

BIGHORN SHEEP POPULATION STATUS  
IN ALBERTA AND BRITISH COLUMBIA

D. Herbert,(1) W. Wishart,(2) J. Jorgenson(2) and M. Festa-Bianchet(2)

(1) B.C. Fish and Wildlife Branch, Williams Lake, B.C.

(2) Alberta Fish and Wildlife Division, Edmonton, Alberta

ABSTRACT

Based on surveys carried out in 1981/82, it is estimated that about 6,000 bighorn sheep inhabit provincial lands in Alberta, another 4,000 are known to exist in National Parks. Currently about 200 to 250 rams and 250 to 300 ewes are harvested annually. Population estimates for B.C. are based on questionnaires sent to regional biologists. It is assumed that the current population size is between 4,000 and 4,500 sheep of which about 62% are California and 38% are Rocky Mountain bighorns. The present harvest consists of 60 to 65 rams and 40 to 45 ewes of these two subspecies, respectively. Certain populations in both B.C. as well as Alberta, have experienced die-offs in recent years.

INTRODUCTION

The relative status of bighorn sheep populations in Canada and the U.S.A. has been examined periodically in the Northern Wild Sheep and Goat Council Proceedings since about 1970. Population estimates have varied from guesses to stratified surveys with replicates.

The variability of past status reports is still evident in the assessment of bighorn population status in 1984. Quantitative status assessments are not available for most populations in British Columbia, negating quantitative trend assessment.

## RESULTS AND DISCUSSION

### ALBERTA

Alberta bighorn sheep populations were surveyed in 1981/82 on their winter ranges. It appears that populations have significantly increased since 1976 due to a series of mild winters. Currently, there are approximately 6,000 sheep on Provincial land and another 4,000 in the National Parks.

Since the last survey, a major die-off of sheep occurred in southern B.C. in 1981 and spread into southern Alberta in the fall of 1982. Sheep populations south of the Crowsnest Pass, including Waterton National Park, declined significantly. Mortality figures from 4 aerial surveys estimated the decline at 75 - 80 percent of the late 1970's level, or approximately 300 sheep. Older individuals and lambs were most severely affected.

During December 1983, the lamb:ewe ratio was 25:100. It is anticipated that the affect of the die-off will decline in 1984 and sheep populations will begin to recover. Translocation of northern sheep to the affected area may be possible and necessary.

The Ram Mountain herd of approximately 100 animals has been able to sustain an ewe harvest averaging 8 percent of the annual winter population. The sheep herd has compensated for this mortality through high survival, high lamb production and production from yearling ewes. Resident hunters harvest only 2 - 3 trophy rams each year from this area.

In 1982, the Sheep River winter range maintained about 150 sheep. There is evidence of overcrowding and over utilization of this limited range and lamb development and survival appear related to lungworm burdens of the respective dams.

In 1982, 2,862 trophy sheep licenses were sold and 238 rams were harvested (83% by residents). Approximately 792 non-trophy permits were issued in the same year and the hunter sample estimated that 270 sheep were harvested.

### BRITISH COLUMBIA

The status of Rocky Mountain and California bighorn sheep populations was evaluated with questionnaires from Regional Wildlife Biologists (Table 1). In general, sheep populations are increasing or stable in Regions 3, 5, 7 and 8, where a major die-off (Region 4) has not occurred. Most of southern B.C. has undergone mild winters for the past 5 - 7 years. In addition to mild winters, enhancement projects have been undertaken on approximately 21 to 34 sheep ranges.

In specific instances (Junction, Vaseux, Ashnola) populations have increased substantially. This may be due to low harvest mortality, mild weather, enhancement projects or winter feeding.

In the majority of populations, estimates are not due to aerial or ground survey information and composition information may be from an unknown portion of the population. In most cases, population numbers are based on guesses or crude estimates.



Bighorn rams in Jasper National Park

Photo: M. Hoefs



Bighorn ewes in Jasper National Park

Photo: M. Hoefs

FIG. 1 THE DISTRIBUTION OF BIGHORNS IN BRITISH COLUMBIA AND ALBERTA.

