

SUMMARY REPORT

Deer Distance Sampling Population Estimate

Des Peres, Missouri

by

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30 February 2020

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 Robert Wadsack, Brad Summers, and Terry Schmeiderer as part of the survey team. Spotlighting surveys were conducted from ~22:00-03:00 h on 24, 25, and 26 January 2020. The transect was ~16 miles long, comprised of 7.0 miles east of I-270, 9.0 miles west of I-270. On 24 January 2020 the complete 16 mile route was sampled once. Similar to the previous three surveys no deer were detected east of I-270. On 25 and 26 January 2020 the western section of the city was sampled twice each evening and the eastern portion of the route was excluded from the sampling effort. It should be noted that while no deer were observed on the sampling route the team did observe 2 deer crossing Ballas Road from Kirkwood into Des Peres near the intersection of Rayner Rd on the evening of 24 January 2020.

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 30–52 deer (14-20 groups of deer) on the 5 transect replicates (See Figure 1 for the full survey route). Temperature, wind, and cloud cover were

similar on all three sampling nights and led to excellent survey continuity. Deer were observed from 2 (on the road) to 141 yards from the road, with most observations occurring at less than 75 yards.

The mean sighting distance was 41 yards, 19% less than the 2019 mean of 50.6 yards, but similar to the 2017 mean of 40.8 yards. The average cluster size of 2.4 is below the average of the 2019 survey but comparable to the 2.45 average of the 2017 survey. Numerous observations were made when deer crossed the road in front of the survey vehicle. 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 two 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, 4 Winds Farm, Shari Drive and the Goodson Road area. To better depict deer distribution the observations from the 24 January 2020 survey were plotted on an aerial image (Figure 3).

The estimated density for the west portion of the municipality (where deer were observed; ~2.2 mile²) is 62.4 deer/mile² (95% confidence interval: 43.4 – 89.6 deer/mile²). Therefore, we estimate that there were ~137 deer (62.4 deer/mile² X 2.2 mile² = 137.28 deer) inhabiting this area with a range of 96-197 at the 95% confidence interval. The deer density estimate is ~21.6% higher than the 2019 estimate and 59% higher than the initial deer population estimate in 2016 (39.9 deer/mile²). All four years of deer population estimates are depicted in Figure 4. Please be advised that the estimate for 2020 is 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 ~33% yearling and adult females, ~49% fawns, ~11% yearling and adult males, and 6% undetermined based on observations during the survey. The data indicates a recruitment rate of ~1.5 fawns per adult doe, significantly greater than the 0.8 fawns per doe observed in 2017 and comparable with the 2019 observations of 1.4 fawns per doe.

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, Goodson Rd area, Holleyhead Drive, and 4 Winds Farm, areas that would be considered to have limited traditional deer habitat. The number of deer observed in the Centeroyal/Fairoyal area has increased dramatically from the 2016 survey.

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.

