



Aerial Wildlife Survey Report

Bighorn Sheep Aerial Ungulate Survey

Red Deer North Saskatchewan Region (Winter 2020)

Background

Bighorn sheep surveys of winter ranges give a minimum population count and contribute to establishing and monitoring long term population trends. Classification of sheep populations (ram: ewe: lamb ratios) are used to assess population composition and recruitment.

Classification of rams by horn size is completed to allow for an estimate of trophy sheep sustainability. Alberta's Bighorn Sheep Management Plan's objective for legal rams found during winter surveys is 5% of the total population being comprised of legal rams following the completion of the preceding hunting season. Legal rams are defined as having achieved a 4/5 curl or larger. Ideally, bighorn sheep surveys are completed every second year and the last two surveys in the Red Deer North Saskatchewan (RDNS) Region were completed during the winters of 2018 and 2015.

All known bighorn sheep winter ranges in Wildlife Management Units (WMUs) 328, 414, 418, 420, 422, 426, 428, 429, 430, 432, 434, 734 (Ghost Wilderness Area (WA)) and 738 (White Goat WA) were flown during the 2020 survey. In addition, all sheep winter ranges in Banff National Park north of the Banff town site were surveyed. This was the most complete survey of Banff Park in the past 15-20 years. A portion of the Brazeau/Issac complex in the south-east corner of Jasper Park (just north of WMU 432) was also flown.

This report summarizes the results of the 2020 winter survey on provincial lands. Details on the Banff Park survey are reported separately.

Survey method

The locations of the bighorn winter ranges are GIS referenced and mapped allowing the survey crew to survey all known winter ranges within the defined survey area. Ideally, bighorn sheep surveys are completed as soon as possible following a snowfall so that the winter ranges have complete coverage of snow to optimize sight-ability. As the winter range is approached all crew members look for sheep and tracks. When tracks are observed they are followed until sheep are located. When a herd of sheep is observed the aircraft approaches from behind and flies by with the herd on the left hand side of the aircraft. One of the two observers on the left hand of the aircraft completes a total count of observed sheep and counts lambs. The other observer on the left counts and classifies observed rams. The difference between the total count and combination of lambs and rams observed will equal the number of ewes. The observer on the right side of the aircraft is responsible for geo-referencing sheep locations recording counts and classifications. Photos are taken whenever possible to verify classifications.

Results

Bighorn sheep winter ranges were surveyed from February 5-7 and 9-10, 2020. The first three days of the survey focused on provincial lands north of the Red Deer River, while the last two days were concentrated in Banff National Park and southern WMUs (414 and 734). Weather conditions and visibility were poor to good during the survey, with variable winds and snow conditions. Some slopes were wind swept and lacked good snow coverage, despite recent snowfalls.



Photo Credit: A. Hubbs, Alberta Environment and Parks

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Totals

A total of 1235 bighorn sheep were observed on provincial lands, of which 1,199 sheep were classified. Of the 36 unclassified sheep, 11 were of unknown sex or age class, and 25 were “rams” of unknown horn classification.

The total number of rams which were classified were:

- 42 at ¼ curl
- 59 at ½ curl
- 73 at ¾ curl
- 33 legal rams (4/5 curl or larger)

The number of legal rams that were observed equated to 2.8% of the total classified sheep. This includes 1 legal ram in the Ghost Wilderness Area (WMU 734) where hunting is prohibited. No legal rams were seen in other no-hunting areas (i.e. White Goat Wilderness Area (WMU 738) and WMU 429).

Population ratios were 29 rams: 100 ewes: 25 lambs.

Comparison amongst survey results on provincial lands

Tables 1, 2 and 3 provide a summary by WMU for the 2020, 2018 and 2015 sheep surveys, respectively.

The most striking difference in 2020 was the low number of lambs per 100 ewes (25) compared with previous surveys (42 – 2018, 37 – 2015). Lamb: ewe ratios can be highly variable across years. Wildlife management will continue to monitor these ratios to look for any long-term trends of concern.

