Aerial Ungulate Distance Survey (2015) for

Moose and White-tailed Deer in WMU 503 (Lac La Biche)

February 2-9, 2015

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EXECUTIVE SUMMARY

On February 2nd - 9th, 2015, Alberta Environment and Parks (AEP) and the Alberta Environmental Monitoring, Evaluation and Reporting Agency (AEMERA) staff jointly surveyed the moose (*Alces alces*) and white-tailed deer (*Odocoileus virginianus*) population in Wildlife Management Unit (WMU) 503 (Lac La Biche) using distance sampling methods. One-hundred and sixty-five out of 254 available survey transects were flown. A total of 40 hours of rotary flight time was used with 1469 km out of a total of 2459 km of available transect flown. Three hundred and seventy six moose were observed in 231 independent groups including 55 bulls, 192 cows, 106 calves and 23 unclassified individuals representing a bull:cow:calf ratio of 29:100:55. The estimated moose density is 0.30 moose/km^2 (CV 0.098, 90% CI 0.25-0.35) with an estimated total population size of 946 moose (CV 0.098, 90% CI 805-1111). WMU 503 is primarily comprised of boreal mixed wood, agricultural fringe, and Lakeland habitat types. Moose density in WMU 503 is lower than surrounding WMU's to the south and west and higher than those WMU's to the north and east. A total of 1,669 white-tailed deer were observed in 355 independent groups The estimated white-tailed deer density for WMU 503 was 1.62 white-tailed deer/km^2 (CV 0.11, 90% CI 1.3-2.0) with an estimated total population size of 5220 white-tailed deer (CV 0.11, 90% CI 4337-6283). White-tailed deer densities in adjacent WMU's range from 1 to 1.9 white-tailed deer/km^2. The moose population trends are increasing while the white-tailed deer population is stable. These results contributed valuable data that supported the decision to increase the population goals for both moose and white-tailed deer in WMU 503 in 2015. It is recommended that this data set be further analyzed using a density surface modelling distance sampling design.

Key words: Alberta, aerial survey, moose, distance, deer, WMU 503, density estimates, age/sex ratios

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DISTRIBUTION

Copies of this report have been sent to the Resource Management staff of the Lower Athabasca region, to the Joint Oilsands Monitoring Program, and to the Provincial Big Game Specialist in Edmonton headquarters.

ACKNOWLEDGEMENTS

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INTRODUCTION

White-tailed deer (*Odocioleus virginianus*) and moose (*Alces alces*) occur in significant abundance in the farmland fringe and boreal mixedwood habitat types found in the Lac La Biche region and are an important source of food to the resident, non-resident, and aboriginal hunting communities. They are also an important prey species in boreal ecosystems for wolf (*Canis lupus*), black bear (*Ursus americanus*), coyote (*Canis latrans*), and other medium to large-sized predators. Wildlife surveys are conducted on a 5-year rotation within wildlife management units (WMUs) in northeast Alberta. These surveys are specifically designed to gather population data on the density, distribution, and classification of white-tailed deer and moose, which are the primary big-game species of interest in the area. General information on ungulate habitat use, the distribution and abundance of predator populations, and the occurrence of species-at-risk such as woodland caribou (*Rangifer tarandus*) or less-encountered ungulate species such as elk (*Cervus canadensis*) or mule deer (*Odocoileus hemionus*), are also gathered during the surveys. These data are used for wildlife management purposes which include the calculation of allowable hunter harvest and license allocation, monitoring population trends, and tracking habitat change across the landscape. Conducting wildlife surveys provide biologists with a reliable means of obtaining data and delivering information to stakeholders including hunters, trappers, outfitters, and landowners.

The purpose of this report is to present the results of the 2015 ungulate survey of WMU 503. Specifically, this survey was designed to obtain population statistics on local white-tailed deer and moose populations. The current status of white-tailed deer and other wildlife species in this area will be discussed, and compared to previous surveys in WMU 503, and to the results from adjacent management units. The last white-tailed deer survey flown in WMU 503 occurred in 2008 and reported a density of 1.86 white-tailed deer/km^2 (CV: 21.8%). White-tailed deer densities in adjacent WMU's range from 1 to 1.9 white-tailed deer/km^2. The February 2015 survey was the first comprehensive moose survey conducted in WMU 503 since 1995. Adjacent WMU's support moose densities ranging from 0.14 to 0.5 moose/km^2.

METHODS

- *Study area*

The community of Lac La Biche is located in the centre of the 3220 km^2 unit which occupies a transitional area between the "white" and "green" zone (Figure 1). Consequently the WMU contains a wide variety of habitat types. The area south of Lac La Biche is typically comprised of agricultural land cover types (white zone) while the areas to the north consists of boreal forest (green zone) where oil and gas development along with forest harvesting and recreational activities occur. There are several large lakes located in the WMU including Lac La Biche and

Beaver Lake. The Wandering River Caribou range also extends into the northwestern corner of the unit. This WMU is primarily managed for white-tailed deer and moose, but mule deer, black bear, cougar and wolf are also hunted.

- *Survey Methods.*

This survey was conducted using distance sampling methods (Buckland et al. 2001). Transects were generated using a Government of Alberta created transect generator tool in ArcMap 10.1. Transects were generated to cover the entire WMU, ran east-west, were no longer than 10 km and no shorter than 2km and spaced 1.2km apart from one another.

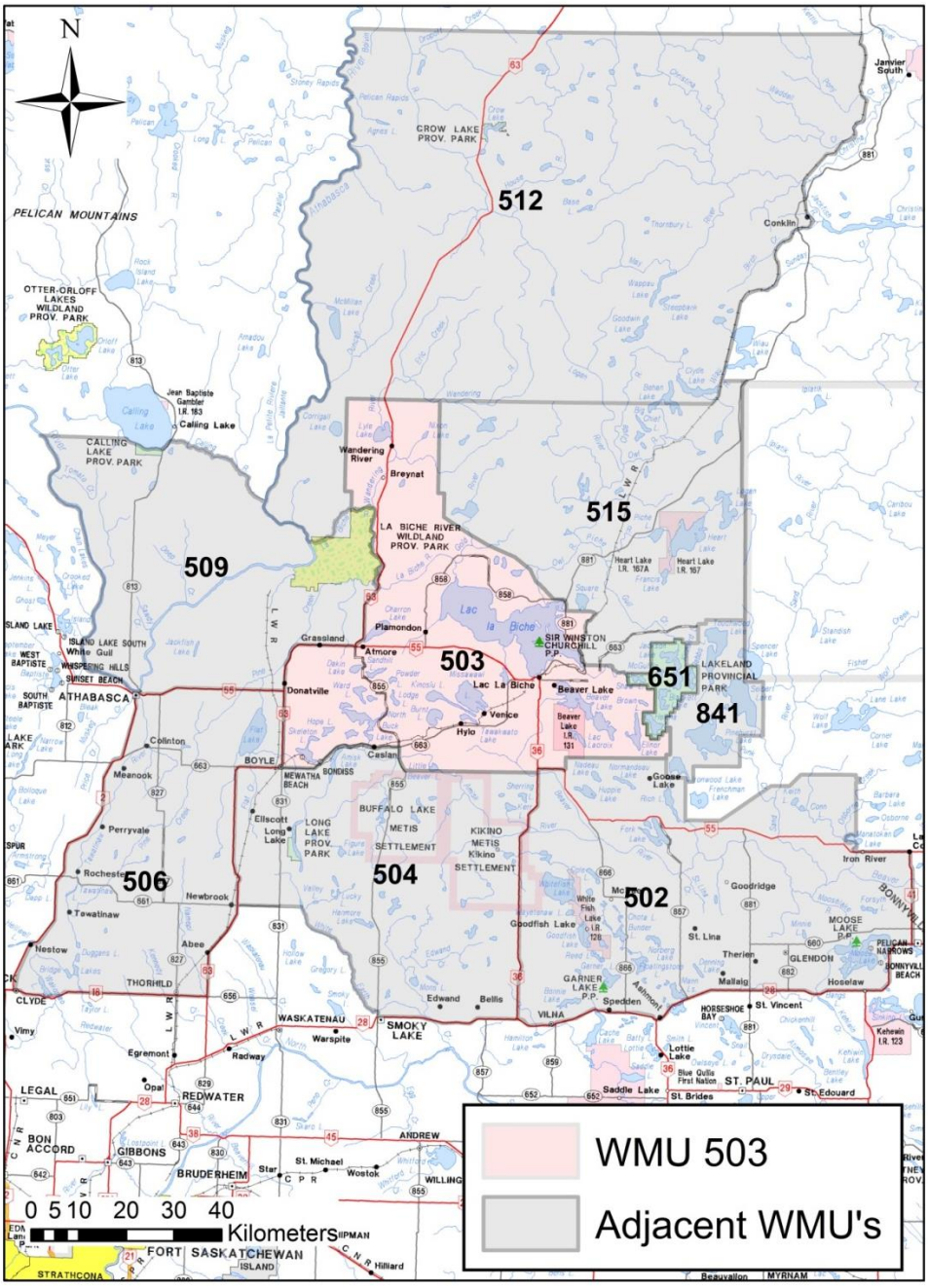

Figure 1. Location of Wildlife Management Unit 503 and surrounding Wildlife Management Units.

Transects were flown using Bell 206 Jetranger helicopters with survey crews of three, plus the pilot. The survey crew consisted of Grant Chapman Lead and Navigator, Justin Gilligan, Co-lead/Navigator, Delaney Anderson, and Hanna Neufeld. The east-west transects were flown at approximately 300 ft above ground level (AGL) and at a speed of 80 knots. Prior to beginning the survey, weather conditions were recorded including temperature, wind, cloud cover and

precipitation along with the survey crew and their position in the aircraft. During the survey, the front left observer restricted observations to 50 m on either side of the transect centre-line while the back left and right observers were responsible for all areas outside the 0-50 m distance on their respective sides of the aircraft. In this survey the pilots were also observing and reporting sightings which were also used in determining the detection function.

When an animal was detected a waypoint was taken and the transect was continued to be flown until the aircraft was perpendicular to the animal or cluster of animals. Once perpendicular to the animal the aircraft left the transect line and collected another waypoint at the location where the animal was first observed. The animal was then classified by sex, age and antler class, if antlers were still present. All animals within 100m of the original observation were considered to be a part of the same group. Covariate data recorded for each observation included crown closure (0-30%, 31-70%, 71-100%), activity (standing, bedded, moving), direction flown, and estimates of snow cover, light intensity and terrain.

- *Analysis methods*

Data for this survey were analyzed using Distance 6.0 Release 2 (Thomas et al. 2010). Preliminary analyses included an examination of histograms displaying observations by distance and data were truncated or binned to improve model fit (Buckland et al. 2001). Candidate models were then fit to the data and overall model fit was determined using various goodness-of-fit tests and Akaike's Information Criterion (AIC) (Buckland et al. 2001). Models were also fit using the recorded covariates.

RESULTS

One-hundred and sixty-five out of 254 planned transects were surveyed from February 2nd-9th, 2015 (Figure 2). A total of 1469 km of transect distance was surveyed out of a total of 2459 km of available transect, using 39.7 billable flying hours for a total cost of $51,694.24.

- *Moose*

During the survey, 376 moose were observed in 231 independent groups (Figure 3). The 376 moose observed included 55 bulls, 192 cows, 106 calves and 23 unclassified individuals representing a bull:cow:calf ratio of 29:100:55. Of the 55 bulls, 37 had no antlers, 9 were small antlered, 8 were medium, and 1 was large which indicates that 67% of the bulls had shed their antlers by this time. The estimated moose density was 0.30 moose/km^2 (CV 0.098, 90% CI 0.25-0.35) with an estimated total population size of 946 moose in the unit (CV 0.098, 90% CI 805-1111).

