

The survey took place from 6:00 to 8:44 a.m. The temperature was 65° F at the end. The weather was sunny and there was no wind. The spring has been typical, with about 2 inches of rain the previous week, 1.6” the week before that and 2” the week before that.

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 15, 2010

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

Point 1: Hickory tree at south edge of meadow
10 minute observation
1 male flew from the SW to the mid-central quadrant. Another male was in the mid-central quadrant. A male, possibly the same as one of the first two, was in the SW quadrant. A female was spotted in each of the mid-central, NW, and SW quadrants. I could not confirm that they were different individuals.

Point 2: Southwest corner of meadow
9 minute observation
No bobolinks were seen, but one was heard from a tree at the west edge of the meadow.

Point 3: Middle of west edge of meadow

9 minute observation
1 male was in a tree along west edge of the meadow. Another male was in the SW quadrant. Two individual bobolinks seen just south of point 4, but I couldn't determine their sex due to bad lighting.

Point 4: Between hickory tree and electric tower north of meadow
30 minute observation
Two males were continually perched together in the SW quadrant. One separate male was perched near a female in the SW quadrant. One male, possibly the same as one of the previous 3, flew from the SW to the NW quadrant. Two males and a female (different individual than the first one), were between points 4 and 5. One of these males was very agitated.

Point 5: Electric tower at east side of meadow
27 minute observation
Most activity was in the SW quadrant. One male flew within that quadrant, then flew to the west edge of the north-central quadrant. A separate male remained in the SW quadrant, and another separate male flew from the SW to the NW quadrant. Two different females were observed in the SW quadrant.

Point 6: Between east and west meadow, at edge of newly seeded area.
21 minute observation
A male flew from the SW quadrant to a goldenrod patch north of point 7. A different male was in the NW quadrant. Two different males and a female flew from the SW quadrant to perch on milkweed in the south-central quadrant. A different female flew from the NW quadrant to the north-central quadrant. Two females flew in from the north-central meadow landing very close to each other near point 4, near where the agitated male was earlier.

Point 7: Hickory tree at east side of mid-central quadrant
8 minute observation
On the way to this point 2 males popped up in the milkweed area between points 6 and 7. These were not counted in the tally or shown on the Point 7 map because they may be the same individuals that were seed during the Point 7 observation. From Point 7 I observed between 2 and 5 different males: 3 in the NW quadrant, one in the SW quadrant, and 1 in the north-central quadrant. I also observed 5 separate females: one in the NW quadrant, two in the mid-central quadrant, and two in the north-central quadrant.

Point 8: North edge of Kusmeski Conservation Restriction
6 minute observation
No bobolinks were seen or heard.

Other observations: An aggressive tree swallow was observed chasing several different birds at different times, including a male and a female bobolink, a grackle, a catbird, and a kingbird. The amount of time spent by the bobolinks in avoiding the swallow may significantly reduce the available time for foraging.

Comparison of bobolink numbers and distribution in East Leverett Meadow 2000-2010

	Northwest	Southwest	North-Central	Mid-Central	South-Central	East	Est. # bobolinks
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:

At least 5 females were present this year, the highest number since the surveys began. The number of males was also relatively high, with a minimum of 3 and up to 7 seen from one observation point. 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.

I did not observe any courtship flights by the males. It seemed that most activity was either foraging or preening. A female and a male were each observed carrying food, which in one case was probably a butterfly, based on its orange color. Groups perched together consisted of all males, all females, and males with females.

Sections of ELM used by bobolinks:

This year a much larger portion of the meadow was being used by bobolinks. Like every year, the SW quadrant had consistently heavy use. But now the NW quadrant is once again being used after a 3 year hiatus. The north-central, mid-central, and south-central sections are all being used for the first time in several years. I saw no bobolinks enter the east section, although it is being used by red-winged blackbirds.

Effect of Re-Seeding and Implications for mowing or haying

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 this year 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). Its structure as well as its species composition is now different than it was last year and different from the East Meadow.

The un-reclaimed section resembles the structure and composition of the west half of the meadow before it was re-seeded. It has a dense layer of thatch and a higher stem density, providing greater cover at ground level. The un-reclaimed section also has a much higher density of milkweed, goldenrod, and hedge bindweed. In contrast the re-seeded section has little or no thatch, and the stem density is lower than the un-reclaimed section. The stem height of the two sections is about the same.

It is likely that the re-seeding has improved the habitat for the bobolinks, and may explain the higher number of bobolinks this year. Bobolinks prefer a lower stem density and fields dominated by grasses rather than forbs. However, the field may become even more attractive in a year or two after some thatch has been allowed to accumulate.

An interesting observation is that even though only part of the meadow was re-seeded, ALL parts of the meadow, except the eastern quadrant, showed increased bobolink activity. Several observations were made of male and female bobolinks in patches of goldenrod or milkweed. Perhaps these areas provide more abundant insects for food.

Now that the West Meadow has been re-seeded it is not necessary for this section to be mowed every year. It would be more beneficial for bobolinks as well as other nesting birds, butterflies, and wildflowers, to mow it only every other year. The East Meadow should be mowed every year, late in the season, if woody vegetation is encroaching.

