

Aerial Wildlife Survey Report

Provincial Pronghorn Survey 2021

Background

Aerial surveys for pronghorn have been conducted in Alberta since 1963. In 1985 a trend block survey was developed to sample portions of primary range in each antelope management area (AMA) in the province (see Table 1 for WMUs and area of each AMA). Approximately 17% of the 37,544 km² of primary antelope range in the province is surveyed to provide information on population densities and herd composition both within AMAs and provincially. From 2007–2012, pronghorn surveys were conducted by the Alberta Conservation Association (ACA) and summary results can be found on their website at:

- <http://www.ab-conservation.com/programs/wildlife/big-game-surveys>

Pronghorn hunting opportunities are in high demand in Alberta, making the information collected during annual surveys a critical component of pronghorn management. This report provides detailed results of the survey conducted by Alberta Environment and Parks in 2021, and summarizes pronghorn trends within AMAs from 2013–2021, and provincially from 2007–2021.

Survey method

Surveys were flown simultaneously in two Bell 206B aircraft July 5–7, 2021. Each AMA contains from one to seven designated survey blocks (Figure 1) with 1.6 km wide fixed strip transects spaced 3.2–6.4 km apart. At each observation point animals were counted and classified as bucks, does, or kids. Pronghorn density (#observed/km²) within each AMA was calculated by dividing number of animals observed on transect by search area (sum of transect lengths multiplied by 1.6 km). For a population estimate within each AMA, the observed density was multiplied by the area of the AMA. AMA G and H also contain expanses of secondary range that are not surveyed. Density of pronghorn in secondary range is estimated as 0.04/km², which is added to the population estimate within primary range of those AMAs. The estimated provincial population is the sum of all AMA survey estimates, and does not include pronghorn occupying CFB Suffield (AMA S) at the time of the survey.

CFB Suffield was last surveyed in 2009 where 2,469 pronghorn (10% of the provincial population) were estimated to occur. In 2021, the population split of buck, doe, and kid for each AMA was calculated by multiplying the total estimated population by the proportion of each age/sex class observed. Buck and kid:doe ratios were calculated for each AMA as #bucks or kids observed/#does observed. Provincial estimates for buck and kid to doe ratios were calculated by totals of each age/sex class summed across AMAs (i.e. buck:doe ratio=total bucks/total does; kid:doe ratio=total kids/total does).

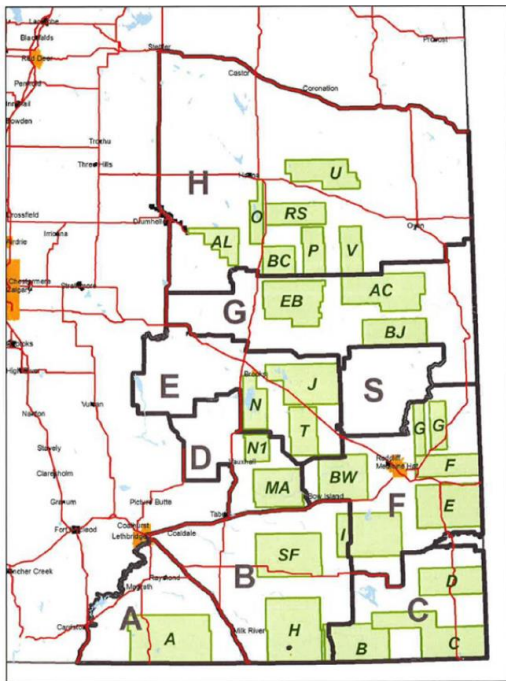


Figure 1. Antelope Management Areas and Trend Blocks

Results

In 2021 the total survey effort was 5951 km² of an estimated 37544 km² (16%) of primary range in AMA A-H. Secondary range in AMA G and H is approximately 2121 km² and 9098 km², respectively. That contributes an estimated 82 animals to the overall estimate in AMA G, and 351 animals to the estimate in AMA H. In total, 2412 pronghorn were observed on-transect; 1270 doe, 540 buck, and 570 kid. The provincial buck:doe and kid:doe ratios were 0.43 and 0.45, respectively. The provincial estimate was 15955 with a population split of 8476 doe, 3544 buck, 3935 kid. The highest population density occurred in AMA F, while buck:doe ratio was highest in AMA G and kid:doe ratio highest in AMA B (Table 2).