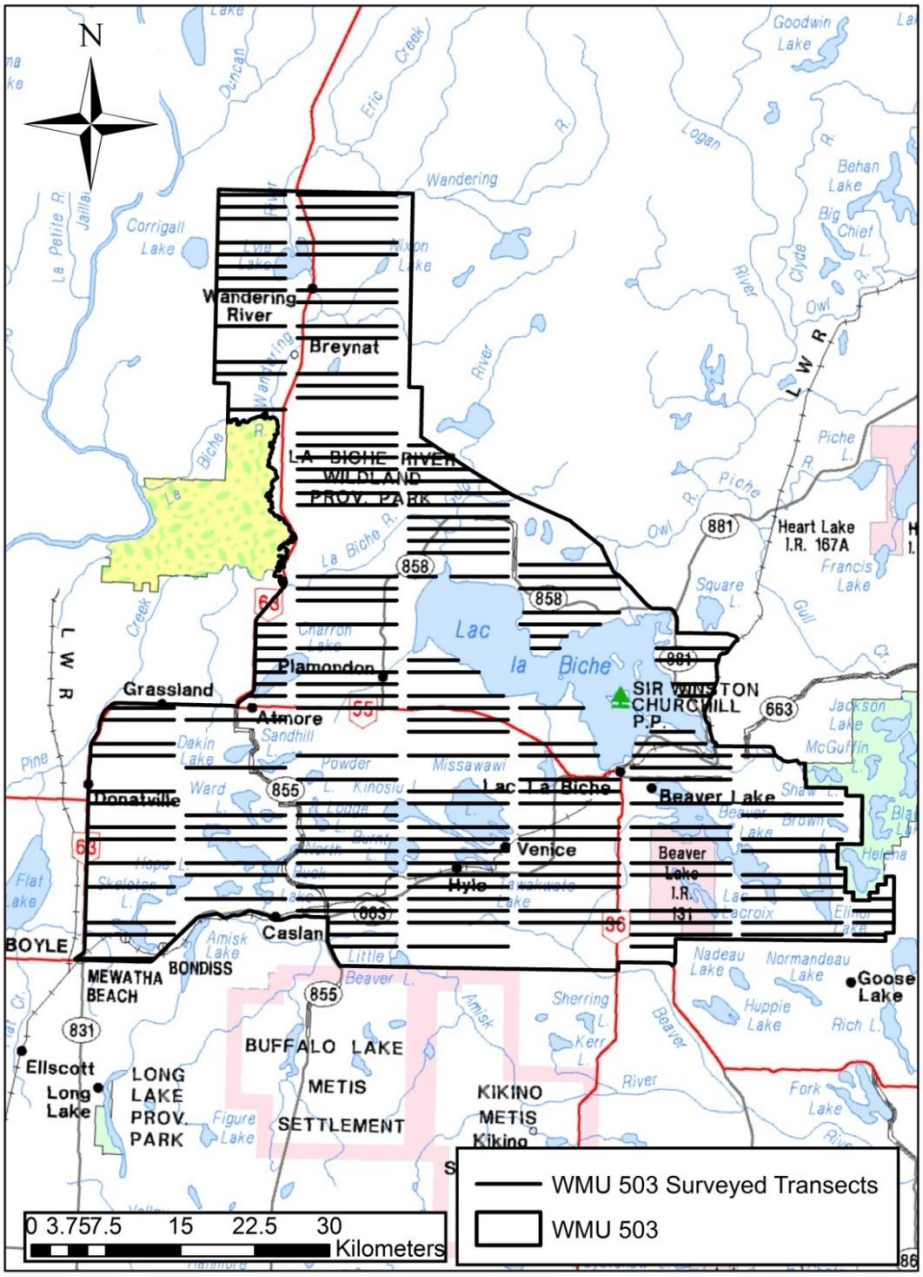

Figure 2. One-hundred and sixty-five transects out of Two-hundred and fifty-four transects flown in WMU 503 from February 2-9th, 2015.

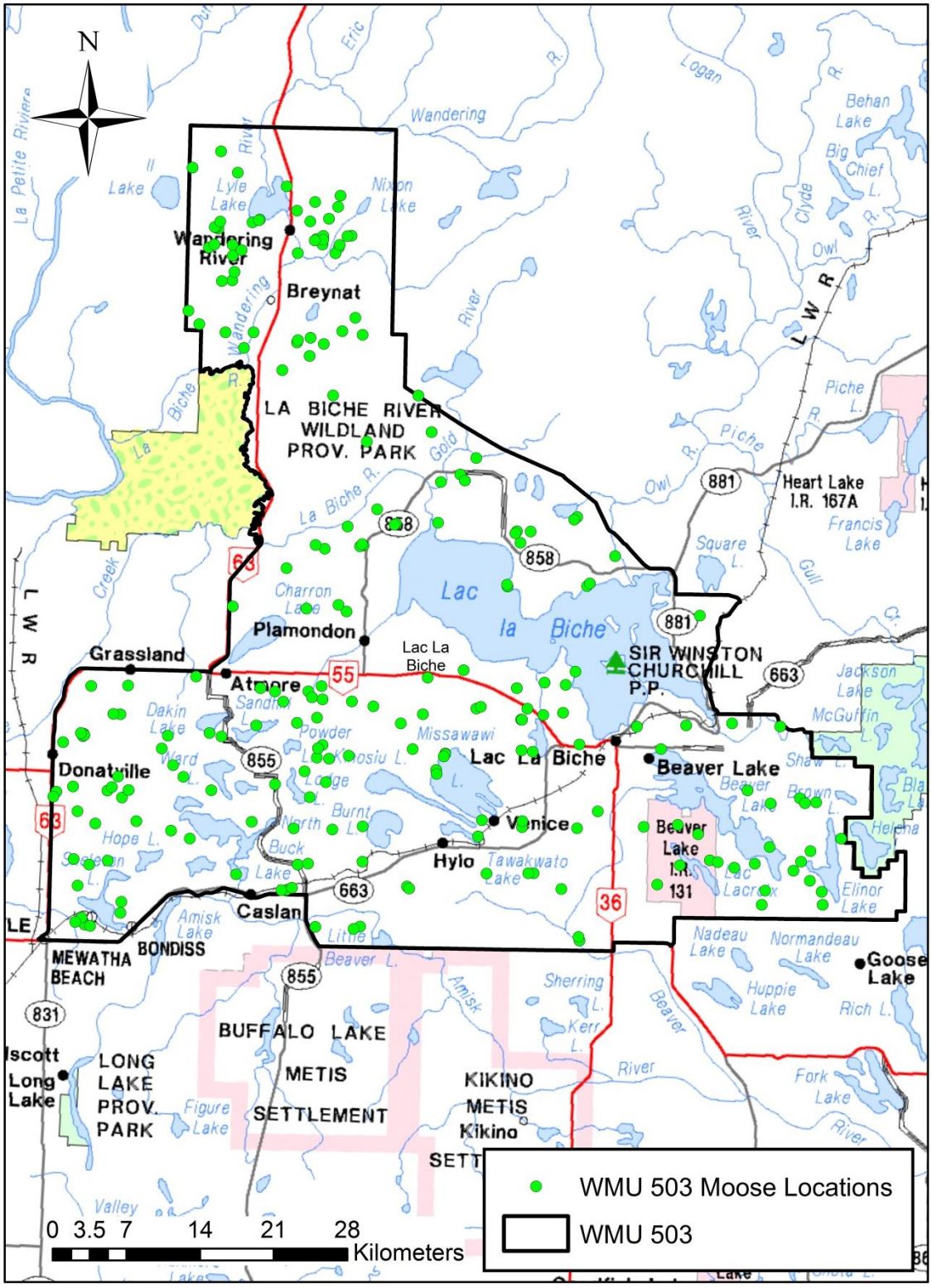

Figure 3. Moose observations in WMU 503 from the February 2015 aerial survey.

A total of 15 models were fit to the moose data in program Distance including models with covariates. Model fit was assessed using q-q plots, histograms showing the probability of detecting moose as distance increases and by AIC values. Six candidate models were selected using the above criteria and are displayed in (Table 1). The density estimates were similar for all of the models however the hazard-rate + cosine model with a 1000m right truncation was selected as it fit the data best according to the q-q plot, histogram and the other goodness-of-fit tests.

The variability in the density estimate for the selected model was 22.9% detection probability, 68.5% encounter rate and 8.6% cluster size. Therefore the majority of variability in the density estimate was due to variability in moose encounter rates during the survey. The encounter rate across all transects was 0.16 moose per km^2 of transect (CV 0.08, 90% CI 0.14-0.18).

Table 1. Parameter estimates for the six candidate models. Upper and lower confidence limits are based on a 90% confidence interval. Density units are moose/km^2. Model names are constructed with the detection function model keys (HN = half-normal, Haz= Hazard-rate) and adjustment terms (Cos = cosine). The selected model is bold and shaded.

Model	N	D	CV	DLCL	DUCL	NLCL	NUCL
Haz(Cos)1000m Truncation	**946**	**0.30**	**0.098**	**0.25**	**0.35**	**805**	**1111**
HN(Cos) with direction flown as a covariate	1067	0.33	0.10	0.28	0.39	901	1263
Haz(Cos)900m Truncation	948	0.30	0.098	0.25	0.35	806	1116
Haz(Cos)	953	0.30	0.10	0.25	0.35	806	1125
HN(Cos)	1053	0.33	0.096	0.28	0.38	898	1235
HN(Cos) with canopy closure as covariate	1035	0.32	0.10	0.27	0.38	873	1227

- *White-tailed deer*

During the survey, 1,669 white-tailed deer were observed in 355 independent groups (Table 2, Figure 4). Due to the timing of the survey many white-tailed deer had experienced antler drop and as a result accurate sex ratios were not obtained. The observed population structure is reported in Table 2. Although this survey was not able to report an accurate age and sex ratio, an age and sex survey was conducted in December 2013 in WMU 503 (Gilligan, Chapman and Castle 2014) and reported a buck:doe:fawn ratio of 31:100:53. The estimated white-tailed deer density for WMU 503 was 1.62 white-tailed deer/km^2 (CV 0.11, 90% CI 1.3-2.0) with an estimated total population size of 5220 white-tailed deer (CV 0.11, 90% CI 4337-6283). Adjacent WMU white-tailed deer densities range from 1 to 1.9 white-tailed deer/km^2 (Table 8).

Table 2. White-tailed deer age and sex classification from 2015 WMU 503 Survey

Bucks	Does	Fawns	Unclassified Adults	Unclassified Deer
68	80	275	452	794

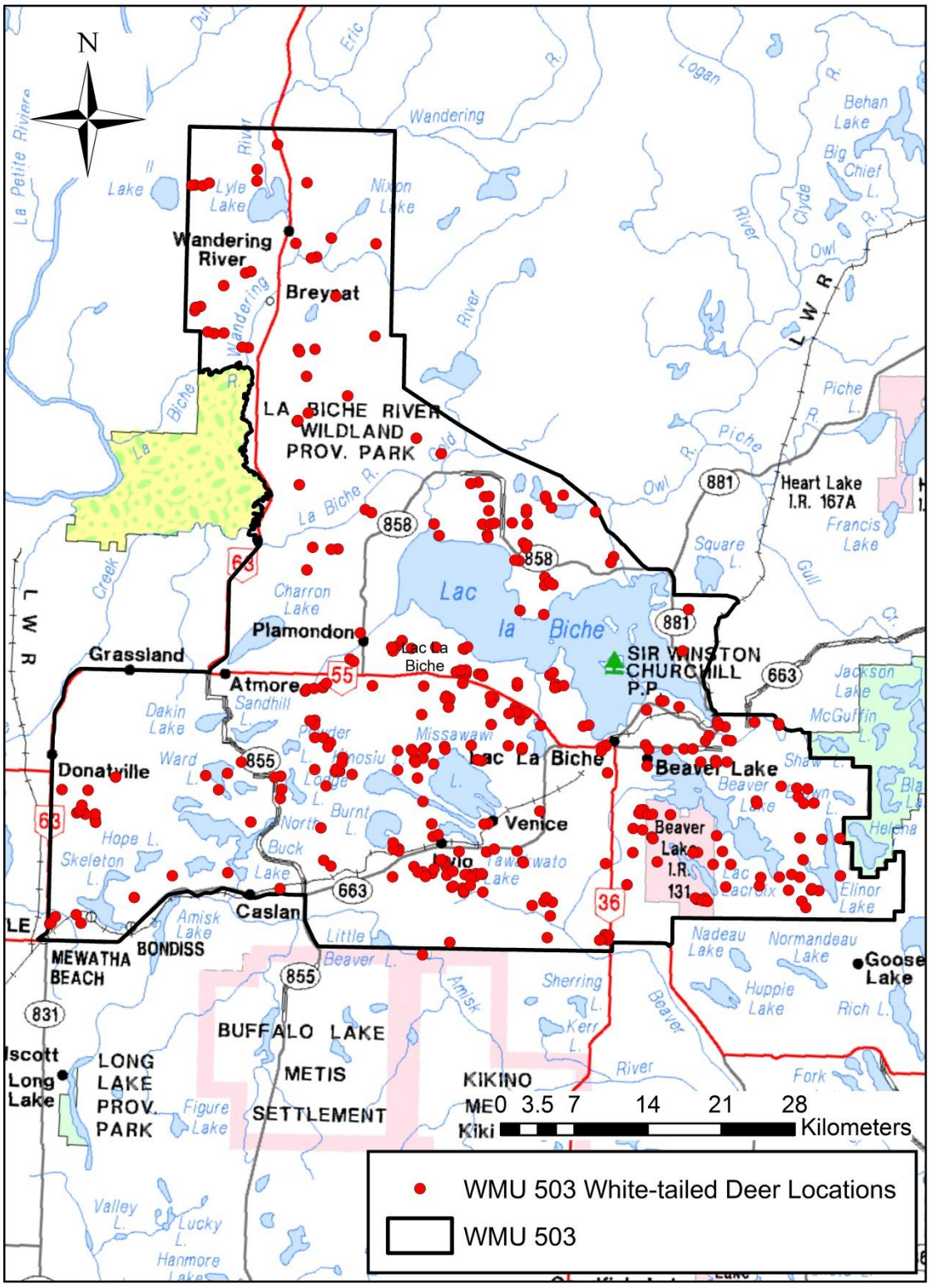

Figure 4. White-tailed deer observations in WMU 503 from the February 2015 aerial survey.

A total of 19 models were fit to the white-tailed deer data in program Distance including models with covariates. Model fit was assessed using q-q plots, histograms showing the probability of detecting deer as distance increases and by AIC values. Five candidate models were selected using the above criteria and are displayed in (Table 3). The density estimates were similar for all of the models however the hazard-rate + cosine model with no truncation was selected as it fit the data best according to the q-q plot, histogram and the other goodness of fit tests.

The variability in the density estimate for the selected model was 16.9% detection probability, 65.8% encounter rate and 17.3% cluster size. Therefore the majority of variability in the density estimate was due to variability in deer encounter rates during the survey. The encounter rate across all transects was 0.24 (CV 0.09, 90% CI 0.21-0.28).

Table 3 Parameter estimates for the five candidate models. Upper and lower confidence limits are based on a 90% confidence interval. Density units are deer/km^2. Model names are constructed with the detection function model keys (HN = half-normal, Haz= Hazard-rate) and adjustment terms (Cos = cosine). The selected model is bold and shaded.

