

SUMMARY REPORT

Deer Distance Sampling Population Estimate

Des Peres, Missouri

by

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3 February 2019

Introduction/Methods

The city of Des Peres is 4.3 mile² and bisected by I-270 running north/south. There are approximately 2.2 mile² in the western section of the city with the remaining area located east of I-270. We often delineate areas within a community to better describe deer density variability if it exists.

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.

First, we delineated a non-overlapping spotlighting route on a City road map (Figure 1). We used Des Peres Public Safety Officers Shaun Doerr and Terry Schneiderer as part of the survey team. Spotlighting surveys were conducted from ~22:00-03:00 h on 27, 29, and 30 January 2019. The transect was ~16 miles long, comprised of 7.0 miles east of I-270, 9.0 miles west of I-270. On 27 January 2019 the eastern section of the route was sampled once and the western section was sampled twice. Similar to the previous two surveys no deer were detected east of I-270. On 29-30 January 2019 the western section of the city was sampled twice each evening and the eastern portion of the route was excluded from the sampling effort.

While driving 10 mph spotters searched their respective side of the road with 2,000 lumen spotlights. Upon sighting deer, the number in each social group, age and sex of the individuals, 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.

Results/Discussion

The survey team counted from 24–46 deer (9-14 groups of deer) on the 6 transect replicates (See Figure 1 for the full survey route). Temperature, wind, and cloud cover varied on all three sampling nights. Deer were observed from 5 (on the road) to 111 yards from the road, with most observations occurring at less than 75 yards. Poor weather conditions impacted

observations on 29 January 2019. Wind velocities in excess of 15 mph, with gusts above 25 mph, resulted in 34 % fewer observations than the other two survey replicates. In an effort to more accurately represent the deer population, observations from 29 January 2019, were excluded from the density estimate calculations. Inclusion of the known bias data would have reduced the density estimate by over 20%.

The mean sighting distance was 50.6 yards, 19% greater than the 2017 mean of 40.8 yards. The average cluster size of 3.2 is 30% greater than the 2017 result of 2.45. Increasing cluster size (observed group size) has been a common trend over the last 3 surveys. During the 2016 survey the average cluster size was 2.3. The average group size has increased nearly 40% in the last 4 years. The complete observations sheets are attached as Appendix A.

Deer were only observed on ~9.0 miles of the 16.0 mile transect. The segment of the transect with deer observations occurred west of I-270 (Figure 2). In an effort to provide a more accurate estimate, we sampled the area west of I-270 twice on all three survey nights instead of allocating effort to the area east of I-270 where no deer were observed on the initial sampling night and previous years surveys. West of I-270 deer appeared to be evenly distributed with numerous observations occurring on Center/Fair Royal Drive, Hickory/Hunter Creek Ridge, 4 Winds Farm and Shari Drive. The estimated density for the west portion of the municipality (where deer were observed; ~2.2 mile²) is 51.3 deer/mile² (95% confidence interval: 35.2 – 74.6 deer/mile²). Therefore, we estimate that there were ~113 deer (51.3 deer/mile² X 2.2 mile² = 112.9 deer) inhabiting this area with a range of 77-164 at the 95% confidence interval. The deer density estimate is ~12% higher than the 2017 estimate. Please be advised that these estimates are pre-fawning with an expected increase in May and June.

No deer were observed east of I-270 even though it comprised nearly 44% of the transect route (7.0 miles of transect) and ~49% of the land area (~2 mile²). Based on these observations the deer densities east of I-270 can be assumed to be <10 deer/mi². Residents in this area may experience some conflicts with deer, but the area would typically be considered to have low deer densities.

The demographics of the population were ~38% yearling and adult females, ~48% fawns, and ~14% yearling and adult males based on observations during the survey. The data indicates a recruitment rate of ~1.3 fawns per adult doe, significantly greater than the 0.8 fawns per doe observed in 2017. It would be expected that the population growth next year will be significantly greater than during 2017 when recruitment rates were abnormally low.

Continued development along Des Peres Road will likely displace the deer inhabiting this area to other portions of the city. Residence surrounding this area would be expected to see a significant increase in the number of deer conflicts as displaced deer seek refuge in the surrounding habitat that remains. Field observations during the Distance Sampling route seem to support this. Numerous deer were observed on Beaver Dam Road, Holleyhead Drive, Camberwell Drive, and 4 Winds Farm, areas that would be considered to have limited traditional deer habitat.

Integration of deer into more developed parts of the municipality is a direct result of traditional deer habitat loss and increasing deer densities. Deer utilize the forage that is available (i.e., landscape plantings) when traditional browse is not available, and seek cover in sparser, less desirable, wooded corridors as densities increase. Conflicts between humans and deer increase as they embed themselves into these more highly developed areas.

Figure 1. Des Peres, MO Delineated Distance Sampling Route 27, 29, & 30 January 2019.



Figure 2. Des Peres, MO Area of Deer Observations, Distance Sampling 27, 29 & 30 January 2019.



