

SUMMARY REPORT

27 January 2017

Deer Distance Sampling Population Estimate

Town and Country, Missouri

by

White Buffalo, Inc.

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 ~2200-0400 h on 18, 20, and 21 January 2017.

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 survey team counted from 85–133 deer (32-45 groups of deer) on the 3 transect replicates under similar weather conditions (Appendix A). Deer were observed from 6 to 177 yards from the road, with most observations occurring at less than 100 yards. The estimated density for the area surveyed ($\sim 10 \text{ mi}^2$), using three transect data sets, was 61 deer/mile² (Confidence interval: 44.6 – 83.6). The number of deer/cluster was 2.8, an increased 10% above the January 2016 sampling result of 2.6. The mean sighting distance was 50.9 yards, 4.9 yards less than the January 2016 mean of 55.8 yards. The increased cluster size and reduced sighting distance resulted in an estimate 13.5 deer/mi² greater than the 2016 estimate even though the number deer and groups of deer were similar.

Culling operations continued during the surveys, resulting in the reduction of 19 deer between the first and second survey and 7 deer between the second and third survey. An additional 5 deer were removed on the last night of the project after the population estimate was complete. During the three survey nights, several large groups of deer were detected along Topping Road and Topping Estates Drive.

Deer appeared to be fairly evenly distributed in the area sampled with the exception of the Topping Road area in which densities are higher than the rest of the City. The elimination of the 1.5 mile stretch along topping road reduces the deer density estimate significantly to 47 deer/mi² (Confidence interval: 30.5 – 73.3), nearly identical to the 2016 estimate. 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 observations are attached as Figure 1, 2 and 3 for the samples conducted on 18, 20, and 21 January 2017, respectively.

Although detection is difficult, due to the small ear tag size, several sterilized deer were witnessed during the population estimate accounting for ~10% of the total observations and ~23% of the adult female observations.

The demographics of the population were ~42% yearling and adult females, ~44% fawns, 10% yearling and adult males, and 4% undetermined based on observations during the survey.

The density estimate is of concern considering the estimate from 2016 was 13.5 deer/mi² lower than the 2017 estimate. High recruitment and a population density that was possibly near the top of the 2016 range (28.6-79 deer/mi²), along with removal efforts below recommended levels, likely contributed to the residual population being above the targeted range of 30 deer/mi².

Appendix A

Project: Town and Country, MO

Date: 1/18/17 A

Time conducted: 22:00-03:00

Transect Length: 20.5

Weather (Temp, Wind, Cloud Cover): 44 degrees, 0-5 mph wind, Partly Cloudy

# of deer/group	A-Female/Fawn/YM/A-Male UD-Undetermined	Perpendicular distance (yd)	Location
1	1 AM	49	21715 Clayton
3	1 AF / 2 F	14	Topping/Clayton
3	1 AF / 2 F	26	Principia/Tammany
5	2 AF / 3 F	85	Principia/Tammany
5	3 AF / 2 F	35	Thornfield/Tammany
3	3 AM	119	Tammany/Hawkshead
2	2 AF	90	Topping/Tundra Ct.
2	2 AF	26	1415 Topping
3	2 AF / 1 F	92	12920 Topping Est.
1	1 F	22	12800 Post Oak
2	1 AF / 1 F	51	12760 Post Oak
3	1 AF / 2 F	22	12760 Post Oak
2	1 AF / 1 F	39	Post Oak/Topping
3	1 AF / 2 F	21	1739 Topping
7	3 AF / 4 F	23	1739 Topping
1	1 F	18	1761 Topping
6	4 AF (3 Tagged 123) / 2 F	60	Thornhill Pool House
5	3 AF (2 Tagged) / 2 F	54	13325 Manor Hill
1	1 F	24	Woodmark/Thornhill
2	2 AF	65	13465 Thronhill
1	1 AM	71	13465 Thronhill
4	1 AF / 3 F	40	Mason/Park Place
2	1 AF / 1 F	69	13421 Featherstone
1	1 AM	116	13421 Featherstone
2	1 AF / 1 F	72	13350 Featherstone
4	3 AF (3 Tagged 17,74,107) 1 F	66	Featherstone/Mason Knoll
4	3AF (3 Tagged 18,101,122) 1 F	60	1669 Mason Knoll
3	1 AF / 2 F	32	1718 Mason Knoll
2	2 AM	12	1377 Mason
2	1 AF (Tagged 119) 1 F	15	1302 Mason
2	2 AF	29	13536 Royal Glen
3	1 AF / 2 F	51	Mason/Williamsburg
1	1 AM	47	9 Williamsburg
4	2 AF / 2 F	22	25 Brookmill
3	1 AF / 1 F / 1 UD	122	15 Brookmill
4	2 AF / 2 F	24	50 Brookmill
4	2 AF / 2 F	67	335 Babbler
3	1 AF / 2 F	19	Sunway/Pebble Ridge