Model	N	D	CV	DLCL	DUCL	NLCL	NUCL
Haz (Cos)	**5220**	**1.62**	**0.11**	**1.34**	**2.00**	**4337**	**6283**
HN(Cos) 650m Truncation	5539	1.70	0.11	1.44	2.10	4631	6626
Haz(Cos)700m Truncation	5238	1.60	0.11	1.35	2.00	4356	6299
HN(Cos)700m Truncation	5478	1.70	0.11	1.42	2.03	4585	6545
HN(Cos)850m Truncation	5383	1.67	0.12	1.37	2.04	4417	6559

- *Elk and Mule Deer*

Survey-based elk and mule deer estimates have never been derived for this unit and given small sample sizes could not be determined in this survey. A total of 21 mule deer were seen in 4 groups and no elk were observed during the survey however a ground visual count of a known elk herd was obtained from a local rancher (Garnett Ailsby) who had trail camera and visual observations of a herd of 12 elk. The elk herd was last observed during the same week this survey was flown and primarily resides SW of Plomondon, AB on the south side of highway 55 and ranges south as far as highway 663. This elk herd has been resident to that area for the last 4 years with accounts of up to 14 animals in a single sighting and for which no complaints of agricultural damage have been reported.

Supplemental snowfall and temperature data from 2008 to current is provided below for the Edmonton and Fort McMurray Environment Canada weather stations (Figures 5 and 6). The winter of 2014-15 was milder and had less snowfall than previous recent years.

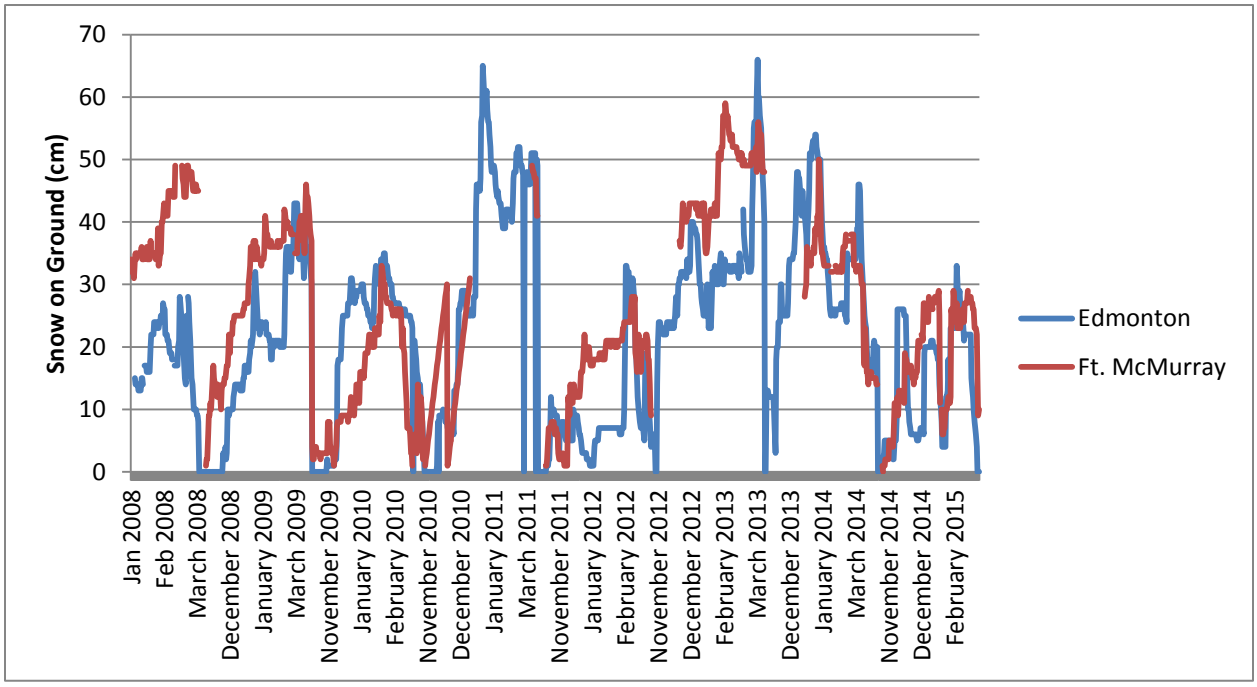

Figure 5. Snowfall data for Northeastern Alberta 2008-Present (Environment Canada 2015)

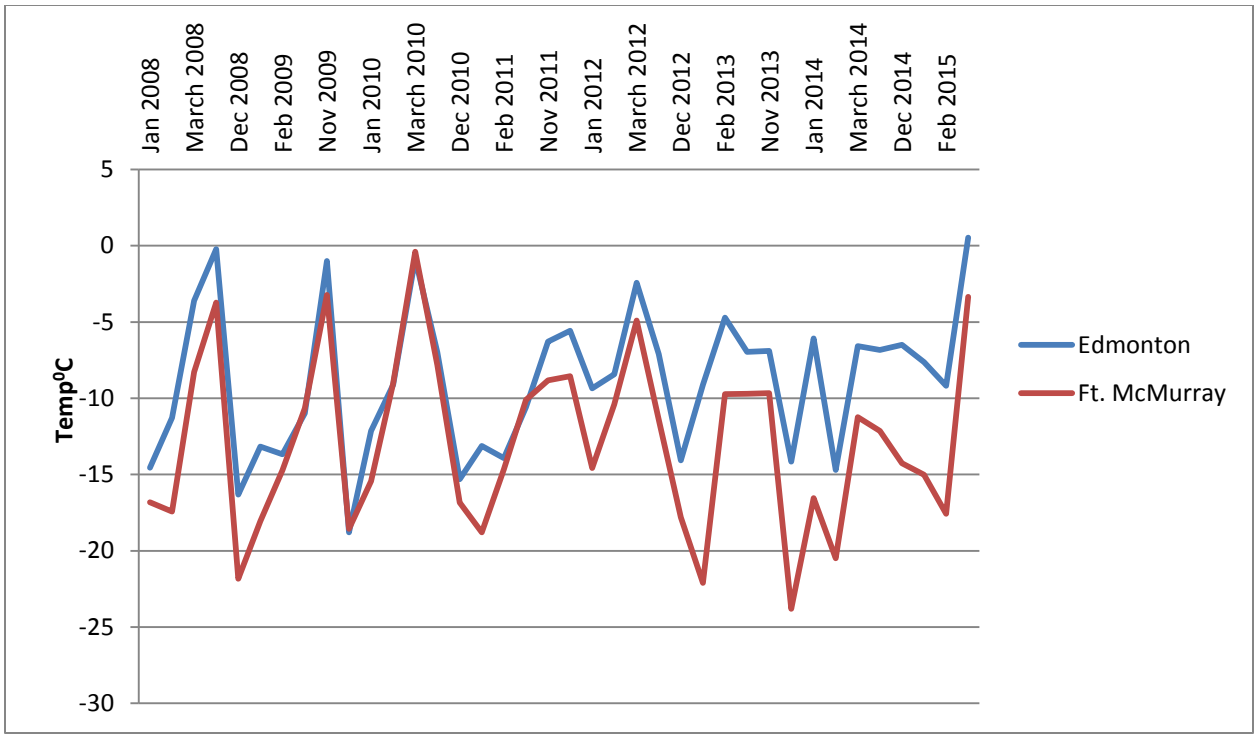

Figure 6. Temperature data for Northeastern Alberta 2008-Present (Environment Canada 2015)

DISCUSSION

This survey provides an accurate estimate of both white-tailed deer and moose and was intensively flown in order to reduce the coefficient of variation (CV) and increase confidence in the population estimates. A Forward Looking Infrared (FLIR) Survey was also flown Feb 25th - March 8th 2015 in the WMU to facilitate comparison and improve our understanding of the detection function, specifically the assumption of seeing 100% of the animals from 0-50m. Unfortunately, the final results of the infrared survey are unavailable however preliminary results show the FLIR technology to be inadequate for accurately surveying moose and deer populations in Northeastern Alberta.

The current moose trend in WMU 503 (0.3 moose/km^2) is increasing and is currently in the mid-range of observed densities of moose compared to adjacent WMU's which range 0.05-0.5moose/km^2 (Table 4 and 5). The moose population goal up until 2014 was 400 animals and was amended in the spring of 2015 due to an improved understanding of moose density and demand for moose hunting opportunity, with no complaints of moose damage by stakeholders. The new population goal was increased to 1100 animals or a density of 0.35 moose/km^2. In 2015, the wildlife regulation was amended to require moose archery hunters to possess a special license and was made as a result of archers in this WMU harvesting 30% of all moose harvested by any weapon regardless of season. Antlered moose hunting success rates for WMU

503 averaged 31% from 2010-2014 and is consistent with adjacent WMU's which range 10%-52% success (Table 6).

Table 4. Historical moose population data from WMU 503

Survey Date	Moose Density (moose/km^2)	Population Estimate	CV (%)	Sex Ratio (Bulls:Cows:Calves)
1995	0.16	389	-	44:100:70
2003	-	-	-	59:100:68
2015	0.3	946	9.8	29:100:55

Table 5. Moose density in WMU 503 and surrounding WMU's

WMU	Date Last Surveyed	Moose Density (moose/km^2)	Population Estimate	2014 Population Goal	CV (%)	Sex Ratio (Bulls:Cows:Calves)
502	1999	0.10	332	400	36.6	37:100:84
503	**2015**	**0.30**	**946**	**400**	**9.8**	**29:100:55**
504	2015	0.50	1346	800	15.6	62:100:68
506	2013	0.39	861	2,000	16.0	25:100:41
509	2008	0.36	921	1,000	23.9	22:100:58
512	2013	0.30	2378	2,000	16.3	35:100:31
515	2014	0.14	375	1,000	18.6	29:100:44
726	2014	0.05				22:100:33

Table 6. Bull moose special license, harvest goals, and hunter success in adjacent WMU's 2010-2014.

												Bull Hunter Harvest Success			
WMU	PreSeason Population Goal	2014 Pre-Hunting Season Population Estimate	2015 Pre-Hunting Season Population Estimate	Bulls	Cows	Season	Archery Only	General	Harvest Goal %	2010-14 Average Hunter Success (%)	Bull Special Licenses issued in 2015	2010	2011	2012	2013
503	1100	726	1087	248	561		draw	draw	20	31%	158	30%	25%	36%	32%
504	800	1186	1419	447	626		draw	draw	15	37%	126	37%	37%	42%	31%
506	2000	713	1407	280	714		draw	draw	10	45%	43	60%	36%	44%	54%
509	1000	1002	1000	167	531		draw	draw	15	30%	78	26%	33%	28%	28%
510	2500-3500	2200	3549	744	1907		draw	draw	20	52%	275	65%	52%	51%	52%
512	2000	2689	2765	670	1465	Early	unlimited	draw	20	42%	234	40%	56%	35%	36%
512	2000	2689	2765	670	1465	Late	unlimited	draw	20	24%	136	16%	20%	37%	16%
515	1000	392	410	201	461	Early	unlimited	draw	20	30%	49	36%	38%	22%	31%
515	1000	392	410	201	461	Late	unlimited	draw	20	19%	130	9%	14%	31%	11%
516	1000	968	1028	209	502	Early	unlimited	draw	25	25%	112	20%	31%	16%	28%
516	1000	968	1028	209	502	Late	unlimited	draw	25	10%	100	2%	10%	17%	5%
517	800	258	248	86	112	Early	unlimited	draw	3	0%	5	0%			0%
517	800	258	248	86	112	Late	unlimited	draw	3	10%	5	25%		20%	0%

The white-tailed deer population estimate for WMU 503 is 5220, and is consistent with the three previous surveys which reported population estimates of 5144, 5308, and 3424 in 2008, 2003, and 1995 respectively (Table 7) and indicates that the long term population is stable. It is known that the population in this WMU is likely less than 50% of what it was during the population peak of 2006-07, which unfortunately was not a survey year. The population declined in 2006-2007 due to a severe winter. White-tailed deer benefit from the conversion of forested land to earlier successional habitat types (agriculture, cut lines, etc.) along with less severe winters, which has facilitated the expansion of white-tailed deer range by increasing access to forage and increasing overwinter survival (Dawe, et al. 2014). It was also noted during the survey that higher densities of deer were observed around agriculturally modified habitat types.

The previous population goal of 3424 was low relative to the long term habitat carrying capacity and was established by using the population estimate from 1995 survey as the goal and is much lower than the current stakeholder supported population. During the last 4 years resident hunters and outfitters have expressed concerns with the lower numbers of deer, reduced antler size and age structure, and there have been almost no deer related wildlife complaints by landowners. In 2014, the wildlife regulation was amended for the supplemental antlerless white-tailed deer licenses so that they were no longer valid in many WMU's including WMU 503. The amendment will remain in effect for the 2015 hunting season. It is planned that in 2016 at least 1 supplemental license will be made valid assuming a severe winter doesn't occur in 2015-16. To reflect the above trends and stakeholder input, in spring 2015, the WMU goal was amended to a winter population 1.15 times the current winter population of 5220, and results in an amended wintering goal of 6003 deer. This is in alignment with the long term average of 1.3 deer/km^2 in the adjacent WMU's over the last 22 deer surveys conducted in the region since 1994 (Table 8).

Table 7. Historical white-tailed deer population data for WMU 503

Survey Date	**White-tailed deer density/km^2**	**Population Estimate**	**CV or 95%CI)**	**Sex Ratio (Bucks:Does:Fawns)**
1995	1.4	3424		-
2003	1.64	5144	23.8 CI (Gasoway survey)	-
2008	1.86	5370	21.8 CI (Gasoway survey)	7:100:39
2015	1.62	5220	11 CV DS=11*1.65=18.2CI	31:100:53 (2013)

Table 8. Historical white tailed deer population parameters for WMU's in Alberta's Northeast region.