Between 2009 and 2011 the provincial pronghorn population was estimated to decline 42% from 20,111 to 11,701 animals; the population in 2011 was the lowest on record since 1996. Between 2011 and 2014, the population increased by an estimated 3,624 animals (15%/year). A slight decline was observed in the herd between 2014 and 2015. Between 2015 and 2017 the population increased 23%, roughly 12%/year. The population estimate declined 18% between 2017 and 2018. This survey indicates a stable pronghorn population trend between 2018 and 2021 with an estimated annual increase of 3% (Figure 2).

The provincial buck:doe ratio varies from survey to survey (Figure 2), and range between roughly 0.3 and 0.5 (note: a ratio of 0.3 is equivalent to 30 bucks per 100 does). Buck:doe ratios generally declined between 2010 and 2015, but have rebounded since. In 2021, the buck:doe ratio was relatively high (0.43). Similarly, kid:doe ratios, an indicator of production in the population, are variable and have ranged between roughly 0.2 and 0.5 since 2007. Following a series of low years between 2008 and 2013, kid:doe ratios have been relatively stable and exceeding 0.4 since that time. The kid:doe ratio (0.45) in 2021 was among the highest recorded since 2013.

Similar to provincial pronghorn density estimates, density within individual AMAs is variable and indicates fluid geographic distribution of animals among AMAs and years. For example, while there was a slight provincial decline in abundance between 2017 and 2018, AMAs A and C experienced severe decline, while AMA G increased substantially (Figure 3). Similarly, AMA G experienced a marked decline in abundance between 2018 and 2021, while AMA H had a corresponding increase. While most AMAs tend to oscillate around the provincial density estimate, AMA H has been steadily increasing since 2013 (Figure 3).

Due to the variability associated with buck and kid:doe ratios both provincially and within individual AMAs, we compared the averages for each (+/- standard error) over the period of 2013-2021 (Figure 4). That analysis shows that both buck and kid:doe ratios were highest in AMAs F, G, and H; AMA B also had a high average kid:doe ratio (Figure 4).

TABLE 1: WMUS CONTAINED WITHIN EACH AMA AND ESTIMATED AREA OF EACH AMA IN THE PROVINCE
(km²)

AMA	Primary range (km ²)	Secondary range (km ²)	WMUs
A	1839	-	108
B	5905	-	104, 106, 112
C	4674	-	102, 118
D	1352	-	128, 140
E	3004	-	138, 142, 144
F	7420	-	116, 119, 124, 148
G	6254	2121	150, 151, 152
H	7093	9098	160, 162, 163, 164, 166
S	2590	-	732

TABLE 2: PRONGHORN SURVEY RESULTS 2021
(km²)

AMA	# Observed	Density(#/km ²)	Buck:Doe	Kid:Doe	Population estimate
A	111	0.28	0.33	0.19	525
B	242	0.43	0.39	0.57	2554
C	294	0.34	0.41	0.32	1608
D	150	0.34	0.53	0.40	461
E	155	0.41	0.27	0.46	1231
F	615	0.51	0.51	0.50	3773
G	356	0.36	0.55	0.47	2371
H	489	0.43	0.34	0.49	3430
TOTAL	2,412	0.42*	0.43*	0.45*	15,953

* Calculated from total numbers of all provincial blocks.

