

**IDAHO DEPARTMENT OF FISH AND GAME**

**Cal Groen, Director**

**Project W-170-R-31**

**Progress Report**



**BIGHORN SHEEP**

Study I, Job 4

July 1, 2006 to June 30, 2007

Prepared by:

Jay Crenshaw ..... Clearwater Region  
Jon Rachael ..... Southwest (Nampa) Region  
Jeff Rohlman ..... Southwest (McCall) Region  
Randy Smith, Regan Berkley ..... Magic Valley Region  
Daryl Meints, Hollie Miyasaki ..... Upper Snake Region  
Tom Keegan ..... Salmon Region

Compiled and edited by: Dale Toweill, Wildlife Program Coordinator

September 2007  
Boise, Idaho



Findings in this report are preliminary in nature and not for publication without permission of the Director of the Idaho Department of Fish and Game.

The Idaho Department of Fish and Game adheres to all applicable state and federal laws and regulations related to discrimination on the basis of race, color, national origin, age, gender, or handicap. If you feel you have been discriminated against in any program, activity, or facility of the Idaho Department of Fish and Game, or if you desire further information, please write to: Idaho Department of Fish and Game, PO Box 25, Boise, ID 83707; or the Office of Human Resources, U.S. Fish and Wildlife Service, Department of the Interior, Washington, DC 20240.

This publication will be made available in alternative formats upon request. Please contact the Idaho Department of Fish and Game for assistance.

## TABLE OF CONTENTS

STATEWIDE.....	1
Abstract.....	1
Bighorn Sheep Harvest 2005 .....	1
Bighorn Sheep Applications 2006 .....	2
CLEARWATER REGION .....	3
Climatic Conditions .....	3
UNITS 11, 13, 18.....	3
Abstract.....	3
Management Direction.....	4
Background .....	4
Population Surveys .....	5
Harvest Characteristics .....	6
Habitat Conditions .....	6
Capture and Translocation .....	7
UNITS 14, 17, 19, 20.....	7
Abstract.....	7
Management Direction.....	8
Background.....	8
Population Surveys .....	8
Harvest Characteristics .....	9
Habitat Conditions .....	10
Capture and Translocation .....	10
SOUTHWEST (NAMPA) REGION .....	19
UNITS 40, 41, 42.....	19
Abstract.....	19
Management Direction.....	19
Background.....	20
Population Surveys .....	20
Harvest Characteristics .....	20
Habitat Conditions .....	21
Capture and Translocation .....	21

**TABLE OF CONTENTS (Continued)**

Management Implications.....	21
SOUTHWEST (MCCALL) REGION.....	27
UNITS 19A, 20A, 26.....	27
Abstract.....	27
Management Direction.....	27
Background.....	27
Population Surveys.....	28
Harvest Characteristics.....	28
Management Implications.....	28
UNITS 22, 23, 31.....	29
Abstract.....	29
Management Direction.....	29
Background.....	29
Population Surveys.....	29
Harvest Characteristics.....	29
Management Implications.....	29
MAGIC VALLEY REGION.....	34
UNITS 46, 47, 54, 55, 57.....	34
Abstract.....	34
Management Direction.....	35
Background.....	35
Population Surveys.....	36
Harvest Characteristics.....	36
Capture and Translocation.....	37
Management Studies.....	37
Management Implications.....	37
LITERATURE CITED.....	38
UPPER SNAKE REGION.....	42
UNITS 51 (PART), 58, 59A, 61, 64, 65, 67.....	42
Abstract.....	42
Management Direction.....	42

## TABLE OF CONTENTS (Continued)

Climatic Conditions .....	42
Background.....	42
Population Surveys .....	43
Capture and Translocation .....	43
Management Implications.....	44
SALMON REGION.....	48
UNITS 21, 21A, 27, 28, 29, 30, 30A, 36, 36A, 36B, 37, 37A, 50, 51.....	48
Abstract.....	48
Management Direction.....	48
Background.....	49
Population Surveys .....	50
Harvest Characteristics .....	51
Climatic Conditions .....	51
Habitat Conditions .....	52
Capture and Translocation .....	52
Disease .....	53
Management Implications.....	53
APPENDIX A.....	65

## LIST OF TABLES

### CLEARWATER REGION

Table 1. Bighorn sheep population data, Units 13 and 18, Clearwater Region, 1983-present.....	12
Table 2. Bighorn sheep population data, Unit 11, Clearwater Region, 1992-present. Counts are not additive. ....	14
Table 3. Bighorn sheep harvest and drawing odds by hunt area, Clearwater Region, 1997-present. ....	15
Table 4. Bighorn sheep harvest and drawing odds, Clearwater Region, 1982-present. ....	16
Table 5. Bighorn sheep population data, Unit 17, Clearwater Region, 1981-present. ....	17
Table 6. Bighorn sheep population data, Units 19 and 20, Clearwater Region, 1981-2001.....	18

## TABLE OF CONTENTS (Continued)

### SOUTHWEST (NAMPA) REGION

Table 1. Bighorn sheep population data, Southwest (Nampa) Region, 1983-present. ....	22
Table 2. Bighorn sheep harvest and drawing odds, Southwest (Nampa) Region, 1983-present. ....	23
Table 3. Bighorn sheep harvest and drawing odds by hunt area, Southwest (Nampa) Region, 1997-present. ....	24
Table 4. Bighorn sheep translocation, Southwest (Nampa) Region, 1963-2003. ....	26

### SOUTHWEST (MCCALL) REGION

Table 1. Bighorn sheep population data, Southwest (McCall) Region, 1987-present. ....	31
Table 2. Bighorn sheep harvest and drawing odds by hunt area, Southwest (McCall) Region, 1997-present. ....	32
Table 3. Bighorn sheep harvest and drawing odds, Southwest (McCall) Region, 1975-present. ....	33

### MAGIC VALLEY REGION

Table 1. Bighorn sheep translocations, Units 54 and 55, Magic Valley Region, 1986-present. ....	40
Table 2. Bighorn sheep population data, Jarbidge/Bruneau area (Hunt Area 46), Magic Valley Region, 1990-2006 (Obs = observed, Est = estimated). ....	40
Table 3. Bighorn sheep harvest and drawing odds, Magic Valley Region, 1991-present. ....	41

### UPPER SNAKE REGION

Table 1. Bighorn sheep population data, Upper Snake Region, 1992-present. ....	46
Table 2. Bighorn sheep translocations, Upper Snake Region, 1976-1984. ....	47

### SALMON REGION

Table 1. Bighorn sheep population data, Salmon Region, 1983-present. ....	55
Table 2. Bighorn sheep harvest and drawing odds by hunt area, Salmon Region, 1997-present. ....	59
Table 3. Bighorn sheep harvest and drawing odds, Salmon Region, 1983-present. ....	62
Table 4. Bighorn sheep mortality, Salmon Region, 1993-present. ....	63
Table 5. Bighorn sheep translocation, Salmon Region, 1968-present. ....	64

**PROGRESS REPORT  
SURVEYS AND INVENTORY**

<b>STATE:</b>	<u>Idaho</u>	<b>JOB TITLE:</b>	<u>Bighorn Sheep Surveys and</u>
<b>PROJECT:</b>	<u>W-170-R-31</u>		<u>Inventories</u>
<b>SUBPROJECT:</b>	<u>2-7</u>	<b>STUDY NAME:</b>	<u>Big Game Population Status,</u>
<b>STUDY:</b>	<u>I</u>		<u>Trends, Use, and Associated</u>
<b>JOB:</b>	<u>4</u>		<u>Habitat Studies</u>
<b>PERIOD COVERED:</b>	<u>July 1, 2006 to June 30, 2007</u>		

**STATEWIDE**

**Abstract**

Idaho has huntable populations of both Rocky Mountain bighorn sheep and California bighorn sheep. Hunters may harvest a lifetime limit of 1 bighorn of each species if they are successful in the appropriate annual lottery drawings for permits; additional bighorn sheep of either species may be hunted using either of the 2 Special Bighorn Sheep permits issued annually (one by statewide lottery and one by auction).

In 2006, the Department provided 64 permits for Rocky Mountain bighorn sheep rams, with permits distributed among 19 hunts; an additional 16 permits distributed among 4 hunts were offered for California bighorn sheep (Appendix A). One Special Bighorn Sheep permit was auctioned at the annual convention of the Foundation for North American Wild Sheep convention, and a second Special Bighorn Sheep permit was drawn by lottery.

**Bighorn Sheep Harvest 2006**

Both Special Bighorn Sheep permit holders hunted Rocky Mountain bighorn sheep in 2006. A total of 34 bighorn sheep were harvested by 66 Rocky Mountain bighorn sheep hunters for a success rate of 52%. Harvest was up slightly from 2005, when 66 hunters harvested 31 bighorns for a success rate of 47%. The lottery tag winner harvested a ram in Unit 11, and the auction tag purchaser harvested a ram in Unit 27-2. On average, successful hunters hunted 7.7 days to harvest a ram in 2006 as compared with 5.6 days in 2005 and 5.5 days in 2004.

Age of Rocky Mountain bighorn sheep rams harvested in 2006 (7.2 years on average) was markedly greater than the average age of rams harvested in 2005 (5.9 years).

Of the 16 hunters seeking California bighorn sheep in 2006, 14 were successful for a hunter success rate of 88%, continuing an upward trend in harvest. In 2005, 16 California bighorn sheep hunters harvested 11 rams for a success rate of 69%, while in 2004, the success rate was only 53% (15 hunters harvested 8 California bighorn sheep rams).

As with Rocky Mountain bighorn sheep, average age of rams harvested in 2006 (7.9 years) also increased, up from an average age among harvested rams of 6.3 years in 2005 and 5.9 years in 2004.

### **Bighorn Sheep Applications 2007**

Bighorn sheep permits are among the most desirable permits offered for hunting in Idaho. A single permit purchased at the 2007 convention of the Foundation for North American Wild Sheep brought \$95,000.

The number of applications received for the 61 permits for Rocky Mountain bighorn sheep hunts (21 hunts were offered) in April 2007 totaled 1,691, a slight decline from the record high 1,847 applications received in 2006. The majority of applications for Rocky Mountain bighorn sheep permits (1,037 or 61%) were received from non-resident hunters.

In April 2007, 21 permits were offered for California bighorn sheep distributed among 6 hunts. A total of 647 applications were received, an increase of 43% from the number received in 2006 (452) and over twice the number received in 2005 (308). This increase was due to the addition of a new hunt in Unit 55 for which 197 applications were received. Unlike applications for Rocky Mountain bighorn sheep, the majority of applications for California bighorn sheep permits (413 or 64%) were received from resident hunters.

**PROGRESS REPORT  
SURVEYS AND INVENTORY**

<b>STATE:</b>	<u>Idaho</u>	<b>JOB TITLE:</b>	<u>Bighorn Sheep Surveys and</u>
<b>PROJECT:</b>	<u>W-170-R-31</u>		<u>Inventories</u>
<b>SUBPROJECT:</b>	<u>2</u>	<b>STUDY NAME:</b>	<u>Big Game Population Status,</u>
<b>STUDY:</b>	<u>1</u>		<u>Trends, Use, and Associated</u>
<b>JOB:</b>	<u>4</u>		<u>Habitat Studies</u>
<b>PERIOD COVERED:</b>	<u>July 1, 2006 to June 30, 2007</u>		

**CLEARWATER REGION**

**Climatic Conditions**

The Clearwater Region experienced below normal snow pack for water year 2006-2007 according to Natural Resources Conservation Service Idaho Basin Outlook Report. The Clearwater River Basin was 65% of the 30-year average of snow water (Oct-Jun), with the total precipitation percent of average at 99%. Snow depth was below average for the basin with early melting at all but the highest elevations. Meanwhile, the Salmon River Basin averaged 44% of snow water with a total precipitation percent of average at 85%. Snow depth was near normal at the higher elevations where melting did not occur, although at lower elevations snow depths were diminished early in the season with run-off. Snowfall was good throughout the early winter in the region, but was lacking in late winter. Additionally, warm temperatures caused a decrease in the remaining snow pack when it is normally at the peak.

**Units 11, 13, 18**

**Controlled Hunt Area 11**

**Abstract**

Interest and support by The North American Foundation for Wild Sheep (FNAWS) and other state and federal agencies has raised the level of involvement with bighorn sheep along the Snake River in Units 11, 13, and 18. Recent survey results suggest slight growth in the population in Unit 11 and recovery from the 1995-1996 epidemic; however, disease concerns still exist in the Snake River Canyon. Hunt Area 11 was closed in 1997 after surveys indicated few legal rams remained in the population; however, the unit was reopened in 1999 for limited harvest opportunity. Sixteen bighorn sheep were released in Unit 13 in 1997 and were supplemented with 6 additional bighorn sheep in 1999. A small population persists in Unit 18. Monitoring efforts continue and include continuation of work on developing a sightability model for bighorn sheep in this area.

## **Management Direction**

The Department plans to conduct helicopter surveys for bighorn sheep at least every 5 years to monitor population trends. Interest and support by FNAWS and other state and federal agencies has raised the level of involvement with bighorn sheep along the Snake River in Units 11, 13, and 18. In Units 11 and 13, an additional objective is to pursue cooperative land acquisitions with federal agencies to secure significant blocks of bighorn sheep habitat. The domestic sheep/bighorn sheep conflict in Unit 18 (Hells Canyon National Recreation Area) was reduced in 1996 with the removal of the last remaining Wallowa-Whitman National Forest grazing permit.

## **Background**

Bighorn sheep occurred naturally in the Hells Canyon area of Units 11, 13, and 18, but were extirpated in the early part of the century. Translocations have been conducted in all 3 units to reestablish populations.

The Unit 11 bighorn sheep population was reestablished onto the Craig Mountain Wildlife Management Area (WMA) in 1984, when 17 bighorn sheep (8 ewes, 9 rams) from Torrey Rim, Wyoming, were translocated into the area. Additionally, marked translocation stock from both Washington and Oregon were observed mixing with bighorn sheep from the Wyoming translocation and vice versa.

Reports of dead and dying bighorn sheep on the Washington side of the Snake River opposite Unit 11 in December 1995 prompted the removal of 72 bighorn sheep from this area in an attempt to prevent the spread of pneumonia to other bighorn sheep in the Snake River Canyon population. These bighorn sheep were transported to the IDFG Wildlife Health Laboratory in Caldwell after a joint capture effort by Idaho, Oregon, and Washington personnel. Despite intensive treatment in captivity, all but 8 of these bighorn sheep died by June 1996. Periodic aerial surveys were conducted through spring 1996 by Idaho, Oregon, and Washington personnel to monitor bighorn sheep status. The disease spread along the Snake River from north of the Grande Ronde River, Washington, to the Imnaha River, Oregon, and up the Grande Ronde River to the Wenaha River in Oregon. Some Idaho bighorn sheep appeared to exhibit symptoms, but no deaths were attributed to the Washington-Oregon outbreak.

The last-known native bighorn sheep in Unit 18 was observed in 1932. Speculation at that time attributed the loss of bighorn sheep to over-hunting by miners and disease outbreaks associated with domestic sheep contact. Bighorn sheep were reintroduced into Hells Canyon with translocations of Salmon River stock in 1975-1976 (11 ewes, 10 rams) and 1979 (7 ewes). The population was augmented in 1990 with 30 bighorn sheep (20 ewes, 10 rams) from Whiskey Mountain, Wyoming.

A disease outbreak that occurred in 1983 resulted in a substantial decline in the Unit 18 bighorn sheep population. The outbreak was initially detected through the observation of a number of dead and sick bighorn sheep along the Snake River. Domestic sheep, bighorn sheep, elk, mule deer, mountain goats, and white-tailed deer were tested for a variety of diseases at that time. The

testing detected the presence of *Pasteurella* spp., Parainfluenza III (PI-3), epizootic hemorrhagic disease, and *Chlamydia* in the bighorn sheep and PI-3 and *Chlamydia* in the domestic sheep.

Another disease outbreak was detected in April 1991. Several sick bighorn sheep and 2 dead ewes were reported in the vicinity of Granite Creek in Hells Canyon. A subsequent helicopter survey did not detect any bighorn sheep, but a fixed-wing radio location flight (26 Apr 1991) after the survey found 10 bighorn sheep and 1 active radio. Subsequent helicopter surveys in 1992, 1993, and 1996 indicated that few animals remained in the Unit 18 herd (Table 1). It is likely that domestic sheep have introduced 1 or more diseases to the bighorn sheep in Unit 18 and that the disease(s) have either caused or contributed to the decline of the population. The last remaining domestic sheep grazing permit offered by the Wallowa-Whitman National Forest in Hells Canyon has now been removed.

Bighorn sheep were established in Big Canyon Creek in Unit 13 in December 1997 with a translocation of 12 ewes and 4 rams from Spences Bridge, British Columbia. The population was supplemented with 6 bighorn sheep (3 ewes, 3 rams) from the Cadomin coal mine in Hinton, Alberta, Canada, on 13 February 1999. In summer 2000, the population was estimated at 45 bighorn sheep (21 ewes, 16 lambs, 6 sub-legal rams, 2 legal rams [Table 1]). During fall 2000, nearly all lambs died. Nine yearlings and adults were also found dead in 2000 and 2001, primarily due to scabies infection and pneumonia. In March 2002, the population was estimated at 32. All lambs born in spring 2002 died that summer and the population was estimated at 32 in March 2003. Additional losses now put counts for Unit 13 at 17 sheep in March 2007, with good recruitment (10 ewes, 5 lambs) for the first time since 2001.

