



White Buffalo Inc.

Conserving Native Species and Ecosystems

FINAL REPORT

12 February 2016

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 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. We used Erin Shank (Missouri Department of Conservation), Gary Hoelzer (Town and Country City Administrator), and Sergeant Chuck Frohock (Town and Country Police Department) as part of the survey team. Spotlighting surveys were conducted from ~2200-0400 h on 28- 30 January 2016.

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 107–133 deer (35-50 groups of deer) on the 3 transect replicates under similar weather conditions (Appendix A). Deer were observed from 1 (on the transect line) to 138 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 47.5 deer/mile² (Confidence interval: 28.6 – 79). The number of deer/cluster remained identical to the January 2015 sampling efforts at 2.6. The mean sighting distance was 55.8 yards, 11 yards less than the January 2015 mean of 66.83 yards.

Culling operations continued during the surveys, resulting in the reduction of 2 deer between the first and second survey and 4 deer between the second and third survey. An additional 7 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. Fewer deer were observed along the route in the vicinity of Mason Road, Mason Valley Estates, and Tammany than in prior years. Focused deer reduction efforts, along with the benefit of numerous surgically sterilized deer, appear to have achieved significant population decreases in the Mason Valley area. The single largest achievement of the 2016 project was in the area along Tammany Road, between Clayton and Mason Valley. Intensified removal efforts in this area resulted in 46 deer being culled, ~ 22 percent of the total harvest, from the 4 properties within this management area.



Deer appeared to be fairly evenly distributed in the area sampled with the exception of the Topping Road area and Woodmark/Manor Hill in which densities are higher than the rest of town. 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 replicates observations are attached as Figure 1, 2 and 3 for the samples conducted on 28, 29, and 30 January 2016 respectively.

Although detection is difficult, due to the small ear tag size, several sterilized deer were witnessed during the population estimate accounting for ~8% of the total observations and ~24% of the adult female observations. The demographics of the population were ~31% yearling and adult females, ~42% fawns, 8% yearling and adult males, and 19% undetermined based on observations during the survey.

The density estimate from 2015 was 10 deer/mi² lower than the recent 2016 estimate. High recruitment and a population density that was likely at the top of the 2015 estimate range (26.7-51.2 deer/mi²) is the likely cause. Population estimates in Ladue and Des Peres, MO indicate recruitment rates of 1.5 and 1.6 fawns per doe, respectively. Most deer population models use a 1.3 fawn/doe figure for calculating harvest efforts and making recommendations. Regional field data suggest that the models should have used a number ~20% higher. Near ideal spring conditions during the fawning period, and a high nutritional plane of the adult females, likely



helped support high fawn survivorship and recruitment. Discounting tagged deer (i.e., sterilized) in the 2016 population estimate, there were 1.7 fawns per doe in Town and Country at the time of the Distance Sampling Survey. The number of fawns is skewed slightly high as adult females were prioritized during the 2016 deer management efforts. Regardless, there is the potential for nearly 250-300 fawns to be recruited into the population in Spring 2016.

We would like to thank Erin Shank, Gary Hoelzer, and Chuck Frohock for assisting with the survey.



Appendix A

Project: Town and Country, MO

Date: 1/28/16

Time conducted: 22:00-03:00

Transect Length: 20.4

# of deer in group	A-Female/Fawn/YM/A-Male	Perpendicular distance (yd)	Location
4	2 AF / 2 F	65	12725 Clayton (County Life)
4	2 AF / 2 F	54	12725 Clayton (County Life)
1	1 AM	68	1201 Tammany
2	1 AF / 1 F	90	1201 Tammany
4	4 AF (All Tagged)	20	1216 Tammany
3	1 AF / 2 F	70	Clayton/Topping
3	1 AF / 2 F	28	Topping/Topping Meadows
3	1 AF / 2 F	46	Topping/Topping Meadows
3	1 AF / 2 F	50	12920 Topping Est
4	2 AF / 2 F	56	12920 Topping Est
1	1 AM	81	12701 Post Oak
3	1 AF / 2 F	1	Topping/Kriste
3	3 UNK	88	12827 Topping Manor
5	2 AF / 3 F	35	12927 Thornhill
2	1 AF / 1 F	88	13101 Thornhill
3	1 AF / 2 F	30	1827 Manor Hill
2	1 AF / 1 F	5	1827 Manor Hill
2	2 AM	68	1826 Manor Hill
2	1 AF / 1 F	40	Woodmark/Thornhill
3	1 AF / 2 F	35	Thornhill Gate
2	1 AF / 1 F	16	1830 Mason