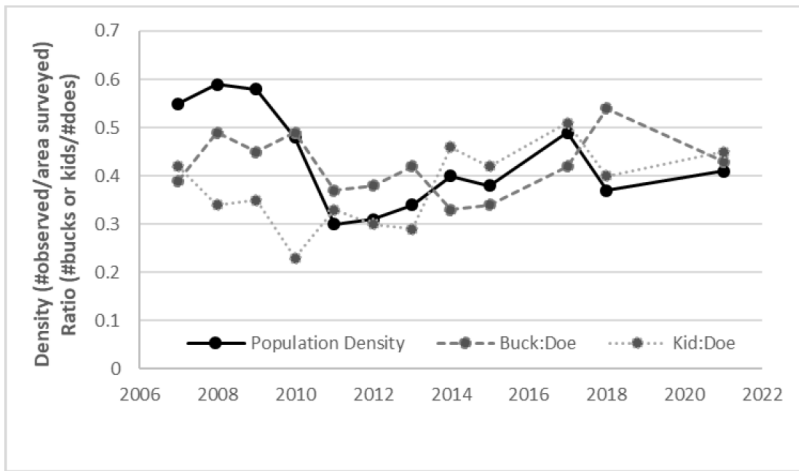
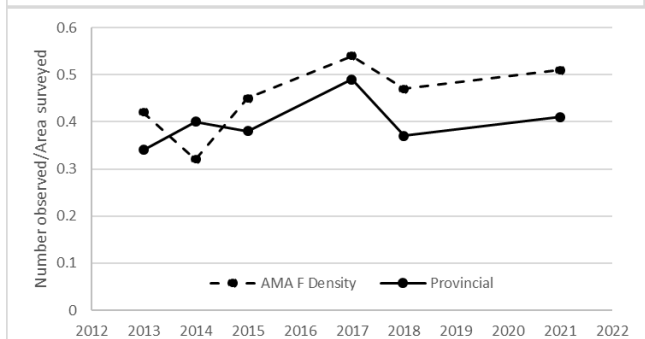
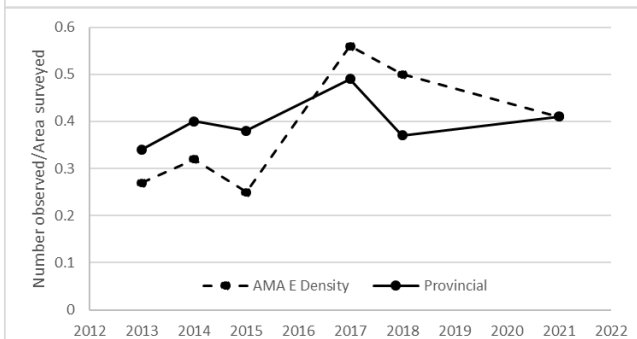
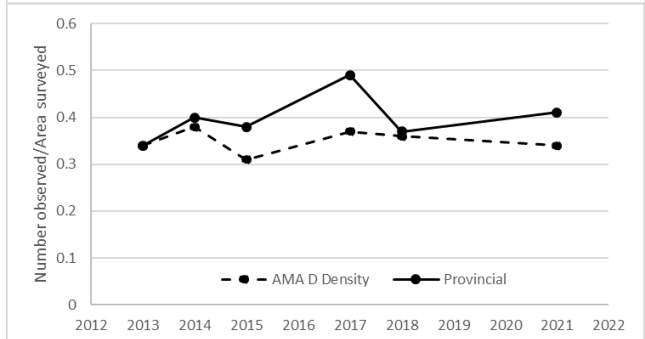
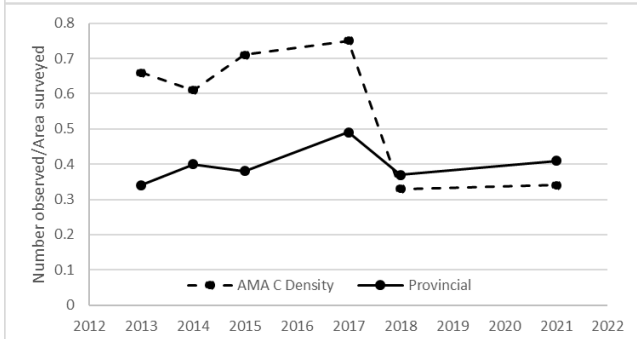
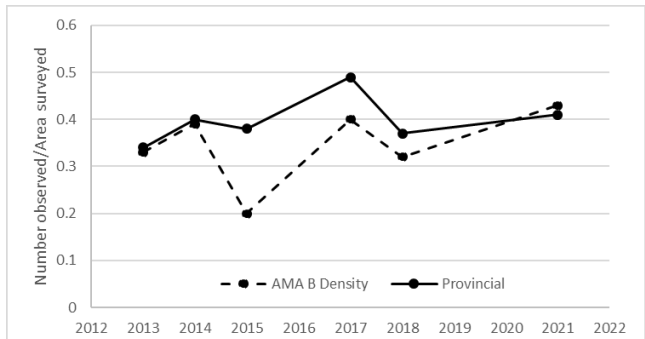
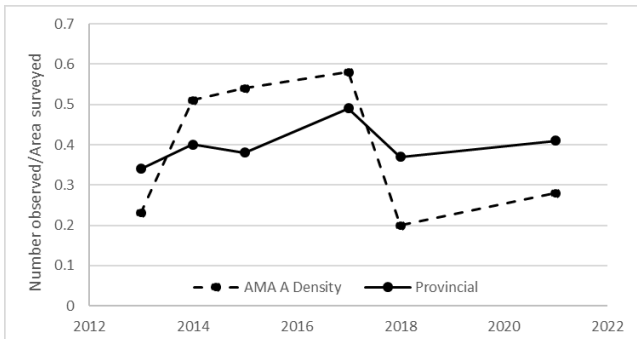