## **Population Surveys**

Since the 1984 translocation, the Unit 11 herd has grown at a moderate rate (Table 2). Frequency of bighorn sheep surveys in Unit 11 increased in 1996 to monitor mortality and survival of lambs and to develop a sightability model as part of a research effort focusing on the Snake River Hells Canyon complex. Lamb survival in 1996 was extremely low (7 lambs:100 ewes). This was presumably a residual effect of the 1995-1996 *Pasteurella* outbreak in Oregon and Washington. Since then, lamb survival has fluctuated, with good survival in 1997, 1999, 2000, and 2002. Those years of good lamb survival, accompanied by high adult survival, resulted in a doubling of the population between 1997 and 2003. Lamb survival was poor in 1998, 2001, 2003, and 2004. Recent poor lamb survival has been accompanied by a population decline of nearly 25% between 2003 and 2005. The population remained stable between 2005 and 2007. The primary cause of mortality in recovered dead lambs is pneumonia. Several adults also died of pneumonia during winter 2006-2007.

Helicopter sightability has been assessed during 6 trials, 3 in March and 3 in December, in 7 herds in Idaho, Oregon, and Washington. Over the 6 trials, 359 of 397 radio-collared bighorn sheep (90%), 167 of 192 groups (87%), and 1,008 of 1,120 bighorn sheep (90%) have been observed during helicopter surveys. Both the sightability model development and the vaccine test were conducted cooperatively under the "Hells Canyon Initiative."

Aerial surveys indicated a sharp decline in the number of bighorn sheep in Unit 18 since the occurrence of disease outbreaks in 1983 and 1991 (Table 1); however, until 2004, bighorn sheep were regularly observed at Bernard Creek. On 25 May 1999, 4 adult ewes, 1 yearling ewe, 2 lambs, and 1 yearling ram were observed. A similar group (6 adult bighorn sheep, 2 lambs) was observed from the air on 16 June 1999. On 12 June 2000, 4 adult ewes, 1 yearling ewe, 3 lambs, and 1 yearling ram were observed at Bernard Creek. On 10 January 2001, 2 adult ewes, 1 yearling ewe, 2 lambs, and 1 yearling ram were observed. The yearling ewe was coughing. In March 2001, 4 ewes, 2 lambs, and 1 class II ram were observed, all at Bernard Creek. In June 2002, 6 ewes, 2 lambs, 1 class I ram, 1 class II ram, and 2 class III rams were observed. The total sheep observed in 2003 was 14. In 2007, 8 sheep were observed near Sheep Creek and 1 ram was observed near Three Creeks.

### **Harvest Characteristics**

Hunting was initiated in Unit 11 in 1993. A limited hunt with 2 permits was offered in 1993 and 1994. The likelihood of participation by the state auction or lottery tag holder in the Unit 11 hunt, as occurred from 1993-1996, led to a reduction in the number of permits offered in the unit from 2 to 1 in 1995. Odds of drawing a tag declined significantly in 1995, probably in large part due to the harvest of a record book ram in 1994.

In 1997, the hunt was closed after surveys indicated few legal rams remained in the population (Table 3). The Idaho State record bighorn ram that probably died in 1996 was picked up in Unit 11 in 1997. Beginning in the late 1990s, the unit has consistently produced some of the largest rams taken statewide. In 1999, the statewide lottery tag holder was allowed to hunt in Unit 11 and harvested a record book ram. In 2001, the season was opened for 1 general draw tag and the statewide auction tag buyer. Two record book rams were taken. They received the bronze and first honorable mention awards for the third and fourth largest Rocky Mountain bighorn rams taken by FNAWS members in 2001. In 2003, a record book ram was taken in Unit 11 with a muzzleloader. The largest ram ever harvested in Idaho was taken in 2004. This ram received the silver award for the second largest ram taken by a FNAWS member in 2004. One additional permit was offered in 2005, raising the total to 3 including the statewide tag. Fourteen rams have been harvested since 2000. All 3 permittees harvested sheep in Unit 11 in 2005 and 2006. Drawing odds for the Unit 11 hunt reached an all-time high of 1 in 345 in 2006.

No bighorn sheep hunt is offered at this time in Unit 13.

Hunting was initiated in Unit 18 in 1984. Permit and harvest levels were reduced in subsequent years and the odds of drawing a controlled hunt permit varied considerably (Table 4). Hunter success appeared to decline in the late 1980s and early 1990s concurrent with the population decline. Hunter success averaged 70% from 1984 through 1987, and 40% from 1988 through 1992. The hunt was closed in 1993.

### **Habitat Conditions**

Bighorn sheep habitat in Units 11, 13, and 18 consists of dry bunchgrass habitat types along the Salmon and Snake River breaks. Ownership in Unit 11 is primarily public along the Snake River

including the Department's Craig Mountain WMA. Land along the Salmon River is primarily privately owned, although Bureau of Land Management (BLM) manages much of the river corridor. The river breaks in Unit 13 are also primarily under private ownership with isolated tracts of BLM lands and state lands. The Snake River corridor in Unit 18 is entirely under U.S. Forest Service ownership (USFS). Approximately 110 acres of the Snake River corridor in Unit 13 (Ragtown Bar) was acquired by a conservation group for transfer to USFS in 1998. Additionally, a conservation easement was acquired by BLM on several thousand acres in Unit 13 in the Salmon River drainage.

The acquisition of habitat in Unit 11 by the Department, subsequent reduction of cattle grazing, and an intensive weed control program will lead to improved habitat conditions in that area. Restoration of fire to the Hells Canyon ecosystem should also benefit bighorn sheep. In Unit 11, a wildfire burned approximately 400 acres along the Snake River between Captain John Creek and Billy Creek in 1996 and approximately 1,000 acres in the Tenmile Creek drainage in 1997. A prescribed fire burned additional acreage in Tenmile Creek in spring 1998 and BLM and Idaho Department of State Lands cooperated with the Department on a mosaic burn between Captain John Creek and Dough Creek in March 1998. In 2000, the Maloney Creek wildfire burned approximately 70,000 acres along the Snake and Salmon rivers between Maloney Creek on the Salmon River side and China Garden Creek on the Snake River. In Unit 18, wildfire burned approximately 16,100 acres of land managed by USFS near Sheep Creek and 425 acres near Hells Canyon Dam in 1996. In 2005, wildfire burned over 31,000 acres between Granite Creek and Sheep Creek.

### **Capture and Translocation**

Twenty sheep (16 ewes, 4 rams) from the Missouri Breaks outside Havre, Montana, were released along the Snake River upriver of Kirkwood Creek in Unit 18 on 13 February 2002. All sheep released were radio-collared. By spring 2005, 1 ewe remained in Sheep Creek, Idaho. Ten ewes and 2 rams had moved across the Snake River to Oregon, the radio-collar had failed on 1 ram that probably remained in Idaho, and the remaining 7 sheep had died (1 road kill, 1 fence, 1 pneumonia, 1 cougar predation, and 3 unknown). Few lambs born to these ewes survived to 1 year of age in 2002-2006.

In December 2001, Oregon Department of Fish and Wildlife released 15 sheep (14 radio-collared) at Quartz Creek, Oregon. These sheep have moved between Hells Canyon Reservoir and Copper Creek on both the Idaho and Oregon sides of the Snake River.

## **Units 14, 17, 19, 20**

### **Controlled Hunt Areas 19, 20-1, 20-2**

### **Abstract**

Bighorn sheep were hunted on a general-hunt basis in these units until 1971. Hunting pressure in Clearwater Region under a general season framework allowed more accessible populations to be overexploited. In 1971, all bighorn sheep hunts were placed on a controlled-hunt basis. More

recent surveys in Units 17, 19, and 20 suggested a decline in total bighorn sheep numbers and lamb recruitment that may be related to similar declines in adjacent units caused by diseases, primarily *Pasteurella* spp. The late hunts were dropped and permit levels were reduced substantially for the 1993-1994 hunts. Six rams were harvested by 10 permittees on Hunts 19, 20-1, and 20-2 during the 2006 hunting season. Aerial survey results from Unit 17 since the late 1980s have suggested a low but stable population.

## **Management Direction**

The Department plans to conduct bighorn sheep surveys at least every 5 years to monitor population trend and recruitment. Conservative permit levels will be continued until lamb recruitment and population trends suggest that increases are appropriate. In terms of hunting recreation, the emphasis will be to provide a high-quality backcountry hunting experience. Because of the difficulty that hunters experience in locating legal rams in some units, a somewhat lower success rate will be expected.

## **Background**

Rocky Mountain bighorn sheep populations are found in Units 14, 17, 19, and 20. The Unit 14 herd is limited to a few, scattered animals that likely disperse from adjacent herds to the east in Unit 19. At present, hunting is permitted only in the western portion of Unit 14, the southern portion of Unit 17, and in Units 19 and 20. These units are further divided into 3 controlled hunt areas (Appendix A).

Units 14, 19, and 20 bighorn sheep populations reside within the Salmon River breaks. Bighorn sheep in Unit 17 commonly move between Idaho and Montana. Bighorn sheep were translocated into 2 sites in Unit 17 in the Selway-Bitterroot Wilderness in 1988. Fifteen bighorn sheep (10 ewes, 5 rams) were released near Tango Bar and 14 bighorn sheep (13 ewes, 1 ram) were released at Elevator Mountain. Recent surveys have suggested that neither translocation was successful. Bighorn sheep have not been observed in the Tango Bar area since the translocation. Similarly, few animals have been observed in the Elevator Mountain area. The 1994 spring survey revealed the presence of 1 ewe on Elevator Mountain.

## **Population Surveys**

Bighorn sheep have usually been surveyed by helicopter coincidentally with elk sightability surveys in January and February. From 5-14 February 2001 and 17-24 January 2007, 15 hours were added to the elk survey flight time in Units 19 and 20 to allow total coverage of search units where bighorn sheep have been observed in the past. In Unit 17, 8 bighorn sheep were observed on 8-9 February 2001 during a bighorn sheep capture effort in the upper Selway River east of Magruder Crossing. Spring surveys were most recently conducted in Units 19 and 20 during 1-3 May 1993 and in Unit 17 from 28-30 April 1994. Bighorns were again observed during Unit 17 elk surveys in January 2007 (Table 1).

Total numbers of bighorn sheep observed during surveys have declined in Units 17, 19, and 20 since the early 1980s. From 99-121 bighorn sheep were observed in Unit 17 from 1982-1984,

whereas only 37-52 bighorn sheep were observed on the last 3 surveys prior to 1995 (Table 5). The number of sheep observed in the unit in 2003 (32), 2004 (34), and 2007 (26) indicate lower, but stable sheep numbers. In Unit 19, 122 to 136 bighorn sheep were observed during 1983 and 1984 surveys, but only 52-60 were observed in 1992, 1993, and 1996 (Table 6). Although conducted with low sampling intensity, abundance of bighorn sheep observed in the 2001 survey in Unit 19 was within the expected range given recent levels. A January 2007 survey conducted coincident with helicopter counts for elk resulted in 40 sheep observed. Lower numbers may have resulted from the redistribution of sheep from wildfire in 2006 that burned the Salmon River breaks from Wind River upstream to Sheep Creek. In Unit 20, 207-230 bighorn sheep were observed during 1986 and 1987; however, this number declined in surveys in 1993, 1994, and 1996 to a range of 66-87 (Table 6). Observed abundance in the Unit 20 survey was significantly lower in 2001. This may be related to the occurrence of large-scale fires that burned bighorn sheep habitat on both the north and south sides of the Salmon River during summer 2000. Of interest is the fact that the Three Bears Fire occurred throughout Hunt Area 20-2 and the Flossie Fire was south of the Salmon River, adjacent to Hunt Area 20-2. However, bighorn sheep numbers were “normal” in 20-2, and deficient in 20-1. Numbers of bighorns (19) observed during January 2007 elk surveys were the lowest counted in the past 20 years.

Lamb recruitment remained high in Unit 19 in 2001 (47 lambs:100 ewes) after rebounding in 1996 from lows in 1992 and 1993 of 5.3 and 0.0, respectively. However, the 2007 survey data revealed very low lamb survival (16 lambs:100 ewes). In Unit 20, observed recruitment in 2007 was also poor, falling to 9 lambs per 100 ewes from the 27 lambs per 100 ewes observed in 2001. Results from the 1994 and 1995 surveys in Unit 17 suggested favorable levels of lamb recruitment; however, only 1 lamb was observed in the 2007 survey (7 lambs:100 ewes).

Low recruitment rates and overall decline in bighorn sheep numbers over the long term in these units may be caused by disease and habitat conditions. Diseases have apparently caused reduced lamb survival in adjacent herds along Salmon River. The most significant pathogen appears to be *Pasteurella* spp., which causes pneumonia. *Pasteurella* spp. has a significant effect on population dynamics through increased adult and lamb mortality. Lambs generally develop clinical infections once they are weaned and passive immunity through colostrum is lost. Additionally, the effects of recent wildfires on bighorn sheep populations in these areas is as yet unknown, but may affect adult survival and recruitment of young and alter habitat use patterns and distribution.

### **Harvest Characteristics**

Beginning in 1952 and lasting until 1970, bighorn sheep hunting in Clearwater Region was offered on a general-hunt basis. From 1971-1981, permit levels and hunt boundaries remained the same with variations only in season length. In 1982, the 4 controlled hunts were expanded and the September-October season was split, creating 2 hunts within the same hunt boundary. In 1985, 1 permit each was added to the September portion of the 4 hunts along Salmon River (19-1, 20-1, 20-3, and 20-5).

The hunting season format was changed again beginning in 1991 to reduce the probability of hunters shooting bighorn sheep in the wrong hunt area, while continuing to provide the same

amount of hunter opportunity on a statewide basis. As a result, Hunt 19-2 and portions of Units 19A and 20A were combined into 19-L, and Hunts 20-3 and 20-5 were changed to Hunts 20-2 and 20-3. Hunts 20-2, 20-4, 20-6, and portions of Units 21 and 20A were incorporated into Hunt 20-L. Additionally, Hunt 20-1 was expanded to include a portion of Units 17 and 21 beginning in 1991.

The hunting season structure was modified for the 1993-1994 hunting regulations to respond to the decline in total numbers and lamb recruitment. The late hunts, which had higher success rates, were discontinued. The number of permits offered for early hunts was reduced from 25 to 15. In 1995, further changes were made to the Units 19 and 20 hunts to address population status concerns. Hunt Area 20-3 was added to Hunt Area 19 to become Hunt Area 19 with 6 permits. Permit numbers were reduced to 2 each in Hunt Areas 20-1 (-4 permits) and 20-2 (-1 permit).

In 2005, 10 permittees killed 5 rams in the Unit 19 and 20 hunts for a success rate of 50% (Table 3). The current level of harvest is questionable given bighorn sheep plan guidelines which call for a minimum population of 100 bighorn sheep and a maximum harvest of 20% of the legal rams observed on the previous survey. The 3 hunt areas contain 3 discreet bighorn sheep populations that are each below the 100 bighorn sheep minimum (Hunt Area 19: 62; Hunt Area 20-1: 17; Hunt Area 20-2: 25). Combined, there are only 104 bighorn sheep (Table 6). In addition, with a total of 17 legal rams, maximum harvest would be 3 rams. The 5-year mean harvest in the 3 hunt areas was 4.8 rams. These data suggest that the current 10 permits should be reduced to 7: 4 in Hunt Area 19 and 3 in Hunt Area 20 (20-1 and 20-2 combined). The hunt areas are scheduled to be surveyed in 2007 after which they will be evaluated for adjustments in permit levels.

### **Habitat Conditions**

Bighorn sheep habitat in Units 14, 17, 19, and 20 consists of dry bunchgrass habitat types along the Salmon River breaks and in the upper Selway River drainage. Ownership throughout the area is primarily USFS with small inholdings of private land.

Prior to 1995, drought conditions predominated leading to dry, hot summers and mild winters. These conditions may have led to increased winter survival but may also have limited lamb production and lamb survival during summer and fall. In fall 1992, numerous lightning-caused fires occurred along the Salmon River breaks in Units 14 and 19. Extensive burns resulted from wildfires during summer and fall 2000. In Unit 19, the Lone Sheep Fire burned about 300 acres in the Gospel Hump Wilderness. The Three Bears and Flossie fires burned a total of about 120,000 acres in the Frank Church River-of-No-Return Wilderness in Unit 20. Fire activity may have diminished short-term habitat potential but can be expected to improve habitat conditions in the long term.

### **Capture and Translocation**

As part of a statewide effort to monitor health in bighorn sheep populations, bighorn sheep were captured after immobilization with Carfentanil-filled darts to obtain throat and ear swabs and blood and fecal samples. During 2 trips up Salmon River by jet boat into Unit 19 in November

and December 2000, a total of 15 bighorn sheep (3 rams, 12 ewes) were sampled and ear-tagged. Additionally in Unit 17, 3 bighorn sheep (1 ram, 2 ewes) were processed during a trip by snow machine into the upper Selway River area near Magruder Crossing at Sheep Creek 8-9 February 2001. Samples were taken from the ram, a 2½ year old, after it was observed from a helicopter being attacked and killed by a mountain lion.

In an effort to collect additional information on bighorn sheep in the upper Selway River drainage, 2 ewes in the upper reaches of the Watchtower Creek, Montana, drainage were immobilized with Carfentanil/Xylazine-filled darts in August 2006. Both were fitted with VHF radio collars and released at the capture site. Subsequent monitoring by fixed-wing aircraft confirmed the movement of 2 bands of sheep across the Bitterroot Divide into Idaho. These sheep wintered along the Selway River face from the Stewart Creek to the Indian Creek drainages, returning to the Divide in early summer. Monitoring will continue into autumn to determine the timing of their return to Idaho in order to assess opportunities for hunting.

Table 1. Bighorn sheep population data, Units 13 and 18, Clearwater Region, 1983-present.