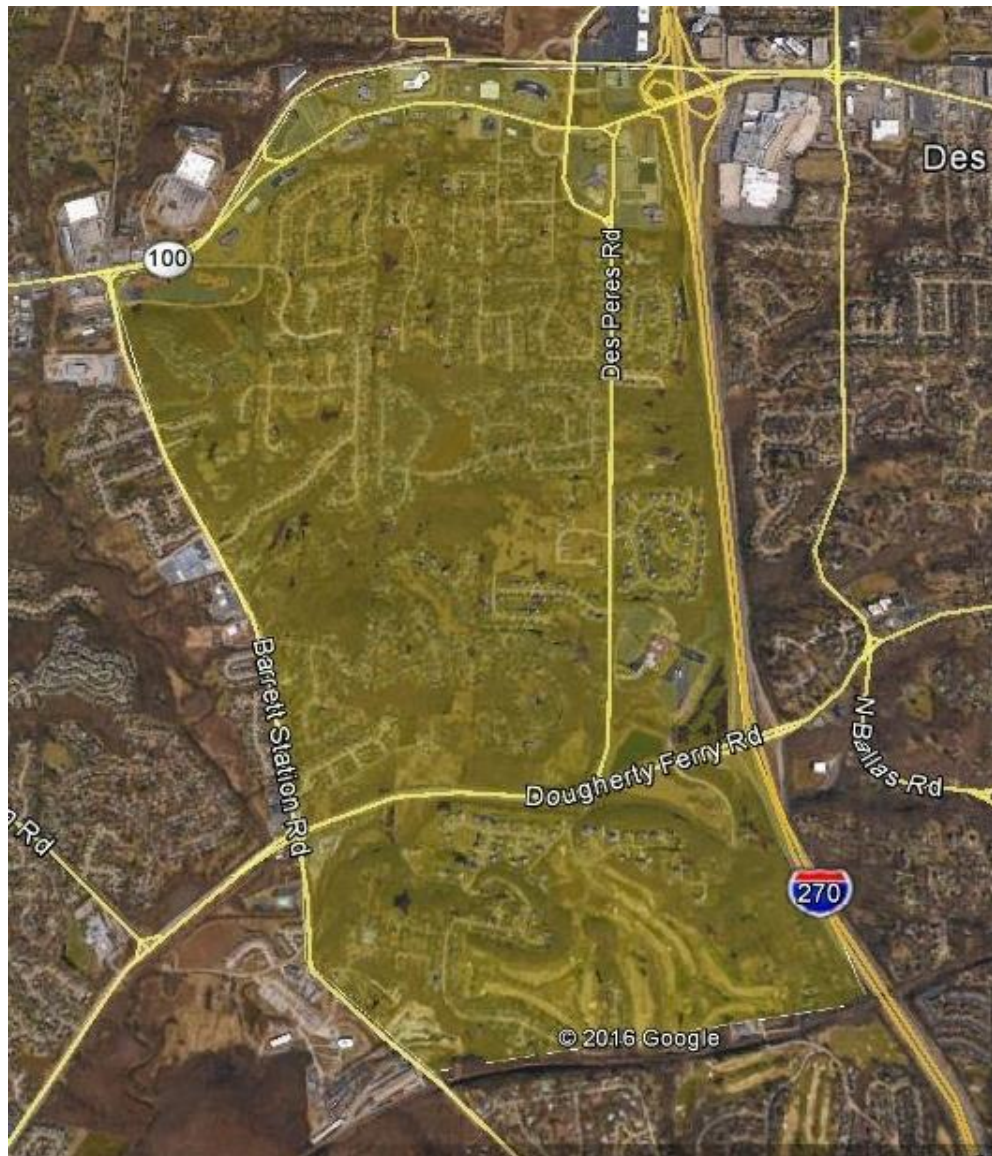


Figure 3. Deer Observation Distribution 24 January 2020 Des Peres, MO.