YEAR	WMU	SPECIES	DATE	SURVEY TYPE	Population Estimate	Density (Deer/km^2)	Confidece Interval +/- (%)	Buck	Doe	Juvenile.
1994	504	WTDE	2/1/1995	CLASSIFIED	1205	N/A	N/A	N/A	N/A	N/A
1995	502	WTDE	12/15/1995	CLASSIFIED	5039	1.63		33	100	76
1995	503	WTDE	2/22/1996	CLASSIFIED	3424	1.4	N/A	N/A	N/A	N/A
1997	651	WTDE		Line (50% cvrg)	50	N/A	N/A	N/A	N/A	N/A
1997	841	WTDE		Line (50% cvrg)	250	N/A	N/A	N/A	N/A	N/A
1998	515	WTDE	1/21/1999	Rand block	1093	0.41	N/A	N/A	N/A	N/A
1999	502	WTDE	19-Jan-00	Random Block	5560	1.63	18%	34	100	55
2000	504	WTDE	Dec-00	Random Block	2600	-	16%	20	100	51
2003	503	WTDE	Feb.-03	Random Block	5144	1.64	24%	-	-	-
2008	502	WTDE	Jan.-08	Random Block	6134	1.79	32%	17	100	75
2008	503	WTDE	Jan.-08	Random Block	5370	1.86	22%	7	100	39
2012	517	WTDE	Jan.-13	Random Block	693	0.15	53%		100	38
2013	515	WTDE	14-Jan	Distance	2750	0.99	22%	N/A	N/A	N/A
2013	651	WTDE	14-Jan	Distance	113	0.64	53%	N/A	N/A	N/A
2013	841	WTDE	14-Jan	Distance	334	0.52	45%	N/A	N/A	N/A
2013	503	WTDE	Dec.-13	Age Sex Survey Only	N/A	N/A	N/A	31	100	53
2013	506	WTDE	Feb.-13	Random Block	1459	0.67	37%	7	100	108
2014	506	WTDE	Dec.-13	Age Sex Survey Only	N/A	N/A	N/A	11	100	54
2014	510	WTDE	Dec.-13	Age Sex Survey Only	N/A	N/A	N/A	30	100	59
2014	503	WTDE	Feb.-15	Distance	5220	1.62	18%	N/A	N/A	N/A
2014	504	WTDE	Jan.-15	Distance	2178	0.81	33%	17	100	65
2014	510	WTDE	Feb.-15	Distance	5860	1.33	32%	N/A	N/A	N/A

Illustrated below (Figures 7 and 8) are maps of the white-tailed deer and moose observations for the 2014 WMU 515 Distance Survey. These figures illustrate a continuous distribution of moose and deer throughout the region with densities of both species highest in agriculturally modified lands, upland deciduous habitat types, and in areas where forest harvesting has occurred.

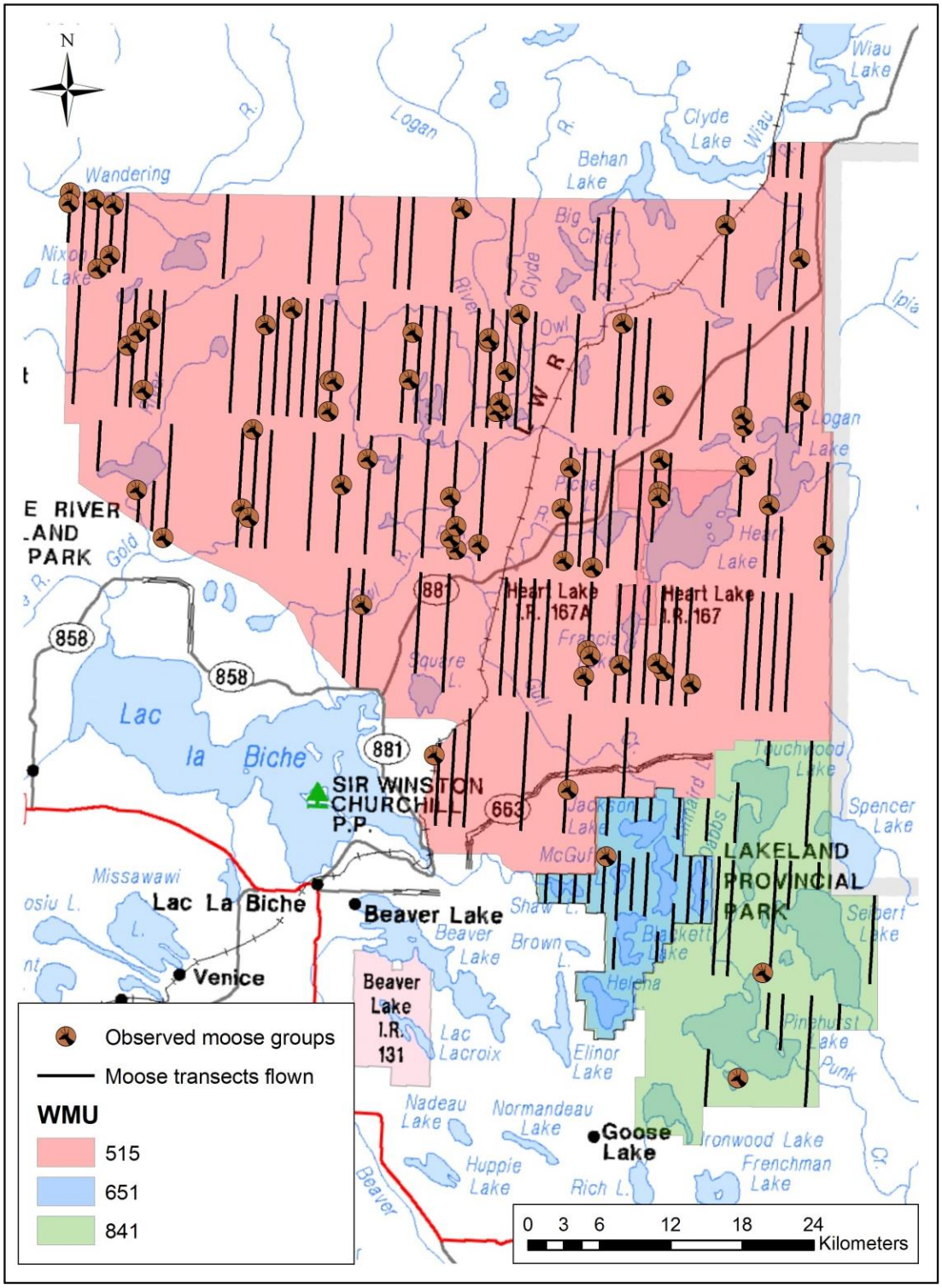

Figure 7. Map of study area, strata (WMUs), transects surveyed and moose detections.

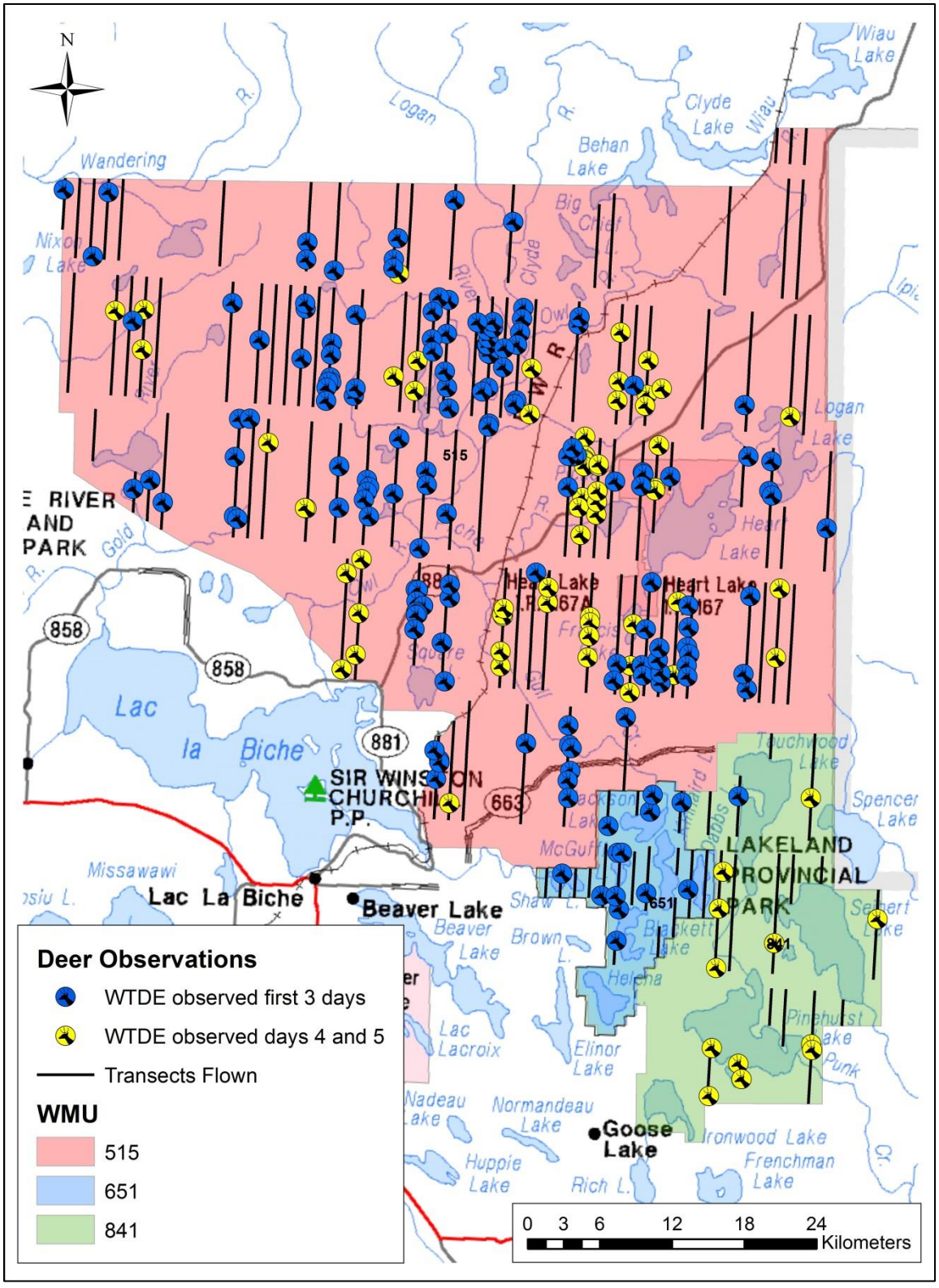

Figure 8. Map of transects surveyed and white-tailed deer detections in WMU's 515,651 and 841.

RECOMMENDATIONS

This data set is comparatively rare as it contains 355 white-tailed deer groups and distances. Resources did not permit further analysis and it is recommended that this dataset be analysed using a distance density surface model to better understand white-tailed deer spatial distribution and density across the diversity of habitat types within this WMU. Continued monitoring of both moose and white-tailed deer populations should be assessed relative to the 2015 adjusted population goals.

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APPENDICES

Basic survey data

WMU	WMU 503 Lac La Biche
Dates of survey	February 2nd to 9th, 2015
Observers	Grant Chapman, Justin Gilligan, Hanna Neufeld, Delaney Anderson
Aircraft	Bell 206 JetRanger
Pilot	Colin Reed (Star Helicopters), Jida Didc(Delta Helicopters)
Cost and time breakdown	$51,964.24 over 39.7 hrs of flight time
Design	Distance sampling design with 254 east-west transects.

