

2011 Wildlife Management Units 344, 437 - 446 elk



Section Authors: Andy Murphy and Jeff Kneteman

Suggested Citation

Murphy, A., and J. Kneteman. 2012. Pronghorn antelope. Pages 30-35. *In*: M. Ranger and R. Anderson. Delegated aerial ungulate surveys, 2010/2011 survey season. Data Report, D-2011-009, produced by the Alberta Conservation Association, Sherwood Park, Alberta, Canada. 100pp.

Aerial trend counts allow biologists to estimate population trends, sex ratios and recruitment rates. Large portions of remote traditional wintering ranges can be surveyed during a period when elk are concentrated and snow conditions make them relatively easy to observe. The last survey of this elk wintering range occurred in 2009. Data from the 2011 winter trend survey will be used to calculate the allowable harvest for the hunting season and to assess whether current methods of management are sufficient to sustain elk populations.

Study area

The WMUs 344, 437 - 446 survey area is located northeast of Jasper National Park and includes all or parts of these 11 WMUs, along with Willmore Wilderness Park (Figure 1). Most of the study area falls within the Rocky Mountain Natural Region, with the eastern edge of the study area in the Foothills Natural Region (Natural Regions Committee 2006). Most of the traditional wintering range surveyed is adjacent to the Smoky, Berland, Wildhay, Athabasca and McLeod rivers. The Willmore Wilderness Park is largely undisturbed wilderness. Forestry cut blocks and linear disturbances are common outside of the park, and there are both active and reclaimed mines near Grande Cache and Cadomin. Agricultural land and "Fire Smart Areas" are rare, and are concentrated in the vicinity of Hinton and Cadomin.

Survey methods

The aerial survey was conducted on 6, 8, 9, 24 February and 7 March 2011 using a Bell 206B helicopter. Transects were flown in appropriate orientations to ensure coverage of the traditional wintering range and other areas where elk had been recently reported or observed. Observations of elk made during concurrent days of bighorn sheep surveys were also used to direct our search effort. We flew at approximately 190 m above ground level at ground speeds of 100 - 130 km/h. The search grid was intensified when fresh elk tracks and/or craters were observed. The flight crew consisted of a pilot and navigator in the front seat and two observers in the rear seat. When elk were observed, a total count was made by one of the observers and a GPS location was recorded. The navigator classified the elk as cows, calves, bulls or unclassified. Bulls were further classified into small, medium, large or unclassified based on antler size.

Snow cover was excellent and winds were light throughout the survey period. Cloud cover varied from 0 to 100%. Visibility was excellent throughout the survey; however, shadows associated with clear sky conditions may have reduced elk sightability (Allen 2005). We did not correct for sightability; therefore, overall counts should be considered as minimum population estimates and direct comparisons of survey results among years may be difficult.

Results

A total of 719 elk were observed in the 2011 aerial survey. Of this total, 283 were in the vicinity of Grande Cache, 37 were in the vicinity of the Berland and Wildhay rivers, and 399 were in the vicinity of Hinton and Cadomin (Table 1). An additional 365 elk were counted from a ground survey on the Cardinal River Coal (CRC) and Greg River Mine (GRM) leases by a mine contractor (Bighorn Wildlife Technologies). The combined counts result in a total of 1,084 elk. This is less than the total count from a similar survey in 2009 ($n = 1,246$); however, the 2009 survey recorded 74 elk at "Chases Flats", a site that was not surveyed in 2011. Additionally, the 2009 total was compiled from the highest counts recorded during multiple observations.

In 2008, only four sites in the Hinton - Cadomin vicinity were surveyed on a single day, resulting in a total of 290 observed elk. The comparable total from the same four sites

(Athabasca Ranch, Brule Pasture, Camp 1 and Hinton-Town) in 2011 was slightly higher at 315 elk.

The regional total of 1,084 from the 2011 survey was more than twice the number of elk counted by Smith and Edmonds in 1987 (n = 509).

There was a ratio of 13 bulls/100 cows observed throughout the entire survey area in 2011; however, this ratio varied substantially across the survey area (Table 9). The overall bull/cow ratio was substantially lower in 2011 than in 2009 (26 bulls/100 cows). However, the sightability of bulls can be substantially lower than the sightability of cows and calves (Allen 2005), so the 2011 ratio may simply reflect lower sightability of bulls during the 2011 survey.

The calf to cow ratio throughout the entire survey area was 31 calves/100 cows, and this ratio also varied across the survey area (Table 1). The overall calf/cow ratio in 2011 was identical to the 2009 survey, and was higher than the 1987 and 2008 ratios, which were 16 and 26 calves/100 cows, respectively.

The snow pack was deeper than average in 2011. This may have caused some elk to avoid traditional wintering sites, especially in the Berland - Wildhay vicinity. Elk sign was observed more frequently on this survey, than during other years, throughout exposed areas such as scattered high-ground cutblocks and windblown south facing slopes and knolls.

Table 1. Total elk population counts in Wildlife Management Units 344, 437 - 446 from 1987 - 2011.

Area/Year	Males	Females	Juveniles	Unclassified	Total Elk	Ratio to 100 Females	
						Males	Juveniles
Grande Cache							
2011	13	209	57	4	283	6	27
2009	24	172	25	29	250	14	15
2008	--	--	--	--	--	--	--
1987 ^a	57	254	41	0	352	22	16
Berland - Wildhay							
2011	5	27	5	0	37 ^b	19	19
2009	19	72	48	0	139	26	67
2008	--	--	--	--	--	--	--
1987 ^a	1	13	2	0	16	8	15
Hinton - Cadomin							
2011	60	374	128	202	764 ^c	16	34
2009	112	358	112	276	858	31	31
2008	18	216	56	0	290 ^d	8	26
1987 ^a	10	109	22	0	141 ^e	10	20

^a Smith and Edmonds, 1987

^b Chases Flats was not surveyed.

^c CRC and GRM coal mine leases were counted from the ground by Bighorn Wildlife Technologies (365 of the 764 elk).

^d Only the Hinton vicinity (excluding Cadomin) was surveyed.

^e The Hinton vicinity was not surveyed.

Literature Cited

Allen, J.R. 2005. Use of sightability models and resource selection functions to enhance aerial population surveys of elk (*Cervus elaphus*) in Alberta. M.Sc. Thesis, University of Alberta, Edmonton, Alberta, Canada. 69 pp.