

## 2011 Wildlife Management Units 436 - 446 bighorn sheep



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Aerial surveys for counts of bighorn sheep populations in the Eastern Slopes of Alberta have been conducted since the 1970s. Since 1978, surveys have focused on selected mountain complexes (traditional winter ranges) where concentrations of bighorn sheep have been observed. These mountain complexes are located within WMUs 437 - 440, 442, and 444 - 446 (Figure 1). The most recent complete survey of these complexes was conducted in the winter of 2008 (Hobson 2008). In 2009, five complexes with low productivity in 2008 were again surveyed, along with the winter range complexes in WMU 444. In 2011, a complete survey of all winter ranges took place, with the exception of complexes in WMU 445. Additionally, three

new complexes were surveyed; one in WMU 436 and two in WMU 440. This report summarizes observations of bighorn sheep populations in the winter of 2011 with results being compared to previous surveys.

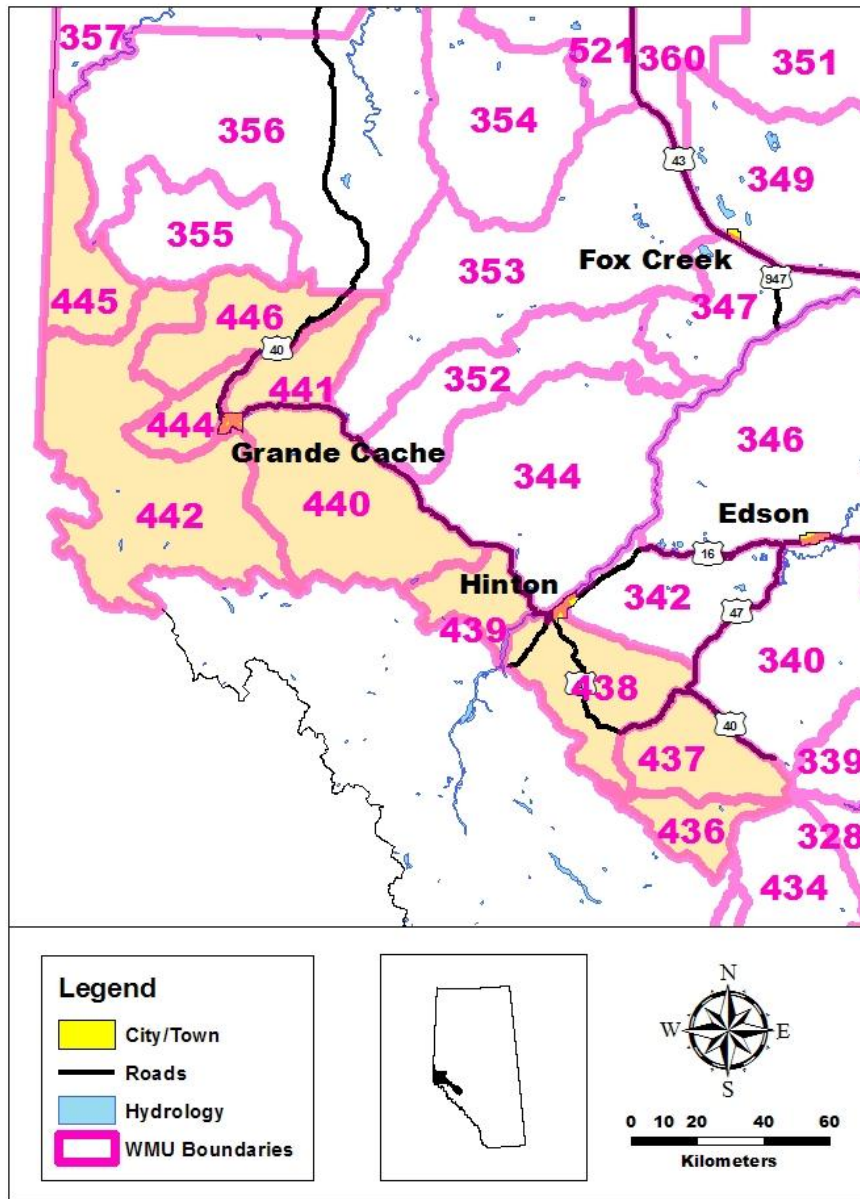


Figure 1. Location of the bighorn sheep survey area in Wildlife Management Units 436 - 446 in Alberta.

### *Study area*

All selected mountain complexes within WMUs 437 - 446 were surveyed including: Folding Mountain, Hayden Ridge, Horn and Swift, Monoghan, Moon and Planet, Mount Stern, Mumm and Collie, North Berland, Redcap, Rocky Pass, SRC/Caw, Solomon Creek, Triangle and Whitehorse. With supplemental funding from ASRD, three new complexes were surveyed to assess additional areas of sheep wintering range; Deneor (WMU 440), North Persimmon (WMU 440), and Ruby-Thistle (WMU 436). A number of these mountain complexes have areas that lie within the boundaries of Willmore Wilderness Park and Jasper National Park. The study area is located within the alpine and subalpine natural subregions of Alberta (Natural Regions Committee 2006). The area is dominated by non-treed alpine landscapes, with alpine shrubs and grasses as the dominant vegetation.