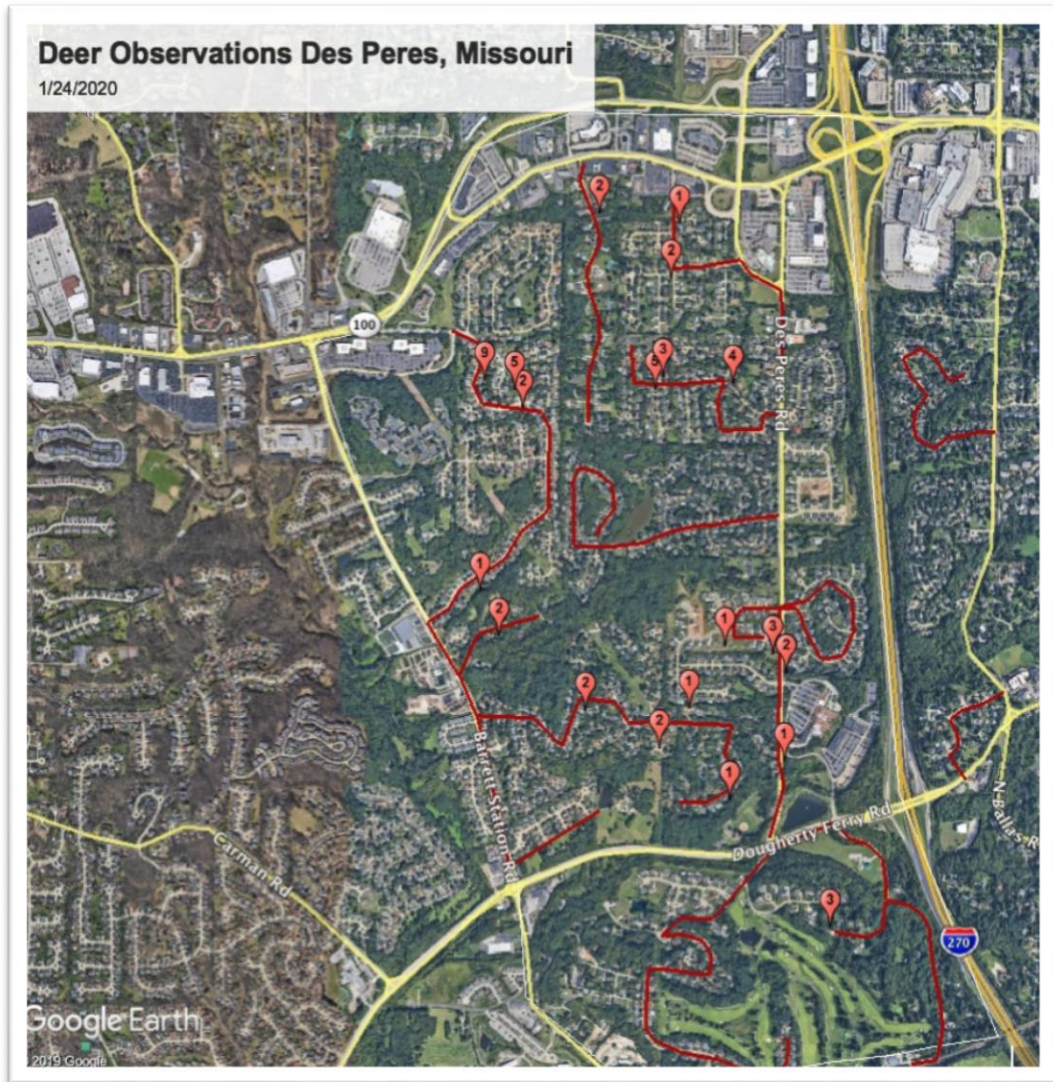
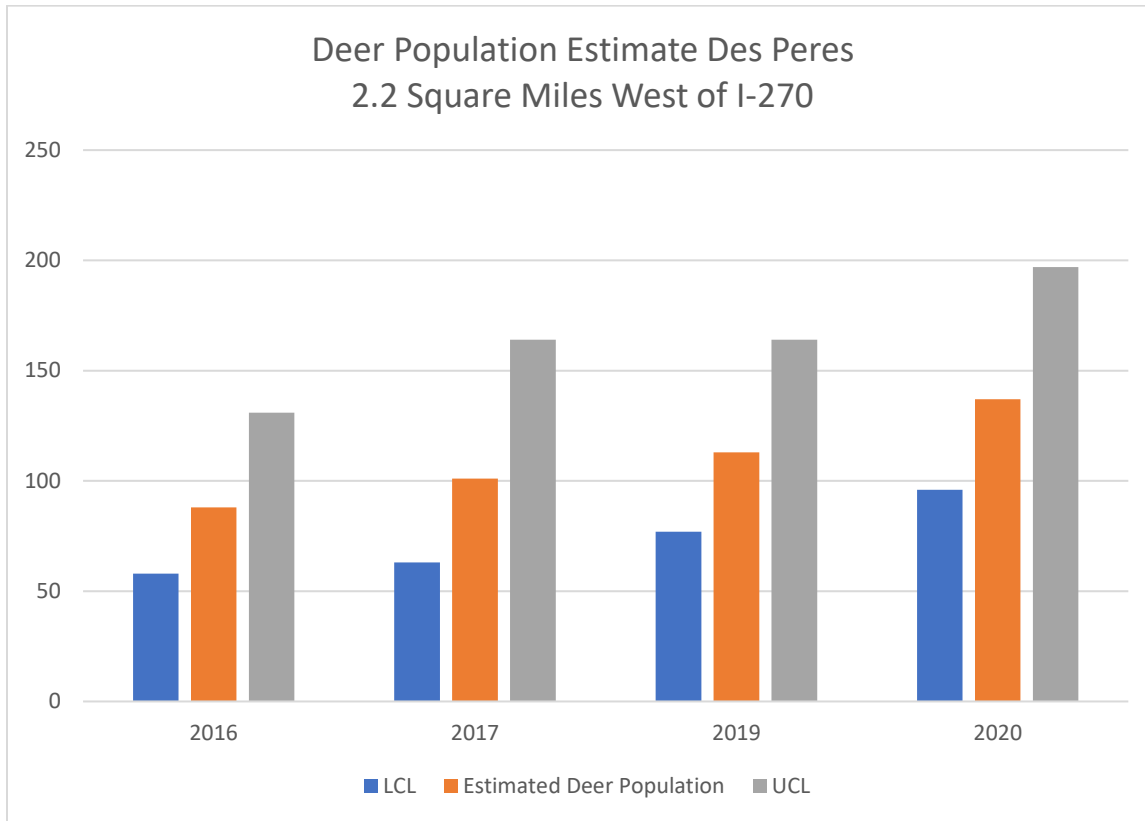


Figure 4. Deer Population Estimates in Des Peres, MO



Appendix A. Deer Observation Forms

Project: Des Peres

Date: 1/24/19

Time conducted: 22:00

Transect Length: 9.1

# of deer/group	A-Female/Fawn/YM/A-Male	Perpendicular distance (yd)	Location
3	2 AM/1 F	52	4 Shari
1	1F	25	Des Peres/Hunter Creek
2	1AF/1F	17	Des Peres/Westledge
3	1AF/2F	79	Des Peres/Westledge
1	1YM	68	Brighton Heights/Westledge
4	2AF/2F	5	White Rock/4 Winds Farm
5	2AF/3F	24	4 Winds Farm/Plymouth Rock
3	1AF/2F	5	4 Winds Farm/Plymouth Rock
2	1AF/1F	28	Sarala/Grandview
1	UNK	21	Des Peres Woods Dr/Sarala
2	1AF/1F	22	22 Topping
9	3AF/6F	38	2232 Centeroyal
5	2AM/3YM	44	Centeroyal/Viewroyal
2	1AF/1F	2	13234 Centeroyal
1	UNK	32	2430 Centeroyal
2	1AF/1F	5	3 Barrett Woods
2	2F	5	13028 HunterCreek Rd
2	1AF/1F	106	WindingTrail/Huntercreek
1	1AM	69	12915 Hunter Ridge
1	UNK	30	12892 White Horse