Appendix A. Deer Observation Forms

Project: Des Peres, MO Date: 1/27/19 A

Time conducted: 22:00-03:00 Transect Length: 9.0

Weather (Temp, Wind, Cloud Cover): 32 degrees, 10 mph, Overcast

# of deer/group	AF-Female/Fawn/YM/A-Male UD-Undetermined	Perpendicular Distance (yd)	Location
5	2 AF / 2 Fawn / 1 AM	23	5 Shari
3	1 AF / 2 Fawn	93	772 Haw Thicket
1	UD	82	12960 Beaver Dam
6	3 AF / 3 Fawn	72	Beaver Dam/Camberwell
6	2 AF / 4 Fawn	5	Holleyhead Dr/Ct
3	1 AF / 2 Fawn	32	4 Winds Farm/Bourbon Red
1	1 Fawn	107	Plymouth Rock/4 Winds
4	4 AM	87	33 Topping
3	2 AF / 1 Fawn	48	13237 Center Royal
7	3 AF / 4 Fawn	61	2425 Fair Royal
1	UD	45	13165 Hunter Creek Ridge
1	Fawn	5	Winding Trail/Hunter Creek
2	1 AF / 1 Fawn	33	Whitehorse Dr/Ct

Project: Des Peres, MO

Date: 1/27/19 B

Time conducted: 22:00-03:00

Transect Length: 9.0

Weather (Temp, Wind, Cloud Cover): 32 degrees, 10 mph, Overcast

# of deer/group	AF-Female/Fawn/YM/A-Male UD-Undetermined	Perpendicular Distance (yd)	Location
2	2 AM	35	1 Shari
3	2 AM / 1 UD	43	5 Shari
2	2 UD	62	166 Greenbriar
2	1 AF / 1 Fawn	53	12840 Beaver Dam
6	2 AF / 4 Fawn	54	2377 Camberwell
3	1 AF / 2 Fawn	31	4 Winds Farm/Bourbon Red
2	2 AM	49	18 Topping
5	2 AF / 3 Fawn	35	2231 Center Royal
3	1 AF / 1 Fawn / 1 UD	5	13189 Hunter Creek Ridge
2	1 AF / 1 Fawn	23	Hunter Creek Rdg/Ct
2	1 AF / 1 Fawn	74	12911 Whitehorse

Project: Des Peres, MO

Date: 1/29/19 A

Time conducted: 22:00-03:00

Transect Length: 9.0

Weather (Temp, Wind, Cloud Cover): 19 degrees, 15+ mph, Overcast

# of deer/group	AF-Female/Fawn/YM/A-Male UD-Undetermined	Perpendicular Distance (yd)	Location
2	2AM	59	5 Shari
5	3 AM / 2 Fawns	44	5 Shari
1	1 AF	62	Ashdown Forest Ct
1	1 UD	63	2339 Camberwell
5	5 AM	55	4 Winds/Minarca
2	1 AF / 1 Fawn	48	868 Minarca
2	1 AF / 1 Fawn	35	13157 Hunter Crk Rdg
4	2 AF / 2 Fawn	52	13140 Hunter Crk Rdg
2	2 AM	50	Hunter Crk Rdg/Ct

Project: Des Peres, MO

Date: 1/29/19 B

Time conducted: 22:00-03:00

Transect Length: 9.0

Weather (Temp, Wind, Cloud Cover): 8 degrees, 15+ mph, Overcast

# of deer/group	AF-Female/Fawn/YM/A-Male UD-Undetermined	Perpendicular Distance (yd)	Location
7	7 AM	39	5 Shari
1	1 AF	63	Beaver Dam/Holley Head
3	2 AF / 1 Fawn	57	2386 Camberwell
5	5 AM	42	855 Minarca
1	1 AF	64	Grandview/Sarala
3	1 AF / 2 Fawn	54	2401 Center Royal
3	1 AF / 2 Fawn	50	13133 Hunter Crk Rdg
2	1 AF / 1 Fawn	5	Whitehorse/Hunter Crk Rdg
2	2 UD	106	12912 Whitehorse

Project: Des Peres, MO

Date: 1/30/19 A

Time conducted: 22:00-03:00

Transect Length: 9.0

Weather (Temp, Wind, Cloud Cover): 8 degrees, 0 mph, Overcast

# of deer/group	AF-Female/Fawn/YM/A-Male UD-Undetermined	Perpendicular Distance (yd)	Location
2	1 AF / 1 Fawn	10	Shari Hill
3	1 AF / 2 Fawn	53	Shari Hill
2	2 UD	44	2364 Holleyhead
2	1 AF / 1 Fawn	54	Holleyhead Ct.
3	1 AF / 1 Fawn / 1 UD	90	Holleyhead Ct.
3	1 AF / 2 Fawn	22	923 Des Peres Rd
1	1 Fawn	74	Des Peres/Old Des Peres
6	4 AF / 2 Fawn	62	2232 Center Royal
4	2 AF / 2 Fawn	92	Center/View Royal
8	3 AF / 5 Fawn	5	2317 Fair Royal
5	5 AM	67	2400 Fair Royal
2	2 UD	57	13020 Hickory Creek Ct
8	3 AF / 5 Fawn	46	13020 Hickory Creek Ct

Project: Des Peres, MO

Date: 1/30/19 B

Time conducted: 22:00-03:00

Transect Length: 9.0

Weather (Temp, Wind, Cloud Cover): 8 degrees, 0 mph, Overcast

# of deer/group	AF-Female/Fawn/YM/A-Male UD-Undetermined	Perpendicular Distance (yd)	Location
4	4 AM	42	4 Shari
4	4 UD	53	Highland/Shari
3	1 AF / 2 Fawn	111	Crab Thicket/Beaver Dam
2	2 UD	54	2353 Holleyhead
1	1 AM	42	2353 Holleyhead
1	1 Fawn	71	2308 Camberwell
2	1 AF / 1 Fawn	32	2365 Cambewell
2	1 AF / 1 Fawn	58	12825 Bourbon Red
2	1 AF / 1 Fawn	74	Plymouth Rock/4 Winds
2	1 AF / 1 Fawn	52	13020 Hickory Ridge Ln
2	1 AF / 1 Fawn	44	13020 Hickory Ridge Ln
8	3 AF / 5 Fawn	15	Hickory Ridge Ln/Ct.