Moose Distance Data

Stratum	Area Km2	Transect ID	Transect Length	DistancePerp	Group Size	Observer	Direction Flown	Cover	Activity
WMU 503	3220.515	2	6.18235						
WMU 503	3220.515	3	10						
WMU 503	3220.515	4	10	272.578	2	BL	WEST	H	S
WMU 503	3220.515	4	10	72.351	1	BR	WEST	M	B
WMU 503	3220.515	5	4.4305						
WMU 503	3220.515	6	8.32362	121.579	1	BR	EAST	M	M
WMU 503	3220.515	6	8.32362	222.068	1	BL	EAST		
WMU 503	3220.515	6	8.32362	170.62	1	BR	EAST	M	B
WMU 503	3220.515	7	6.72684	79.134	2	FL	WEST	M	B
WMU 503	3220.515	7	6.72684	96.848	1	FL	WEST	M	B
WMU 503	3220.515	7	6.72684	321.579	2	BL	WEST	M	B
WMU 503	3220.515	10	4.44577						
WMU 503	3220.515	11	8.98407	129.132	2	BR	WEST	M	B
WMU 503	3220.515	11	8.98407	389.506	1	FL	WEST	L	B
WMU	3220.51	14	10						

503	5								
WMU 503	3220.515	18	8.95416	179.79	1	BR	EAST	M	B
WMU 503	3220.515	21	10						
WMU 503	3220.515	22	10						
WMU 503	3220.515	23	10	122.884	2	BR	EAST	M	B
WMU 503	3220.515	23	10	343.885	2	BR	EAST	H	B
WMU 503	3220.515	25	8.92424	231.004	1	BR	WEST	M	B
WMU 503	3220.515	27	10	146	2	BL	WEST	L	S
WMU 503	3220.515	27	10	166.038	1	FL	WEST		
WMU 503	3220.515	27	10	47.904	2	FL	WEST	L	B
WMU 503	3220.515	28	10	127.192	1	BR	EAST	M	S
WMU 503	3220.515	28	10	144.99	1		EAST	M	M
WMU 503	3220.515	29	10	103.766	2	FL	EAST	L	B
WMU 503	3220.515	30	10	201.311	1	BR	WEST	M	B
WMU 503	3220.515	31	10	560.641	1	BR	WEST	M	S
WMU 503	3220.515	31	10	295.649	2	BL	WEST	M	S
WMU 503	3220.515	31	10	333.044	1	BL	WEST	H	S
WMU 503	3220.515	34	10	3.494	2	BR	WEST	M	M
WMU 503	3220.515	35	10						
WMU 503	3220.515	36	10	50.591	2	FR	EAST	M	B
WMU 503	3220.515	37	10	262.29	2	BR	WEST	L	S
WMU 503	3220.515	37	10	254.709	3	BR	WEST	M	S
WMU 503	3220.515	39	10	421.4	2	BL	EAST	M	B
WMU 503	3220.515	41	8.86381	157.193	2	BR	WEST	M	B

WMU 503	3220.515	41	8.86381	260.205	1	BL	WEST	M	B
WMU 503	3220.515	41	8.86381	251.959	1	BR	WEST	M	B
WMU 503	3220.515	42	10						
WMU 503	3220.515	43	10	103.041	2	BR	WEST	M	B
WMU 503	3220.515	43	10	184.73	1	BL	WEST	L	S
WMU 503	3220.515	43	10	171.041	2	BL	WEST	M	S
WMU 503	3220.515	44	10						
WMU 503	3220.515	45	10						
WMU 503	3220.515	46	10	449.366	3	BR	EAST	M	S
WMU 503	3220.515	46	10	314.577	1	BR	EAST	M	M
WMU 503	3220.515	46	10	276.065	2	BL	EAST	L	S
WMU 503	3220.515	46	10	17.308	1	BL	EAST	L	M
WMU 503	3220.515	47	10	17.443	1	FL	WEST	M	S
WMU 503	3220.515	47	10	82.513	2	BR	WEST	M	B
WMU 503	3220.515	48	8.83319						
WMU 503	3220.515	51	10						
WMU 503	3220.515	53	10						
WMU 503	3220.515	54	10	354.219	1	BR	WEST	H	S
WMU 503	3220.515	54	10	17.327	1	FL	WEST	L	B
WMU 503	3220.515	55	8.80205						
WMU 503	3220.515	56	10	162.609	1	BL	WEST	M	M
WMU 503	3220.515	57	10						
WMU 503	3220.515	58	10	50.534	2	BR	EAST	M	S
WMU	3220.515	60	10	379.377	1	BL	EAST	L	B

503	5								
WMU 503	3220.515	61	9.56932	141.252	3	BR	EAST	M	B
WMU 503	3220.515	62	8.77246	85.275	1		EAST	M	M
WMU 503	3220.515	62	8.77246	342.309	2	BL	EAST	M	B
WMU 503	3220.515	63	10	128.467	3	BR	WEST	M	S
WMU 503	3220.515	63	10	540.833	1	BL	WEST	L	B
WMU 503	3220.515	64	10	105.154	1	BR	EAST	M	S
WMU 503	3220.515	64	10	406.531	3	BR	EAST	M	S
WMU 503	3220.515	64	10	399.476	1	BR	EAST	M	S
WMU 503	3220.515	65	10	345.213	2	BR	WEST	M	S
WMU 503	3220.515	66	10	277.966	1	BL	EAST	H	S
WMU 503	3220.515	66	10	396.698	1	BR	EAST	M	B
WMU 503	3220.515	66	10	282.85	1	BR	EAST	H	B
WMU 503	3220.515	67	10	88.199	1	FL	WEST	M	S
WMU 503	3220.515	67	10	105.122	1	BR	WEST	M	S
WMU 503	3220.515	69	8.74167	216.399	1	BR	WEST	M	S
WMU 503	3220.515	73	10	181.951	1	BL	EAST	H	M
WMU 503	3220.515	74	10						
WMU 503	3220.515	76	8.71169	105.35	1	FR	WEST	M	S
WMU 503	3220.515	76	8.71169	284.03	1	BR	WEST	M	B
WMU 503	3220.515	78	10	196.87	1	BL	EAST	M	S
WMU 503	3220.515	79	10						
WMU 503	3220.515	82	10	261.205	1	BR	WEST	M	M
WMU 503	3220.515	82	10	71.288	1	FL	WEST	M	M

WMU 503	3220.515	82	10	158.781	2	FL	WEST	M	B
WMU 503	3220.515	82	10	176.496	2	BL	WEST	M	M
WMU 503	3220.515	83	8.68229	187.031	1	BR	EAST	M	S
WMU 503	3220.515	83	8.68229	254.579	3	BR	EAST	L	B
WMU 503	3220.515	83	8.68229	393.144	2	BR	EAST	L	S
WMU 503	3220.515	83	8.68229	92.123	2	FL	EAST	L	S
WMU 503	3220.515	83	8.68229	157.793	2	FL	EAST	L	B
WMU 503	3220.515	84	10	144.517	3	BR	EAST	M	M
WMU 503	3220.515	85	10	326.952	1	BR	WEST	M	S
WMU 503	3220.515	85	10	237.239	1	BR	WEST	M	B
WMU 503	3220.515	88	10						
WMU 503	3220.515	89	10	365.175	4	BR	EAST	M	B
WMU 503	3220.515	90	8.65256	168.699	1	BL	WEST	M	B
WMU 503	3220.515	91	10	276.412	2	BR	EAST	L	S
WMU 503	3220.515	92	10	276.879	2	BR	EAST	L	B
WMU 503	3220.515	93	10	248.122	3	BL	EAST	H	S
WMU 503	3220.515	93	10	141.945	1	BR	EAST	M	B
WMU 503	3220.515	94	10						
WMU 503	3220.515	98	10	301.309	1	BR	EAST	M	S
WMU 503	3220.515	99	10	452.634	2	BL	EAST	L	S
WMU 503	3220.515	99	10	175.715	3	FL	EAST	M	S
WMU 503	3220.515	99	10	345.108	1	BL	EAST	M	B
WMU 503	3220.515	100	10	820.97	1	BR	EAST	L	B
WMU	3220.515	105	10	5.243	1	BR	WEST	M	B

503	5								
WMU 503	3220.515	106	10	301.123	1	BR	EAST	M	S
WMU 503	3220.515	106	10	46.545	2	FL	EAST	M	S
WMU 503	3220.515	107	10	700.752	2	BL	WEST	L	S
WMU 503	3220.515	107	10	463.19	1	BL	WEST	L	B
WMU 503	3220.515	107	10	4.711	1	FL	WEST	M	S
WMU 503	3220.515	108	10	313.178	1	BR	WEST	M	B
WMU 503	3220.515	108	10	310.632	1	BL	WEST	M	B
WMU 503	3220.515	108	10	120.217	1	FL	WEST	L	B
WMU 503	3220.515	109	10	86.242	2	FL	WEST	M	B
WMU 503	3220.515	111	8.56256	542.837	1	BR	EAST	L	S
WMU 503	3220.515	111	8.56256	428.53	4	BL	EAST		
WMU 503	3220.515	111	8.56256	224.751	1	BL	EAST	L	S
WMU 503	3220.515	111	8.56256	345.786	2	BL	EAST		
WMU 503	3220.515	111	8.56256	120.699	1	BL	EAST	L	B
WMU 503	3220.515	112	10	259.984	1	BR	EAST	L	B
WMU 503	3220.515	112	10	259.984	1	BR	EAST	L	B
WMU 503	3220.515	112	10	1051.248	2	BL	EAST	M	S
WMU 503	3220.515	112	10	25.352	2	BL	EAST	L	B
WMU 503	3220.515	112	10	68.107	1	BL	EAST	M	S
WMU 503	3220.515	112	10	1051.248	2	BL	EAST	M	S
WMU 503	3220.515	112	10	25.352	2	BL	EAST	L	B
WMU 503	3220.515	112	10	68.107	1	BL	EAST	M	S
WMU 503	3220.515	113	10						

WMU 503	3220.515	116	10						
WMU 503	3220.515	118	8.43168						
WMU 503	3220.515	120	10	38.106	3	BR	EAST	M	S
WMU 503	3220.515	120	10	494.683	1	BR	EAST	M	B
WMU 503	3220.515	121	10	43.13	1	FL	WEST	H	S
WMU 503	3220.515	122	7.88321	379.645	2		EAST	M	B
WMU 503	3220.515	122	7.88321	396.147	2	BL	EAST	M	S
WMU 503	3220.515	123	9.75472	164.053	2	BR	EAST	M	S
WMU 503	3220.515	123	9.75472	44.973	1	FL	EAST	M	S
WMU 503	3220.515	123	9.75472	216.363	2	BR	EAST	M	B
WMU 503	3220.515	124	3.35826	244.894	2	BR	EAST	M	S
WMU 503	3220.515	125	8.35687	90.899	2	BR	EAST	M	B
WMU 503	3220.515	125	8.35687	94.807	4	BR	EAST	M	S
WMU 503	3220.515	128	10	336.589	2	BL	EAST	L	B
WMU 503	3220.515	128	10	506.301	1	BL	EAST	M	S
WMU 503	3220.515	128	10	216.109	2	BR	EAST	M	M
WMU 503	3220.515	129	7.61116	385.366	1	BL	WEST	M	S
WMU 503	3220.515	129	7.61116	158.942	2	BL	WEST	H	S
WMU 503	3220.515	129	7.61116	225.335	2	BR	WEST	M	B
WMU 503	3220.515	130	7.03081						
WMU 503	3220.515	131	7.64178						
WMU 503	3220.515	132	10						
WMU 503	3220.515	133	10	203.581	2	BL	EAST	M	B
WMU	3220.515	133	10	191.621	3	BL	EAST	M	S

503	5								
WMU 503	3220.515	133	10	275.014	2	FL	EAST	L	B
WMU 503	3220.515	133	10	629.197	1	BR	EAST	L	S
WMU 503	3220.515	133	10	208.286	2	BR	EAST	L	S
WMU 503	3220.515	134	10						
WMU 503	3220.515	135	7.29844						
WMU 503	3220.515	136	4.28308						
WMU 503	3220.515	137	7.40816	90.194	2	BR	WEST	L	S
WMU 503	3220.515	137	7.40816	22.52	2	BR	WEST	M	S
WMU 503	3220.515	138	10	177.608	1	BR	EAST	L	B
WMU 503	3220.515	139	10	515.311	2	BR	EAST	M	S
WMU 503	3220.515	139	10	202.165	1	FL	EAST	M	B
WMU 503	3220.515	139	10	237.511	2	BL	EAST		
WMU 503	3220.515	140	10						
WMU 503	3220.515	141	6.14243	260.714	2	BL	EAST	L	S
WMU 503	3220.515	141	6.14243	43.718	2	BL	EAST	M	B
WMU 503	3220.515	141	6.14243	270.487	2	BR	EAST	M	B
WMU 503	3220.515	143	10	257.868	2	BL	WEST	L	B
WMU 503	3220.515	145	10	299.077	3		EAST	L	S
WMU 503	3220.515	145	10	381.036	1	BR	EAST	H	B
WMU 503	3220.515	146	6.4082	20.463	1	FL	WEST	L	S
WMU 503	3220.515	154	7.75763						
WMU 503	3220.515	155	4.27727						
WMU 503	3220.515	157	10						

WMU 503	3220.515	163	6.26						
WMU 503	3220.515	164	3.03893	384.865	2	BR	WEST	M	B
WMU 503	3220.515	165	10	171.668	2	BL	EAST	L	B
WMU 503	3220.515	165	10	146.485	1	BR	EAST	M	S
WMU 503	3220.515	165	10	486.054	1	BL	EAST	M	S
WMU 503	3220.515	166	2.84165						
WMU 503	3220.515	167	7.42601	239.109	1	BR	EAST	M	S
WMU 503	3220.515	172	2.98839						
WMU 503	3220.515	174	8.08093	251.275	1	BL	EAST	M	S
WMU 503	3220.515	174	8.08093	78.926	1	BL	EAST	M	S
WMU 503	3220.515	174	8.08093	134.735	1	BR	EAST	M	S
WMU 503	3220.515	174	8.08093	127.242	2	BR	EAST	M	M
WMU 503	3220.515	176	10	311.911	1	BR	WEST	M	B
WMU 503	3220.515	177	9.59343						
WMU 503	3220.515	178	3.34037						
WMU 503	3220.515	180	9.49685	439.342	2	BR	WEST	M	S
WMU 503	3220.515	181	10	269.5	1	BL	WEST	M	B
WMU 503	3220.515	181	10	213.795	1	BR	WEST	M	B
WMU 503	3220.515	181	10	333.804	2	BR	WEST	M	B
WMU 503	3220.515	181	10	188.811	2	BR	WEST	M	B
WMU 503	3220.515	181	10	124.792	2	BR	WEST	M	B
WMU 503	3220.515	182	10	26.708	1		WEST	M	S
WMU 503	3220.515	185	5.7312						
WMU	3220.515	186	10	260.896	4	BR	EAST	M	S