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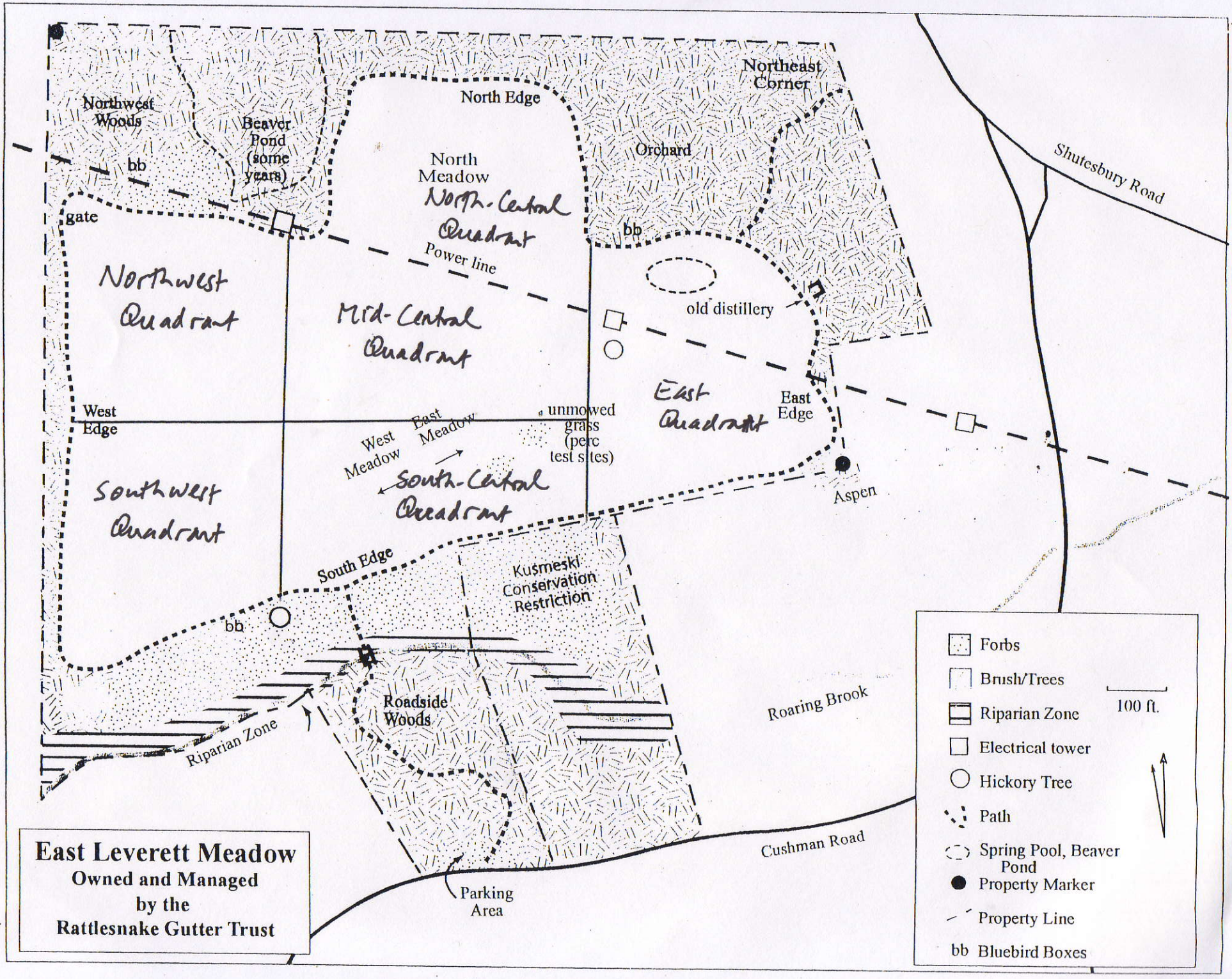
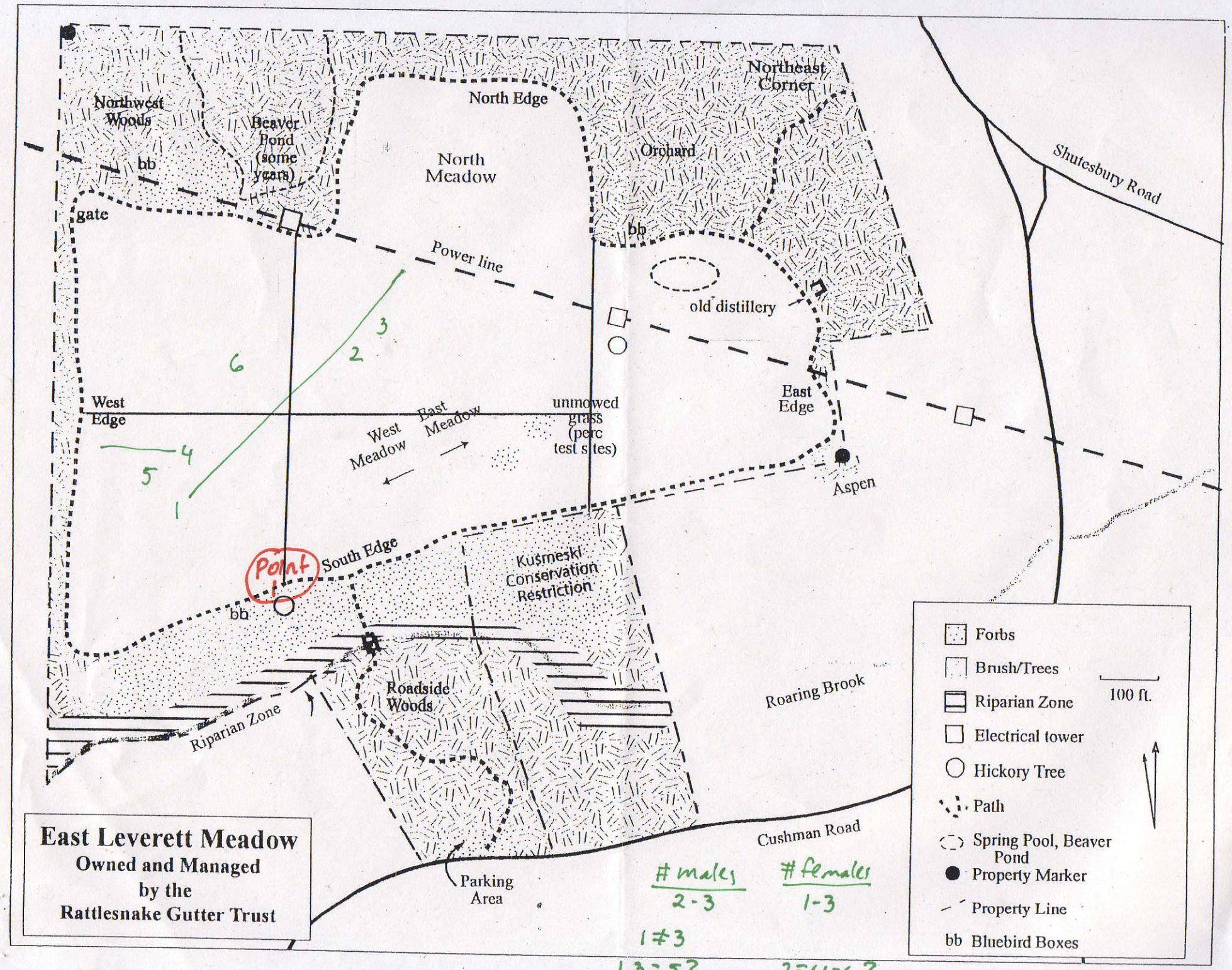