Project: Town and Country, MO Date: 1/20/17

Time conducted: 22:00-03:00 Transect Length: 20.5

Weather (Temp, Wind, Cloud Cover): 48 degrees, 5 mph wind, Partly Cloudy

# of deer/group	A-Female/Fawn/YM/A-Male UD-Undetermined	Perpendicular distance (yd)	Location
2	1 AF / 2 F	56	T&C Lane/Clayton
5	3 AF / 2 F	35	Topping/Clayton
5	1 AF / 4 UD	47	1201 Tammany
6	2 AF / 4 F	22	Topping/Topping Est.
6	2 AF / 4 F	25	12921 Topping Est.
3	3 UD	85	12921 Topping Est.
2	2 AF	40	12739 Post Oak
3	2 AF / 1 F	28	1739 Topping
3	1 AF / 2 F	60	1739 Topping
1	1 F	37	13337 Manor Hill
2	2 AM	40	Thornhill Gate
1	1 AF (Tagged looked like 18)	11	Mason/Van Courtland
1	1 F	25	1614 Mason
2	1AF / 1F	64	13477 Featherstone
4	1 AF / 2 F / 1 AM	24	1674 Mason Knoll
1	1 UD	141	1578 Mason
2	1 AF / 1 F	80	1544 Mason
1	1 AF (Tagged)	10	1393 Mason
2	2 AF	29	Mason/Kings Glen
4	2AF / 2 F	32	Mason/Weston Park
4	2 AF(1 Tagged) / 2 F	70	Mason/Weston Park
3	1 AF / 2 F	45	Williamsburg/Mason
4	1 AF / 3 F	50	2 Williamsburg
6	3 AF / 3 F	33	Clayton/Mason Ridge
2	2 AM	44	13650 Mason
1	1 AM	120	15 Brookmill
2	1 AF / 1 F	50	51 Brookmill
2	1 AF / 1 F	47	829 T&C Est.
1	1 AM	66	917 T&C Est.
2	1 AF / 1 F	74	Amersham Dr/Ct
1	1 AM	68	946 Delvin
1	1 AM	47	967 Delvin

Project: Town and Country, MODate: 1/21/17Time conducted: 23:00-03:30Transect Length: 20.5

Weather (Temp, Wind, Cloud Cover): 55 degrees, 5-10 mph wind, Clear

# of deer/group	A-Female/Fawn/YM/A-Male UD-Undetermined	Perpendicular distance (yd)	Location
1	1 AM	48	12773 Spruce Pond
3	1 AF / 2 F	37	13016 Clayton
4	2 AF / 2 F	94	Clayton/Principia
2	2 F	32	1201 Tammany
4	3 AF (3 Tagged) / 1 F	87	1272 Tammany
3	3 AM	168	Topping/Tundra
2	1 AF / 1 F	64	12718 Post Oak
2	1 AF 1 F	28	1516 Topping
13	4 AF / 9 F	32	1610 Topping
1	1 AF	6	1801 Topping
3	1 AF / 2 F	28	1823 Topping
5	2 AF / 3 F	23	12927 Thornhill
2	2 UD	177	13065 Thornhill
1	1 AF (Tagged 117)	58	Thornhill Pool House
2	2 AF (2 Tagged)	56	13308 Thornhill
1	1 AM	113	13308 Thornhill
3	1 AF / 2 F	66	1826 Manor Hill
2	2 AF (2 Tagged 17, ?)	56	Woodmark/Thornhill
3	1 AF / 2 F	25	13456 Thornhill
1	1 F	56	Thornhill/Mason
4	2 AF / 2 F	13	1825 Mason
1	1 AF (Tagged)	72	Queeny Dog Museum
1	1 F	18	Mason/Park Place
4	2 AF / 2 F	54	1632 Mason
2	1 AF / 1 F	34	1601 Featherstone
4	3 AF (3 Tagged) / 1 F	92	13477 Featherstone
5	3 AF / 2 F	34	Mason/Mason Hts.
2	2 F	26	Mason/Mason Hts.
4	2 AF / 2 F	19	1337 Mason
1	1 AF (1 Tagged 119)	39	1337 Mason
2	1 AF / 1 F	26	13706 Clayton
3	1 AF / 2 F	29	St. Lukes Hospital
3	3 AM	38	13223 Pebble Ridge
3	1 AF / 2 F	70	Conway/Conway Commons
1	1 AF	52	Mason/Conway
4	3 AF / 1 F	11	Mason/S. Outer 40
1	1 F	23	948 T&C Est
1	1 AF (Tagged)	38	12410 S. Outer 40