Unit Year	Ewes	Lambs	Rams				Total legal rams	Total sheep	Lambs: 100 ewes	Rams: 100 ewes
			I	II	III	IV				
13										
1997 <sup>a,b</sup>										
Dec.	12	0	4	0	0	0	0	16	0.0	33.0
1998										
10/20	12	8	0	2	0	0	0	22	66.7	16.7
1999 <sup>c</sup>										
3/22 <sup>b</sup>	14	7	3	2	0	0	0	26	50.0	35.7
12/17 <sup>b</sup>	17	12	4	2	2	0	2	37	70.6	47.1
2000										
6/13	21	16	4	2	2	0	2	45	76.2	38.1
12/4 <sup>b</sup>	18	2	3	2	2	1	3	28	11.1	44.4
2001										
3/24	16	1	2	3	2	1	3	25	6.3	50.0
12/19 <sup>b</sup>	15	7	2	3	5	0	5	32	50.8	66.6
2002										
3/23 <sup>b</sup>	16	7	0	3	6	0	6	32	43.8	56.3
2003 <sup>d</sup>										
3/15,16 <sup>b</sup>	20	0	1	5	6	0	6	32	0.0	60.0
2004										
3/19 <sup>b</sup>	7	2	2	2	8	0	8	21	28.6	171.4
2005										
3/21 <sup>b</sup>	7	2	0	2	4	2	6	17	28.6	114.3
2006										
3/11 <sup>b,e</sup>	9	0	0	0	0	0	0	9	0.0	0.0
2007										
3/16 <sup>b</sup>	10	5	0	0	2	0	2	17	50.0	20.0
18 <sup>f</sup>										
1983 <sup>b</sup>	28	15	4	10	3	2	5	62	53.6	67.9
1987 <sup>b</sup>	23	4	0	4	5	1	6	37	17.4	43.5
1990 <sup>b</sup>	16	0	3	2	1	0	1	22	0.0	37.5
1992 <sup>b</sup>	1	0	0	0	1	0	1	2	0.0	100.0
1993 <sup>b</sup>	5	0	0	0	0	0	0	5	0.0	0.0
1996	0	0	0	0	0	0	0	0	0.0	0.0
1998 <sup>b</sup>	3	3	1	0	1	0	1	8	100.0	67.0
1999 <sup>b</sup>	5	2	1	0	0	0	0	8	50.0	20.0
2000 <sup>b</sup>	5	3	1	0	0	0	0	9	60.0	20.0
2001 <sup>b</sup>	4	2	0	1	0	0	0	7	50.0	25.0
2002 <sup>b</sup>	6	2	1	1	2	0	3	12	33.3	67.7
2003 <sup>b</sup>	6	3	3	2	0	0	0	14	50.0	83.3
2004 <sup>b</sup>	3	1	0	0	1	0	1	5	33.3	33.3
2007	4	1	1	1	1	1	3	9	25.0	100.0

<sup>a</sup> Translocation from British Columbia, Canada.

Table 1. Continued.

<sup>b</sup> Survey data used for population trend analysis.

<sup>c</sup> Translocation from Alberta, Canada, of 6 bighorn sheep.

<sup>d</sup> Two class II rams dispersed into herd from 2002 translocation from Montana.

<sup>e</sup> Eight legal rams observed during a telemetry relocation flight in May 2006 were not seen during the population survey.

<sup>f</sup> Surveys during 1983, 1990, and 1992 were conducted during winter (Dec-Jan) incidental to mule deer and elk surveys; 1987, 1993, and 1996 surveys were conducted during spring (Mar-Apr). The 1998, 1999, 2000, 2002, and 2003 data were collected incidentally from the Snake River in May and June. The 2001 data were collected incidentally from the Snake River in March. The 2007 data were collected from aerial and ground observations of radio-marked and unmarked sheep February-April.

Table 2. Bighorn sheep population data, Unit 11, Clearwater Region, 1992-present. Counts are not additive.

Year <sup>a</sup>	Ewes	Lambs	Rams		Uncl.	Total sheep	Lambs: 100 ewes	Rams: 100 ewes
			Sub-legal	Legal				
1992	30	8	6	13	0	57	26.7	63.3
1993	25	4	6	10	0	45	16.0	64.0
1994	45	15	7	10	0	77	33.3	37.8
1995								
12/1 <sup>b</sup>	40	13	7	12	0	72	32.5	47.5
12/18	18	8	4	9	0	39	44.4	72.2
12/23	16	4	5	9	0	36	25.0	87.5
1996								
1/5	26	11	1	6	0	44	42.3	26.9
1/30	24	10	5	1	0	40	41.7	25.0
2/15	31	10	7	2	0	50	32.3	29.0
2/28	29	8	8	2	0	47	27.6	34.5
3/20 <sup>b</sup>	36	14	11	6	0	67	38.9	47.2
6/20	19	11	10	5	0	45	57.9	78.9
11/21	30	2	14	7	0	53	6.7	70.0
1997								
6/27	28	23	4	8	0	63	82.1	42.9
12/6 <sup>b</sup>	34	17	8	12	0	71	50.0	58.8
1998								
3/18	35	15	12	11	0	73	42.8	65.7
12/9 <sup>b</sup>	41	9	16	18	0	84	30.0	82.9
1999								
3/22 <sup>b</sup>	44	8	11	17	0	80	18.1	63.6
12/16	46	11	10	19	0	86	23.9	63.0
2000								
12/11 <sup>b</sup>	56	28	8	16	24	130	50.0	42.0
2001								
3/22 <sup>b</sup>	55	30	8	28	0	121	54.6	50.9
2002								
3/20	61	10	16	34	0	121	16.0	62.5
12/5-13 <sup>b</sup>	66	39	17	25	0	148	59.1	63.6
2004								
3/12-14 <sup>b</sup>	77	11	12	30	0	130	14.3	54.5
2005								
4/4 <sup>b</sup>	74	10	5	24	0	113	13.5	39.2
2006								
3/11-12 <sup>b</sup>	80	7	8	23	0	118	8.8	38.8
2007								
3/13-14 <sup>b</sup>	65	14	18	22	0	119	21.5	61.5

<sup>a</sup> Surveys prior to 1995 were conducted during December and January incidental to elk and mule deer surveys.

<sup>b</sup> Survey data used for population trend analysis.

Table 3. Bighorn sheep harvest and drawing odds by hunt area, Clearwater Region, 1997-present.

Hunt area	Year	Permits	Harvest	Hunter success (%)	Days/hunter	First-choice applicants	Drawing odds
11	1997	Closed					
	1998	Closed					
	1999 <sup>a</sup>	0	1	100	5.0	0	
	2000	Closed					
	2001 <sup>a</sup>	1	2	100	2.0	222	1:222.0
	2002 <sup>a</sup>	1	2	100	3.0	263	1:263.0
	2003 <sup>a</sup>	1	2	100	1.0	248	1:248.0
	2004 <sup>a</sup>	1	2	100	2.5	224	1:224.0
	2005 <sup>a</sup>	2	3	100	2.3	374	1:187
	2006 <sup>a</sup>	2	3	100	5.3	689	1:344.5
19	1997	6	4	67	8.7	62	1:10.3
	1998	6	4	67	2.5	71	1:11.8
	1999	6	4	67	7.3	59	1:9.8
	2000	6	4	67	8.0	76	1:12.7
	2001	6	3	50	5.0	68	1:11.3
	2002	6	4	67	5.0	82	1:13.7
	2003	6	5	83	9.2	126	1:21.0
	2004	6	5	83	4.4	119	1:19.8
	2005	6	4	67	7.4	108	1:18
	2006	6	4	67	5.6	168	1:28
20-1	1997	2	1	50	9.0	23	1:11.5
	1998	2	2	100	8.0	22	1:11.0
	1999	2	0	0		45	1:22.5
	2000	2	2	100	11.0	10	1:5.0
	2001	2	1	50	20.0	33	1:16.5
	2002	2	1	50	17.0	24	1:12.0
	2003	2	0	0		17	1:8.5
	2004	2	2	100	17.0	28	1:14.0
	2005	2	1	50	8.0	18	1:9.0
	2006	2	1	50	16.0	27	1:13
20-2	1997	2	1	50	8.0	12	1:6.0
	1998	2	2	100		16	1:8.0
	1999	2	1	50	30.0	14	1:7.0
	2000	2	0	0		10	1:5.0
	2001	2	1	50	14.0	19	1:9.5
	2002	2	1	50	15.0	7	1:3.5
	2003	2	1	50	9.0	20	1:10.0
	2004	2	1	50	2.0	12	1:6.0
	2005	2	0	0	3	16	1:8.0
	2006	2	1	50	16	11	1:5.5

<sup>a</sup> The state auction or lottery tag holder hunted for bighorn sheep in Unit 11, raising participation by 1 permit.

Table 4. Bighorn sheep harvest and drawing odds, Clearwater Region, 1982-present.

Year	Permits	Harvest	Hunter success (%)	First-choice applicants	Drawing odds
1982	13	3	23	79	1:6.1
1983	13	3	23	64	1:4.9
1984	17	9	53	124	1:7.3
1985	19	5	26	73	1:3.8
1986	19	6	32	139	1:7.3
1987	19	9	47	107	1:5.6
1988	19	11	58	83	1:4.4
1989	19	8	42	108	1:5.7
1990	19	8	42	64	1:3.4
1991	31	11	35	202	1:6.5
1992	31	13	42	151	1:4.9
1993 <sup>a</sup>	18	6	33	173	1:10.2
1994 <sup>a</sup>	18	10	56	136	1:8.0
1995	11	5	45	146	1:13.3
1996 <sup>a</sup>	12	6	50	187	1:17.0
1997	10	6	60	97	1:9.7
1998	10	8	80	109	1:10.9
1999 <sup>a</sup>	11	6	55	118	1:11.8
2000	10	6	60	96	1:9.6
2001 <sup>a</sup>	11	7	64	342	1:31.1
2002 <sup>a</sup>	11	8	73	376	1:34.2
2003 <sup>a</sup>	11	8	73	411	1:37.4
2004 <sup>a</sup>	11	10	91	383	1:34.8
2005 <sup>a</sup>	12	8	62	516	1:43.0
2006 <sup>a</sup>	12	9	75	895	1:74.6

<sup>a</sup> The state auction or lottery tag holder also hunted for bighorn sheep in Unit 11, raising participation above this value by 1 permit.

Table 5. Bighorn sheep population data, Unit 17, Clearwater Region, 1981-present.

Year <sup>a</sup>	Ewes	Lambs	Rams		Uncl.	Total sheep	Lambs: 100 ewes	Rams: 100 ewes
			Sub-legal	Legal				
1981	16	7	1	0	31	55	43.8	6.3
1982	84	29	8	0	0	121	34.5	9.5
1983	38	8	10	1	42	99	21.1	28.9
1984	56	26	18	9	0	109	46.4	48.2
1988	22	8	12	1	0	43	36.4	59.1
1991	37	7	6	2	0	52	21.2	24.2
1994	20	4	6	6	0	37	20.0	60.0
1995 <sup>b</sup>	22	11	5	5	0	43	50.0	45.5
2001 <sup>c</sup>	2	0	1	0	0	3	--	--
2003	10	6	2	0	14	32	60.0	--
2004	13	9	4	8	0	34	71.0	92.3
2007	21	1	3	1	0	26	6.6	26.6

<sup>a</sup> The 1994 survey was conducted during spring (28-30 Apr). Previous surveys and the 1995 survey were conducted during January and February coincident with elk surveys.

<sup>b</sup> The 1995 data were analyzed using the current bighorn sheep sightability model.

<sup>c</sup> The 2001 data were collected during a bighorn sheep capture effort in the upper Selway River east of Magruder Crossing.

Table 6. Bighorn sheep population data, Units 19 and 20, Clearwater Region, 1981-2001.

Unit Year <sup>a</sup>	Ewes	Lambs	Rams				Uncl.	Total legal rams	Total sheep	Lambs: 100 ewes	Rams: 100 ewes
			I	II	III	IV					
19											
1981	44	9	3	0	0	0	0	56	20.5	6.8	
1982	76	14	4	3	2	1	0	100	18.4	13.2	
1983	95	31	6	4	0	0	0	136	32.6	10.5	
1984	92	25	1	2	2	0	0	122	27.2	5.4	
1986	69	9	3	4	3	1	0	89	13.0	15.9	
1987	68	20	2	0	0	0	0	90	29.4	2.9	
1989	63	20	4	3	1	0	0	91	31.7	12.7	
1992	38	2	1	4	7	0	0	52	5.3	31.6	
1993	40	0	7	2	11	0	0	60	0.0	5.3	
1996	32	14	5	0	2	3	0	56	44.8	31.3	
2001	28	13	0	5	0	7	0	53	46.4	42.9	
2007	31	5	1	1	0	0	0	40	16.1	6.5	
20											
1981	12	3	6	3	1	1	0	26	25.0	91.7	
1982	78	19	3	8	15	6	0	129	24.4	41.0	
1983	83	13	13	11	10	3	0	133	15.7	44.6	
1984	107	29	6	15	14	6	0	177	27.1	38.3	
1986	132	31	14	15	19	19	0	230	23.5	50.8	
1987	113	25	16	12	30	11	0	207	22.1	61.1	
1989	94	26	10	9	10	3	0	152	27.7	34.0	
1992	68	13	3	8	10	4	0	106	19.1	36.8	
1993	53	7	1	2	3	0	0	66	13.2	11.3	
1994	49	11	10	3	12	2	0	87	22.4	55.1	
1996	51	7	4	5	7	3	1	78	13.8	39.2	
2001	22	6	10	0	13	0	0	51	27.3	104.6	
2007	11	1	0	1	3	3	0	19	9.1	63.6	

<sup>a</sup> The 1993 survey was conducted during spring (May). All other surveys were conducted during January and February coincident with elk surveys. The 2001 data include sightability estimates with 90% bounds.

**PROGRESS REPORT  
SURVEYS AND INVENTORY**

<b>STATE:</b>	<u>Idaho</u>	<b>JOB TITLE:</b>	<u>Bighorn Sheep Surveys and</u>
<b>PROJECT:</b>	<u>W-170-R-31</u>		<u>Inventories</u>
<b>SUBPROJECT:</b>	<u>3, Nampa</u>	<b>STUDY NAME:</b>	<u>Big Game Population Status,</u>
<b>STUDY:</b>	<u>I</u>		<u>Trends, Use, and Associated</u>
<b>JOB:</b>	<u>4</u>		<u>Habitat Studies</u>
<b>PERIOD COVERED:</b>	<u>July 1, 2006 to June 30, 2007</u>		

**SOUTHWEST (NAMPA) REGION**

**Units 40, 41, 42**

**Controlled Hunt Areas 41, 42-1, 42-2**

**Abstract**

Thirteen hunters harvested 12 California bighorn sheep during the 2006 hunting season.

We conducted aerial surveys of California bighorn sheep herds in July 2006. The number of sheep observed (234) in the Little Jacks Creek, Shoofly Creek, and Big Jacks Creek herds increased 10% from the count in 2004. We observed 355 bighorn sheep during the survey in the Owyhee River area in 2006, a 35% increase compared to the 2004 count, and the highest count since 1996.

**Management Direction**

Maintain controlled hunt strategy and offer hunter opportunity consistent with management goals. Encourage bighorn sheep habitat improvement projects by land management agencies. Harvest and/or remove for transplant no more than 15-20% of the observed legal rams in a hunt unit. Promote the non-consumptive value of bighorn sheep and consider such values in our management decisions.

The Department will continue to cooperate and coordinate management with Nevada and Oregon to ensure that adjacent bighorn sheep habitat is stocked with only the California subspecies and increase permit levels as population status allows.

The 1991-1995 management goals for California bighorn sheep are to increase populations, establish new populations, increase harvest, and provide more recreation.

## **Background**

Units 40, 41, and 42 are reserved for the California bighorn sheep subspecies; all other units north of Interstate Highway 84 are designated as Rocky Mountain bighorn sheep habitat.

Four releases of California bighorn sheep from British Columbia into Owyhee County in the 1960s provided the nucleus for the original herds along portions of the Owyhee River and in Little Jacks Creek. As those herds grew, hunting seasons were initiated. Beginning in 1980, 50 bighorn sheep were transplanted into other parts of the Owyhee, Bruneau, and Jarbidge River drainages. An additional 12 bighorn sheep from British Columbia were released into Idaho's Jarbidge River Canyon in 1984 when deep snows prevented Nevada Department of Wildlife personnel from reaching their proposed release site in Nevada.

## **Population Surveys**

The Little Jacks Creek and Owyhee River areas have been surveyed regularly since 1983 (Table 1). The number of bighorn sheep observed in the Owyhee River drainage decreased dramatically from 669 in 1993 to 347 in 1994 (Table 1). Since 1990, the survey area has included the whole drainage from the Oregon border upstream to approximately 5 miles east of the point where the pipeline crosses the East Fork Owyhee River.

The drainage of the Little Jacks Creek/Shoofly Creek complex has been surveyed since 1983, and the Big Jacks drainage has been surveyed since 1990 (Table 1). The number of bighorn sheep counted in 1993 was an all-time high.

We surveyed California bighorn sheep herds in early July 2006 (Table 1). The number of sheep observed (234) in the Little Jacks Creek and Big Jacks Creek herds increased 10% from the count in 2004. We observed 355 bighorn sheep during the survey in the Owyhee River area in 2006, a 35% increase compared to the 2004 count and the highest count since 1996.

There are scattered pockets of bighorn sheep habitat in Unit 40. Small bands of bighorns exist in the Reynolds Creek/Salmon Creek area in the northern part of the unit and sheep are seen periodically in the vicinity of Sinker Creek, but none were observed from the helicopter in those areas during a survey attempt in 2006. We observed 14 bighorn sheep (10 ewes, 3 lambs, 1 sub-legal ram) in the Castle Creek drainage in 2004, but did not find them in 2006.

