

SUMMARY REPORT

1 March 2020

Deer Distance Sampling Population Estimate

Town and Country, Missouri

by

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Introduction/Methods

We used a population estimation method called Distance Sampling. This approach is based on the premise that you can determine the width of a transect traveled by creating a detection probability from the field observations (i.e., number of deer and distance from the transect). In simple terms, the software program projects the area sampled and then integrates the number of deer observed in that area to determine density.

The transect was the same as last year, ~21 miles long, and was surveyed once each evening. Spotlighting surveys were conducted from ~2200-0300 h on 28-30 January 2020.

While driving 10 mph spotters searched their respective side of the road with 400,000 candlepower spotlights. Upon sighting deer, the number in each social group, age and sex of the individuals, whether deer were marked or unmarked, and the perpendicular distance to the group was recorded. These data were then entered into a software program (Distance-Version 6.0) that estimates the deer density. The full data set is included as Appendix A.

Results/Discussion

The 2020 survey was completed before removal efforts took place. The survey team counted from 78–92 deer (33-37 groups of deer) on the 3 transect replicates (Appendix A). Deer were observed from 3 to 194 yards from the road. In contrast to previous years, when the vast majority of observations were under 100 yards, 21% of the observations during the survey were 100 yards or greater. The estimated density for the area surveyed ($\sim 10 \text{ mi}^2$), using three transect data sets, was 33.9 deer/mile^2 (Confidence interval: $27.6 - 41.72$) prior to culling activities, an slight increase of 1 deer/mi^2 from the 2019 estimate of 32.5 deer/mi^2 . The number of deer/cluster was 2.5, 25% smaller than the survey in 2019 but similar to the result of 2018. The mean sighting distance was 68.6 yards, 14 yards shorter than the January 2019 mean of 54.6 yards.

Culling operations were initiated after the surveys were complete, resulting in the reduction of 134 deer. Based on the distance sampling data and subsequent removal efforts it is estimated that there were ~ 206 ($33.9 \text{ deer/mi}^2 \times 10 \text{ mi}^2 = \text{deer} - 134 = 206$) deer in the survey area at the conclusion of field operations with a range at the 95% confidence interval of $142 - 283$ ($14.2 \text{ deer/mi}^2 - 28.3 \text{ deer/mi}^2$).

During the three survey nights, large groups of deer were detected along Williamsburg Estates and Kings Glenn/Royal Glenn. These areas are known to have deer densities higher than most other areas in town. Currently we have no sharpshooting locations proximate to these deer herds. It is recommended that sharpshooting locations be secured in these areas moving forward. The large group of deer in the Town and Country Estates/Amersham/Bickford/Delvin Drive area were not observed during the 2020 sampling effort. While it is possible that some mortalities occurred in the previous year it is unlikely that this group has disappeared. Moving forward it

would be recommended to secure a sharpshooting location in this area. While several of the deer in the group have been sterilized, and not available for removal efforts, the proportion of unsterilized deer is likely growing unchecked.

Aside from the areas mentioned above deer appeared to be evenly distributed in the sampling area. In an effort to better demonstrate where deer appeared during the Distance Sampling Survey, maps were generated plotting the number of deer in each group and specific location of observations. Each replicate's observations are attached as Figure 1, 2, and 3 for the samples conducted on 28, 29, and 30 February 2020, respectively.

The demographics of the population were ~34.8% yearling and adult females, ~36.4% fawns, 15.4% yearling and adult males, and 13.4% undetermined based on observations during the survey. Although detection is difficult, due to the small ear tag size, several sterilized deer were witnessed during the population estimate accounting for ~4% of the total observations and ~11% of the adult female observations.

Appendix A

Project: Town and Country, MO Date: 1/28/20

Time conducted: 22:00 Transect Length: 21.1

Weather (Temp, Wind, Cloud Cover): 34 F, 5-7 MPH, Cloudy

# of deer/group	A-Female/Fawn/YM/A-Male	Perpendicular distance (yd)	Location
4	4 UNK	30	Clayton/Topping
2	2 UNK	178	Principia/Tammany
3	3 UNK	100	Tammany/Clayton
3	3 UNK	174	Topping/Tauton
4	2AF/2F	29	Topping/Topping Meadows
3	1AF/2F	80	12838 Topping Est
4	2AF/2F	30	1503 Topping
3	AF/F/AM	60	Topping/Topping Acres
2	AM/UNK	87	Topping/Topping Acres
1	F	3	Topping/Thornhill
1	YM	58	12927 Thornhill
1	AM	10	Karlin/Thornhill
4	4YM	40	1864 Woodmark
2	1AF/1F	62	Queeny/Dog Museum
1	AF	65	13668 Peacock Farm
1	UNK	90	13561 Featherstone
4	2AF/2F	58	Featherstone/Foxleigh
1	AM	72	Featherstone/Mason Knoll
1	AM	155	Featherstone/Mason Knoll
2	1AF(Tagged)/1F	65	Featherstone/Mason Knoll
1	YM	73	1562 Mason
1	F	12	1412 Mason
4	1AF/2F/1AM	53	Mason/Buckland Hall
3	1AF/2F	19	13527 Kings Glen
4	2AF/2F	48	11 Williamsburg
1	AM	48	26 Williamsburg
7	3AF/4F	60	25 Williamsburg
4	2AF/2F	27	16 Summer Hill
2	2UNK	155	Conway/141
3	1AF/2F	30	Maryville U Soccer
1	AM	3	166 Babler
3	1AF/2AM	21	321 T&C Est
3	3AM	36	837 Amersham