### *Survey methods*

Aerial surveys of the mountain complexes began on 19 and 21 January 2011, but were then postponed due to poor weather. Following the improvement of weather, surveys continued on 1, 6, 7, 8, 16, and 24 February 2011. Surveys were flown using a Bell 206B helicopter. Mountain contours were flown in a counter-clockwise direction at a height to ensure visibility of open slopes on all ridges. The four person crew consisted of a pilot, a navigator/observer, an observer and a recorder/observer. The navigator was responsible for classifying each group of sheep observed, while the observer provided a total count. The recorder/observer recorded all data and provided supplemental observations. The location of each animal or group of animals was taken with a GPS. All sheep were classified according to sex and age. Adult sheep were considered as greater than one year old. Rams were further classified according to horn-size categories:  $\frac{1}{4}$  curl,  $\frac{1}{2}$  curl,  $\frac{3}{4}$  curl, or legal ( $\frac{4}{5}$  curl or greater) (ASRD 2010). Unclassified sheep were either rams (horn size could not be determined) or sheep that could not be identified based on either sex or age.

Conditions for the surveys were good with the majority of ridges snow covered. Temperatures ranged from -27 to -5 degrees Celsius. Winds were generally low, but it is worth noting that high winds were relatively common throughout the survey period and caused delays on many occasions. We believe that sheep in these areas do not commonly move among ranges during a specific winter. All of the traditional winter ranges were surveyed between 21 January and 8 February 2011, such that if any winter movements did occur, they would likely be nominal. 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 1,864 bighorn sheep were counted during the aerial survey of WMUs 436 - 446 (Table 1, 2). The number of sheep observed in WMU 437 was very similar to the count obtained in 2009, approaching the maximum count of 200 sheep observed in this WMU over the past 10 surveys (Table 3). The WMU 438 count was well below the maximum count in 1994, but consistent in composition and abundance with the three previous surveys. WMU 439, which has had some significant variation among surveys, possibly due in part to its smaller population and the resulting large effect that missing one or two groups can have on the results, was found to have the largest count of the past 10 surveys. Survey results from WMUs 440, 442 and 444 suggest relatively stable populations since the late 1980s. WMUs 436 and 446 have only recently been added to the survey program, making it difficult to determine a population trend. Overall classification of rams by horn size for the entire survey area, was 129 ¼ curl, 111 ½ curl, 75 ¾ curl, 91 legal and 2 unclassified rams.

Table 1. Total counts and sex/age distribution of bighorn sheep in Wildlife Management Units 437 - 446 in 2011.

WMU	Rams	Ewes	Lambs	Unclassified	Total Sheep
437	62	80	43	0	185
438	96	134	75	11	316
439	16	30	7	1	54
440 <sup>a</sup>	45	164	89	5	303
442	84	198	98	0	380
444	53	148	63	0	264
445 <sup>b</sup>	--	--	--	--	--
446	52	120	22	1	195

Table does not include counts from Ruby-Thistle (WMU 436), see Table 2.

<sup>a</sup> Does not include counts from Deneor and North Persimmon, see Table 2.

<sup>b</sup> Not surveyed in 2011.

Table 2. Total counts and sex/age distribution of bighorn sheep in three mountain complexes not previously surveyed in Wildlife Management Units 436 and 440 in 2011.

Complex (WMU)	Rams	Ewes	Lambs	Unclassified	Total Sheep
Deneor (440)	21	21	18	0	60
North Persimmon (440)	3	11	6	0	20
Ruby-Thistle (436)	16	52	19	0	87

Table 3. Total counts of bighorn sheep in Wildlife Management Units 437 - 446 from 1988 - 2011.

Year	Total number of bighorn sheep by WMU							
	437	438	439	440 <sup>a</sup>	442	444	445	446
2011	185	316	54	303	380	264	--	195
2009	178	297	--	--	153	297	123	192
2008	96	276	25	313	255	--	--	--
2002	150	330	37	286	481	296	--	--
1999	118	168	31	322	315	--	46	--
1998	132	--	--	--	--	--	--	--
1997	153	--	--	--	--	--	--	--
1996	158	331	43	338	--	--	--	--
1994	200	437	50	317	341	271	99	--
1988	185	316	54	303	380	264	--	195

Table does not include counts from Ruby-Thistle (WMU 436).

<sup>a</sup> Does not include counts from Deneor and North Persimmon.

-- Not surveyed.

### *Literature Cited*

Alberta Sustainable Resource Development (ASRD). 2010. Aerial ungulate survey protocol manual. Produced by ASRD, Fish and Wildlife Division, Edmonton, Alberta, Canada. 65 pp.

Natural Regions Committee. 2006. Natural regions and subregions of Alberta. Compiled by D.J. Downing and W.W. Pettapiece. Pub. No. T/852, produced by the Government of Alberta, Edmonton, Alberta, Canada.