Figure 1. Distance Sampling Observations 18 January 2017 Town and Country, MO

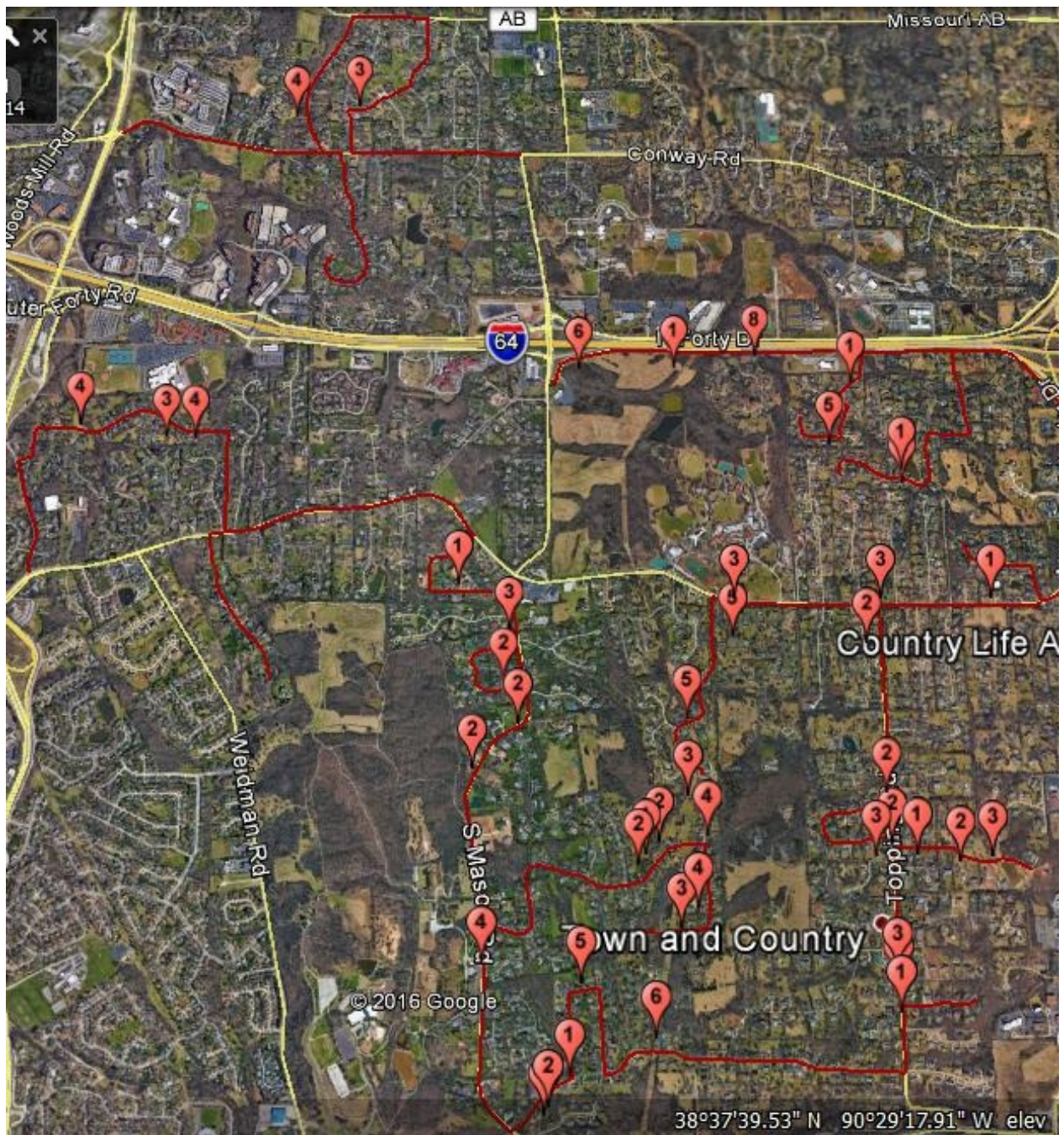


Figure 2. Distance Sampling Observations 