503	5								
WMU 503	3220.515	186	10	509.654	2	BR	EAST	M	S
WMU 503	3220.515	186	10	88.005	1	BR	EAST	M	S
WMU 503	3220.515	186	10	66.779	1	FL	EAST	M	B
WMU 503	3220.515	186	10	113.697	2		EAST	M	S
WMU 503	3220.515	187	10	462.144	2	BR	EAST	L	B
WMU 503	3220.515	188	3.83138	96.527	2	BR	WEST	M	B
WMU 503	3220.515	188	3.83138	15.885	1	FR	WEST	M	S
WMU 503	3220.515	189	5.85422	66.649	1	BL	EAST		
WMU 503	3220.515	191	10	67.915	1	FL	EAST	M	B
WMU 503	3220.515	192	10						
WMU 503	3220.515	193	8.49644						
WMU 503	3220.515	195	10						
WMU 503	3220.515	196	7.51575						
WMU 503	3220.515	197	10						
WMU 503	3220.515	198	10	102.531	1	BR	WEST	L	B
WMU 503	3220.515	198	10	161.945	2	BR	WEST	M	B
WMU 503	3220.515	201	10	220.229	2	BL	WEST	H	B
WMU 503	3220.515	204	10	116.046	1	BL	EAST	L	B
WMU 503	3220.515	207	10	602.596	1	BL	WEST	M	M
WMU 503	3220.515	208	8.08847	159.167	2	BL	EAST	M	M
WMU 503	3220.515	209	10						
WMU 503	3220.515	211	10						
WMU 503	3220.515	213	10	20.534	1	BR	WEST	M	B

WMU 503	3220.515	214	2.53107	16.96	2	FL	WEST	L	B
WMU 503	3220.515	216	10	14.605	2	FL	EAST	M	S
WMU 503	3220.515	218	10						
WMU 503	3220.515	219	5.75035	168.124	1	BR	EAST	L	S
WMU 503	3220.515	220	10	100.367	1	FL	EAST	L	S
WMU 503	3220.515	220	10	401.997	3	FR	EAST	M	B
WMU 503	3220.515	220	10	880.276	2	BR	EAST	L	B
WMU 503	3220.515	220	10	630.544	3	BL	EAST	M	B
WMU 503	3220.515	221	5.72356	51.264	3	BR	WEST	L	M
WMU 503	3220.515	221	5.72356	36.168	2	FL	WEST	M	B
WMU 503	3220.515	222	10	146.332	1	BR	EAST	M	M
WMU 503	3220.515	222	10	319.877	2	FL	EAST	M	S
WMU 503	3220.515	222	10	298.241	3	BR	EAST	L	B
WMU 503	3220.515	223	7.15601	368.797	2	FR	EAST	M	B
WMU 503	3220.515	224	10	36.531	1	BR	WEST	M	S
WMU 503	3220.515	225	7.12835	275.166	1	FR	WEST	L	B
WMU 503	3220.515	228	10						
WMU 503	3220.515	229	7.07299	138.32	1	BL	EAST	M	B
WMU 503	3220.515	229	7.07299	209.678	2	BL	EAST	M	M
WMU 503	3220.515	231	7.04531	140.779	2	BR	EAST	M	S
WMU 503	3220.515	233	7.01762	77.67	2	BR	WEST	M	S
WMU 503	3220.515	234	10	353.214	3	BR	WEST	M	B
WMU 503	3220.515	234	10	383.752	2	BR	WEST	M	S
WMU	3220.515	235	6.98992	158.996	1	BL	EAST	M	M

503	5								
WMU 503	3220.515	235	6.98992	202.534	1	BL	EAST	M	B
WMU 503	3220.515	235	6.98992	317.806	2	BR	EAST	M	B
WMU 503	3220.515	235	6.98992	134.76	1	BR	EAST	M	M
WMU 503	3220.515	236	10	89.006	1	FL	WEST	M	M
WMU 503	3220.515	236	10	31.524	2	BL	WEST	M	B
WMU 503	3220.515	236	10	350.968	1	BL	WEST	M	S
WMU 503	3220.515	237	6.96221	272.705	1	BR	WEST	M	S
WMU 503	3220.515	237	6.96221	264.933	2	BR	WEST	M	S
WMU 503	3220.515	237	6.96221	293.001	2	BR	WEST	M	S
WMU 503	3220.515	238	10	439.783	3	BL	WEST	M	B
WMU 503	3220.515	238	10	606.001	2	BL	WEST	M	B
WMU 503	3220.515	238	10	464.806	2	BL	WEST	M	S
WMU 503	3220.515	238	10	798.85	2	FL	WEST	M	B
WMU 503	3220.515	238	10	441.724	2	BL	WEST	M	S
WMU 503	3220.515	238	10	360.863	1	BL	WEST	M	S
WMU 503	3220.515	239	6.93445	545.467	1	BR	EAST	M	S
WMU 503	3220.515	239	6.93445	290.519	1	BL	EAST	M	S
WMU 503	3220.515	239	6.93445	165.798	1	BR	EAST	M	S
WMU 503	3220.515	239	6.93445	222.149	1	BR	EAST	M	B
WMU 503	3220.515	239	6.93445	39.622	1	FL	EAST	L	S
WMU 503	3220.515	239	6.93445	143.989	1	BR	EAST	M	B
WMU 503	3220.515	239	6.93445	39.76	1	BR	EAST	M	S
WMU 503	3220.515	240	10	99.139	3	FL	EAST	L	B

WMU 503	3220.515	240	10	281.879	1	BR	EAST	M	S
WMU 503	3220.515	244	10	76.126	2	FL	WEST	L	M
WMU 503	3220.515	245	6.85102						
WMU 503	3220.515	246	10	354.179	3	BR	EAST	M	B
WMU 503	3220.515	247	6.8232	55.556	2	FL	WEST	M	B
WMU 503	3220.515	247	6.8232	330.952	1	BL	WEST	M	S
WMU 503	3220.515	248	10						
WMU 503	3220.515	249	6.79539	474.842	1	BR	WEST	M	S
WMU 503	3220.515	252	10						
WMU 503	3220.515	253	6.73981						
WMU 503	3220.515	254	10						

Density Estimation Results

Effort : 1458.630

samples : 165

Width : 1000.000

observations: 229

Model Selection Results

Model 1
Hazard Rate key, k(y) = 1 - Exp(-(y/A(1))**-A(2))

Component Percentages of Var(D)

Detection probability : 22.9
Encounter rate : 68.5
Cluster size : 8.6

Goodness of fit tests

Kolmogorov-Smirnov test

D_n = 0.0332 p = 0.9626

Cramer-von Mises family tests

W-sq (uniform weighting) = 0.0272 0.900 < p <= 1.000

Relevant critical values:

W-sq crit(alpha=0.900) = 0.0000

C-sq (cosine weighting) = 0.0206 0.900 < p <= 1.000

Relevant critical values:

C-sq crit(alpha=0.900) = 0.0000

Total Chi-square value = 1.8398 Degrees of Freedom = 7.00

Probability of a greater chi-square value, P = 0.96817

Expected cluster size estimation table

Expected cluster size estimated based on regression of: log(s(i)) on g(x(i))

Regression Estimates

Slope = -0.115705 Std error = 0.988147E-01

Intercept = 0.492888 Std error = 0.875315E-01

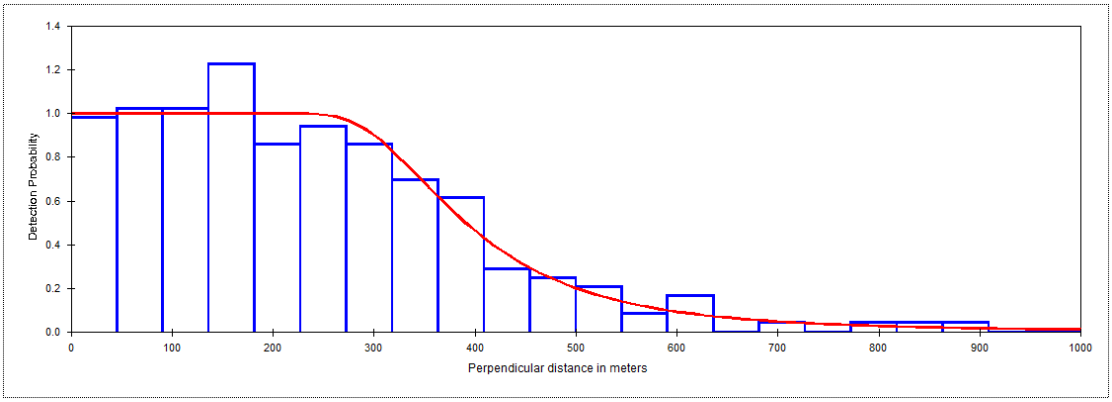
Correlation= -0.0775 Students-t = -1.17093

Df = 227 Pr(T < t) = 0.121428

Expected cluster size = 1.5914 Standard error = 0.45861E-01

Mean cluster size = 1.6245 Standard error = 0.47480E-01

Detection probability plot



White-tailed Deer Distance Data

Stratum	Stratum Area	Transect ID	Transect Length	DistancePerp	WTDE GroupSize	Observer	Direction	Cover	Activity
WMU 503	3220.52	2	6.182352						
WMU 503	3220.52	3	10	1402.5	18	BR	WEST	L	S
WMU 503	3220.52	3	10	196.689	2	BR	WEST	L	M
WMU 503	3220.52	4	10	352.234	2	BR	WEST	M	M
WMU 503	3220.52	4	10	161.504	4	BL	WEST	M	B
WMU 503	3220.52	4	10	115.324	7	BL	WEST	M	S
WMU 503	3220.52	4	10	55.747	5	BL	WEST	M	S
WMU 503	3220.52	4	10	136.212	5	BL	WEST	M	S
WMU 503	3220.52	4	10	2.1	1	FL	WEST	M	S
WMU 503	3220.52	4	10	341.419	17	BR	WEST	M	B
WMU 503	3220.52	5	4.430496						
WMU 503	3220.52	6	8.323622	73.844	6	FL	EAST	M	S
WMU 503	3220.52	6	8.323622	233.582	2	FL	EAST	M	S
WMU 503	3220.52	6	8.323622	151.108	2	BL	EAST	M	B

WMU 503	3220.52	7	6.726841						
WMU 503	3220.52	10	4.445771						
WMU 503	3220.52	11	8.984075	279.36	6	BL	WEST	L	B
WMU 503	3220.52	11	8.984075	145.011	1	FL	WEST	L	S
WMU 503	3220.52	14	10	292.157	5	BR	EAST		
WMU 503	3220.52	14	10	713.944	5	BL	EAST	L	M
WMU 503	3220.52	18	8.95416	297.141	2	BL	EAST	M	S
WMU 503	3220.52	21	10	243.752	1	BL	WEST	M	S
WMU 503	3220.52	21	10	195.262	7	BL	WEST	M	B
WMU 503	3220.52	21	10	188.739	1	BR	WEST	M	B
WMU 503	3220.52	22	10	185.637	2	FL	EAST	M	S
WMU 503	3220.52	22	10	47.357	6	FL	EAST	M	M
WMU 503	3220.52	22	10	2.732	1	BR	EAST	M	S
WMU 503	3220.52	22	10	12.695	2	FL	EAST	M	S
WMU 503	3220.52	22	10	248.097	3	BL	EAST	M	S
WMU 503	3220.52	22	10	107.898	3	FL	EAST	M	B
WMU 503	3220.52	22	10	268.58	6	BL	EAST	M	M
WMU 503	3220.52	23	10	140.693	2	BL	EAST	M	B
WMU 503	3220.52	23	10	299.716	1	BR	EAST	M	S
WMU 503	3220.52	25	8.924244						
WMU 503	3220.52	27	10	20.289	4		WEST		
WMU 503	3220.52	28	10	190.051	6	FR	EAST	L	S
WMU 503	3220.52	28	10	1160.64	20	BL	EAST	L	S
WMU	3220.5	28	10	371.021	51	BR	EAST	L	S

503	2								
WMU 503	3220.52	28	10	70.865	7	BL	EAST	M	M
WMU 503	3220.52	28	10	312.256	22	BR	EAST		
WMU 503	3220.52	28	10	181.889	3	BL	EAST	M	S
WMU 503	3220.52	28	10	332.842	6	FL	EAST	L	S
WMU 503	3220.52	28	10	77.241	2	FL	EAST	L	S
WMU 503	3220.52	29	10						
WMU 503	3220.52	30	10	165.779	3	BR	WEST	M	S
WMU 503	3220.52	30	10	290.656	8	BR	WEST	M	S
WMU 503	3220.52	31	10	314.314	2	BL	WEST	M	S
WMU 503	3220.52	31	10	132.356	3	BL	WEST	M	B
WMU 503	3220.52	31	10	105.057	4	BR	WEST	M	B
WMU 503	3220.52	31	10	257.005	3	BL	WEST	M	S
WMU 503	3220.52	31	10	178.338	4	BL	WEST		
WMU 503	3220.52	34	10	79	1	BR	WEST	L	M
WMU 503	3220.52	34	10	73.318	1	FL	WEST	L	S
WMU 503	3220.52	35	10						
WMU 503	3220.52	36	10	0	2	FR	EAST	M	S
WMU 503	3220.52	36	10	75.333	2	BR	EAST	L	S
WMU 503	3220.52	36	10	560.194	13	BR	EAST	L	S
WMU 503	3220.52	36	10	295.928	15	BL	EAST	M	S
WMU 503	3220.52	36	10	249.266	1	BR	EAST	L	S
WMU 503	3220.52	36	10	9.384	4	FL	EAST	M	S
WMU 503	3220.52	36	10	112.516	17	BR	EAST		