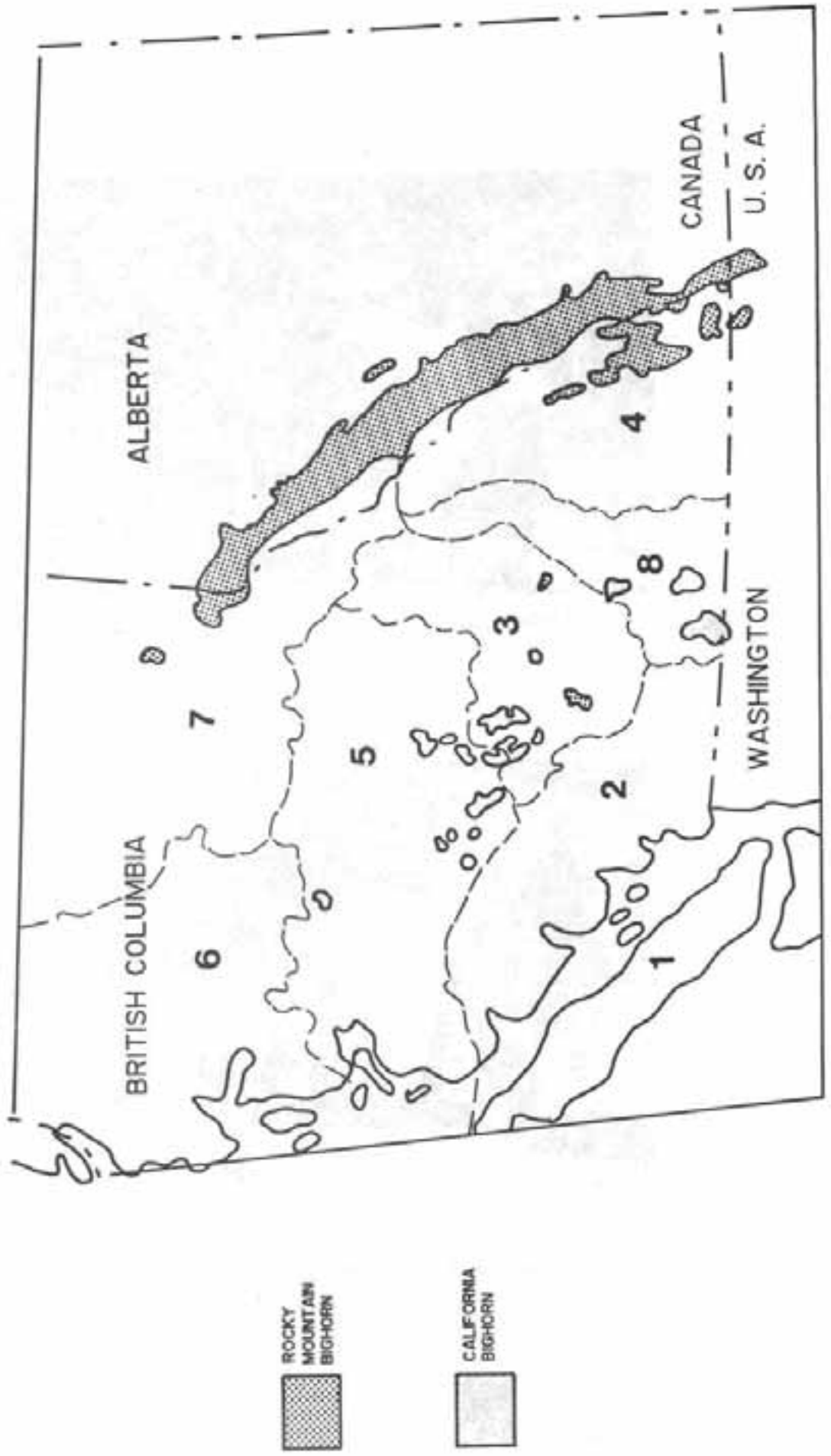


TABLE 1. STATUS OF BIGHORN SHEEP POPULATIONS IN BRITISH COLUMBIA IN 1984.