Figure 2. Pronghorn provincial survey trends 2007-2021 (AMA A-H combined).



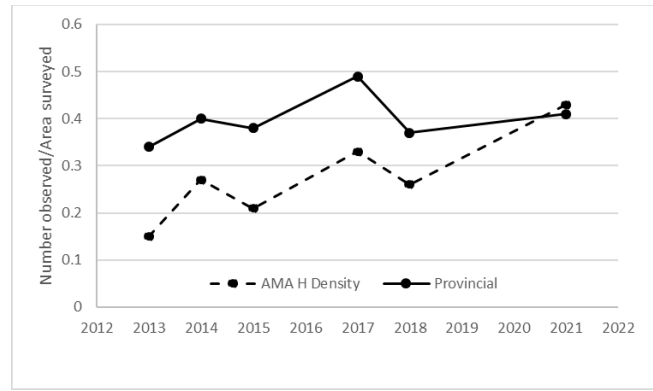
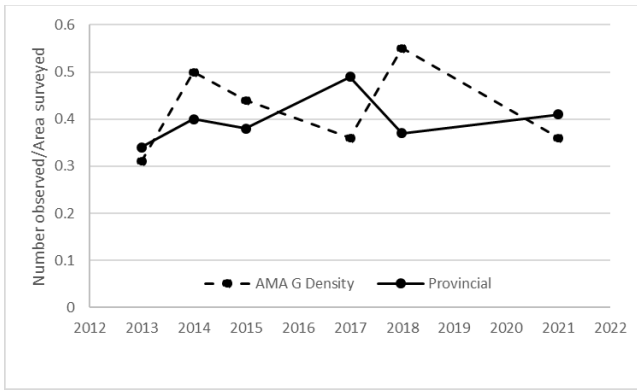


Figure 3. Population density trends in Antelope Management Areas relative to provincial estimates 2013-2021

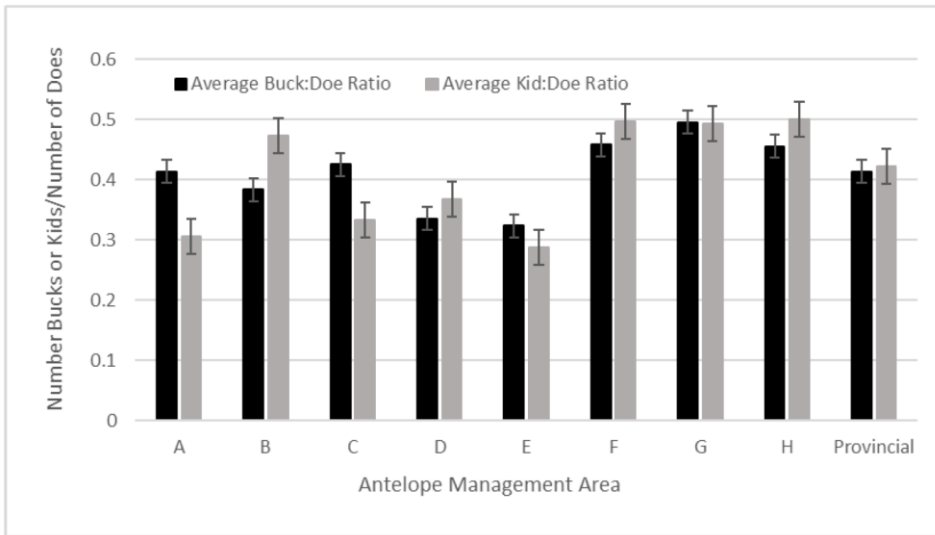


Figure 4. Average Buck:Doer and Kid:Doer ratios in each AMA and provincially 2013-2021