WMU 503	3220.52	36	10	758.076	18	BL	EAST	L	S
WMU 503	3220.52	36	10	341.611	2	BL	EAST	L	S
WMU 503	3220.52	36	10	142.952	2	BL	EAST	L	M
WMU 503	3220.52	36	10	7.621	100	FR	EAST	L	S
WMU 503	3220.52	36	10	165.431	5	FL	EAST	L	M
WMU 503	3220.52	36	10	403.418	1	BR	EAST		
WMU 503	3220.52	36	10	84.063	2	BR	EAST	H	B
WMU 503	3220.52	36	10	142.094	14	BL	EAST	L	S
WMU 503	3220.52	37	10						
WMU 503	3220.52	39	10	67.245	4	FL	EAST	H	B
WMU 503	3220.52	39	10	177.853	2	BR	EAST	M	S
WMU 503	3220.52	39	10	132.686	2	FR	EAST	M	S
WMU 503	3220.52	39	10	116.191	5	FL	EAST	M	M
WMU 503	3220.52	39	10	210.6	2	BR	EAST	M	S
WMU 503	3220.52	41	8.863815						
WMU 503	3220.52	42	10						
WMU 503	3220.52	43	10	221.486	3	BR	WEST	L	
WMU 503	3220.52	43	10	292.17	9	BL	WEST	M	S
WMU 503	3220.52	44	10	309.679	2	BR	WEST	M	M
WMU 503	3220.52	44	10	381.871	1	BR	WEST	H	M
WMU 503	3220.52	44	10	130.295	4	BR	WEST	L	S
WMU 503	3220.52	44	10	402.527	2	BL	WEST	M	S
WMU 503	3220.52	44	10	193.863	5	BR	WEST	M	S
WMU	3220.5	44	10	255.094	1	BR	WEST	L	M

503	2								
WMU 503	3220.52	45	10	76.353	1	BR	EAST	M	S
WMU 503	3220.52	45	10	825.542	2	bl	EAST	M	B
WMU 503	3220.52	45	10	10.348	3	FL	EAST	M	S
WMU 503	3220.52	45	10	117.282	3	BL	EAST	M	S
WMU 503	3220.52	46	10	86.471	4	BL	EAST	M	M
WMU 503	3220.52	46	10	183.206	3	BR	EAST	L	S
WMU 503	3220.52	46	10	166.06	2	BR	EAST	M	B
WMU 503	3220.52	47	10	180.119	2	BR	WEST	M	B
WMU 503	3220.52	48	8.833188						
WMU 503	3220.52	51	10	40.182	8	FL	WEST	M	M
WMU 503	3220.52	51	10	150.187	16	BR	WEST	L	M
WMU 503	3220.52	51	10	780.16	6	BR	WEST	L	S
WMU 503	3220.52	51	10	172.956	37	FL	WEST	L	S
WMU 503	3220.52	51	10	135.359	5	BL	WEST	H	S
WMU 503	3220.52	51	10	18.135	3	FL	WEST	M	S
WMU 503	3220.52	51	10	239.233	6	BR	WEST		
WMU 503	3220.52	53	10	226.056	3	BL	WEST	M	S
WMU 503	3220.52	53	10	148.327	1	BL	WEST	M	S
WMU 503	3220.52	53	10	210.689	4	BL	WEST	M	B
WMU 503	3220.52	53	10	216.637	2	BL	WEST	M	S
WMU 503	3220.52	54	10						
WMU 503	3220.52	55	8.802054						
WMU 503	3220.52	56	10						

WMU 503	3220.52	57	10						
WMU 503	3220.52	58	10	43.678	1	BR	EAST	M	B
WMU 503	3220.52	58	10	107.244	4	BL	EAST	M	S
WMU 503	3220.52	60	10	139.038	2	BL	EAST	M	M
WMU 503	3220.52	60	10	37.852	5	BR	EAST	M	B
WMU 503	3220.52	60	10	129.31	2	BL	EAST	M	S
WMU 503	3220.52	61	9.569318	100.263	5	BR	EAST	M	M
WMU 503	3220.52	61	9.569318	5.495	5	FL	EAST	M	S
WMU 503	3220.52	61	9.569318	145.144	4	BR	EAST	M	B
WMU 503	3220.52	62	8.772458	507.214	7	BR	EAST	M	S
WMU 503	3220.52	62	8.772458	218.493	1		EAST	M	M
WMU 503	3220.52	63	10	128.467	3	BR	WEST	M	S
WMU 503	3220.52	64	10	177.228	3	BR	EAST	L	S
WMU 503	3220.52	65	10	166.033	8	BR	WEST	M	M
WMU 503	3220.52	65	10	102.014	5	BR	WEST	M	S
WMU 503	3220.52	65	10	3.315	3	FL	WEST	H	S
WMU 503	3220.52	66	10						
WMU 503	3220.52	67	10	185.219	1	BL	WEST	M	B
WMU 503	3220.52	67	10	359.098	2	BL	WEST	M	S
WMU 503	3220.52	69	8.741666	170.517	5	FR	WEST		
WMU 503	3220.52	69	8.741666	10.268	1	FL	WEST		
WMU 503	3220.52	69	8.741666	191.135	1	BL	WEST	M	M
WMU 503	3220.52	69	8.741666	201.808	1	BL	WEST	M	S
WMU	3220.5	69	8.74166	649.406	15	BR	WEST		

503	2		6						
WMU 503	3220.52	69	8.741666	58.969	2	BR	WEST		
WMU 503	3220.52	69	8.741666	75.161	13	BR	WEST	M	S
WMU 503	3220.52	73	10	298.165	4	BL	EAST		
WMU 503	3220.52	74	10	125.442	3	BR	EAST	M	S
WMU 503	3220.52	74	10	319.838	16	FR	EAST		
WMU 503	3220.52	74	10	39.417	5	BR	EAST	M	B
WMU 503	3220.52	74	10	17.629	1	FL	EAST	M	M
WMU 503	3220.52	74	10	42.483	5	FL	EAST	M	B
WMU 503	3220.52	74	10	294.707	10	FR	EAST		
WMU 503	3220.52	74	10	50.198	1	BR	EAST	M	M
WMU 503	3220.52	74	10	14.016	2	FL	EAST	L	M
WMU 503	3220.52	76	8.711692						
WMU 503	3220.52	78	10	167.509	2		EAST	M	M
WMU 503	3220.52	79	10	13.457	2	FL		L	S
WMU 503	3220.52	82	10	107.427	4	FL	WEST	M	S
WMU 503	3220.52	82	10	18.927	2	BR	WEST	M	B
WMU 503	3220.52	82	10	236.743	3	FL	WEST	M	S
WMU 503	3220.52	82	10	421.392	2	BR	WEST	M	S
WMU 503	3220.52	82	10	160.688	1	BL	WEST	M	M
WMU 503	3220.52	83	8.682294	167.084	1	BR	EAST	H	B
WMU 503	3220.52	83	8.682294	105.394	3	BR	EAST	M	B
WMU 503	3220.52	84	10	139.697	6	BR	EAST	M	B
WMU 503	3220.52	85	10	192.719	2	FL	WEST	H	S

WMU 503	3220.52	85	10	19.56	3	FR	WEST	M	S
WMU 503	3220.52	88	10						
WMU 503	3220.52	89	10	72.735	8	BR	EAST	M	B
WMU 503	3220.52	89	10	134.388	2	BL	EAST	M	S
WMU 503	3220.52	89	10	50.304	1	BR	EAST	M	B
WMU 503	3220.52	90	8.652558	140.451	4	FL	WEST	M	M
WMU 503	3220.52	91	10	218.384	19	BR	EAST	M	M
WMU 503	3220.52	91	10	60.977	1	BR	EAST	L	M
WMU 503	3220.52	92	10	290.637	2	FL	EAST	M	S
WMU 503	3220.52	92	10	89.333	2	BL	EAST	M	M
WMU 503	3220.52	92	10	126.03	4	BL	EAST	M	M
WMU 503	3220.52	92	10	46.315	4	BL	EAST	H	S
WMU 503	3220.52	92	10	235.86	2	BL	EAST	M	S
WMU 503	3220.52	92	10	129.241	2	BR	EAST	M	B
WMU 503	3220.52	92	10	55.989	2	BR	EAST	M	S
WMU 503	3220.52	92	10	13.312	3	BR	EAST	M	S
WMU 503	3220.52	93	10	114.943	4	FL	EAST	M	B
WMU 503	3220.52	93	10	576.755	2	BR	EAST	L	S
WMU 503	3220.52	94	10	181.268	5	BL	EAST	M	S
WMU 503	3220.52	98	10	2.704	1	FL	EAST	H	M
WMU 503	3220.52	99	10	135.582	3	BR	EAST	M	B
WMU 503	3220.52	99	10	369.011	9	BL	EAST	L	S
WMU 503	3220.52	100	10	126.857	8	BR	EAST	M	S
WMU	3220.5	100	10	195.05	3	FL	EAST	L	S

503	2								
WMU 503	3220.52	100	10	160.808	3	FL		L	S
WMU 503	3220.52	100	10	353.131	4	BR	EAST	L	S
WMU 503	3220.52	100	10	61.765	6	BL	EAST	L	M
WMU 503	3220.52	100	10	106.292	4	FR	EAST	M	S
WMU 503	3220.52	100	10	94.282	4	BR	EAST	M	M
WMU 503	3220.52	105	10						
WMU 503	3220.52	106	10	181.184	3	BR	EAST	H	B
WMU 503	3220.52	107	10	69.902	2	FL	WEST	M	B
WMU 503	3220.52	107	10	1.562	3	FL	WEST	M	S
WMU 503	3220.52	107	10	297.482	2	BR	WEST	M	B
WMU 503	3220.52	107	10	147.122	7	FR	WEST	M	S
WMU 503	3220.52	107	10	51.349	3	BR	WEST	M	S
WMU 503	3220.52	107	10	379.608	4	BR	WEST	M	S
WMU 503	3220.52	107	10	227.08	3	BL	WEST	M	S
WMU 503	3220.52	107	10	4.711	2	FL	WEST	M	S
WMU 503	3220.52	108	10	384.799	3	BR	WEST	L	M
WMU 503	3220.52	108	10	215.299	2	FR	WEST	M	S
WMU 503	3220.52	108	10	394.845	2	BL	WEST	H	B
WMU 503	3220.52	108	10	145.02	5	BR	WEST	M	M
WMU 503	3220.52	108	10	12.977	2	FL	WEST	L	M
WMU 503	3220.52	109	10	1.543	2	FL	WEST	M	S
WMU 503	3220.52	109	10	38.539	4	FL	WEST	M	S
WMU 503	3220.52	109	10	472.115	3	BR	WEST	L	M

WMU 503	3220.52	109	10	88.588	2	BL	WEST	M	S
WMU 503	3220.52	109	10	13.279	1	BR	WEST	M	S
WMU 503	3220.52	111	8.562557						
WMU 503	3220.52	112	10	118.381	1	BR	EAST	M	S
WMU 503	3220.52	112	10	176.912	5	BR	EAST	M	S
WMU 503	3220.52	112	10	355.062	15	BR	EAST	M	B
WMU 503	3220.52	112	10	85.173	3	BR	EAST	M	B
WMU 503	3220.52	112	10	24.441	2	FL	EAST	M	S
WMU 503	3220.52	112	10	118.381	1	BR	EAST	M	S
WMU 503	3220.52	112	10	176.912	5	BR	EAST	M	S
WMU 503	3220.52	112	10	355.062	15	BR	EAST	M	B
WMU 503	3220.52	112	10	24.441	2	FL	EAST	M	S
WMU 503	3220.52	112	10	85.173	3	BR	EAST	M	B
WMU 503	3220.52	113	10	98.53	3	FR	WEST	M	S
WMU 503	3220.52	113	10	75.085	3	BR	WEST	M	S
WMU 503	3220.52	113	10	548.62	2	BR	WEST	L	S
WMU 503	3220.52	116	10	236.022	2	BR	EAST	M	S
WMU 503	3220.52	116	10	222.562	1	BR	EAST	L	S
WMU 503	3220.52	116	10	260.61	8	FR	EAST		
WMU 503	3220.52	116	10	265.679	4	FL	EAST	M	S
WMU 503	3220.52	118	8.431681						
WMU 503	3220.52	120	10	288.694	3	BR	EAST	M	S
WMU 503	3220.52	120	10	199.325	2	BL	EAST	M	S
WMU	3220.5	120	10	65.06	5	BR	EAST	M	S

503	2								
WMU 503	3220.52	121	10	28.098	1	FL	WEST	M	S
WMU 503	3220.52	122	7.883212	180.332	3		EAST	M	S
WMU 503	3220.52	122	7.883212	87.096	3	BR	EAST	L	S
WMU 503	3220.52	122	7.883212	396.147	3	BL	EAST	M	S
WMU 503	3220.52	122	7.883212	153.747	3	BR	EAST	L	S
WMU 503	3220.52	123	9.754717	238.801	3	FL	EAST	M	S
WMU 503	3220.52	123	9.754717	245.728	2	BR	EAST	L	S
WMU 503	3220.52	123	9.754717	87.92	3	FL	EAST	M	S
WMU 503	3220.52	124	3.358259	97.17	1	BL	EAST	M	M
WMU 503	3220.52	124	3.358259	99.113	2	BR	EAST	M	S
WMU 503	3220.52	124	3.358259	163.947	5	BL	EAST	M	S
WMU 503	3220.52	125	8.356867						
WMU 503	3220.52	128	10	216.109	2	BR	EAST	M	M
WMU 503	3220.52	128	10	513.983	6	BL	EAST	L	S
WMU 503	3220.52	129	7.611158	92.151	5	BL	WEST	M	S
WMU 503	3220.52	129	7.611158	173.96	6	BL	WEST	M	S
WMU 503	3220.52	129	7.611158		6	FL	WEST	M	B
WMU 503	3220.52	129	7.611158	404.658	9	BR	WEST	L	S
WMU 503	3220.52	129	7.611158	18.143	1	BL	WEST		
WMU 503	3220.52	129	7.611158	218.551	2	BL	WEST	H	S
WMU 503	3220.52	129	7.611158	168.303	5	BL	WEST		B
WMU 503	3220.52	130	7.030809	562.494	10	BR	WEST	L	S
WMU 503	3220.52	130	7.030809	88.476	2	BR	WEST	L	S