Pop. Name Reg. 3	Number Survey or Est.	Composition R: E: L	Recent Pop. Trend	Cause	Harvest M/or F	Open, LEH, Curl Reg.	Range Status	Winter Food	Enhance- ment	CRMP(2)
Spences Bridge	100	12:17:8	Inc.	Weather	7 M	Full curl	Mod.	No	No	
Chase	40	9:20:9	Stab.	Range	0	No open season	Poor	No	Slashing Pre-Burn	
Kamloops (1) Lk	115	16:21:11	Inc.	Range	<1 M <1 F	LEH ram, 1 ewe/2 yr	Good	No	Pre-Burn	
Limestones (1)	160	32:65:24	Inc.	Weather?	13 M	3/4 curl	Mod.	No	Pre-Burn	
Snulaps (1)	65	?	?			3/4 curl	?	No	Pre-Burn	
<u>Region 5(1)</u>										
Junction Inc-Deer Park	500-600 est	100:14(Mar)	Stab.	Pred.? Escape Terrain	5 M 5 F (1983)	LEH, Full	Good	No	Pre-Burn	Bescher Raven
Chum Cr	350-400 est		Inc.	Weather	4 M	Open, Full	Fair	No	No	Gaspard
Nemala	70 est		Stab.	Domestic Overgrazg	3 M	Open, 3/4	Poor	No	No	
E. Tasko Lk- Tyaughton	200 est		Stab.	Poaching?	4 M	Open, 3/4	Fair	No	No	None
W. Tasko Lk	50 est		Stab., Inc.	Weather	1 M	Open, 3/4	Fair- Good	No	No	None
Dog Creek	<10 est	Unknown	Stab.		Nil	Closed	Poor- Fair	No	No	None
Ilgechuz	15 est	8:6:1	Inc.	Immigrtn & recruit	Nil	Closed	Fair	No	No	None

(1) California bighorn sheep  
(2) Coordinated Resource Management Plan

TABLE 1. STATUS OF BIGHORN SHEEP POPULATIONS IN BRITISH COLUMBIA IN 1984.

Pop. Name Reg. 4(1)	Number Survey or Est.	Composition R: E: L	Recent Pop. Trend	Cause	Harvest H/yr F Pre Die off	Open, LEH, Cur1 Reg.	Range Status	Winter Feed	Enhancement	CRP
Phillips Cr	35 est		Stable	Post die-off	1/3yr	Cur1 reg.	Fair	No.	Setlog Spacing	No
Maguire Red Canyon	14+7	3:7:4 +7 est	Inc. Decrease	Die-off	1/3yr	Cur1 reg.	Fair	No.	Setlog	No
Wigwan China Wall	100 est	20:74:6	Inc. Decrease	Die-off	7/yr	Cur1 reg.	Good	No.	Treat(2) Slash burn	No
Bull River	37 obs.	7:18:12	Stable	Die-off	3/yr	Cur1 reg.	Exc.	No	Treat Pre.Burn	Yes
Wildhorse R.	14 obs.	3:6:5	Decrease	Die-off	1/yr	Cur1 reg.	Poor	No	Setlog Seed	Yes
Estella	35 est.		Decrease	Die-off	2/yr	Cur1 reg.	Good	No.	Pre.Burn	No
Premier	76 obs.	27:70:3	Increase	Die-off	2/yr	Cur1 reg.	Exc.	No.	Treat Pre.Burn	Yes
Marmalade	35 obs.		Stable	Snow	1/2yr	Cur1 reg.	Good	No.	Pre.Burn	No.
Vanlostrand	14 est.		Decrease	Die-off	1/yr	Cur1 reg.	Good	No.		No
Whiteswan	20 est.		Decrease	Die-off	1/yr	Cur1 reg.	Poor	No	Slash burn	No
Columbia Lk	152 obs.	50:83:18	Increase		3/yr	Cur1 reg.	Poor	No	Treat Setlog Spacing Treat	No
Windermere	22 obs.	5:12:5	Stable		1/yr	Cur1 reg.	Fair	No		No
Stoddart Cr.	130 est.		Stable		1/yr	Cur1 reg.	Fair	No		No

(1) Rocky mountain bighorn sheep

(2) Treatment - Anthelmintics

TABLE 1. STATUS OF BIGHORN SHEEP POPULATIONS IN BRITISH COLUMBIA IN 1984.