Northwest Woods
bb
Beaver Pond (some years)
North Edge
North Meadow
North-Central Quadrant
Northeast Corner
Orchard
Shutesbury Road
gate
Power line
bb
Northwest Quadrant
Mid-Central Quadrant
old distillery
East Quadrant
East Edge
West Edge
West Meadow
East Meadow
unmowed grass (perc test sites)
South-Central Quadrant
Aspen
Southwest Quadrant
South Edge
Kusmeski Conservation Restriction
bb
Roadside Woods
Riparian Zone
Roaring Brook
Cushman Road
Parking Area
East Leverett Meadow
Owned and Managed by the Rattlesnake Gutter Trust
Forbs
Brush/Trees
Riparian Zone
100 ft.
Electrical tower
Hickory Tree
Path
Spring Pool, Beaver Pond
Property Marker
Property Line
bb Bluebird Boxes



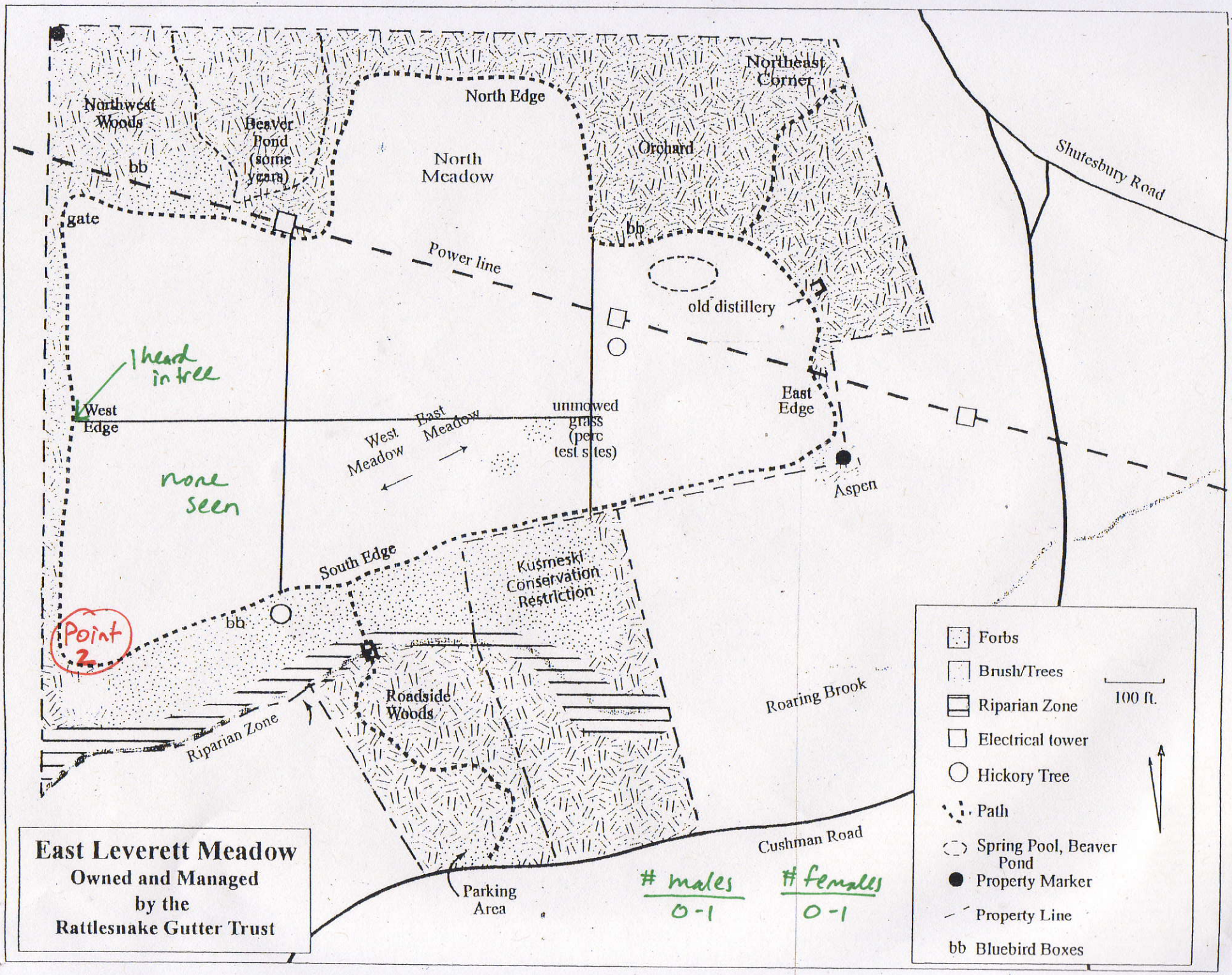
males
2-3

females
1-3

1≠3

1,3=5?

2=4=6?


Northwest Woods
Beaver Pond (some years)
North Edge
Northeast Corner
North Meadow
Orchard
Shutesbury Road
bb
gate
Power line
old distillery
I heard in tree
West Edge
East Meadow
West Meadow
unmowed grass (perc test sites)
East Edge
none seen
Aspen
South Edge
Kusmeski Conservation Restriction
Point 2
Roadside Woods
Roaring Brook
Riparian Zone
Cushman Road
Parking Area
males 0-1
females 0-1
East Leverett Meadow
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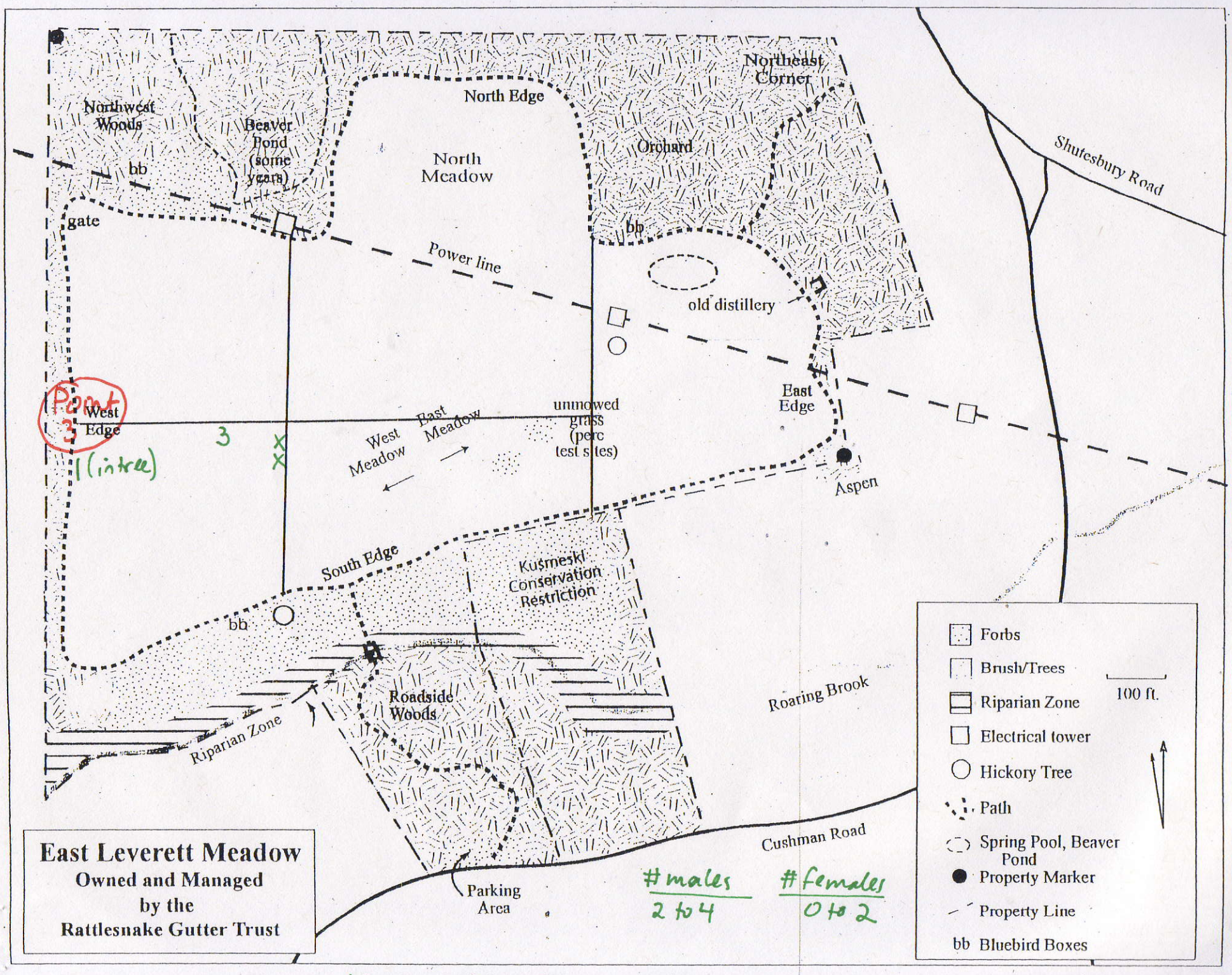
Path
Spring Pool, Beaver Pond
Property Marker
Property Line
bb Bluebird Boxes
100 ft.