## **Harvest Characteristics**

Thirteen permits were offered for California bighorn sheep in 3 hunt areas (41, 42-1, 42-2) in 2006 (Appendix A). Three hundred forty-two hunters applied for the 13 permits, resulting in drawing odds of 1:26.3 applicants. Thirteen hunters harvested 12 rams in 2006 for a 92% success rate (Tables 2 and 3).

## **Habitat Conditions**

These units are characterized by large expanses of flat terrain dominated by sagebrush/grass vegetative types. The major drainage systems (Bruneau, Jarbidge, and Owyhee rivers) have formed steep canyons that provide the habitats preferred by California bighorn sheep. Grass-covered benches along these canyons provide foraging sites. Steepness of these canyons and isolation of some forage areas by rimrock reduces competition between bighorn sheep and cattle. Thus, bighorn sheep seldom compete with cattle for forage on those sites. However, the potential for bighorn sheep/livestock conflicts may exist adjacent to the canyons, or in portions of the canyons accessible to livestock as the numbers of bighorn sheep or cattle increase, or as availability of forage decreases in the canyons due to drought, grazing pressure, wildfire, or invasion of unpalatable exotic weed or grass species.

The BLM administers most of the habitats suitable for bighorn sheep within these units. Some parcels of state-owned and private lands also contain suitable habitat. Most currently-occupied habitat has been under study by BLM for possible wilderness designation and is incorporated in the current Owyhee Canyonlands Wilderness proposal.

## **Capture and Translocation**

A history of trapping and translocation activity in Units 40, 41, and 42 appears in Table 4. No capture or transplant activity took place in the Southwest Region during the current reporting period.

## **Management Implications**

Prior to 1993, permit levels were held at a conservative level in accordance with the management plan that called for removal of no more than 20% of legal rams. Hunting seasons since 1995 have been modified in response to the 1994 and subsequent population survey results. These bighorn sheep populations should continue to be monitored very closely. Aerial surveys should be conducted every other year to monitor population trends, ram:ewe ratios, and lamb survival. The rate of bighorn sheep removal should be closely evaluated and adjusted in accordance with population trends.

Table 1. Bighorn sheep population data, Southwest (Nampa) Region, 1983-present.

Unit	Year	Ewes	Lambs	Rams		Uncl.	Total sheep	Lambs: 100 ewes	Rams: 100 ewes
				Sub-legal	Legal				
41-Little Jacks Creek									
	1983			17	25		115	53.0	74.0
	1985 <sup>a</sup>	30	16	26	13	0	85	53.3	130.0
	1985 <sup>b</sup>	40	18	22	16	0	96	45.0	95.0
	1987 <sup>c</sup>	84	49	26	25	0	184	58.3	60.7
	1987 <sup>a</sup>	102	35	19	8	0	164	34.3	26.5
	1988	73	29	56	26	0	184	39.7	112.3
	1989	105	43	33	22	0	203	41.0	52.4
	1990	78	32	54	33	5	202	41.0	111.5
	1991	99	55	43	37	7	241	55.6	80.8
	1992	81	42	35	36	0	194	51.9	87.7
	1993	142	36	51	41	0	270	25.4	64.8
	1994	107	40	41	16	0	204	37.4	53.3
	1996	95	33	39	14	0	181	34.7	55.8
41-Big Jacks Creek									
	1990	14	10				38	71.4	
	1993	46	19	17	8	0	90	41.3	54.3
	1997	73	38	12	18	0	141	52.1	41.1
41-Big and Little Jacks Creek									
	1998	116	48	60	31	0	258	41.4	78.4
	2000	141	51	17	16	0	225	36.2	23.4
	2002 <sup>d</sup>	63	18	21	19	5	126	28.6	63.5
	2004 <sup>d</sup>	118	52	28	14	0	212	44.1	35.6
	2006 <sup>d</sup>	124	60	36	14	0	234	48.4	40.3
42									
	1983	135	76	76	46	1	334	56.3	90.4
	1985	124	71	57	21	0	273	57.3	62.9
	1987	140	70			0	329	50.0	85.0
	1990	339	183	71	46	0	639	54.0	34.5
	1991	400	175	60	114	4	753	43.8	43.5
	1992	323	142	101	54	0	620	44.0	48.0
	1993	406	81	125	57	0	669	20.0	44.8
	1994 <sup>c</sup>	179	73	51	42	2	347	40.8	52.0
	1994 <sup>d</sup>	177	63	61	35	0	336	35.6	54.3
	1996	202	96	52	51	0	401	47.5	51.0
	1998	204	76	24	26	4	334	37.3	24.5
	2000	198	60	29	22	0	309	30.3	25.8
	2002 <sup>d</sup>	164	50	25	9	1	249	30.5	20.7
	2004 <sup>d</sup>	135	48	46	28	5	262	35.6	54.8
	2006 <sup>d</sup>	184	81	53	37	0	355	44.0	48.9

<sup>a</sup> August survey.

<sup>b</sup> November survey.

<sup>c</sup> June survey.

<sup>d</sup> July survey.

Table 2. Bighorn sheep harvest and drawing odds, Southwest (Nampa) Region, 1983-present.

Year	Permits	Harvest	Hunter success (%)	First-choice applicants	Drawing odds
1983	11	6	55	197	1:17.9
1984	18	14	78	205	1:11.4
1985	20	16	80	245	1:12.3
1986	22	13	59	363	1:16.5
1987	22	14	64	360	1:16.4
1988	22	14	64	331	1:15.0
1989	22	14	64	275	1:12.5
1990	22	19	86	300	1:13.6
1991	30	25	83	373	1:12.4
1992	30	26	87	457	1:15.2
1993	62	39	63	467	1:7.5
1994	62	40	65	685	1:11.0
1995	39	25	64	584	1:15.0
1996	39	23	59	558	1:14.3
1997	39	27	69	557	1:14.3
1998	39	29	74	636	1:16.3
1999	37	22	59	607	1:16.4
2000	37	21	57	483	1:13.1
2001	13	9	69	232	1:17.8
2002	13	4	31	233	1:17.9
2003	13	6	46	200	1:15.4
2004	13	6	46	190	1:14.6
2005	13	10	77	207	1:15.9
2006	13	12	92	342	1:26.3

Table 3. Bighorn sheep harvest and drawing odds by hunt area, Southwest (Nampa) Region, 1997-present.

Hunt area	Year	Permits	Harvest	Hunter success (%)	Days/hunter	First-choice applicants	Drawing Odds
41-1 <sup>a</sup>	1997	5	3	60	6.7	86	1:17.2
	1998	5	4	80	6.5	95	1:19.0
	1999	4	3	75	4.7	115	1:28.7
	2000	4	2	50	3.5	83	1:20.8
41-2 <sup>a</sup>	1997	5	3	60	1.3	57	1:11.4
	1998	5	2	40	12.5	72	1:14.4
	1999	4	3	75	4.7	82	1:20.5
	2000	4	4	100	4.0	53	1:13.3
41 <sup>a</sup>	2001	3	3	100		67	1:22.3
	2002	3	1	33	14.0	83	1:27.7
	2003	3	3	100	5.0	74	1:24.7
	2004	3	2	67	10.0	93	1:31.0
	2005	3	3	100	6.3	80	1:26.7
	2006	3	3	100	2.3	107	1:35.6
41-4 <sup>a</sup>	1997	5	3	60	3.0	108	1:21.6
	1998	5	5	100	3.6	110	1:22.0
	1999	3	2	67	2.0	43	1:14.3
	2000	3	3	100	6.3	38	1:12.7
41-5 <sup>a</sup>	1999	2	2	100	5.5	34	1:17.0
	2000	2	2	100	3.0	44	1:22.0
42-1	1997	10	6	60	5.3	93	1:9.3
	1998	10	7	70	6.6	144	1:14.4
	1999	10	3	30	2.3	149	1:14.9
	2000	10	2	20	7.0	77	1:7.7
	2001	5	3	60	6.3	76	1:13.3
	2002	5	3	60	6.0	72	1:14.4
	2003	5	1	20	1.0	76	1:15.2
	2004	5	1	20	10.0	61	1:12.2
	2005	5	3	60	2.7	62	1:12.4
	2006	5	4	80	4.0	84	1:16.8
42-2	1997	10	8	80	4.8	111	1:11.1
	1998	10	7	70	4.7	124	1:12.4
	1999	10	7	70	6.6	125	1:12.5
	2000	10	5	50	3.4	100	1:10.0
	2001	5	3	60		89	1:17.9
	2002	5	0	0		78	1:15.6
	2003	5	2	40	7.0	50	1:10.0
	2004	5	3	60	2.3	65	1:13.0
	2005	5	4	80	3.3	65	1:13.0
	2006	5	5	100	6.0	151	1:30.2

Table 3. Continued.

Hunt area	Year	Permits	Harvest	Hunter success (%)	Days/hunter	First-choice applicants	Drawing Odds
42-3 <sup>b</sup>	1997	2	2	100	1.0	46	1:23.0
	1998	2	2	100	5.0	58	1:29.0
	1999	2	1	50	2.0	32	1:16.0
	2000	2	1	50	2.0	45	1:22.5
42-4 <sup>b</sup>	1997	2	2	100	2.0	56	1:28.0
	1998	2	2	100	9.0	33	1:16.5
	1999	2	1	50	2.0	27	1:13.5
	2000	2	2	100	4.0	43	1:21.5

<sup>a</sup> Hunts 41-1 and 41-2 were closed in 2001, and Hunts 41-4 and 41-5 were renamed Hunt 41.

<sup>b</sup> Hunts 42-3 and 42-4 were eliminated in 2001.

Table 4. Bighorn sheep translocation, Southwest (Nampa) Region, 1963-2003.

Date	Capture site	Release site	Adult <sup>a</sup>		Lambs		Total
			Male	Female	Male	Female	
Oct 1963	Chilcotin, B.C.	E.F. Owyhee R	5	14			19
Nov 1965	Chilcotin, B.C.	E.F. Owyhee R	2	7			9
Nov 1966	Chilcotin, B.C.	E.F. Owyhee R	2	8			10
Oct 1967	Chilcotin, B.C.	Little Jacks Cr	4	8			12
Mar 1980	Little Jacks	Granite Mt, NV	1	4			5
Feb 1981	Little Jacks	Jarbidge R, NV	3	9			12
Dec 1982	E.F. Owyhee	Bruneau/Jarbidge	2	10			12
Mar 1984	Chilcotin, B.C.	Bruneau/Jarbidge	2	10			12
Dec 1984	E.F. Owyhee	Bruneau/Jarbidge	2	9			11
Jan 1985	Little Jacks	Bruneau/Jarbidge	1	0			1
Jan 1985	Little Jacks	S.F. Owyhee	2	7			9
Dec 1986	E.F. Owyhee	Snowcloud Mt, NV					7
Dec 1986	E.F. Owyhee	Cottonwood Cr	4	11			15
Dec 1987	Little Jacks	Cottonwood Cr	3	11			14
Feb 1988	Chilcotin, B.C.	Big Jacks Cr	3	11			14
Mar 1988	E.F. Owyhee	Big Jacks Cr	2	0			2
Nov 1988	Shoofly Cr	Cottonwood Cr	5	9			14
Nov 1988	Shoofly Cr	Nevada	2	11			13
Nov 1988	Battle Cr	Duncan Cr	9	15			24
Dec 1989	Little Jacks	W.F. Bruneau	3	9			12
Nov 1990	E.F. Owyhee	W.F. Bruneau	5	11	0	0	16
Nov 1990	E.F. Owyhee	North Dakota	6	17	0	0	23
Nov 1991	E.F. Owyhee	E.F. Dry Cr	3	10	2	1	16
Nov 1991	E.F. Owyhee	North Dakota	5	28	3	2	38
Nov 1991	E.F. Owyhee	Nevada	4	31	1	2	38
Dec 1993	E.F. Owyhee	Battle Mt, NV	3	20	1	1	25
Dec 1993	E.F. Owyhee	Deschutes, OR	6	25	2	2	35
Dec 1993	E.F. Owyhee	Bruneau/Jarbidge R & Big Cottonwood Cr					45
Mar 2003	E.F. Owyhee	Independence Pks, Id.	1	5			6

<sup>a</sup> When the age of transplanted bighorn sheep is not available, all are listed as adult.

**PROGRESS REPORT  
SURVEYS AND INVENTORY**

<b>STATE:</b>	<u>Idaho</u>	<b>JOB TITLE:</b>	<u>Bighorn Sheep Surveys and</u>
<b>PROJECT:</b>	<u>W-170-R-31</u>		<u>Inventories</u>
<b>SUBPROJECT:</b>	<u>3, McCall</u>	<b>STUDY NAME:</b>	<u>Big Game Population Status,</u>
<b>STUDY:</b>	<u>I</u>		<u>Trends, Use, and Associated</u>
<b>JOB:</b>	<u>4</u>		<u>Habitat Studies</u>
<b>PERIOD COVERED:</b>	<u>July 1, 2006 to June 30, 2007</u>		

**SOUTHWEST (MCCALL) REGION**

**Units 19A, 20A, 26**

**Controlled Hunt Areas 20A, 26, 26-L**

**Abstract**

The bighorn sheep hunt areas in Units 20A and 26 were restructured during implementation of the 1991-1995 Bighorn Sheep Management Plan and again in 1997. Permits were lowered from 6 to 2 in Hunt Areas 20A and 26 beginning with the 2003-2004 regulation cycle. Six harvest permits were issued in 2006 among 3 separate hunt areas. Four rams were harvested for a 67% hunter success rate. The 2006 population survey indicated there were ample legal rams to increase hunting opportunity. As a result, permits in Hunt Area 26 were increased from 2 to 4 for the 2007-2008 regulation cycle.

**Management Direction**

Allow and/or encourage population increases. Increase recreational opportunity. Develop and/or continue with reintroduction programs. Monitor populations via helicopter surveys every other year.

**Background**

Hunting seasons for bighorn sheep in Units 20A and 26 were restructured with the implementation of the 1991-1995 Bighorn Sheep Management Plan. Prior to this plan, there were 5 hunt areas (20A-1, 20A-2, 20A-3, 26-1, and 26-2) in these units. Hunt Area 20A-1 remained unchanged. Hunt Area 20A-3 was incorporated into Hunt Area 20A-2. Hunt Areas 26-1 and 26-2 included all of Unit 26 and were stratified by season dates, but in 1992, a portion of Hunt Area 20A-2 was incorporated into Hunt Area 26-1 and a portion of 27-1 was incorporated into Hunt Area 26-2. The season dates for Hunt Areas 26-1 and 26-2 were made concurrent in 1991. Hunt Area 26-L was created in 1992 and incorporated portions of both Hunt Areas 26-1 and 26-2. This hunt was designed to provide a low-permit level, high-quality hunt close to the rut period. Hunt areas were restructured again in 1997 in response to declining

bighorn sheep survey numbers. Hunt Area 20A-1 was eliminated and Hunt Area 20A-2 became Hunt Area 20A. Hunt Areas 26-1 and 26-2 were combined and renamed Hunt Area 26; permit levels were reduced from a combined total of 11 to a new total of 6. Permit levels were further reduced to 2 in Hunt Areas 20A and 26 in 2003. Population data in Table 1 reflect the new hunt area boundaries.

### **Population Surveys**

No population surveys were conducted during the reporting period. Past surveys are summarized in Table 1.

### **Harvest Characteristics**

Harvest data are generated from a mandatory hunter report regulation for all permit holders for bighorn sheep hunts. Successful permit holders must present their bighorn sheep horns to a Department office and complete a harvest report within 10 days of the date of kill. Unsuccessful permit holders must present and/or mail their unused bighorn sheep tag/permit to a Department office within 10 days of the close of the hunt for which the tag was valid.

A combined total of 6 permits was authorized for bighorn sheep Hunt Areas 20A, 26, and 26-L in 2006 (Tables 2 and 3). Four rams were harvested which represents a 67% (4 out of 6) hunter success rate.

### **Management Implications**

The permit level in Hunt Areas 26-1 and 26-2 was reduced by 2 and 9, respectively, in 1993. This reduction was in response to continued recruitment problems in the Big Creek and Middle Fork Salmon River drainages. The low number of legal rams observed in Hunt Area 26-2, and the fact that no hunters were able to harvest a legal ram during the 1995 and 1996 seasons, indicated that management restrictions were necessary. In 1997, the permits for Hunt Area 26-2 were dropped, and Hunt Area 26-2 was combined with Hunt Area 26-1 to form new Hunt Area 26. The bighorn sheep population in Hunt Area 20A showed a similar trend, but permit levels remained constant. The 2006 bighorn sheep aerial survey indicated bighorn sheep recruitment may be poor and the overall population still appears static; however, ram numbers appear to be acceptable.

A research study conducted in April 2000 indicated that a highly virulent strain of *Pasteurella* spp. is present in the Big Creek bighorn sheep population. This evidence suggests that this population is not stable. In response to the disease status and less than desirable population performance, permit levels were reduced from 6 to 2 in both Hunt Areas 20A and 26 beginning with the 2003-2004 hunting seasons. However, the ram numbers observed during the 2006 survey indicate more opportunity can be given in this area. Permits levels in Hunt Area 26 will be increased from 2 to 4 during the 2007-2008 regulation cycle. This bighorn sheep population will be monitored every other year as funding permits.

## Units 22, 23, 31

### **Abstract**

No hunting or population surveys for bighorn sheep occurred in this area during the 2006-2007 reporting period.