1	1 F	45	1694 Mason
4	1 AF / 3 F	15	1632 Mason
1	1 AF	66	13668 Peacock Farm
2	1 AF / 1 F	68	13502 Featherstone
7	4 AF (All Tagged) / 3 F	54	Featherstone/Mason Valley
1	1 AM	39	Featherstone/Mason Valley
4	1 AF / 3 F	66	1730 Mason Knoll
2	1 AF / 1 F	42	1730 Mason Knoll
2	1 AF / 1 F	49	1735 Mason Knoll
2	1 AF (Tagged) / 1 F	67	Buckland Hall/Mason
4	2 AF / 2 F	80	5 Williamsburg
1	1 UNK	107	13530 Clayton
3	1 AF / 2 F	32	13530 Clayton
2	1 AF / 1 F	43	13530 Clayton
2	1 AF / 1 F	36	13760 Clayton
1	1 F	50	10 Summerhill
3	1 AF / 2 F	27	21 Brookmill

39 degrees Fahrenheit, Clear, 5-10 MPH wind
 Ryan Rodts & Erin Shank



Project: Town and Country, MO

Date: 1/28/16

Time conducted: 22:00-03:00

Transect Length: 20.4 Miles

# of deer in group	A-Female/Fawn/YM/A-Male	Perpendicular distance (yd)	Location
1	1 AM	24	30 Brookmill
5	1 AF / 2 F / 2 UNK	80	Ladue / Bon Chateau
2	1 AF / 1 F	32	108 Pebble Acres
3	1 AF / 2 F	82	108 Pebble Acres
1	1 AM	89	230 Pebble Acres
2	1 AM / 1 UNK	123	333 Sunway
5	2 AF / 3 F	42	Principia / S Outer 40
1	1 AM	1	829 Town and Country Est
2	1 AF / 1 F	43	883 Amersham
3	2 AM / 1 F	24	Bickford/Delvin
3	1 AF / 2 F	82	997 Delvin
4	4 AM	64	12340 S. Outer 40

39 degrees Fahrenheit, Clear, 5-10 MPH wind



Project: Town and Country, MO

Date: 1/29/16

Time conducted: 22:30-0:300

Transect Length: 20.4 Miles

# of deer in group	A-Female/Fawn/YM/A-Male	Perpendicular distance (yd)	Location
4	2 AF / 2 F	42	Country Life Acres/Clayton
1	1 AF	76	Country Life Acres/Clayton
2	1 AF / 1 F	44	Clayton/Topping
1	1 AM	47	Tammany/Clayton
3	1 AF / 2 F	60	1201 Tammany
1	1 AM	75	1201 Tammany
9	3 AF / 6 F	40	Topping/Tauton
6	2 AF / 4 F	49	1415 Topping
4	4 AF (All Tagged)	34	12940 Topping Est
1	1 AM	58	1274 Post Oak
6	2 AF / 4 F	32	1274 Post Oak
3	1 AF / 2 F	68	12835 Topping Manor
5	2 AF / 3 F	92	Manor Hill/Thornhill
3	1 AF / 2 F	107	1819 Manor Hill
1	1 AM	92	Manor Hill/Woodmark
2	2 AM	35	1871 Woodmark
4	2 AF / 2 F	32	Van Courtland/Queeny
8	3 AF / 5 F	61	1731 Mason Knoll
5	2 AF / 3 F	26	1544 Mason
1	1 AF (Tagged)	26	1223 Mason
2	2 AM	55	20 Williamsburg