Northwest Woods
Beaver Pond (some years)
North Edge
North Meadow
Northeast Corner
Orchard
Shutesbury Road
bb
gate
Power line
old distillery
Pond
West Edge
3
1 (in tree)
West Meadow
East Meadow
unmowed grass (perc test sites)
East Edge
Aspen
South Edge
Kusmeski Conservation Restriction
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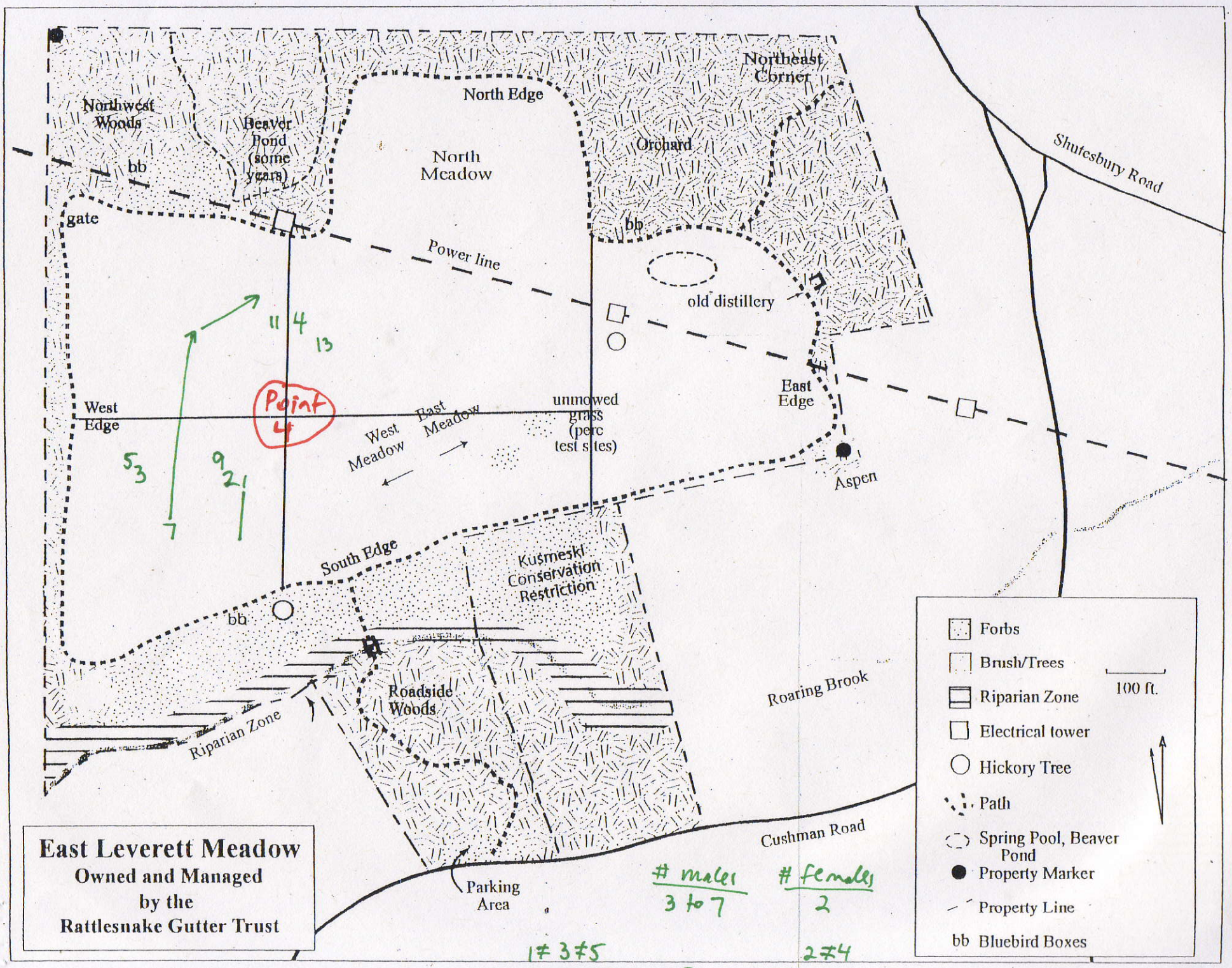
Property Line
bb Bluebird Boxes
100 ft.
males
2 to 4
females
0 to 2
X = sex undetermined
1 ≠ 3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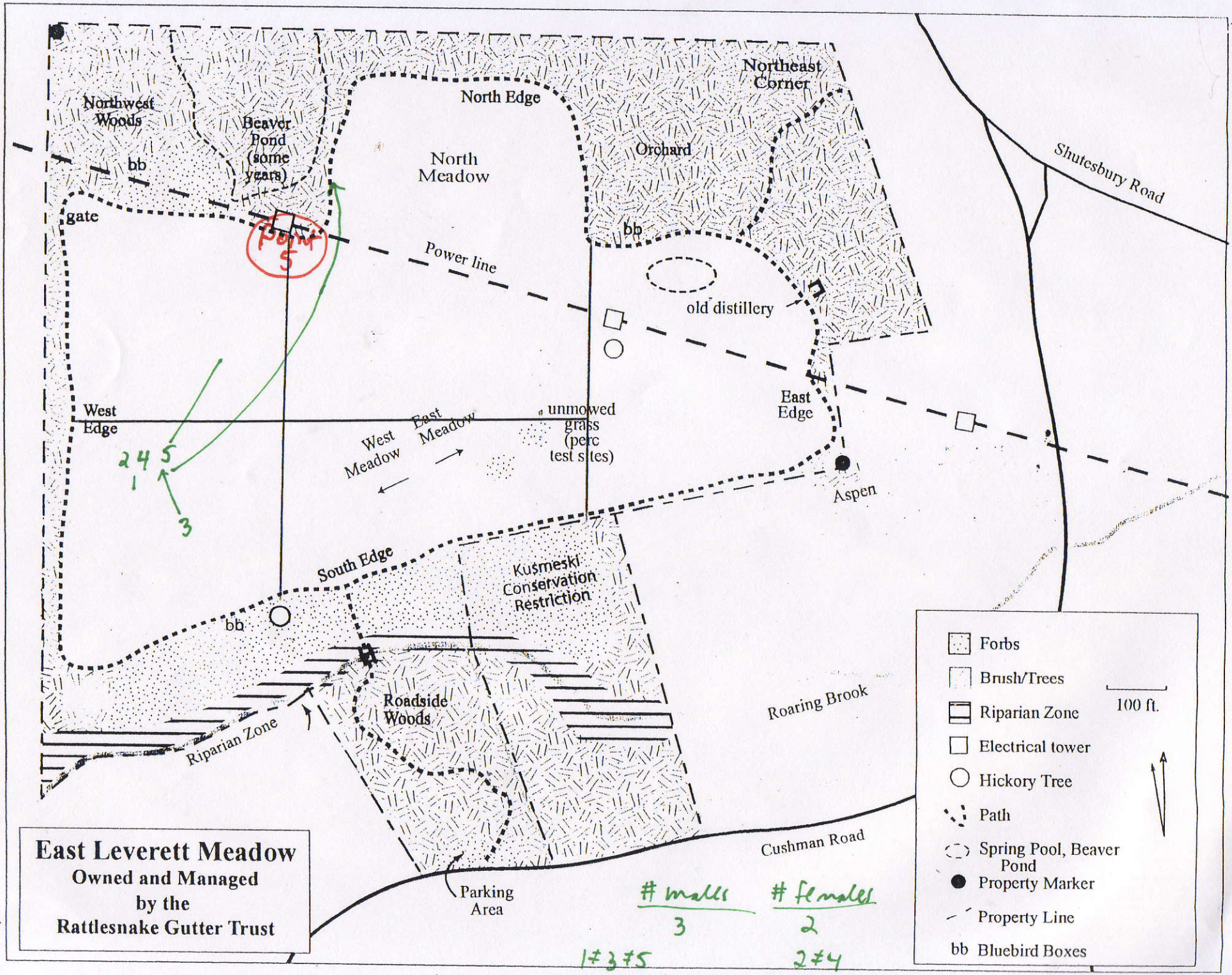