### **Management Direction**

Follow statewide management direction. Continue to work with the USFS and livestock producers in the Hells Canyon National Recreation Area to minimize the potential for any disease transfer between domestic sheep and bighorn sheep. Coordinate with the Oregon and Washington departments to release Rocky Mountain bighorn sheep in Hells Canyon. Open additional hunts as transplanted populations become established and meet minimum population estimate criterion of 100. Complete inventories of potential release sites, assess status of recently established herds, and increase bighorn sheep numbers through transplants.

### **Background**

Units 22, 23, and 31 represent the southern and western distribution of Rocky Mountain bighorn sheep habitat in Idaho. Until recently, the Granite Creek drainage and the area from Granite Creek south to Hells Canyon Dam represented the occupied bighorn sheep habitat in Unit 22. Sheep translocations on the Oregon side of Hells Canyon in the mid 1990s have supplied the source for animals now colonizing Unit 22 in the Dukes Creek and Limepoint Creek areas.

The opportunity for establishing huntable bighorn sheep populations in these units is limited by the abundance and distribution of domestic sheep. There has never been bighorn sheep hunting authorized in these units.

### **Population Surveys**

No population surveys were conducted in these units during the reporting period.

### **Harvest Characteristics**

No bighorn sheep hunting was authorized during this reporting period.

### **Management Implications**

Available habitat exists for the bighorn sheep population to expand into in Unit 22. However, the bighorns in Unit 22 are precariously close to domestic sheep allotments and pose a disease vector risk to other bighorn sheep in Hells Canyon. The Payette National Forest conducted a risk analysis of disease transmission between domestic sheep and bighorn sheep on the forest. They found a very high risk for disease transmission between domestic sheep and wild sheep in this area. Two stray domestic sheep were killed in bighorn sheep habitat in the Big Bar area of Hells

Canyon Reservoir in February 2007. Management recommendations for this area are dependent upon the status of domestic sheep grazing.

Table 1. Bighorn sheep population data, Southwest (McCall) Region, 1987-present.

Hunt Area/ Year	Ewes	Lambs	Rams				Uncl.	Total legal rams	Total sheep	Lambs: 100 ewes	Rams: 100 ewes
			I	II	III	IV					
20A											
1989	76	13	5	8	6	8	0	14	116	17.1	35.5
1991	72	3	4	2	20	4	0	24	105	4.2	41.7
1992	80	7	4	7	11	7	0	18	116	8.8	36.3
1993	62	10	1	5	11	4	1	15	94	16.1	33.9
1994	63	11	4	1	7	7	0	14	93	17.5	30.2
1995	53	11	3	3	6	7	0	13	83	20.8	35.8
1996	38	6	1	4	1	8	0	9	58	15.8	36.8
1999	35	11	0	2	2	1	0	3	51	31.4	14.3
2002	35	14	1	2	3	3	0	6	58	40.0	25.7
2004	21	8	3	2	2	0	0	2	36	38.1	33.3
2006	48	9	5	1	4	1	0	5	68	18.8	22.9
26 <sup>a</sup>											
1989	180	28	11	17	18	26	0	44	270	15.6	40.0
1991	93	4	5	8	20	6	0	26	136	4.3	41.9
1992	91	26	0	10	11	19	8	30	165	28.6	44.0
1993	108	22	3	3	11	18	0	29	165	20.4	32.4
1994 <sup>b</sup>	33	2	1	2	9	10	0	19	57	6.1	66.7
1995	95	10	3	3	7	9	0	16	131	10.5	23.2
1996	99	11	2	9	7	10	0	17	138	11.1	28.3
1999	88	23	5	12	10	8	0	18	146	26.1	39.8
2002	86	26	6	7	8	2	0	10	135	30.2	26.7
2004	90	23	10	9	9	3	0	12	144	25.6	34.4
2006	120	23	4	6	15	18	0	33	186	19.2	35.8
26-L											
1987	114	19	5	9	11	10	0	21	177	16.7	30.7
1988	116	18	3	7	8	12	0	20	172	15.5	25.9
1989	122	19	7	13	15	24	0	39	200	15.6	48.4
1991	64	4	2	8	13	2	0	15	93	6.3	39.1
1992	62	20	0	5	6	14	0	20	107	32.3	40.3
1993	82	13	2	3	8	10	0	18	118	15.9	28.0
1994 <sup>b</sup>	22	1	1	2	7	5	0	12	38	4.5	68.2
1995	85	7	4	6	6	7	0	13	115	8.2	27.1
1996	73	9	1	7	4	7	0	11	101	12.3	26.0
1999	62	14	4	9	6	5	0	11	100	22.6	38.7
2002	50	16	3	6	5	1	0	6	81	32.0	30.0
2004	62	12	9	9	6	3	0	9	101	19.4	43.5
2006	78	17	2	4	14	18	0	32	133	21.8	48.7

<sup>a</sup> Unit 27 data not included.

<sup>b</sup> Incomplete survey.

Table 2. Bighorn sheep harvest and drawing odds by hunt area, Southwest (McCall) Region, 1997-present.

Hunt area	Year	Permits	Harvest	Hunter success (%)	Days/hunter	First-choice applicants	Drawing odds	
20A	1997	6	5	83	3.6	41	1:6.8	
	1998 <sup>a</sup>	6	5	67		75	1:12.5	
	1999	6	3	50		46	1:7.6	
	2000	6	4	67		77	1:12.8	
	2001	6	1	17		57	1:9.5	
	2002	6	1	17		33	1:18.2	
	2003	2	1	50		13	1:6.5	
	2004	2	0	0		20	1:10.0	
	2005	2	0	0		16	1:8.0	
	2006	2	0	0		9	1:4.5	
26	1997 <sup>b</sup>	6	3	50	4.6	59	1:9.8	
	1998	6	5	83	13.2	67	1:11.2	
	1999	6	3	50		84	1:14.0	
	2000 <sup>c</sup>	6	4	80		100	1:16.7	
	2001 <sup>d</sup>	7	2	29		69	1:11.5	
	2002	6	2	33		25	1:24	
	2003	2	0	0		27	1:13.5	
	2004	2	2	100		4.5	37	1:18.5
	2005	2	0	0		14	1:7.0	
	2006	2	2	100		23	1:11.5	
26-L	1997	2	2	100		6.0	28	1:14.0
	1998	2	2	100	5.0	53	1:26.5	
	1999	2	1	50	10.0	82	1:41.0	
	2000	2	2	100	11.5	80	1:40.0	
	2001	2	1	50		21	1:10.5	
	2002	2	1	50		48	1:24	
	2003	2	1	50		15	1:7.5	
	2004	2	2	100	2.5	38	1:19.0	
	2005	2	1	50		23	1:11.5	
	2006	2	2	100		15	1:7.5	

<sup>a</sup> The auction tag permit holder harvested a bighorn sheep in Hunt Area 20A.

<sup>b</sup> Hunt area restructured in 1997 to include former Hunt Area 26-2.

<sup>c</sup> One permit holder opted for a rain-check tag in 2001 due to forest fire area closures during part of the 2000 season.

<sup>d</sup> Includes 1 rain-check recipient from the 2000 hunting season.

Table 3. Bighorn sheep harvest and drawing odds, Southwest (McCall) Region, 1975-present.

Year	Permits	Harvest	Hunter success (%)	First-choice applicants	Drawing odds
1975	22	7	32		
1976	27	10	37		
1977	28	8	29		
1978	23	9	39		
1979	23	7	30		
1980	25	7	28		
1981	25	13	52		
1982	30	16	53		
1983	28	16	57		
1984	28	12	43		
1985	26	13	50		
1986	26	18	69		
1987	26	12	46		
1988	26	13	50		
1989	26	11	42		
1990	26	13	50		
1991	34	15	44		
1992	32	10	31	149	1:4.7
1993	21	10	49	135	1:6.4
1994 <sup>a</sup>	14	7	50	108	1:7.7
1995	14	8	57	136	1:9.7
1996	14	4	29	135	1:9.6
1997	14	10	71	128	1:9.1
1998 <sup>a</sup>	14	12	86	195	1:13.9
1999	14	7	50	212	1:15.1
2000	14	10	71	257	1:18.4
2001	15	4	27	147	1:9.8
2002	14	4	29	106	1:7.6
2003	6	2	33	55	1:9.2
2004	6	4	67	95	1:15.8
2005	6	1	17	53	1:8.8
2006	6	4	67	47	1:7.8

<sup>a</sup> The auction tag permit holder harvested a bighorn sheep in Hunt Area 20A.

**PROGRESS REPORT  
SURVEYS AND INVENTORY**

<b>STATE:</b>	<u>Idaho</u>	<b>JOB TITLE:</b>	<u>Bighorn Sheep Surveys and</u>
<b>PROJECT:</b>	<u>W-170-R-31</u>		<u>Inventories</u>
<b>SUBPROJECT:</b>	<u>4</u>	<b>STUDY NAME:</b>	<u>Big Game Population Status,</u>
<b>STUDY:</b>	<u>I</u>		<u>Trends, Use, and Associated</u>
<b>JOB:</b>	<u>4</u>		<u>Habitat Studies</u>
<b>PERIOD COVERED:</b>	<u>July 1, 2006 to June 30, 2007</u>		

**MAGIC VALLEY REGION**

**Units 46, 47, 54, 55, 57**

**Controlled Hunt Area 46**

**Abstract**

During this reporting period, Magic Valley Region wildlife personnel monitored reintroduced populations of California bighorn sheep in the Bruneau and Jarbidge canyons and the Jim Sage and Albion mountain ranges and evaluated opportunities to increase sheep hunting opportunity in the region. In the Jim Sage area, radio-monitoring bighorns from the 2000 and 2001 releases continued. Three collared sheep died during this reporting period, and as a result, only 12 radio-collared sheep remain on Jim Sage Mountain; of these, only 8 still have functioning radio collars. An aerial survey conducted during September 2006 resulted in an estimate of 80-100 individuals including at least 9 3/4-curl rams. Two permits will be issued for the 2007-2008 hunting seasons.

Forty-eight bighorns from Oregon and Nevada were released in the Albion Mountains in 2003 and 2004. During both years, sheep began dispersing soon after release and presently no wild sheep are known to inhabit the area. Fifteen of 31 (48%) radio-collared sheep have died since the releases primarily to mountain lion predation. Documented dispersal includes movements to Jim Sage Mountain, Goose Creek, Birch Creek, Salmon Falls Creek Reservoir, and the Raft River Narrows.

The bighorn sheep population in Unit 54 has decreased to fewer than 15 bighorns. Disease is the suspected, but unverified, cause of the population decline. Plans for augmenting the existing population will be delayed until potential conflicts with domestic sheep grazing can be resolved.

Aerial survey results from July 2006 suggest a stable to slightly upward trend in the Jarbidge/Bruneau (Hunt Area 46) bighorn sheep population. Hunting was reauthorized in this Hunt Area for the 2003 and 2004 seasons, and the number of tags offered was increased to 3 for the 2005 and 2006 seasons. Based on 2006 survey results, 3 tags will again be offered during the 2007 and 2008 seasons.

## **Management Direction**

Increase existing populations; reintroduce bighorn sheep into suitable historical habitats; conduct research on habitat use and population dynamics; promote non-consumptive values.

## **Background**

Bighorn sheep were extirpated from southern Idaho in the early 1900s. In 1963, the Department initiated a program to reestablish California bighorn sheep populations in the Owyhee River and Little Jacks Creek drainages in Owyhee County. These early releases were successful and bighorn sheep populations increased and expanded their range in southwest Idaho.

In Idaho, the area south and west of Interstate 84 within the Magic Valley and Southwest regions has been designated exclusively for the California bighorn sheep subspecies. In 1992, it was estimated there were more than 1,200 California bighorn sheep in Idaho. From 1980-1992, Idaho's healthy California bighorn populations provided a source for numerous reintroduction projects and 413 sheep were captured and moved to other locations in Idaho, Nevada, Oregon, and North Dakota. Population surveys in 1994 indicated a substantial decline in California bighorn populations in the East Fork Owyhee and Jacks Creek drainages and annual capture/translocation operations were discontinued. Surveys conducted from 1996-2006 indicate populations have not increased to pre-1994 levels.

Units 46, 47, and 41 (east) – From 1982-1993, the Department and Nevada Department of Wildlife (NDOW) released 93 California bighorn sheep into portions of the Jarbidge and Bruneau drainages (see Table 4 in the Southwest Region-Nampa section) with the objective of reestablishing a population in the Jarbidge Mountains. The bighorn sheep released by NDOW in 1982 and 1984 moved north into the Jarbidge River Canyon in Idaho. Bighorn sheep have also been released by the Department near the confluence of the Jarbidge and West Fork Bruneau Rivers, at Dorsey Creek, and near Black Rock Pocket on the West Fork Bruneau Canyon. Bighorn sheep are distributed throughout the Jarbidge and West Fork Bruneau canyons upstream from their confluence. Bighorns have been observed as far north in the Bruneau Canyon at Cave Draw and are occasionally observed in the Sheep Creek and Marys Creek drainages.

Unit 54 – Suitable habitat for bighorn sheep occurs in the Rock Creek, Dry Creek, and Big Cottonwood Creek drainages. However, the proximity of domestic sheep grazing allotments has hindered reintroduction efforts. From 1986-1993, 50 California bighorn sheep were released into the Big Cottonwood drainage and 24 bighorns were released into the East Fork of Dry Creek (Table 1). In 1989, the bighorns in Big Cottonwood experienced a die-off and 57% of the radio-monitored sheep died. Disease from interaction with domestic sheep is believed to be the cause of the decline, although it has not been verified. Wild sheep were known to have contacted a farm flock of domestic sheep near Big Cottonwood WMA and were also observed intermingling with domestic sheep on the Sawtooth National Forest. Currently, fewer than 15 bighorn sheep persist in Unit 54.

Unit 55 – During 1999, domestic sheep grazing on federal grazing allotments in Unit 55 was eliminated, clearing the way for bighorn sheep releases. From 2000-2004, 93 bighorns were

released into historic habitat on the Jim Sage and Albion mountains. The Jim Sage population has increased steadily to an estimated 80-100 individuals; 2 permits will be authorized for the 2007 and 2008 hunting seasons. The Albion Mountain effort was unsuccessful. Released sheep began dispersing immediately from the habitat selected for them and no sheep are known to currently exist in the area.

Unit 57 – Unit 57 is currently considered unsuitable habitat because of domestic sheep grazing.

### **Population Surveys**

Units 46, 47, and 41 (east) – Surveys conducted in 2002, 2003, and 2006 suggest the population has increased since 2000. A survey conducted in July 2006 indicated that the population may have stabilized over the past few years (Table 2).

Unit 54 – There were no population surveys conducted during the reporting period. Data collected were limited to incidental sightings and observations made during mule deer flights.

Observations of bighorn sheep in Unit 54 have become more infrequent in recent years, reflecting the decline in bighorn sheep numbers. Ten sheep (1 legal ram, 2 sub-legal rams, 5 ewes, 1 lamb) were observed in Big Cottonwood Canyon near the Forest boundary in early December 2005. Small bands (1-7 individuals) of sheep have been observed on at least 4 occasions during this reporting period, including at least 3 rams. The total bighorn sheep population in Unit 54 is unknown but estimated to be fewer than 15 individuals.

Unit 55 – A helicopter survey of Jim Sage Mountain was conducted on 29 September 2006. A total of 67 sheep were observed (29 ewes, 5 lambs, 11 sub-legal rams, 9 legal rams, 13 unclassified). Windy conditions toward the end of the survey likely contributed to the low lamb:ewe ratio, as many of the unclassified animals were thought to be lambs. Based on the number of collared animals observed, the total population is estimated to be somewhere between 80 and 100 individuals. In addition, observers recorded 60 total sheep during a private reconnaissance flight in April 2007. Only 3 of 12 radio-collared sheep were observed on the spring flight, indicating that population levels may actually exceed the survey estimates.

Graduate student Gretchen Fowles estimated the population to be between 48 and 59 sheep during summer 2002 (Fowles 2002), and Department surveys in 2004 suggested a population of at least 62 individuals (but likely 70-80 individuals).

### **Harvest Characteristics**

Units 46, 47, and 41 (east) – From 1991-2006, 61 hunters harvested 41 rams from the Jarbidge/Bruneau population (Hunt Area 46). Annual hunter success rates have ranged from 33% to 100% and averaged 70% (Table 3). Ages of harvested rams range from 4.5 years to 12.5 years with a mean of 7.14 years ( $SD = 1.96$ ,  $n = 41$ ) and a median of 6 years. The hunting season in the Jarbidge/Bruneau area was eliminated in 2001 and 2002 because of low bighorn sheep numbers. Based on results from aerial surveys in 2002 and 2003, the season was reopened

in 2003 and 3 permits were authorized for 2005 and 2006 (Appendix A). Drawing odds averaged 1:37.6 in 2003-2006.

Units 54 and 55 – There was no legal harvest of bighorn sheep in Units 54 and 55 during the reporting period.

### **Capture and Translocation**

Jim Sage Mountains – Forty-five California bighorns, captured in Oregon, were released in the Jim Sage Mountains (Unit 55) in 2000 and 2001 (Table 1). All of the released sheep were radio-collared to provide data on survival rates and movements. Survival immediately following the 2000 release was poor. Eleven of 30 (37%) monitored bighorns died in the first 4 months following release. Nine of the 11 mortalities were attributed to mountain lion predation, 1 lamb was killed by a coyote, and 1 ewe became entangled in a fence and died. Survival was good following the 2001 release with a loss of only 2 of 15 (13%) radio-monitored sheep in the first 6 months. Since July 2002, annual survival rates have averaged 91%. During the 2006-2007 reporting period, 3 of 15 radio-monitored bighorns died: a 7-year old ewe was killed by a mountain lion, and 2 other ewes (ages 6 and 10) died of unknown causes. Causes of death for all post-translocation mortalities ( $n = 33$ ) on Jim Sage include mountain lion predation (70%), coyote predation (3%), accidents (9%), illegal kill (3%), and unknown cause (15%). To date, no movements away from Jim Sage Mountain by radio-monitored bighorns have been documented.