The numbers of ram: 100 ewes were the same in 2020 and 2015 (29), and down slightly from 2018 (33). The percentage of legal rams on provincial lands declined slightly in 2020 (2.8%) from 2018 (3.1%) and 2015 (3.2%).

TABLE 1. NUMBER OF BIGHORN SHEEP OBSERVED BY WMU DURING THE 2020 RED DEER - NORTH SASKATCHEWAN REGION AERIAL SURVEY

WMU	Total sheep	Rams	Ewes	Lambs	Unclassified
328	0	0	0	0	0
414	4	0	4	0	0
416	0	0	9	0	0
418	322	59	224	39	0
420	253	47	156	39	11
422	239	28	164	47	0
426	3	0	3	0	0
428	26	6	14	6	0
429	6	0	4	2	0
430	61	30	21	10	0
432	26	7	19	0	0
434	181	40	103	38	0
734	85	13	58	14	0
738	29	2	23	4	0
Total	1235	232	793	199	11

TABLE 1A. HERD RATIO AND RAM PERCENTAGE BY AREA

Herd Composition (Rams:Ewes:Lambs)	29:100:25
% Legal Rams in Population	2.8%

TABLE 1B. NUMBER OF BIGHORN SHEEP OBSERVED BY NATIONAL PARK DURING THE 2020 RED DEER - NORTH SASKATCHEWAN REGION AERIAL SURVEY

	Park	Total sheep	Rams	Ewes	Lambs	Unclassified
	Banff*	673	263	324	78	8
Total	Jasper	41	15	21	5	0

*Refer to Banff National Park survey report for more details

TABLE 2. NUMBER OF BIGHORN SHEEP OBSERVED BY WMU DURING THE 2018 RED DEER - NORTH SASKATCHEWAN REGION AERIAL SURVEY

WMU	Total sheep	Rams	Ewes	Lambs	Unclassified
328	51	8	29	14	0
414	18	0	11	6	1 (yearling)
416	4	4	0	0	0
418	366	71	204	91	0
420	523	105	299	119	0
422	211	34	119	47	11
426	46	4	23	9	10
428	0	0	0	0	0
429	17	2	8	7	0
430	104	28	63	13	0
432	75	16	39	20	0
434	207	29	123	55	0
734	69	19	29	16	5
738	42	5	26	11	0
Banff	419	106	224	89	0
Provincial Land Total	1733	325	973	408	27
Banff National Park Total	419	106	224	89	0
Combined Total	2152	431	1197	497	27

TABLE 2A. HERD RATIO AND RAM PERCENTAGE BY AREA

	Province	Banff National Park
Herd Composition (Rams:Ewes:Lambs)	33:100:42	47:100:39
% Legal Rams in Population	3.1% ¹	5.7%

¹ Fifty-two rams 4/5 curl or larger out of 1698 classified sheep. This includes four legal rams observed in SMA 5, where there is currently no hunting seasons for sheep.

TABLE 3. NUMBER OF BIGHORN SHEEP OBSERVED BY WMU DURING THE 2015 RED DEER - NORTH SASKATCHEWAN REGION AERIAL SURVEY

WMU	Total sheep	Rams	Ewes	Lambs	Unclassified
328	0	0	0	0	0
414	19	6	8	5	0
416	8	8	0	0	0
418	317	40	203	74	0
420	381	72	224	85	0
422	148	34	76	37	1
426	27	4	18	5	0
428	29	8	16	5	0
429	35	4	19	12	0
430	132	26	68	38	0
432	96	13	62	21	0
434	313	47	176	51	39
738	62	3	48	11	0
Banff	288	87	147	54	0
Provincial Land Total	1567	265	918	344	40
Banff Park Total	288	87	147	54	0
Combined Total	1855	352	1065	398	40

TABLE 3A. HERD RATIO AND RAM PERCENTAGE BY AREA

	Province	Banff National Park	Combined
Herd Composition (Rams:Ewes:Lambs)	29:100:37	59:100:37	33:100L37
% Legal Rams in Population	3.2%	10.0%	4.2%

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