100 ft.
East Leverett Meadow
Owned and Managed by the Rattlesnake Gutter Trust
Point 4
11 4 13
5 3
9 2 1
7
males
3 to 7
females
2
1≠3≠5
2≠4
1,3,5=7=9=11=13?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Property Line
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100 ft.
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females
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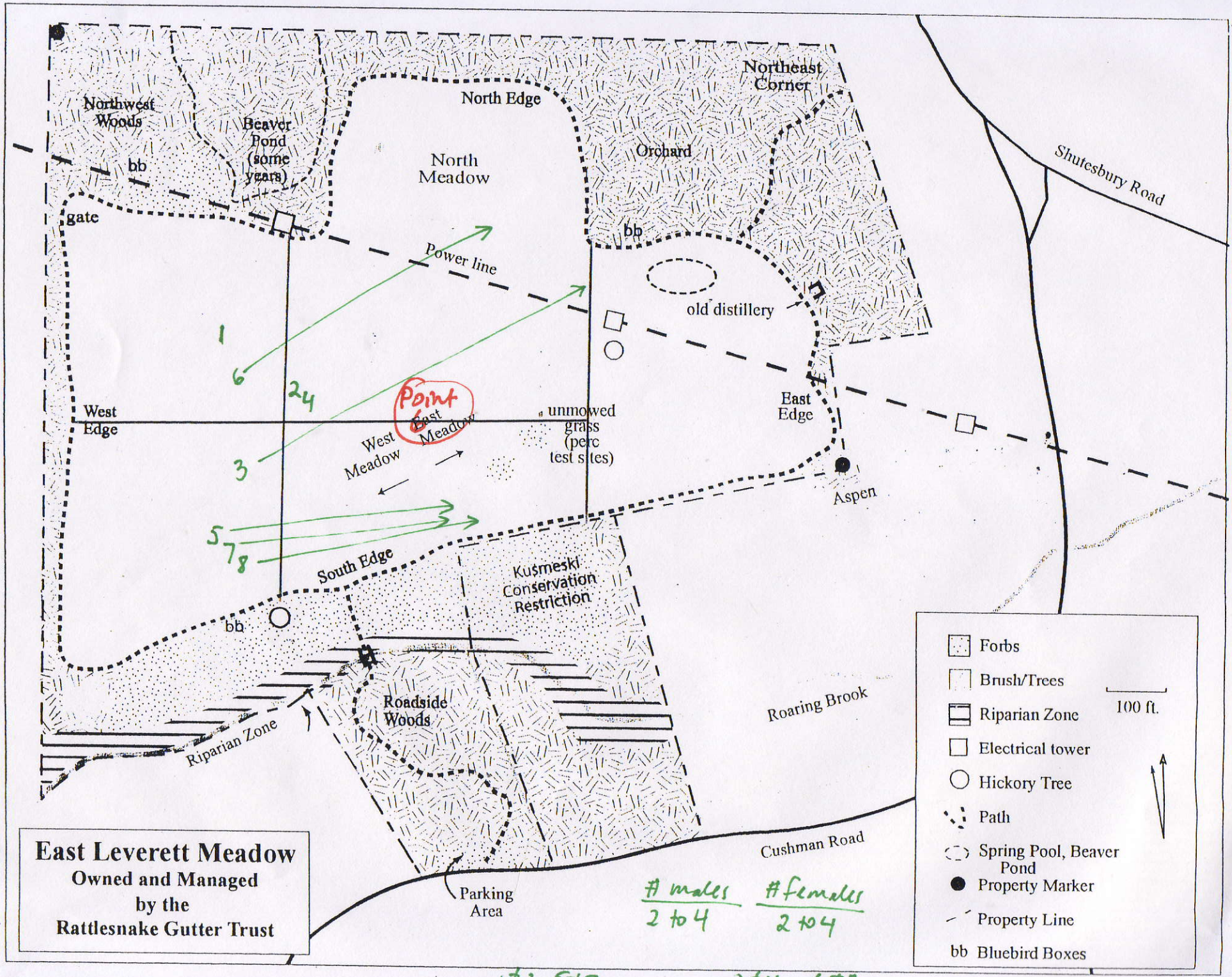
Northwest Woods
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North Edge