1	1 AM	72	Mason Ridge/Clayton
2	2 F	46	6 Summerhill
7	3 AF / 4 F	88	16 Brookmill
3	1 AF / 2 F	86	324 Babler
3	1 AF / 2 F	20	Bon Chateau/Ladue
2	2 AM	119	Conway/Pebble Acres
2	1 AF / 1 F	45	Conway/Pebble Acres
2	2 AM	38	Conway/Tecumseh
1	1 AM	72	Conway/Conway Commons
3	1 AF / 2 F	56	Conway/Conway Commons
3	1 AF / 2 F	54	912 T&C Est
6	4 AF / 2 F (3 Tagged)	77	824 Amersham
3	1 AF / 2 F	31	833 Amersham
2	2 AM	131	12340 S Outer 40

45 degrees Fahrenheit, Clear, 12 MPH south wind
 Ryan Rodts & Gary Hoelzer



Project: Town and Country, MO

Date: 1/30/16

Time conducted: 22:30-03:30

Transect Length: 20.4 Miles

# of deer in group	A-Female/Fawn/YM/A-Male	Perpendicular distance (yd)	Location
1	1 F	18	Muni Center/S outer 40
1	1 AF		Roclare/Clayton
1	1 F	46	Principia /Clayton
2	1 AF / 1 F	105	Principia/Clayton
4	4 AF (All Tagged)	28	Tammany/Clayton
1	1 AM	62	1215 Tammany
3	1 AF / 2 F	123	1215 Tammany
4	2 AF / 2 F	36	1222 Tammany
1	1 AM	2	Tammany/Hawksh ead
4	3 AF / 1 F (3 Tagged)	21	1290 Tammany
3	1 AF / 2 F	65	Tunda/Topping
1	1 AM	135	Taunton/Topping
6	2 AF / 4 F	45	Topping/Kent Manor
3	1 AF / 2 F	83	12923 Topping Est
3	1 AF / 2 F	77	12917 Topping Est
1	1 F	52	12917 Topping Est
1	1 AM	42	12741 Post Oak
1	1 F	17	12701 Post Oak
7	5 AM / 2 F	50	12701 Post Oak
2	2 F	35	12901 Thornhill
1	1 AM	42	1843 Manor Hill



1	1 F	81	1843 Manor Hill
2	2 AF	19	1827 Manor Hill
2	1 AF / 1 F	27	1826 Manor Hill
2	2 AM	63	Manor Hill/Woodmark
3	1 AF / 2 F	87	1855 Woodmark
2	1 AF / 1 F	69	13423 Thornhill
3	1 AF / 2 F	46	Thornhill Gate
1	1 AM	33	13523 Featherstone
1	1 F	138	Featherstone/Foxle igh
3	1 AF / 1 F / 1 UNK	72	Featherstone/Foxle igh
4	4 AF (All tagged)	30	13356 Featherstone
2	2 F	27	Mason/Mason Heights
2	1 AF / 1 F (Tagged 115)	53	1337 Mason
6	3 AF / 3 F (One tagged 102)	32	Mason/Kings Glen
2	2 UNK	88	20 Williamsburg
4	2 AF / 2 F	42	One Williamsburg
2	2 UNK	77	Clayton/Mason Ridge

55 degrees Fahrenheit, Clear, 11 MPH south wind
 Ryan Rodts & Chuck Frohock



Project: Town and Country, MO

Date: 1/30/16

Time conducted: 22:30-03:30

Transect Length: 20.4 Miles

# of deer in group	A-Female/Fawn/YM/A-Male	Perpendicular distance (yd)	Location
1	1 AM	138	Clayton/Mason Ridge
1	1 AF	100	312 Babler
1	1 AM	32	Ladue/Pebble Acres
2	1 AM / 1 F	63	1324 Pebble Ridge
2	1 AF / 1 F	48	Pebble Acres/Conway
1	1 AM	29	Conway/Tecumseh
3	1 AF / 2 F	88	Mason/S Outer 40
2	1 AF / 1 F (1 Tagged #7)	17	Bickford/Delvin
1	1 AM	41	12328 S Outer 40