Pop. Name Reg. 4 (cont'd)	Number Survey or Est.	Composition R: E: L	Recent Pop. Trend	Cause	Harvest M+or F Pre Die off	Open, LEH, Cur <sup>1</sup> Reg.	Range Status	Winter Feed	Enhance- ment	CRP
Simpson R	65 est.		Stable	Snow, Pred.	2/yr	Cur <sup>1</sup> reg.	Good	Yes	Pre-Burn	No
Sheep Mtn	75 obs.		Increase		1/yr	Cur <sup>1</sup> reg.	Good	Yes		No
Erwin Todhunter	250 obs.	Erwin 23:101:56	Increase		5/yr	Cur <sup>1</sup> reg.	Good	Yes		No
West Elk Valley	400 est.		Stable	Deep snow	2/yr	Cur <sup>1</sup> reg.	Good	Yes		No
<u>Region 7(1)</u>										
Kakwa	94	36:39:31	Inc. slowly	Overharvest & weather	1983-0 1978-82 closed season	Cur <sup>1</sup> reg.	Limited Winter	Yes	Pre-Burn for 1984	No
<u>Region 8(2)</u>										
Ashnola	300-400		Increase	Weather/ Feeding(3)	10 M	LEH, cur <sup>1</sup>	Mod	Yes	Yes	Yes
Vaseux	600-900		Rapid Inc.	Weather/ Feeding	20 M	Open, cur <sup>1</sup>	Poor	Yes	Yes	Yes
Shorts Cr.	50-75		Stab.		0	No Season	Unknown	Yes	No	No
Granby R	20(4)		Unknown		0	No Season	Unknown	Yes	No	Yes

The population traditionally referred to as "Vaseux" now extends from Kelowna to Osoyoos in a series of self-sustaining bands. We may rename this population the "South Okanagan Valley Pop."

- (1) Rocky mountain bighorn sheep
- (2) California bighorn sheep
- (3) Moist summers last four years - sheep benefit
- (4) This is a 1984 transplant - first lamb born April 8, 1984



A major die-off in Region 4 has affected at least 8 of 17 Rocky Mountain bighorn populations. The die-off reduced populations in the southern portion of the Rocky Mountain Trench while populations north of Columbia Lake and those in the Elk Valley and Simpson River do not appear to have been affected. To date, California Bighorn sheep populations in B.C. have not been affected by die-off.

Rocky Mountain and California bighorn sheep populations number approximately 4,000 - 4,500. Of this total, approximately 62% are California bighorn sheep and 38% are Rocky Mountain bighorns. Population recovery from the die-off of the East Kootenay bighorns should increase the bighorn proportion to about 45% of the total. The harvest of bighorn rams is about 40 - 45/year or 2.4% of the population. Currently, 60-65 rams and 5-7 ewes, about 2.6% of the population are harvested each year from California bighorn sheep populations throughout the Province.

#### BIBLIOGRAPHY

- Blood, D.A. 1961. An ecological study of California bighorn sheep (*Ovis canadensis californiana* Douglas) in Southern British Columbia. M.Sc. Thesis, U.B.C., Vancouver. 127 pp.
- Blood, D.A. 1967. Food habitat of the Ashnola bighorn sheep herd. *Can. Field Nat.* 81(1):23-29
- Demarchi, D.A. & H.B. Mitchell 1973. The Chilcotin River bighorn population. *Can. Field Nat.* 87:433-454.
- Demarchi, R.A. 1965. An ecological study of the Ashnola bighorn winter ranges. M.Sc. Thesis, U.B.C. Vancouver. 103 pp.
- Spalding, D.J. & H.B. Mitchell 1970. Abundance and distribution of California bighorn sheep in North America. *J. Wild. Mgt.* 34(2): 473-475.
- Sugden, L.G. 1961. The California bighorn in British Columbia with particular reference to the Churn Creek herd. British Columbia Department of Recreation and Conservation. 58 pp.