Project: Des Peres

Date: 1/25/20 A

Time conducted: 22:00

Transect Length: 9.0

# of deer/group	A-Female/Fawn/YM/A-Male	Perpendicular distance (yd)	Location
4	2AF/2F	28	5 Shari
4	1AF/2F/1AM	42	12846 Willow Pond Ct
3	2AF/1F	20	12846 Willow Pond Ct
2	2 UNK	63	Ashdown Forest Ct
2	1AF/1F	61	12843 Beaver Dam
3	1AF/2F	93	12974 Beaver Dam
6	2AF/4F	52	2315 Holley Head
3	1AF/2F	51	67 Minara
2	2AM	57	8 Grandview
1	1AF	63	13258 Centeroyal
2	1AF/1F	51	13219 Centeroyal
2	1AF/1F	50	2291 Fairoyal
1	1F	37	2291 Fairoyal
3	1AF/2F	5	2317 Fairoyal
3	1AF/2F	20	12958 Hickory Ridge
5	1AF/4F	53	Hickory Ridge/Winding Trail

Project: Des Peres

Date: 1/25/20 B

Time conducted: 00:30

Transect Length: 9.0

# of deer/group	A-Female/Fawn/YM/A-Male	Perpendicular distance (yd)	Location
4	2AF/2F	31	5 Shari
1	1F	38	Des Peres/Goodson
2	1AF/1F	50	12828 Beaver Dam
4	2AF/2F	3	12828 Beaver Dam
1	1AM	45	12843 Beaver Dam
4	2AF/2F	21	12816 Bourbon Red
1	1F	54	828 Bourbon Red
3	1AF/2F	38	844 4 Winds Farm
2	1AF/1F	48	Grandview/Oge
3	1AF/2F	2	9 Grandview
1	1AM	51	1070 Salara
1	UNK	45	2203 Centeroyal
1	1AM	5	2223 Centeroyal
5	2AF/3F	7	Centeroyal/Viewroyal
3	3AM	89	Centeroyal/Viewroyal
2	2AM	47	13231 Centeroyal
4	2AF/2F	3	13231 Centeroyal
4	2AF/2F	42	13231 Centeroyal
3	3 UNK	141	Kenroyal/Fairoyal

Project: Des Peres

Date: 1/26/20 A

Time conducted: 22:00

Transect Length: 9.0

# of deer/group	A-Female/Fawn/YM/A-Male	Perpendicular distance (yd)	Location
1	1F	47	5 Shari
1	1YM	33	12861 Goodson
5	2AF/3F	42	Holley Head Dr/Ct
5	2AF/3F	55	12825 Bourbon Red
1	1AM	50	844 4 Winds Farm
1	1F	23	861 Minarca
2	1AF/1F	102	Grandview/Salara
2	2AF	88	20 Topping
2	1AF/1F	11	26 Topping
2	2YM	70	40 Topping
2	2UNK	54	13231 Centeroyal
1	1AF	69	2269 Fairoyal
1	1F	43	2291 Fairoyal
4	1AF/3F	50	12915 Hunter Creek Ridge

Project: Des Peres

Date: 1/26/20 B

Time conducted: 00:30

Transect Length: 9.0

# of deer/group	A-Female/Fawn/YM/A-Male	Perpendicular distance (yd)	Location
2	1AF/1F	10	10 Shari
4	2AF/2F	23	4 Shari
5	2AF/3F	50	5 Shari
1	1AM	52	Wickerton/Greenbriar
1	1YM	10	Westledge/Des Peres
3	1AM/1AF/1F	24	Goodson/Des Peres
2	1AF/1F	42	Holleyhead Dr/Ct
1	1F	28	2338 Camberwell
2	1AF/1F	57	2338 Camberwell
2	1AF/1F	58	2375 Camberwell
3	1AF/2F	53	2377 Camberwell
4	2AF/2F	38	12871 4 Winds Farm
1	1F	16	4 Winds Farm/Minarca
4	2AF/2F	58	861 Minarca
1	1AF	48	Salara/Woods Valley
2	1AF/1F	28	22 Topping
1	1AF	20	44 Topping
1	1F	15	13274 Centeroyal
1	1F	67	Hickory Ridge Ct/Ln
1	1UNK	51	12915 Hunter Creek Rd