Project: Town and Country, MO Date: 1/29/20

Time conducted: 22:00 Transect Length: 21.3

Weather (Temp, Wind, Cloud Cover): 34 F, Light, Cloudy

# of deer/group	A-Female/Fawn/YM/A-Male	Perpendicular distance (yd)	Location
2	2AF	12	12765 Spruce Pond
4	2AF/2F	119	Principia/Tammany
4	2AF/2F	164	Principia/Tammany
1	AF	17	Tammany/N 1240 Takara
4	2 AF(1 Tagged 113)/2F	23	Tammany/20 Chapel Hill
4	3AF (2 Tagged 36/?)/1F	27	1205 Tammany
3	1AF/2F	194	Topping/Tauton
2	2YM	60	Dubon/Topping
1	F	82	13017 Thornhill
2	2AF	93	3134 Thornhill
3	1AF/1F/1UNK	103	3134 Thornhill
1	F	22	13342 Thornhill
2	1AF/1F	87	1835 Manor Hill
3	1AF/2F	40	1816 Wood Mark
1	AM	66	Queeny Dog Museum
2	1AF/2F	51	Queeny Dog Museum
2	2AF (2 Tagged One with collar)	78	Featherstone/Mason Valley
2	1AF/1F	154	13433 Featherstone
2	1F/1UNK	42	1570 Mason
5	3AF/2F	52	Kings Glen Dr/Ct
3	1AF/2F	60	13535 Kings Glen
1	AM	27	10 Williamsburg
7	3AF/4F	38	6 Williamsburg
1	UNK	32	13613 Clayton
3	2AF/1F	60	13704 Clayton
1	AM	130	13704 Clayton
1	AM	84	29 Summer Hill
3	2AF/1F	75	28 Summer Hill
2	1AF/1F	112	Conway/Upper Conway est
1	F	41	244 Babler
1	AM	151	233 Pebble Acres
2	2AM	62	Conway/Mason
2	2AF	16	962 Delvin

Project: Town and Country, MO Date: 1/30/20

Time conducted: 22:00 Transect Length: 21.1

Weather (Temp, Wind, Cloud Cover): 37 F, Light, Cloudy

# of deer/group	A-Female/Fawn/YM/A-Male	Perpendicular distance (yd)	Location
5	3AF/2F	72	2416 White Stable
3	1AF/2F	20	Principia/Tammany
4	2AF/2F	112	Principia/Tammany
2	1AF(Tagged)/1F	50	Tammany/Clayton
2	1AF/1F	122	Topping/Timor
7	3AF/4F	20	Topping/Topping Est
1	1AM	88	Topping/Topping Est
2	2F	80	Topping/Topping Est S
3	1AF/2UNK	98	Topping/Topping Acres
3	3UNK	54	1623 Topping
5	1F/4UNK	113	13324 Thornhill
6	3AF(2 Tagged)/3F	77	1843 Manor Hill
1	1AF	42	13456 Thornhill
1	1AM	116	Mason/Van Courtland
2	1AF/1UNK	90	1632 Mason
3	1AF/2F	24	1604 Featherstone
2	2AM	40	13331 Featherstone
1	1AM	88	13331 Featherstone
1	1F	45	1746 Mason Knoll
3	2YM/1UNK	53	1293 Mason
5	2AF/3F	39	1293 Mason
6	3AF/3F	47	13513 Kings Glen
4	2AF/2F	118	10 Williamsburg
3	2AF(1 Tagged 89)/1F	3	2 Williamsburg
1	1YM	22	Conway/Hampshire Hill
3	3UNK	136	Babler/Ladue
1	1AF	60	230 Pebble Acres
1	1AF	165	13269 Pebble Acres
1	1UNK	185	Pebble Acres/Sunway
3	2YM/1F	40	S Outer 40/Principia
2	1AF/1F	20	837 Amersham
1	1AM	65	837 Amersham
4	2AF/2F	85	Amersham/Darien

Figure 1. Distance Sampling Observations 28 January 2020 Town and Country, MO



Figure 2. Distance Sampling Observations 29 January 2020 Town and Country, MO



Figure 3. Distance Sampling Observations 30 January 2020 Town and Country, MO