Albion Mountains – Following an investigation of habitat suitability that predicted adequate winter, lambing, and summer habitat for bighorn sheep (Fowles and Merrick 2003), the Department initiated a program to reintroduce sheep to the Albion Mountain Range (Unit 55). In 2003 and 2004, 48 bighorns from source populations in Oregon and Nevada, were released near Thunder Mountain approximately 5-6 miles from Jim Sage Mountain (Table 1). Thirty-one sheep were radio-collared to provide data on survival and movements. In both years, sheep began dispersing immediately following release. Five ewes and a ram moved to Jim Sage Mountain and remained with the resident population there. Two ewes moved to Goose Creek, 1 ewe moved to Birch Creek, 1 ewe and a lamb traveled to Salmon Falls Creek Reservoir, 2 ewes moved to the Raft River Narrows, and radio contact was lost with 4 ewes. Presently there are no radio-collared sheep in the vicinity of the release site. Fifteen mortalities of radio-collared individuals have occurred since release. Of these 15 mortalities, 11 were attributed to mountain lion predation, 2 were ruled accidents, and 1 was unknown.

### **Management Studies**

Unit 55 – See discussion above under “Capture and Translocation.”

### **Management Implications**

Units 46 & 47 – Population surveys in 1998 and 2000 indicated poor recruitment and a downturn in the Jarbidge/Bruneau bighorn population. The substantial and rapid decline of this sheep population suggested a disease die-off, although no conclusive evidence was available. Possible sources of disease for the Jarbidge/Bruneau herd were identified in the Marys Creek and Contact,

Nevada, areas. The decline in bighorn sheep numbers prompted the closure of the hunting season in 2001 and 2002.

Results from a July 2006 aerial survey indicated a stable to increasing population estimated at 153 sheep with 12 legal rams. The observed ratio of 36.5 lambs:100 ewes also indicates a stable population. Based on these data, the third permit that was added for the 2005 and 2006 hunting seasons will continue to be offered for the 2007 and 2008 hunting seasons.

Unit 54 – The future of the bighorn sheep population in Unit 54 is uncertain. It is believed there are currently fewer than 15 bighorn sheep remaining in the unit. Disease is believed to be the cause of the decline, although we have no conclusive evidence. Wild bighorns were known to have contacted a farm flock of domestic sheep near Big Cottonwood Canyon, and a wild bighorn ram was observed intermingling with domestic sheep near Dry Creek. In addition, the rapid decline of the Dry Creek herd and the timing of summer lamb mortality strongly suggest that disease played a role. Reestablishing a wild sheep population in Unit 54 remains a high priority for the Department and will be pursued if potential conflicts with domestic sheep grazing and motorized recreational users can be resolved.

Unit 55 – Survival of Jim Sage radio-monitored sheep ( $n = 15$ ) during the 2006-2007 reporting period was somewhat lower than in recent years (80%); however, this is to be expected as radio-collared sheep age and the sample size of functioning radio collars decreases. Population surveys indicate that the population may be stabilizing at 80-100 individuals; this population may be nearing the carrying capacity of the existing habitat. Survey data suggest there were 9 legal rams in the population. Because of this, 2 tags will be offered during the 2007-2008 regulation cycle. Bi-monthly radio monitoring will continue during the 2007-2008 reporting period to assess survival, movements, and project success.

The 2003 and 2004 releases of bighorn sheep on the Albion Mountains appear to have been unsuccessful in establishing a new wild sheep population. Presently there are no known wild sheep remaining in the release area.

In light of the high rate of dispersal away from the Albion Mountains release sites, it is apparent that the bighorn sheep habitat model developed by Gretchen Fowles in the Jim Sage Mountains failed to accurately predict bighorn habitat in the Albion area. In addition, habitat differences between source locations and release locations may have exacerbated the unfamiliarity experienced by sheep in the new terrain. Specifically, the release site exhibited more tall, shrubby vegetation than the source sites; this difference may have contributed to the rejection of the area by the translocated sheep.

### **Literature Cited**

Fowles, G. I. 2002. Habitat use and population characteristics of newly reintroduced California bighorn sheep (*Ovis canadensis californiana*) in south-central Idaho. Thesis, Idaho State University, Pocatello, USA.

Fowles, G. I., and M. Merrick. 2003. Evaluation of bighorn sheep habitat on the Albion Mountains. Idaho Department of Fish and Game, Boise, USA.

Table 1. Bighorn sheep translocations, Units 54 and 55, Magic Valley Region, 1986-present.

Date	Capture site	Release site (Unit)	Adults		Lambs		Total
			Male	Female	Male	Female	
12/17-20/86	E Fork Owyhee R	Big Cottonwood (54)	2	10	1	2	15
12/16/87	Little Jacks Ck	Big Cottonwood (54)	3	6	0	1	10
11/15/88	Poison/Shoofly Ck	Big Cottonwood (54)	5	8	0	1	14
12/6/91	E Fork Owyhee R	E Fork Dry Ck (54)	2	9	1	2	14
12/19/93	E Fork Owyhee R	Big Cottonwood (54)	3	8	0	0	11
12/20/93	E Fork Owyhee R	E Fork Dry Ck (54)	1	7	1	1	10
2/6-8/00	John Day R, OR	Jim Sage Mtn (55)	7	15	2	6	30
2/1/01	Hart Mtn NWR, OR	Jim Sage Mtn (55)	0	14	0	1	15
3/9/03	E Fork Owyhee/ Bruneau Rivers	Albion Mtns (55)	2	10	0	1	13
12/1/04	Diablo, OR	Albion Mtns (55)	2	8	0	1	11
12/3/04	Deschutes, OR	Albion Mtns (55)	1	3	0	0	4
12/16/04	Calico Mtns, NV	Albion Mtns (55)	3	16	1	0	20
Total			25	87	5	15	132

Table 2. Bighorn sheep population data, Jarbidge/Bruneau area (Hunt Area 46), Magic Valley Region, 1990-2006 (Obs = observed, Est = estimated).

Year	Ewes		Lambs		Sub-legal rams		Legal rams		Un-classified		Total		Est. lambs:	Est. rams:
	Obs	Est	Obs	Est	Obs	Est	Obs	Est	Obs	Est	Obs	±90%CI	100 ewes	100 ewes
1990	51		12		8		13		0		84		23.5	41.2
1993	51	79	8	13	39	53	16	20	0	0	114	165±37	16.5	92.4
1994	76	101	24	31	15	19	17	23	0	0	132	171±31	30.7	41.6
1996	102	147	33	43	14	20	15	22	5 <sup>a</sup>	7	169	239±44	29.3	31.3
1997	62	83	25	34	21	33	10	14	3	4	121	168±40	41.0	56.6
1998	85	138	18	29	26	41	6	11	0	0	135	220±44	21.0	37.7
2000	33	45	7	10	6	8	2	3	0	0	48	66±18	22.2	24.4
2002 <sup>b</sup>	49	73	17	22	8	10	3	3	0	0	77	108±34	30.0	17.8
2003	46	64	26	35	18	29	10	15	0	0	100	144±27	54.7	68.7
2006	63	87	21	32	15	19	10	12	2	2	111	153±29	36.5	36.0

<sup>a</sup> Four were unclassified rams.

<sup>b</sup> Only Jarbidge Canyon, approximately half of the area, was surveyed.

Table 3. Bighorn sheep harvest and drawing odds, Magic Valley Region, 1991-present.

Hunt area	Year	Permits	Harvest	Hunter success (%)	Days/hunter	First-choice applicants	Drawing odds	
46	1991	2	2	100	4.0	36	1:18.0	
	1992	2	2	100	7.0	34	1:17.0	
	1993	7 <sup>a</sup>	6	86	7.7	94	1:15.7	
	1994	6	2	33	6.4	91	1:15.2	
	1995	6	3	50	10.5	74	1:12.3	
	1996	6	4	67	6.5	75	1:12.5	
	1997	6	5	83	4.0	101	1:16.8	
	1998	6	4	67	2.8	90	1:15.0	
	1999	5 <sup>b</sup>	3	50	3.5	190	1:31.7	
	2000	7 <sup>b</sup>	3	43	9.0	76	1:12.7	
	2001	Closed						
	2002	Closed						
	2003	2	2	100	2.5	77	1:38.5	
	2004	2	2	100	3	85	1:42.5	
	2005	3	1	33	2	101	1:33.7	
	2006	3	2	67	13.5	110	1:36.7	

<sup>a</sup> The winner of the lottery permit hunted here in addition to the 6 authorized permits.

<sup>b</sup> A hunter successfully drawn for the 1999 season was given a rain-check to hunt in 2000.

**PROGRESS REPORT  
SURVEYS AND INVENTORY**

<b>STATE:</b>	<u>Idaho</u>	<b>JOB TITLE:</b>	<u>Bighorn Sheep Surveys and</u>
<b>PROJECT:</b>	<u>W-170-R-31</u>		<u>Inventories</u>
<b>SUBPROJECT:</b>	<u>6</u>	<b>STUDY NAME:</b>	<u>Big Game Population Status,</u>
<b>STUDY:</b>	<u>I</u>		<u>Trends, Use, and Associated</u>
<b>JOB:</b>	<u>4</u>		<u>Habitat Studies</u>
<b>PERIOD COVERED:</b>	<u>July 1, 2006 to June 30, 2007</u>		

**UPPER SNAKE REGION**

**Units 51 (part), 58, 59A, 61, 64, 65, 67**

**Abstract**

Rocky Mountain bighorn sheep (*Ovis canadensis canadensis*) in the Lost River Range are managed and reported by the Salmon Region. Bighorn sheep in the Lemhi and Beaverhead ranges are not hunted. The Lionhead bighorn sheep are hunted in Montana but not Idaho. There is not an established bighorn sheep herd in the Bighole Mountains.

No population survey was conducted during this reporting period. However, 30 bighorn sheep were observed during the Reno Point mule deer survey in Units 58 and 59A, and 9 bighorn sheep were observed during the Lemhi elk survey in Unit 51.

**Management Direction**

Increase populations; increase recreational opportunity; maintain or increase harvest; revamp season framework; continue reintroduction program; attempt to manipulate 1 bighorn sheep population below carrying capacity to prevent periodic die-off; investigate domestic sheep's (*Ovis aries*) role in disease transmission.

The  $\frac{3}{4}$  curl, 4-year-old minimum for bighorn sheep has been discontinued. Starting in 2007, sheep hunters can harvest any ram.

**Climatic Conditions**

Summer 2006 was warm and dry. Winter conditions during 2006-2007 had below normal snow accumulation in the areas where bighorn sheep occur. Spring 2007 was also dry.

**Background**

The above units in the Upper Snake Region supported Rocky Mountain bighorn sheep populations historically. By the early 1900s, bighorn sheep were eliminated from most of the

area and severely reduced in the remaining habitats. Vegetative changes due to livestock use on winter ranges, loss to disease, and indiscriminate harvest by settlers and miners probably were the main causes of bighorn sheep declines.

Habitats are diverse, generally mountainous types with bighorn sheep summering mostly at higher elevations on alpine and sub-alpine ranges. The winter ranges are mostly sagebrush-grass or curleaf mountain mahogany types where snow depth is low. The USFS generally administers summer ranges, whereas both USFS and BLM manage winter ranges.

Subsistence and indiscriminate harvest of bighorn sheep by early settlers and pioneering travelers was greatly reduced after establishment of the Idaho Department of Fish and Game in 1937. Some general bighorn sheep hunts were authorized through 1970, but since then, all bighorn sheep hunts have been by permit only. These restrictions, along with reductions in domestic sheep grazing, improved habitat conditions, and reintroductions, have all contributed to increased bighorn sheep numbers in these units. Improved grazing management, water developments, controlled burns on bighorn sheep ranges, and closing or changing domestic sheep allotments to eliminate domestic sheep contact with bighorn could further improve conditions for bighorn sheep in this area.

A small population of bighorn sheep occurs on the Idaho-Montana border in the Lionhead area of Unit 61. During the summer and fall months, 12-15 bighorn sheep can frequently be seen in Idaho. Idaho has never authorized a hunt on this herd. The history of the Montana hunts on these bighorn sheep has been to issue a few permits a year until the herd declines, close the hunt and let the herd rebuild, and then reopen it again for a few years. This herd has high non-consumptive value.

Bighorn sheep are occasionally observed during summer in the Bighole Mountain area of Units 64, 65, and 67. We believe these are pioneering bighorn sheep from Grand Teton National Park. Since we have no reports or observations of these bighorn sheep during winter and few summer observations in consecutive years, we assume there is no established herd in Idaho.

### **Population Surveys**

Aerial counts of these populations have generally been made incidental with aerial surveys for other big game animals and, therefore, do not constitute complete population numbers or composition trends (Table 1). Thirty bighorn sheep were observed 10-15 February 2007 during the Reno Point mule deer survey in Units 58 and 59A. Not all sheep were classified, but there were 5 lambs, 2 ewes, 1 yearling ram, and 5 mature rams classified. Nine bighorn sheep were observed 29-31 January 2007 during the Lemhi elk survey in Unit 51. Of the 9, there was 1 ewe, 1 lamb, and 7 unclassified sheep counted.

### **Capture and Translocation**

No capture or transplanting of bighorn sheep occurred during this reporting period. Historically, 82 Rocky Mountain bighorn sheep have been released in Units 51 and 58 between 1976 and 1984 (Table 2). Bighorn sheep obtained from the Whiskey Mountain, Wyoming, herd were

released in Badger and Uncle Ike Creeks in Unit 51 in 1983 and 1984. Bighorn sheep captured from Panther Creek, Idaho, were released into Long, Skull, and Bloom canyons of Unit 58 in 4 translocations between 1976 and 1982.

Some employees of the Bureau of Reclamation have expressed interest in examining the feasibility of transplanting bighorn sheep into the Teton River Canyon area. IDFG has concerns about contact with domestic sheep that are in the area, depredation issues, conflicts with development that is occurring near the canyon, and the amount of habitat remaining that could support a bighorn sheep population.

### **Management Implications**

Bighorn sheep populations in the Upper Snake Region do not occupy all potential habitats primarily because of conflicts with domestic sheep. Domestic sheep allotments have been closed on some USFS lands. However, active domestic sheep allotments still occur on USFS- and BLM-administered bighorn sheep range in Units 51, 58, 59A, and 63.

The USFS continued work toward an action plan with IDFG, BLM, Idaho Chapter FNAWS, and other interested parties to improve sheep numbers in the Lost River Range during this reporting period. This team of interested parties is in the initial stages of developing a plan and evaluating the current distribution of bighorn sheep, lamb survival, disease monitoring, and habitat conditions in this mountain range. Harvest and population survey information for this population of bighorn are reported in the Salmon Region section of this report.

The greatest concern for the future of bighorn sheep in the region is interaction with domestic sheep. The Department continues to work with USFS and BLM to identify all the domestic sheep allotments that overlap with bighorn sheep range in the Lemhi and Beaverhead ranges. Once this is done, contingency action plans will be discussed with the respective agency and domestic sheep permittees to minimize the potential of bighorn-domestic sheep interaction and to quickly remove bighorn sheep that have come into contact with domestic sheep.

In the Lemhi range, the Bernice BLM allotment on the Little Lost River side of the range and the Mahogany Butte BLM allotment on the Birch Creek side of the range overlap with bighorn sheep range. The Mahogany Butte domestic sheep allotment also includes USFS land. Five domestic sheep allotments (Mahogany Butte [BLM]; Reno Gulch [BLM]; Snaky Canyon [USFS], Rocky Canyon [USFS], and Nicholia Canyon [USFS]) in the Beaverhead range overlap with bighorn sheep range. Domestic sheep on private land near the bighorn sheep habitat is also a concern as is domestic sheep allotments that occur on Idaho National Laboratory land.

Concern for domestic-bighorn sheep interaction and disease transmission has been discussed with both BLM and the domestic sheep permittee of the Bernice allotment. The Department, BLM, and permittee are working together cooperatively to monitor for the presence of bighorn sheep before and during the time domestic sheep are on the allotment. If bighorn sheep are observed on or near the allotment, all entities will be informed and efforts made immediately to prevent bighorn sheep contact with domestic sheep.

The bighorn sheep population in the south Beaverhead range overlaps with and is near several domestic sheep allotments. This bighorn population also uses private land on the Waggoner and Simmonds ranches at the mouth of Goddard Canyon and Skull Canyon during rut and early winter. Although these ranches no longer have domestic sheep, the bighorn sheep come down daily and feed with corralled cattle during the winter.

Bighorn sheep were observed on domestic sheep range above Rattlesnake Point and Reno Gulch during winter 2000-2001 and again in March 2002. In February 2005, 4 bighorn sheep were observed at the head of Deadman Canyon in the vicinity where a small band of abandoned domestic sheep were observed in January 2005. As a result of these observations, the Department met with USFS and BLM to develop contingency plans similar to what was developed for the Bernice allotment. To date, domestic sheep-bighorn sheep management plans from these 2 agencies have not been received.

A domestic sheep was observed in Unit 59A near Kelly Canyon on 13 February 2007 during a mule deer aerial survey flight. During the flight, we observed 2 bighorn sheep rams approximately 3 linear miles from a domestic sheep. The USFS was contacted about the domestic sheep within a few days of the sighting. This domestic sheep was shot over a month later on 20 March 2007 after the U.S. Sheep Experiment Station was notified by IDFG. It was confirmed that this sheep belonged to the U.S. Sheep Experiment Station. No disease sampling was done on the domestic sheep. This is another example of a need for a contingency plan for this area.

