

# Aerial Wildlife Survey Report

## Elk Minimum Total Count Survey of Hinton-Cadomin Winter Ranges (2018)

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### Introduction

Minimum total count surveys of elk are conducted periodically in late winter in the Hinton-Cadomin area to record observed abundance and composition. These surveys allow development of a time series, and estimation of trends in population abundance, composition, sex and age ratios, and reproductive and recruitment potential. The usefulness of the time series and estimations are primarily a function of the frequency of surveys and the ability to measure composition, the most telling attribute of population vigour. Sex ratios identify population reproductive potential, reflecting the generational to evolutionary time scale. Calves to cow ratio demonstrates the short term or annual productivity. Calf as a proportion of total elk combines the long-term and short term metrics to demonstrate recruitment potential.

Tree cover in the survey area is expected to cause observed abundance to significantly underestimate actual abundance, and bull elk, specifically mature bull elk, are expected to be underestimated to a greater extent than cow elk. The bias against observing bulls is expected to overestimate females in the sex ratio and calves in the total elk. Subsequently, the annual calves to cows measurement is the most accurate, although the least meaningful of the three productivity metrics. This deficiency argues for the need to increase survey frequency to every two years.

### Survey Method

Winter ranges where elk are relatively more visible, because of perceived greater presence, lower tree cover or areas of open grassland, were gridded for 100% coverage by a jet ranger 206 helicopter, with a pilot and navigator/classifier in the front seats and observers in each back seat. Observed elk were classified as bulls (spike:2-4:5:6:UC points), cows and calves, and locations recorded by Geographic Positioning System. Surveyed areas were snow covered with fresh snow within the last 48 hours. Winds were <15 km/hr.

### Results

The abundance and composition of elk observed on identified winter ranges (n=6) in 2018 is presented in Table 1. Elk abundance is lower than in previous surveys back to 2008 on all surveyed ranges except Hinton Town Vicinity (Appendix 1). However, productivity (calves/100 cows) in 2017/18 is extremely high (60.0), very good (39.4, 36.8, 36.1), less than desired (26.7) or inadequate (19.4) on respectively 1, 3, 1, 1 winter range. The extremely high result may be a function of low sample size (n=10 cow and 6 calf elk). The four winter ranges in the upper Athabasca valley (Athabasca Ranch, Camp 1, Brule Pasture, and Hinton Town Vicinity) combined had 33.9 calves/100 cows. Relative stability and very good productivity on the Hinton Town Vicinity range may indicate increasing preferential selection for the town site.

**Table 1. Elk observed on identified elk winter ranges in the Hinton-Cadomin area, February 2018**

Complex	Total Elk	Classified	Spike	2-4 Point	5 Point	6 Point	U/C	Total Bulls	Cows	Calves	Yrl.	U/C
Athabasca Ranch	50	50	2	2				4	33	13	0	0
Camp 1	18	18	1	1	0	0	0	2	10	6	0	0
Brule Pasture	45	45	0	2	0	0	0	2	36	7	0	0
Hinton Town Vicinity	70	49	0	0	0	0	0	0	36	13	0	21
Cadomin (WMU 437 & 438)	25	19	0	0	0	0	0	0	15	4	0	6
Rock Lake	29	29	3	0	0	0	0	0	19	7	0	0

**Appendix 1 . Elk Survey Summary 2008 – 2018: Hinton-Cadomin**

Location	WMU	Date	Composition						
Geographic Description	Location is within WMU	Mm/dd/yy	Total Elk	Cows	Calves	Calves/100 cows	Bulls	Points-Spike:2-4:5:6:uc	U/C
Athabasca Ranch	344	01/30/2008	149	107	32	29.9	10	10:0:0:0:0	0
		02/13/2009	169+	48	12	25.0	1	1:0:0:0:0	108+
		03/01/2009	156	102	39	38.2	13	6:5:2:0:0	2
		03/07/2011	133	54	29	53.7	14	11:3:0:0:0	36
Camp 1	438	01/30/2008	75	54	17	31.5	4	4:0:0:0:0	0
		02/13/2009	50	30	10	33.3	10	2:0:8:0:0	0
		03/01/2009	30	11	11	100	3	3:0:0:6:0	
		03/07/2011	61+	48+	12	25.0	1	1:0:0:0:0	?
		02/11/2018	18	10	6	60.0	2	1:1:0:0:0	0
Brule Pasture	439	01/30/2008	60	54	6	11.1	0	n/a	0
		02/13/2009	2	2	0	0	0	n/a	0

		02/18/2009	67	56	9	16.1	2	0:2:0:0:0	0
		02/28/2009	74	52	21	40.4	1	1:0:0:0:0	0
		03/07/2011	60	13	5	38.5	3	1:0:0:1:1	39
		02/20/2018	45	36	7	19.4	2	0:2:0:0:0	0
Hinton Town Vicinity	342	01/30/2008	6	1	1	100.0	4	0:0:0:0:4	0
	342 & 438	03/01/2009	145+	54	10	18.5	11	8:3:0:0:0	70+
		03/07/2011	61	8	3	37.5	2	2:0:0:0:0	48
		02/22/2018	70	36	13	36.1	0	0:0:0:0:0	21
Cadomin	437 & 438	02/17/2009	420+ <sup>A</sup>	120	32	26.6	77	6:0:2:25:44	192+
		02/25/2011	84 <sup>B</sup>	6	3	50.0	0	?	75
		02/22/2018	25	15	4	26.7	0	0:0:0:0:0	6

<sup>A</sup> includes CRC and GRM leases in 2009

<sup>B</sup> does not include CRC and GRM coal mine leases in 2011, 2018

#### Appendix 1 continued. Elk Survey Summary 2009 – 2018: Berland and Wildhay

Location	WMU	Date	Composition						
Geographic Description	Location is within WMU	Mm/dd/yy	Total Elk	Cows	Calves	Calves/100 cows	Bulls	Points-Spike:2-4:5:6:uc	U/C
Rock Lake	440	02/10/2009	21	19	1	5.3	1	0:0:1:0:0	0
		02/28/2009	65	35	26	74.3	4	2:0:2:0:0	0
		03/07/2011	37	27	5	18.5	5	3:2:0:0:0	0
		02/22/2018	29	19	7	36.8	3	3:0:0:0:0	0
Chases Flats	344 & 352	02/18/2009	74	37	22	59.5	15	0:0:0:0:15	0

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