20 January 2017 Town and Country, MO

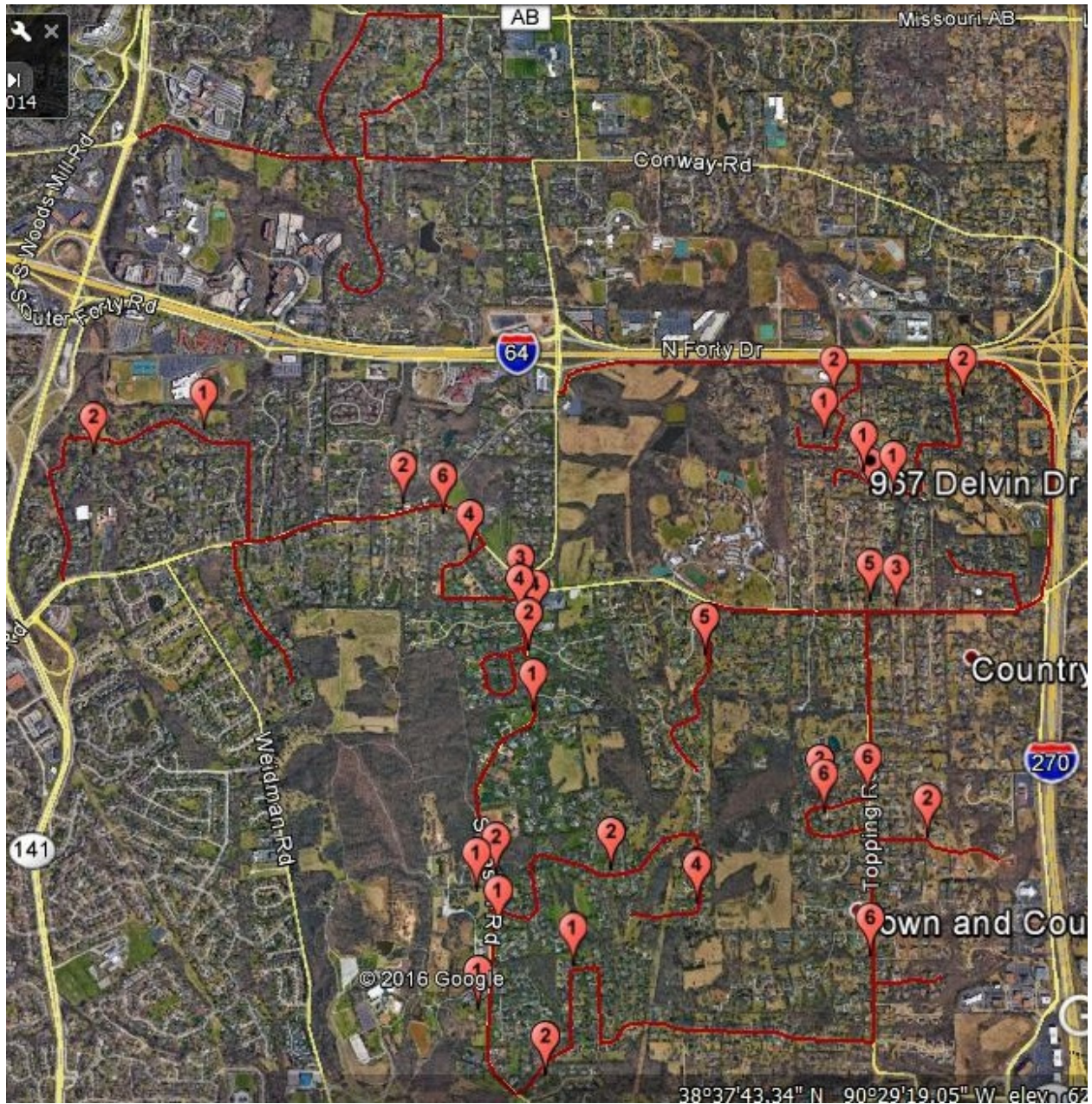


Figure 3. Distance Sampling Observations 21 January 2017 Town and Country, MO