Available free water is unevenly distributed along the Lemhi and Beaverhead ranges. This may be the reason bighorn sheep are observed at lower elevations during fall prior to the rut. Currently, there are no plans to map the location of water sources or install additional water developments on the ranges.

There may be opportunity to coordinate management and hunter opportunity of the bighorn sheep in the Lionhead area of Unit 61 with Montana Fish, Wildlife, and Parks. This herd is small and currently provides limited hunter opportunity for Montana hunters. The Idaho Fish and Game Commission has approved a cooperative agreement between the 2 state agencies allowing hunters to hunt in either state when a small herd of big game animals occurs on the state line. However, the Montana Commission has not approved a similar agreement.

The bighorn sheep that are occasionally observed during summer months in the Bighole Range (Units 64, 65, and 67) are probably transients from Grand Teton National Park. Although this range historically supported bighorn sheep, domestic sheep grazing and plant community succession makes it unsuitable to support bighorn sheep today. Therefore, management is directed toward documenting bighorn sheep observations, protection of the bighorn sheep, and non-consumptive use.

Table 1. Bighorn sheep population data, Upper Snake Region, 1992-present.

Unit Year	Ewes	Lambs	Rams				Uncl.	Total legal rams	Total sheep	Lambs: 100 ewes	Rams: 100 ewes
			I	II	III	IV					
51											
1993 <sup>a</sup>	14	7	0	5 <sup>b</sup>	0	0	0	0	26	50.0	35.7
1995 <sup>a</sup>	11	7	0	4 <sup>b</sup>	0	4 <sup>b</sup>	0	4	26	63.6	72.7
2000 <sup>c</sup>	4	1	0	2	0	0	0	0	7	25.0	50.0
2000 <sup>d</sup>	5	2	1	5	3	0	0	3	16	40.0	180.0
2003 <sup>a</sup>	10	5	0	3 <sup>b</sup>	0	1 <sup>b</sup>	0	4	20	50.0	40.0
2005 <sup>d</sup>	6	3	0	2	2	1	0	3	14	50.0	83.3
2006 <sup>a</sup>	3	2	0	1	0	1	0	1	7	66.7	66.7
2007 <sup>a</sup>	1	1	0	0	0	0	7	0	9		
58											
1992	11	6	5 <sup>b</sup>	0	0	1 <sup>b</sup>	0	1	23	54.5	54.5
1993 <sup>e</sup>	14	8	0	0	0	0	12 <sup>f</sup>	0	34	57.1	85.7
1995 <sup>a</sup>	27	16	0	6 <sup>b</sup>	0	11 <sup>b</sup>	0	11	60	59.3	63.0
2000 <sup>a</sup>	8	0	0	0	0	0	6 <sup>f</sup>	0	14	0.0	75.0
2001 <sup>a</sup>	4	0	7	0	6	0	0	6	17	0.0	325.0
2002 <sup>a</sup>	7	0	0	5	1	0	13	1	26	0.0	85.7
2003 <sup>a</sup>	3	0	0	2	0	0	0	2	5	0.0	40.0
2005 <sup>a</sup>	6	2	1	3	4	0	1	7	17	33.3	133.3
2007 <sup>a,h</sup>	2	5	1	0	0	0	17	5 <sup>g</sup>	30		

<sup>a</sup> Incidental to aerial elk or mule deer surveys. The entire bighorn sheep winter range was not surveyed.

<sup>b</sup> Rams classified to sub-legal and legal only.

<sup>c</sup> Only the area from South Creek around to the first canyon east of East Creek was surveyed.

<sup>d</sup> Incidental to helicopter mountain goat survey of the entire Lemhi range in August.

<sup>e</sup> Ground classification of bighorn sheep coming onto bait - Goddard Face, winter 1992-1993.

<sup>f</sup> Rams not classified, but some were legal.

<sup>g</sup> Starting in 2007, all rams are legal ( $\frac{3}{4}$  curl and 4-year-minimum rule discontinued). Number reported is mature (Class III and IV) rams.

<sup>h</sup> Two of the mature rams were observed in GMU 59A.

Table 2. Bighorn sheep translocations, Upper Snake Region, 1976-1984.

Unit	Date	Capture site	Release site	Adults		Lambs		Total
				Male	Female	Male	Female	
51								
	1/5/83	Whiskey Mtn, WY	Badger Creek	3	11	1	4	19
	1/5/84	Whiskey Mtn, WY	Uncle Ike	3	12	3	4	22
	Total			6	23	4	8	41
58								
	1/15/76	Panther Cr, ID	Long Canyon	1	3	1	1	6
	1/18/78	Panther Cr, ID	Long Canyon	8	2	0	2	12
		Panther Cr, ID	Bloom Canyon	2	8	0	4	14
		Panther Cr, ID	Goddard Canyon	1	6	2	0	9
	Total			12	19	3	7	41

**PROGRESS REPORT  
SURVEYS AND INVENTORY**

<b>STATE:</b>	<u>Idaho</u>	<b>JOB TITLE:</b>	<u>Bighorn Sheep Surveys and</u>
<b>PROJECT:</b>	<u>W-170-R-31</u>		<u>Inventories</u>
<b>SUBPROJECT:</b>	<u>7</u>	<b>STUDY NAME:</b>	<u>Big Game Population Status,</u>
<b>STUDY:</b>	<u>I</u>		<u>Trends, Use, and Associated</u>
<b>JOB:</b>	<u>4</u>		<u>Habitat Studies</u>
<b>PERIOD COVERED:</b>	<u>July 1, 2006 to June 30, 2007</u>		

**SALMON REGION**

**Units 21, 21A, 27, 28, 29, 30, 30A, 36, 36A, 36B, 37, 37A, 50, 51**

**Controlled Hunt Areas 21, 27-1, 27-2, 27-3, 27-4, 27-L, 28-1, 28-2, 30, 36B, 37, 37A**

**Abstract**

From 1989 to 1991, bighorn sheep populations in Salmon Region experienced major, rapid declines (30-50%), followed by several years of very low lamb recruitment. Recent aerial surveys suggest lamb production, although still somewhat low (21 lambs per 100 ewes), is beginning to improve in several units. In general, bighorn sheep populations may be stabilizing after several years of decline, with some populations showing signs of increase.

During 2006 hunting seasons, 46 controlled hunt permits for bighorn sheep rams were authorized in 12 hunt areas. Permit holders harvested 20 rams (44% success). In addition, the Idaho auction tag holder harvested a ram in Hunt Area 27-2. Average age of harvested rams was 7.1 years. Chances of being drawn from among 905 applicants for bighorn sheep permits in 2006 (5.1%) were very similar to those in 2005 and 1% below the previous 5-year average of 6.3%.

**Management Direction**

Follow statewide direction to increase bighorn sheep populations, harvest, and recreational opportunity. Continue to establish new herds via translocation where suitable habitat and conditions exist. Recognize non-consumptive values of bighorn sheep. Conduct bighorn sheep disease research. Conduct bighorn sheep survey flights on at least a 5-year rotation. Establish  $\geq 1$  hunt for female bighorn sheep. Attempt to manipulate 1 bighorn sheep population below carrying capacity to prevent periodic die-offs. Maintain hunts only where bighorn sheep population size is estimated to be  $\geq 100$  animals. Annually harvest  $\leq 20\%$  of legal rams observed during the most recent survey.

## Background

Salmon Region contains approximately two-thirds of Idaho's Rocky Mountain bighorn sheep and offers two-thirds of the hunting opportunity. Habitats, bighorn sheep population characteristics, land management activities, and human access all vary considerably across the region, presenting a variety of bighorn sheep management situations.

Unit 27 contains bighorn sheep habitats of Middle Fork Salmon River drainages. Bighorn sheep populations in this area were protected from pressures of early settlement by the remote nature of the area and, thus, were better able to maintain viable population levels. Access into most occupied bighorn sheep habitats is limited. Herds are relatively stable, although annual fluctuations are commonly associated with varying winter losses and lamb survival rates.

Unit 27 is located in the Frank Church River-of-No-Return Wilderness Area, and managed by the USFS. Most bighorn sheep in the unit winter along the river breaks corridor and migrate to sub-alpine habitats during summer. However, some bighorn sheep remain along the Middle Fork Salmon River during summer, where they provide a valuable viewing resource for river float parties. Past grazing practices, especially on upper river winter ranges, changed some ranges from grassland to shrub-dominated habitats. However, recent range trends are back toward grass-dominated habitat types because of changes in livestock and fire management.

Hunt Areas 27-1, 27-2, 27-7, and 27-8 were combined into 1 hunt (27-1) in 1987. In 1991, the north end of Hunt Area 27-1 (Brush Creek to Big Creek) was incorporated into Hunt Area 26. Hunt Area 27-4 (Camas Creek to Warm Springs Creek east of the Middle Fork Salmon River) was previously part of Hunt 36B, but was created as a separate hunt in 1989 to facilitate better distribution of hunters and harvest. Hunts 27-4, 27-5, and 27-6 were combined into 1 hunt in 1991 (27-3) to allow hunters a better likelihood of finding a ram. In 1997, Hunt Area 36B was formed by combining Hunts 36B-1, 36B-2, and 36B-3; and Hunts 28-1 and 28-2 were combined into 1 hunt and the area was enlarged in 1999. In 2003, Hunt Area 28 was split again and area 28-2 was enlarged.

Units 21 and 28 contain bighorn sheep habitats of Panther Creek drainage and along the roaded portion of Salmon River below North Fork. Human access to major portions of bighorn sheep ranges and ongoing or planned development projects dictate special management considerations in this area. These units are well roaded with potential for copper and cobalt mining, geothermal development, and timber harvest which could lead to even more development and roads. Increased roading can lead to high levels of unregulated harvest. However, viewing and photographing bighorn sheep along Salmon River and Panther Creek are popular recreational pastimes. We expect this type of non-consumptive use to increase in importance.

Bighorn sheep populations in Units 21 and 28 were considered high-quality herds, exhibiting high lamb production and herd growth through the 1970s. However, populations along Panther Creek experienced a decline in the early 1980s, probably due to weather-related mortality. The same herd suffered a major population decline (approximately 50%) during 1989-1990, possibly caused by pneumonia related to *Pasteurella haemolytica*. Low lamb recruitment followed the decline and persisted for  $\geq 3$  years.

The Panther Creek bighorn sheep population was the primary source of Rocky Mountain bighorn sheep for translocation to other sites; 125 were captured and moved between 1974 and 1985. During the 1981-1985 planning period, new trapping sites were developed in Unit 21 along the Salmon River. However, capture and translocation have been curtailed since populations and productivity declined.

Much of the remainder of Salmon Region (Units 21A, 30, 30A, 36, 36A, 37, 37A, 50, and 51) supported Rocky Mountain bighorn sheep in the past. By the early 1900s, bighorn sheep were eliminated from most of the area and populations were severely reduced in remaining habitat. Vegetative changes due to livestock use on winter ranges, disease losses, and indiscriminate harvest by settlers and miners probably were primary causes of bighorn sheep declines.

The modern bighorn sheep population in Units 37, 50, and 51 (Lost River Range) resulted from releases of 7 bighorn sheep from Morgan Creek in 1969, 24 bighorn sheep from Banff Provincial Park, Alberta, Canada, in August 1970 and 28 sheep from Whiskey Mountain, Wyoming, during 1978-1980. The first hunt in Hunt Area 37 was authorized in 1981 and the area has become very popular with hunters. By 1992, the Lost River Range population had suffered the same decline and persistent low recruitment as other bighorn sheep herds in the region. Permit numbers were correspondingly reduced from a peak of 19 permits in 1992 to 3 in 1995 and 2 in 2001. In an attempt to speed population increase, 62 sheep were translocated to the Lost River Range from Sun River, Montana, in 2005.

In 1982, 8 Rocky Mountain bighorn sheep from Panther Creek were released near Birch Creek southwest of Challis in Unit 36B. This translocation was an attempt to stimulate growth of a small, stable population. In January 1985, 22 bighorn sheep obtained from Oregon were released in Unit 30A near Leadore. The first hunt for these animals in Hunt Area 30 was authorized in 2001 with 2 permits available. Since 1986, 54 bighorn sheep have been released in Unit 37A (2 sites) and an additional 17 have been released in Unit 30A. Unit 37A was opened to harvest for the first time in 2005.

## **Population Surveys**

Aerial surveys specifically for bighorn sheep were conducted in Units 36A and 37A during the reporting period (Table 1). Bighorn sheep were counted incidental to other big game in portions of Units 21, 27, 28, 30, 30A, and 36B. Approximately 275 individuals were observed across all survey efforts. Compared to previous surveys in these areas, total bighorn sheep numbers for comparable survey effort were generally stable to slightly higher. The region-wide lamb:100 ewes ratio in 2007 was 20.7, representing a decline in production compared to recent years.

Salmon Region bighorn sheep populations experienced major young and adult mortality (apparently disease-related) beginning in 1990 and very low lamb production for several years afterward (generally  $\leq 10$  lambs:100 ewes). Although lamb to ewe ratios were still somewhat low, recent surveys suggest that the trend of very low lamb production in recent years may be reversing. Lamb production during this year's surveys ranged from 0 to 32 lambs per 100 ewes in units with moderate sample sizes of ewes (Table 1).

## **Harvest Characteristics**

Low lamb survival through the 1990s was expected to reduce recruitment of legal rams available to hunters in 1993 and afterward for several years. Therefore, 1993 permit levels were reduced 50% from 1992. Of 17 hunts in Salmon Region, 4 hunts were eliminated, permit levels were reduced in 10 hunts, and permit numbers in 3 hunts were unchanged. Because hunter success was very high (80%) during late hunts (21 Oct-5 Nov), most of these hunts were eliminated to allow more regular season hunter opportunity. One remaining late hunt, 27-L, was shifted to an earlier time frame (13-31 Oct).

Harvest and hunter information was compiled from Big Game Mortality Reports (BGMRs). Successful hunters must present bighorn sheep horns to an IDFG representative within 10 days of harvest and complete a BGMR. At the time of check-in, an identification pin is set in the right horn. Twelve controlled hunts with 46 permits were authorized for 2006 in Salmon Region. Hunters could harvest a male bighorn sheep with  $\geq 3/4$  horn curl or  $>4$  years old. Among 46 permit holders, 20 harvested rams in 2006, and the auction tag hunter harvested a ram (47% success) in the region (Tables 2 and 3). Bighorn sheep season structure has been essentially unchanged since 1991 (Appendix A). Of 502 total permits issued since 1995, 222 rams have been harvested (44% success).

Chances of drawing a Salmon Region bighorn sheep permit dropped sharply in the early 1990s, primarily because of severe reductions in permits. Chances have continued to decline steadily since the mid-1990s, from 10.4% in 1995 to 4.8% in 2005. Average chance of drawing a permit since 1995 was 7.2%.

Region-wide, non-hunting mortalities peaked during the suspected disease die-off period (1990-1992) and subsided afterward as mortality rates decreased and bighorn sheep numbers reached low ebb (Table 4). Under historic treaty rights, Shoshone-Bannock Indians from Fort Hall Indian Reservation are allowed to hunt bighorn sheep for subsistence uses. However, tribal bighorn sheep season dates, permit levels, and harvest data are generally not available to the Department.

## **Climatic Conditions**

Rainfall during summer months in 2006 was average to below average, with cool, wet weather during late spring. Vegetative growth appeared above average early in the season. Vegetation growth and production was very good during early summer, but then quickly cured out over the late summer and early fall months. Winter conditions were generally moderate, with temperatures normal to above normal, and snow accumulation at lower elevations was below average. In general, animals entered winter in average body condition, then encountered an average to mild winter, which should have produced moderate to high over-winter survival. Snow-pack (as measured at higher elevations) was approximately 80-90% of average by late winter. Onset of spring weather and associated plant phenology was near normal in 2007. Water-year precipitation to date has been approximately 130% of average. Early spring conditions were cool and wet.

## **Habitat Conditions**

Habitats are diverse, generally mountainous types, with bighorn sheep summering primarily at higher elevations in sub-alpine ranges. Winter ranges are dominated by sagebrush and grassland systems where precipitation is low. Summer ranges are generally administered by the USFS, whereas the BLM primarily manages winter ranges. Recent changes in land management practices resulted in improved range conditions for bighorn sheep. Improved grazing management and controlled burns on bighorn sheep ranges could further improve conditions in other units. There are several opportunities to increase existing bighorn sheep herds, and some possibilities for reintroductions.

Land management practices over the past 25 years have generally improved bighorn sheep habitat. Water developments and controlled burns have been directed toward improving bighorn sheep range. Grazing systems have been modified and range improvements for livestock have been beneficial to bighorn sheep. Although domestic sheep numbers are down dramatically from historic levels, there are continued occurrences of bighorn sheep coming in contact with domestic sheep.

Several major wildfires have occurred in the Frank Church River-of-No-Return Wilderness since 1979. Large fires on bighorn sheep ranges from Ship Island to Goat Creek, Tappan Gulch, Pole to Warm Springs Creek, Grouse Creek, Camas Creek, and Marble Creek have been beneficial to bighorn sheep and elk. Several wildfires occurred during summer 2000, burning parts of Pistol, Indian, Brush, Soldier, Sheep, Warm Springs, and Yellowjacket creeks in Middle Fork Salmon River drainage, as well as several tributaries in the lower half of Panther Creek. Several habitat rehabilitation projects were undertaken within burned areas. Habitat changes associated with wildfires and subsequent habitat work are expected to improve range conditions for bighorn sheep.