Northeast Corner
North Meadow
Orchard
Shutesbury Road
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gate
Power line
old distillery
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5
7
8
Point
West Edge
West Meadow
East Meadow
unmowed grass (perc test sites)
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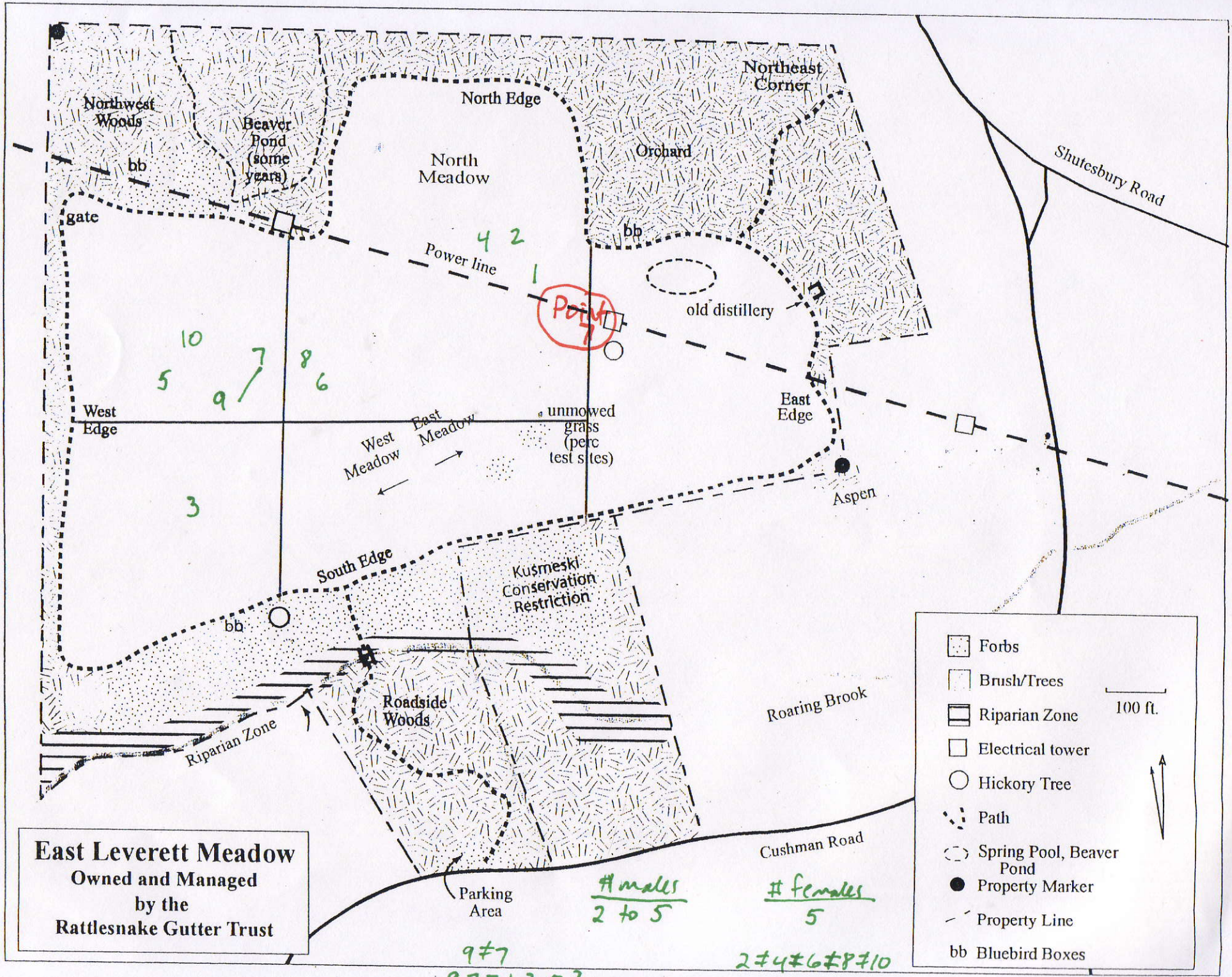
males
2 to 4
females
2 to 4
1≠3 5≠7
1,3 = 5,7 ?
2≠4 6≠8
2,4 = 6,8 ?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Point
old distillery