Figure 1. Distance Sampling Observations 28 January 2016 Town and Country, MO

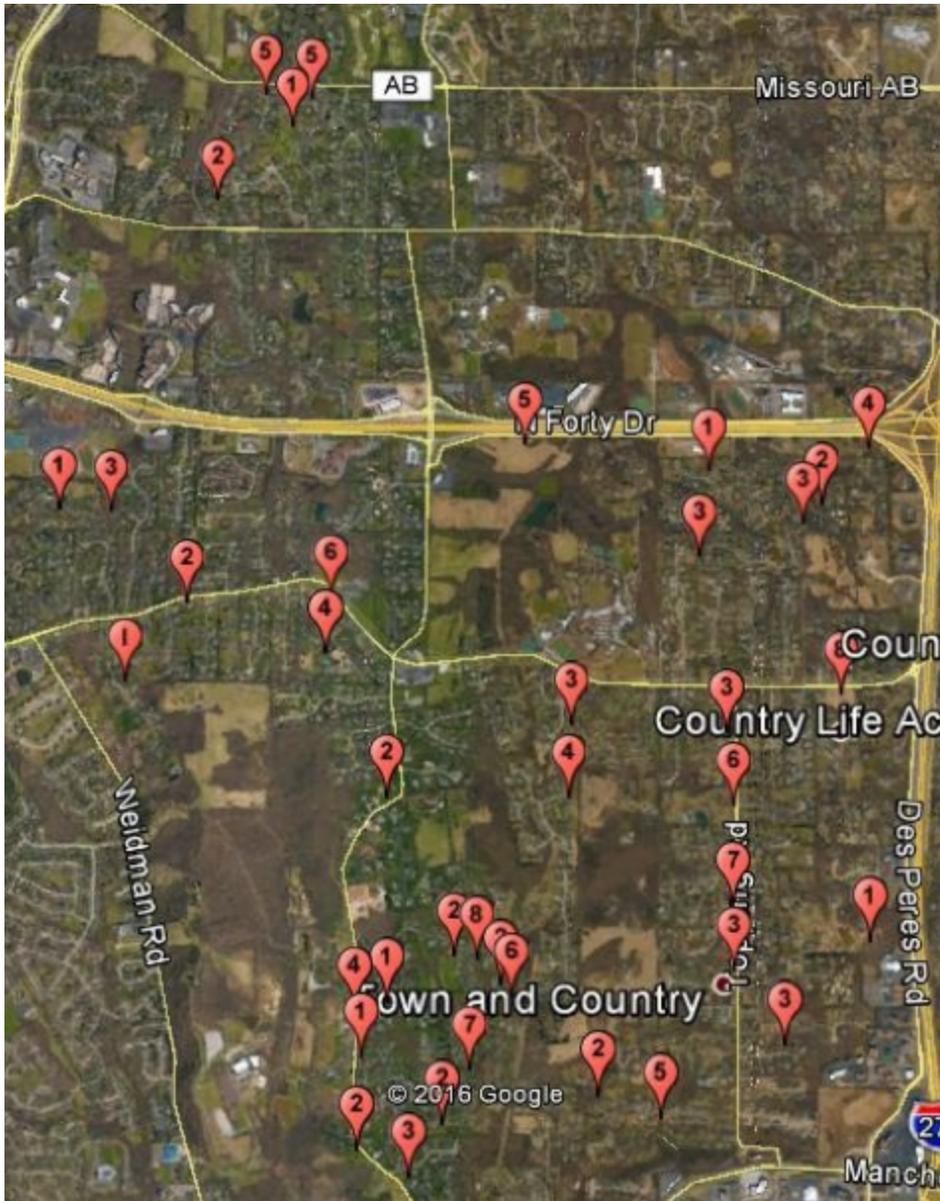




Figure 2. Distance Sampling Observations 