WMU 503	3220.52	131	7.641784						
WMU 503	3220.52	132	10						
WMU 503	3220.52	133	10						
WMU 503	3220.52	134	10	379.958	4	BL	WEST	L	S
WMU 503	3220.52	134	10	100.552	14	FL	WEST	L	S
WMU 503	3220.52	134	10	178.256	3	BR	WEST		
WMU 503	3220.52	134	10	134.469	2	BR	WEST	L	S
WMU 503	3220.52	134	10	205.267	4	BL	WEST	M	S
WMU 503	3220.52	134	10	36.062	3	FL	WEST	M	S
WMU 503	3220.52	134	10	61.805	3		WEST	M	S
WMU 503	3220.52	135	7.298443						
WMU 503	3220.52	136	4.283076	142.77	1	BR	EAST	M	S
WMU 503	3220.52	136	4.283076	98.947	6	BR	EAST	M	B
WMU 503	3220.52	137	7.408163						
WMU 503	3220.52	138	10						
WMU 503	3220.52	139	10	169.59	4	FL	EAST	L	S
WMU 503	3220.52	139	10	146.824	2	FL	EAST	L	M
WMU 503	3220.52	139	10	58.283	2	BL	EAST	M	M
WMU 503	3220.52	139	10	22.033	20	BR	EAST	M	B
WMU 503	3220.52	139	10	276.376	2	FL	EAST	M	S
WMU 503	3220.52	139	10	323.637	3	BL	EAST	M	M
WMU 503	3220.52	139	10	70.853	2	FL	EAST	M	B
WMU 503	3220.52	140	10	48.727	2	FL	EAST	M	B
WMU	3220.5	140	10	132.901	1	BL	EAST	M	M

503	2								
WMU 503	3220.52	141	6.142432	25.918	2	BR	EAST	M	S
WMU 503	3220.52	141	6.142432	68.259	5	BR	EAST	M	S
WMU 503	3220.52	141	6.142432	198.146	2	BL	EAST	M	S
WMU 503	3220.52	141	6.142432	170.719	2	BL	EAST	L	S
WMU 503	3220.52	141	6.142432	270.572	7	BL	EAST	M	S
WMU 503	3220.52	141	6.142432	272.937	3	BL	EAST	M	S
WMU 503	3220.52	141	6.142432	121.93	2	BR	EAST	M	B
WMU 503	3220.52	143	10						
WMU 503	3220.52	145	10	392.468	3	FL	EAST	L	S
WMU 503	3220.52	145	10	261.108	9	FL	EAST	L	S
WMU 503	3220.52	145	10	355.234	9		EAST	L	S
WMU 503	3220.52	145	10	213.221	29		EAST	L	S
WMU 503	3220.52	145	10	52.812	6		EAST	L	S
WMU 503	3220.52	145	10	10.131	11		EAST	L	S
WMU 503	3220.52	145	10	65.831	6	BR	EAST	L	S
WMU 503	3220.52	145	10	199.61	6		EAST	L	S
WMU 503	3220.52	145	10	194.219	4	FL	EAST	L	S
WMU 503	3220.52	145	10	343.848	5		EAST	L	S
WMU 503	3220.52	146	6.408199	130.713	3	BL	WEST	M	S
WMU 503	3220.52	146	6.408199	15.033	1	BR	WEST	M	S
WMU 503	3220.52	154	7.757626	52.64	6	BR	WEST	M	S
WMU 503	3220.52	154	7.757626	163.61	6	FL	WEST	M	S
WMU 503	3220.52	154	7.757626	62.836	2	FL	WEST	H	S

WMU 503	3220.52	154	7.757626	82.257	5	BR	WEST	M	S
WMU 503	3220.52	154	7.757626	215.331	2	BR	WEST	M	S
WMU 503	3220.52	154	7.757626	190.114	3	BR	WEST	M	S
WMU 503	3220.52	154	7.757626	33.124	3	FL	WEST	M	B
WMU 503	3220.52	154	7.757626	786.341	10	BR	WEST	L	S
WMU 503	3220.52	154	7.757626	27.332	3	FL	WEST	L	S
WMU 503	3220.52	154	7.757626	22.085	3	FL	WEST	M	S
WMU 503	3220.52	155	4.277272	344.317	3	BR	EAST	M	S
WMU 503	3220.52	157	10	76.305	2	BL	WEST	M	S
WMU 503	3220.52	157	10	365.784	3	BR	WEST	M	S
WMU 503	3220.52	157	10	31.734	4	BR	WEST	M	B
WMU 503	3220.52	163	6.259996						
WMU 503	3220.52	164	3.038931						
WMU 503	3220.52	165	10						
WMU 503	3220.52	166	2.841647	128.223	1	BL	EAST	M	S
WMU 503	3220.52	166	2.841647	261.209	1	BR	EAST	M	S
WMU 503	3220.52	167	7.426008	315.914	5	BL	EAST	M	S
WMU 503	3220.52	172	2.98839						
WMU 503	3220.52	174	8.080931	300.621	4	BL	EAST	L	S
WMU 503	3220.52	174	8.080931	65.36	2	BR	EAST	M	S
WMU 503	3220.52	174	8.080931	18.261	11	FL	EAST	L	S
WMU 503	3220.52	176	10	186.465	3	BR	WEST	M	B
WMU 503	3220.52	177	9.593435	259.887	2	BR	EAST	L	S
WMU	3220.5	178	3.34037						

503	2		1						
WMU 503	3220.52	180	9.496846	84.046	4	BL	WEST	M	S
WMU 503	3220.52	180	9.496846	439.342	6	BR	WEST	M	S
WMU 503	3220.52	180	9.496846	44.546	5	BL	WEST	M	S
WMU 503	3220.52	180	9.496846	15.164	9	FL	WEST	L	S
WMU 503	3220.52	181	10	53.849	2	BR	WEST	M	S
WMU 503	3220.52	181	10	221.201	12	BL	WEST		
WMU 503	3220.52	181	10	185.336	11	BL	WEST	M	S
WMU 503	3220.52	182	10	164.702	6	BL	WEST	M	M
WMU 503	3220.52	182	10	442.974	1	BL	WEST	L	M
WMU 503	3220.52	182	10	62.271	6	BR	WEST		
WMU 503	3220.52	185	5.731201	136.672	2	BR	WEST	M	S
WMU 503	3220.52	185	5.731201	132.357	7	FL	WEST	L	S
WMU 503	3220.52	185	5.731201	65.706	1	BL	WEST	H	S
WMU 503	3220.52	186	10	117.01	3	FL	EAST	L	S
WMU 503	3220.52	186	10	14.639	3	FL	EAST	L	S
WMU 503	3220.52	187	10						
WMU 503	3220.52	188	3.83138						
WMU 503	3220.52	189	5.854219	2.486	3	FL	EAST	M	S
WMU 503	3220.52	189	5.854219	48.183	3	BR	EAST	L	S
WMU 503	3220.52	189	5.854219	5.824	1	FR	EAST	L	S
WMU 503	3220.52	189	5.854219	114.05	8	BL	EAST	L	S
WMU 503	3220.52	191	10	195.744	3	BR	EAST	M	B
WMU 503	3220.52	191	10	130.466	1	BL	EAST	H	B

WMU 503	3220.52	192	10	67.509	3	BR	WEST	M	B
WMU 503	3220.52	193	8.49644		2	BR	EAST	M	B
WMU 503	3220.52	193	8.49644	200.494	2	BR	EAST	H	B
WMU 503	3220.52	193	8.49644	31.707	2	BR	EAST	L	M
WMU 503	3220.52	193	8.49644	102.65	1	BR	EAST	M	M
WMU 503	3220.52	193	8.49644	393.427	2	BR	EAST	L	M
WMU 503	3220.52	195	10	108.593	2	BL	EAST	H	B
WMU 503	3220.52	195	10	109.836	1	BL	EAST	H	S
WMU 503	3220.52	196	7.51575	262.12	2	BR	WEST	M	S
WMU 503	3220.52	196	7.51575	230.608	3	FL	WEST	L	S
WMU 503	3220.52	196	7.51575	109.302	1	BR	WEST	L	S
WMU 503	3220.52	197	10	2.013	3	BL	WEST	H	S
WMU 503	3220.52	198	10	278.689	13	BR	WEST	M	B
WMU 503	3220.52	198	10	14.674	5	FL	WEST	M	S
WMU 503	3220.52	201	10						
WMU 503	3220.52	204	10	609.664	6	BL	EAST	L	S
WMU 503	3220.52	207	10						
WMU 503	3220.52	208	8.088473	352.414	3	FL	EAST	M	S
WMU 503	3220.52	209	10	14.104	3	BL	WEST	M	S
WMU 503	3220.52	209	10	132.266	4	FL	WEST	L	S
WMU 503	3220.52	211	10	241.966	2	BR	EAST	M	S
WMU 503	3220.52	213	10	88.083	5	BR	WEST	M	M
WMU 503	3220.52	214	2.531071						
WMU	3220.5	216	10	461.483	2	BR	EAST	M	S

503	2								
WMU 503	3220.52	218	10						
WMU 503	3220.52	219	5.750347	13.28	2	FL	EAST	M	M
WMU 503	3220.52	219	5.750347	0.96	3	BR	EAST	L	M
WMU 503	3220.52	220	10	233.79	13	BR	EAST	M	S
WMU 503	3220.52	220	10	213.829	1	BR	EAST	M	S
WMU 503	3220.52	220	10	85.993	1	FL	EAST	L	B
WMU 503	3220.52	221	5.723562	135.618	2	BR	WEST	M	S
WMU 503	3220.52	221	5.723562	23.215	2	BL	WEST	H	M
WMU 503	3220.52	221	5.723562	19.489	8	BR	WEST	M	M
WMU 503	3220.52	222	10	184.776	2	BR	EAST		M
WMU 503	3220.52	223	7.156011						
WMU 503	3220.52	224	10						
WMU 503	3220.52	225	7.128346	99.395	2	BL	WEST	M	M
WMU 503	3220.52	225	7.128346	284.223	1	BR	WEST	M	B
WMU 503	3220.52	225	7.128346	210.688	8	BR	WEST	H	B
WMU 503	3220.52	228	10	52.983	3	FL	EAST	L	S
WMU 503	3220.52	229	7.072994	139.433	7	BR	EAST	H	S
WMU 503	3220.52	231	7.045309	135.4	1	BR	EAST	H	B
WMU 503	3220.52	231	7.045309	28.401	5	FL	EAST	M	B
WMU 503	3220.52	233	7.017617						
WMU 503	3220.52	234	10	10.058	2	FL	WEST	L	S
WMU 503	3220.52	234	10	74.253	6	BR	WEST	M	B
WMU 503	3220.52	235	6.989919						

WMU 503	3220.52	236	10	689.841	8	BR	WEST	M	S
WMU 503	3220.52	236	10	138.048	2	BR	WEST	M	B
WMU 503	3220.52	236	10	192.413	7	BR	WEST	M	B
WMU 503	3220.52	237	6.962213						
WMU 503	3220.52	238	10						
WMU 503	3220.52	239	6.934449						
WMU 503	3220.52	240	10						
WMU 503	3220.52	244	10						
WMU 503	3220.52	245	6.851023	244.437	3	BR	EAST		
WMU 503	3220.52	245	6.851023	177.997	3	BR	EAST	M	B
WMU 503	3220.52	245	6.851023	54.973	4	FL	EAST	M	S
WMU 503	3220.52	245	6.851023	175.609	6	BR	EAST	M	S
WMU 503	3220.52	245	6.851023	100.879	8	BL	EAST	M	S
WMU 503	3220.52	246	10	140.814	1	BL	EAST	L	S
WMU 503	3220.52	247	6.823202	56.342	3	FR	WEST	M	S
WMU 503	3220.52	248	10						
WMU 503	3220.52	249	6.795391						
WMU 503	3220.52	252	10	69.373	2	FR	WEST	M	S
WMU 503	3220.52	253	6.739813						
WMU 503	3220.52	254	10						

Density Estimation Results

Effort : 1458.630

samples : 165

Width : 1402.490

observations: 355

Model Selection Results

Model 1
Hazard Rate key, k(y) = 1 - Exp(-(y/A(1))**-A(2))

Detection probability : 16.9
Encounter rate : 65.8
Cluster size : 17.3

Goodness of fit tests

Kolmogorov-Smirnov test

D_n = 0.0406 p = 0.6011

Cramer-von Mises family tests

W-sq (uniform weighting) = 0.0618 0.800 < p <= 0.900
Relevant critical values:
W-sq crit(alpha=0.900) = 0.0460
W-sq crit(alpha=0.800) = 0.0622

C-sq (cosine weighting) = 0.0536 0.600 < p <= 0.700
Relevant critical values:
C-sq crit(alpha=0.700) = 0.0499
C-sq crit(alpha=0.600) = 0.0622
Total Chi-square value = 12.7250 Degrees of Freedom = 15.00

Probability of a greater chi-square value, P = 0.62353

Expected cluster size estimation table

Expected cluster size estimated based on regression of: log(s(i)) on g(x(i))

Regression Estimates

Slope = -0.504760 Std error = 0.127542

Intercept = 1.56605 Std error = 0.106946

Correlation= -0.2061 Students-t = -3.95759

Df = 353 Pr(T < t) = 0.457757E-04

Expected cluster size = 3.9021 Standard error = 0.18298

Mean cluster size = 4.7521 Standard error = 0.37604

Detection probability plot