10
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8
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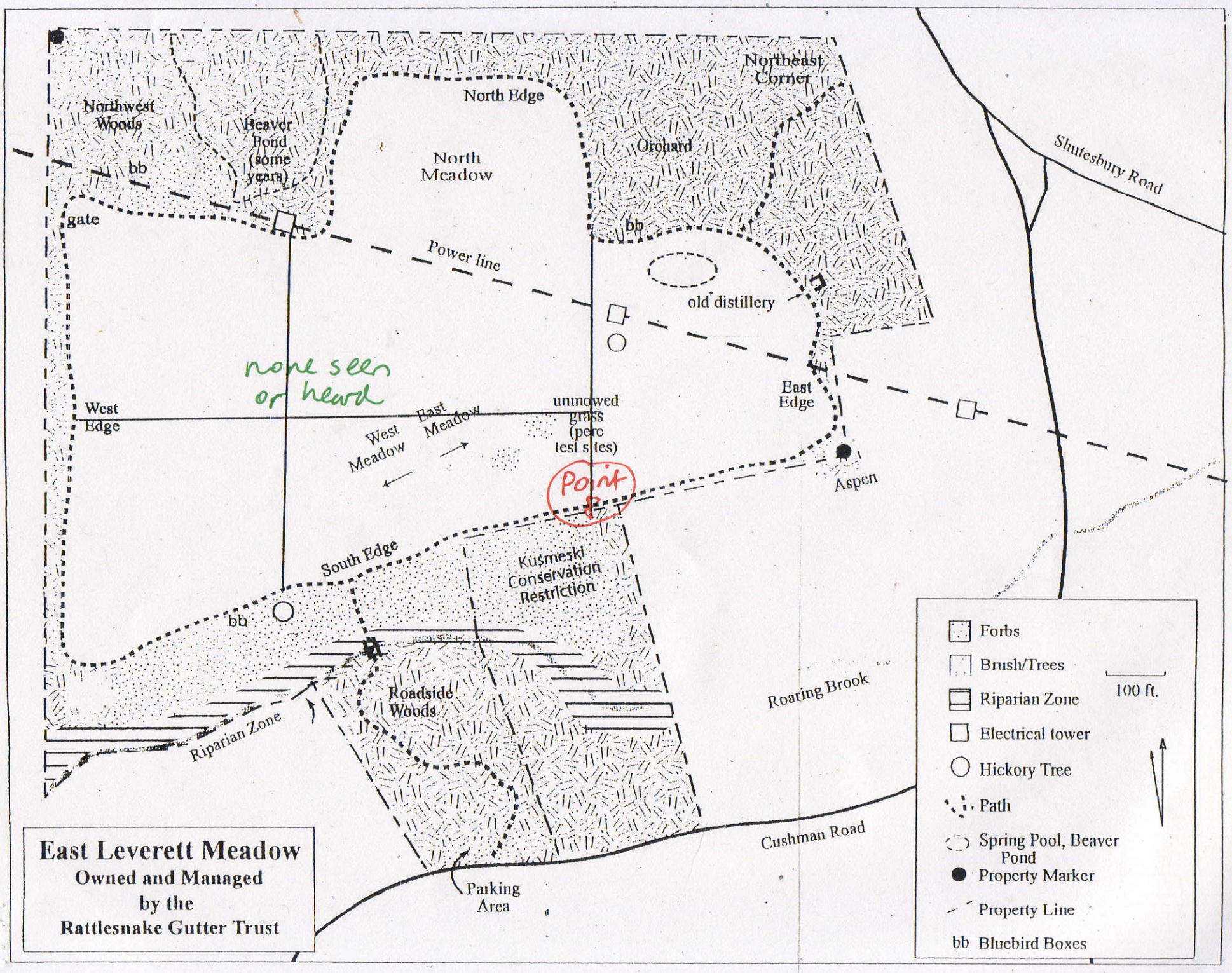
Cushman Road
males
2 to 5
females
5
9≠7
9,7=1,3,5?
2≠4≠6≠8≠10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North Meadow
Northeast Corner
Orchard
Shutesbury Road
bb
gate
Power line
old distillery
none seen or heard
West Edge
West Meadow
East Meadow
unmowed grass (perc test sites)
East Edge
Point P
Aspen
South Edge
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