29 January 2016 Town and Country, MO

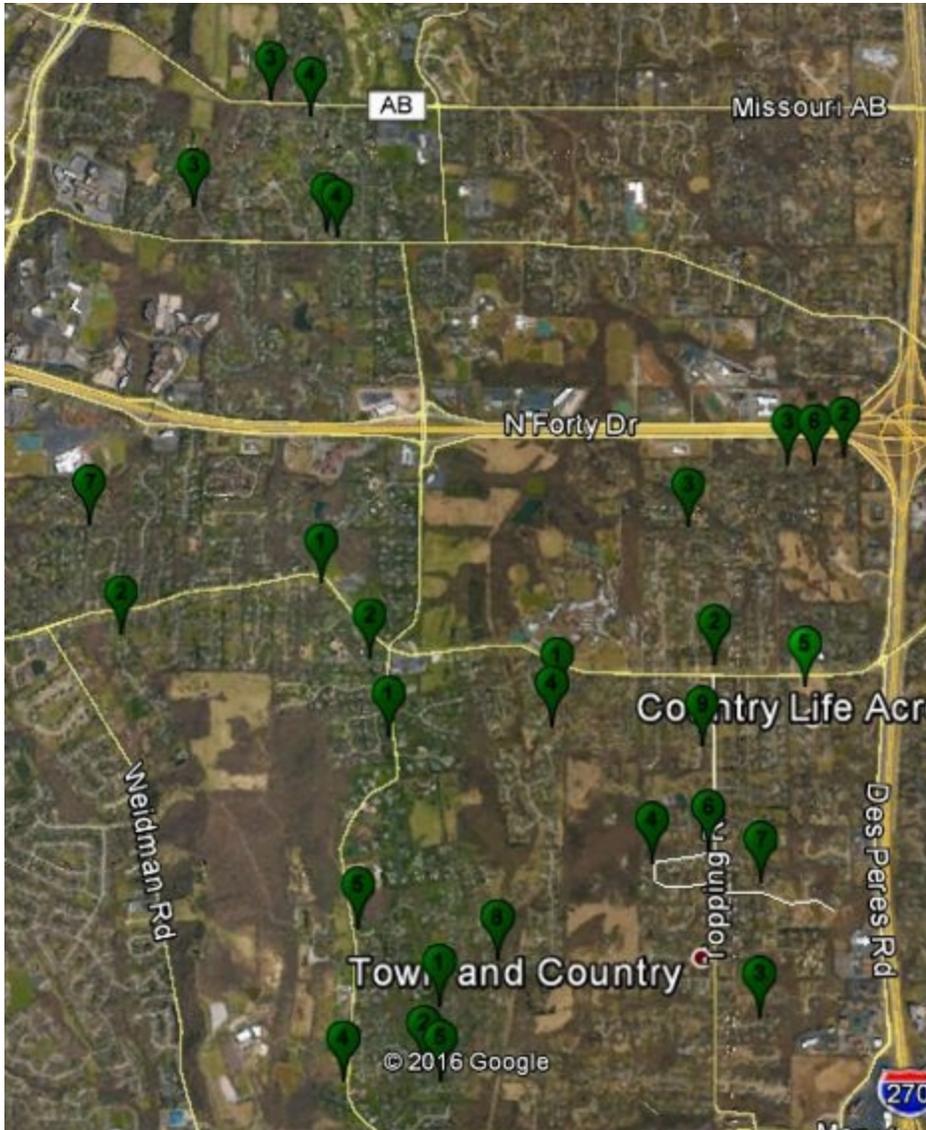




Figure 3. Distance Sampling Observations 30 January 2016 Town and Country, MO