In early 2004, the Department entered a Memorandum of Understanding (MOU) with the BLM and USFS to foster enhanced management of bighorn sheep in the Lost River Range (Units 37, 50, and 51). The MOU was spurred by removal of domestic sheep from grazing allotments within and adjacent to occupied bighorn sheep range. As part of enhanced monitoring and data collection, a technician observed sheep during summer 2004, accounting for approximately 100 individuals and collecting fecal pellets for nutritional and diet analyses. Portions of a management plan were prepared during the reporting period with additional effort scheduled for 2007-2008.

## **Capture and Translocation**

Salmon Region had a very active capture and translocation program for a number of years (Table 5). Bighorn sheep were taken from Units 21, 28, 36A, and 36B for translocation to other parts of Idaho and to other states. Within the region, Units 28, 30A, 37/50, and 37A have all received bighorn sheep in attempts to reestablish extirpated herds. However, stagnant to declining bighorn sheep populations characterized by low productivity suggest that translocation from Salmon Region herds would be unwise in the near future. Some release sites are available in Salmon Region if an appropriate source population can be identified.

As part of the focused effort in Lost River Range, 62 sheep were translocated from the Sun River herd in Montana to 2 sites (Cedar Creek in Unit 50, Rock Spring Creek in Unit 37) during early January 2005. All adult ewes ( $n = 50$ ) and yearling rams ( $n = 4$ ) were equipped with radio collars and a monitoring protocol was established. Through May 2007, 25 radio-marked ewes and 1 young ram died (48% of radio-marked animals). Ultimate cause of death included accidental falls ( $n = 3$ ), pneumonia or other disease problems complicated by poor physical condition ( $n = 10$ ), predation ( $n = 2$ ), and unknown ( $n = 11$ ). Observers reported a large portion of translocated sheep coughing during late winter and spring, an indication of potential pneumonia. Many translocated sheep remained in the vicinity of release sites through spring 2007.

## Disease

During an apparent disease outbreak in winter 1988-1989, bighorn sheep in several areas of Salmon Region and adjacent regions were sampled for disease pathogens. Bighorn sheep tested positive for *Pasteurella multocida* and *P. haemolytica* (biotypes/serotypes A<sub>1</sub>, A<sub>11</sub>, T<sub>3</sub>, T<sub>4</sub>, and T<sub>10</sub>). Both haemolytic and nonhaemolytic types of *P. haemolytica* were found. Antibody titers to Respiratory Syncytial Virus (RSV), Parainfluenza (PI3), and Brucellosis (*Brucella ovis*) are common. However, there does not appear to be a correlation between RSV/PI3 titers and sick bighorn sheep or *Pasteurella* positive bighorn sheep. Lungworm (*Protostrongylus* spp.) loads tend to be high in Salmon Region bighorn sheep. Scabies (*Psoroptes* spp.) is occasionally evident but rarely severe on any individual bighorn sheep. Poor population performance of Salmon Region bighorn sheep in recent years may well be an indication of residual disease problems.

During October 2003, a domestic ewe was observed in association with bighorn sheep on the south side of Salmon River between Pine Creek and Panther Creek (Unit 28). The domestic sheep tested positive for several forms of *Pasteurella*. Wild sheep in the area were monitored for signs of illness for several months; however, no problems have been detected to date.

## Management Implications

Harvest of  $\geq 3/4$  curl bighorn rams has no effect on total bighorn sheep populations when annual harvest is restricted to  $\leq 20\%$  of observed legal rams. Unregulated bighorn sheep populations appear to periodically build to high densities followed by herd die-offs, which are probably related to disease outbreaks. The 1991-1995 bighorn sheep plan calls for ewe removals via capture and translocation and/or hunting to maintain bighorn sheep populations at lower densities, which are less susceptible to die-offs.

Virtually all Salmon Region bighorn sheep populations have recently experienced poor population performance, particularly low lamb production. In some units (37, 50, 51) productivity has been low for several years while in others (36A), low productivity did not appear until 1991. However, in most of the region, declines were first noted during winter 1989-1990. In all cases, low lamb:ewe ratios continued through at least 1992. Permit levels in many hunts were reduced and remained low as several years of reduced ram recruitment continued to impact absolute ram numbers. Aerial surveys suggest lamb recruitment is improving in most

units. However, overall lamb:ewe ratios are still somewhat low compared to historical levels. Salmon Region bighorn sheep herds probably will not produce surplus animals for translocation in the near future. Small lamb crops have resulted in fewer rams available to hunters, but continued improvements in lamb crops should yield increases in harvestable surplus within a few years. Four- to 8-year-old rams comprise the bulk of hunter harvest.

Table 1. Bighorn sheep population data, Salmon Region, 1983-present.

Area Year	Ewes	Lambs	Rams				Uncl.	Total legal rams	Total sheep	Lambs: 100 ewes	Rams: 100 ewes
			I	II	III	IV					
Unit 21											
1989	93	49	14	11	9	22	0	31	198	52.7	60.2
1990	41	4	6	4	7	10	0	17	72	9.8	65.9
1991	60	5	10	8	2	2	0	4	87	8.3	36.7
1992	72	8	1	13	14	5	0	19	113	11.1	45.8
1993	97	24	14	10	10	3	0	13	158	24.7	38.1
1996	62	20	10	12	8	9	1	17	122	32.3	62.9
2000 <sup>a</sup>	47	5	1	11	8	2	0	10	74	10.6	46.8
2001	40	16	5	11	9	4	0	13	85	40.0	72.5
2002 <sup>a</sup>	10	7	0	6	3	0	0	3	26	70.0	90.0
2003 <sup>a</sup>	13	6	8	0	0	0	0	0	27	46.2	61.5
2005 <sup>a</sup>	48	9	7	9	9	2	0	11	84	18.8	56.3
2006 <sup>a</sup>	18	6	2	2	0	0	0	0	28	33.3	22.2
2007 <sup>a</sup>	17	8	4	1	3	0	0	3	33	47.0	47.0
Unit 21A											
1998 <sup>a</sup>	9	3	1	0	1	0	0	1	14	33.3	22.2
2000	5	4	0	1	0	0	0	0	10	80.0	20.0
2002 <sup>b</sup>	7	6	2	1	2	0	0	2	18	85.7	71.4
2003	5	3	2	1	0	0	0	0	11	60.0	60.0
2005 <sup>a</sup>	13	2	3	1	1	0	0	1	20	15.4	38.5
Hunt area 27-1											
1989	77	39	3	9	29	12	3	41	172	50.6	68.8
1991	108	3	5	12	19	6	0	25	153	2.8	38.9
1993	90	14	5	1	5	14	0	19	129	15.6	27.8
1995 <sup>a,c</sup>	58	13	6	12	6	3	0	9	98	22.4	46.6
1999	56	14	7	8	13	5	0	18	103	25.0	58.9
2001	80	13	5	2	10	6	0	16	116	16.3	28.8
2002 <sup>a,c</sup>	45	9	11	7	16	3	0	19	91	20.0	82.2
2003 <sup>a,c</sup>	64	21	8	6	2	1	0	3	102	32.8	26.6
2004	100	24	7	8	19	5	0	24	163	24.0	39.0
2005 <sup>a,c</sup>	47	16	16	3	4	2	0	6	88	34.0	53.2
2006 <sup>a</sup>	50	16	7	9	12	6	0	18	100	32.0	68.0
Hunt area 27-2											
1989	57	19	3	10	4	2	38	6	133	33.3	33.3
1990	43	5	2	6	7	12	0	19	75	11.6	62.8
1991	60	2	3	2	4	2	0	6	73	3.3	18.3
1993	36	2	1	7	4	4	0	8	54	5.6	44.4
1995 <sup>a,c</sup>	16	4	0	3	1	0	0	1	24	25.0	25.0
1999	54	16	7	8	5	1	0	6	91	29.6	38.9
2002 <sup>a,c</sup>	28	8	0	3	9	1	0	10	49	28.6	46.4
2004	44	9	4	1	3	6	0	9	67	20.5	31.8
2006 <sup>a</sup>	23	14	4	2	4	1	0	5	48	60.9	47.8
Hunt area 27-3											
1989	80	35	7	9	11	11	1	22	154	43.8	47.5
1991	88	7	2	10	13	3	0	16	123	8.0	31.8

Table 1. Continued.

Area	Year	Ewes	Lambs	Rams				Uncl.	Total legal rams	Total sheep	Lambs: 100 ewes	Rams: 100 ewes
				I	II	III	IV					
	1993	62	17	7	4	8	11	0	19	109	27.4	48.4
	1995 <sup>a,c</sup>	30	3	1	1	3	2	0	5	40	10.0	23.3
	1999	67	12	3	8	9	3	0	12	102	17.9	34.3
	2001 <sup>c</sup>	34	7	0	3	1	0	0	1	45	20.6	11.8
	2002 <sup>a,c</sup>	31	4	6	3	7	4	0	11	55	12.9	64.5
	2003 <sup>a,c</sup>	24	1	5	0	3	1	0	4	34	4.2	37.5
	2004	57	13	4	6	11	3	4	14	98	22.8	42.1
	2005 <sup>a,c</sup>	58	24	10	11	7	1	0	8	111	41.4	50.0
	2006 <sup>a</sup>	31	11	4	6	9	0	7	9	68	35.5	61.3
Hunt area 27-4												
	1989	28	11	1	9	0	2	0	2	51	39.3	42.9
	1991	36	3	5	8	5	1	0	6	58	8.3	52.8
	1993	29	12	2	4	2	0	1	2	50	41.4	27.6
	1995 <sup>a,c</sup>	3	0	0	1	0	1	0	1	5	0.0	66.7
	1999	2	0	1	1	6	8	0	14	18	0.0	800.0
	2001 <sup>c</sup>	10	1	0	0	0	0	0	0	11	10.0	0.0
	2002 <sup>a,c</sup>	26	5	2	2	4	0	1	4	40	19.2	30.8
	2004	12	8	1	1	1	1	0	2	24	66.7	33.3
	2006 <sup>a</sup>	10	5	0	2	6	3	0	9	26	50.0	110.0
West Lower Panther Creek												
	1989	62	24	7	6	5	7	2	12	113	38.7	40.3
	1990	34	7	3	3	3	5	0	8	55	20.6	41.2
	1991	31	7	2	9	7	5	0	12	61	22.6	74.2
	1992	17	8	0	3	3	3	0	6	34	47.1	52.9
	1996	29	6	5	1	1	1	0	2	43	20.7	27.6
	1999 <sup>a</sup>	22	7	4	4	2	0	0	2	39	31.8	45.5
	2001 <sup>a</sup>	15	2	0	0	7	2	0	9	26	13.3	60.0
	2002 <sup>a</sup>	10	5	0	0	2	0	0	2	17	50.0	20.0
	2004 <sup>a,c</sup>	13	7	4	2	1	0	0	1	27	53.9	53.9
	2005 <sup>a,c</sup>	10	3	4	3	2	0	0	2	22	30.0	90.0
	2006 <sup>a</sup>	4	3	1	0	0	0	0	0	8	75.0	25.0
East Lower Panther Creek												
	1989	93	30	9	5	14	23	1	37	175	32.3	54.8
	1990	36	4	1	8	7	12	0	19	68	11.1	77.8
	1991	51	9	2	13	9	17	0	26	101	17.6	80.4
	1992	66	2	2	3	12	3	0	15	88	3.0	30.3
	1996	57	7	5	5	2	3	0	5	79	12.3	26.3
	1999 <sup>a</sup>	71	23	10	3	8	5	0	13	120	32.4	36.6
	2001	49	11	4	6	3	2	0	5	67	22.4	30.6
	2002 <sup>a</sup>	50	11	6	2	12	1	0	13	82	22.0	42.0
	2004 <sup>a,c</sup>	11	10	0	0	0	0	0	0	21	90.9	0.0
	2005 <sup>a</sup>	47	11	6	9	1	0	1	1	75	23.4	34.0
	2006 <sup>a</sup>	6	3	1	1	0	0	0	0	11	50.0	33.3
	2007 <sup>a</sup>	14	2	1	2	0	0	0	0	19	14.3	21.4
Williams Creek to Perreau Creek in Unit 28												
	1991	8	4	2	7	2	0	0	2	23	50.0	137.5

Table 1. Continued.

Area Year	Ewes	Lambs	Rams				Uncl.	Total legal rams	Total sheep	Lambs: 100 ewes	Rams: 100 ewes
			I	II	III	IV					
1996	11	3	0	3	5	0	0	5	22	27.3	72.7
1999 <sup>a</sup>	9	2	2	5	3	1	0	4	22	22.2	122.2
2001 <sup>a</sup>	27	9	4	5	4	0	0	4	49	33.3	48.1
2005 <sup>a</sup>	28	8	4	5	2	3	0	5	50	28.6	50.0
Units 30 & 30A											
1992	19	2	3	6	2	0	0	2	32	10.5	57.9
1997	3	5	1	5	5	7	0	12	26	166.7	600.0
1999	29	9	3	5	1	3	0	4	50	31.0	41.4
2000 <sup>a</sup>	23	2	0	8	12	4	3	16	52	8.7	104.3
2001 <sup>a</sup>	18	9	5	2	9	1	0	10	44	50.0	94.4
2002 <sup>a</sup>	15	4	1	7	9	1	0	10	37	26.7	120.0
2003 <sup>a</sup>	22	8	0	3	4	3	0	7	40	36.4	45.5
2004 <sup>a</sup>	37	9	3	1	7	4	0	11	61	24.3	40.5
2005 <sup>a</sup>	25	6	4	1	9	4	0	13	49	24.0	72.0
2006 <sup>a</sup>	17	1	4	5	1	0	0	1	28	5.9	58.8
2007 <sup>a</sup>	26	0	0	1	6	1	0	7	34	0	30.8
Unit 36A											
1990	98	47	2	13	20	8	3	28	191	48.0	43.9
1991	84	7	5	11	12	9	0	21	128	8.3	44.0
1992	85	3	3	8	10	7	0	17	116	3.5	32.9
1993	63	5	4	6	10	7	0	17	95	7.9	42.9
1994	65	2	4	6	6	8	0	14	91	3.1	36.9
1996	61	7	1	1	3	5	0	8	78	11.5	16.4
1997	53	2	0	1	2	3	0	5	60	3.8	11.3
2000 <sup>a</sup>	34	5	7	5	1	1	0	2	53	14.7	41.2
2001	27	7	1	2	0	0	0	0	37	25.9	11.1
2004 <sup>a</sup>	20	11	4	0	3	0	0	3	38	55.0	35.0
2007 <sup>a</sup>	20	0	6	10	3	0	0	3	39	0	95.0
Morgan Creek area, Unit 36B											
1990	66	10	11	18	12	13	0	25	130	15.2	81.8
1991	89	18	9	16	13	14	0	27	159	20.2	58.4
1992	75	10	10	11	16	6	1	22	129	13.3	57.3
1993 <sup>c,d</sup>	47	9	1	14	7	4	0	11	82	19.1	55.3
1994 <sup>c,d</sup>	54	3	1	6	14	4	0	18	82	5.6	46.3
1996	66	13	12	6	7	1	0	8	105	19.7	39.4
1997	61	19	2	5	7	3	0	10	97	31.1	27.9
2000 <sup>a</sup>	32	16	2	7	11	4	0	15	72	50.0	75.0
2001	77	10	6	8	21	5	3	26	130	13.0	51.9
2002 <sup>a</sup>	17	3	0	1	6	5	0	11	32	17.6	70.6
2005 <sup>a</sup>	76	18	16	10	11	2	0	13	133	23.7	51.3
Birch Creek area, Unit 36B											
1991	23	4	0	1	2	4	0	6	34	17.4	30.4
1993 <sup>c,d</sup>	27	4	1	5	6	4	0	10	47	14.8	59.3
1994 <sup>c,d</sup>	7	3	0	0	2	0	0	2	12	42.9	28.6
1996	30	0	0	0	6	1	0	7	37	0.0	23.3
1997	29	3	2	2	1	1	0	2	38	10.3	20.7

Table 1. Continued.

Area Year	Ewes	Lambs	Rams				Uncl.	Total legal rams	Total sheep	Lambs: 100 ewes	Rams: 100 ewes
			I	II	III	IV					
2000 <sup>a</sup>	14	2	2	4	1	0	0	1	23	14.3	50.0
2001	21	2	2	3	4	0	0	4	32	9.5	42.9
2002 <sup>a</sup>	5	0	0	5	11	1	0	12	22	0.0	340.0
2003 <sup>a</sup>	22	6	0	2	4	0	0	4	34	27.3	27.3
2005 <sup>a</sup>	13	4	1	0	4	1	0	5	23	30.8	46.2
2006 <sup>a</sup>	20	3	0	1	4	1	0	5	29	15.0	30.0
2007 <sup>a</sup>	8	1	1	5	2	0	0	2	17	12.5	100.0
Hunt area 37											
1983	90	16	14	7	7	2	0	9	136	17.8	33.3
1987	100	22	7	8	17	6	4	23	164	22.0	38.0
1992	38	1	2	3	3	0	0	3	47	2.6	21.1
1994	54	4	5	8	7	6	0	13	84	7.4	48.1
2000	38	8	3	2	4	0	0	4	55	21.1	23.7
2005 <sup>e</sup>	82	17	11	8	9	4	0	13	131	20.7	39.0
2006 <sup>c</sup>	68	23	5	10	10	1	0	11	117	33.8	38.2
Unit 37A											
1992	36	2	1	2	5	3	1	8	50	5.6	30.6
1998 <sup>a,c</sup>	11	4	6	4	3	2	0	5	30	36.4	136.4
2003	35	15	3	3	3	0	0	3	59	42.9	25.7
2007	68	19	2	9	9	5	0	14	112	27.9	36.8

<sup>a</sup> Incidental to deer and/or elk surveys.

<sup>b</sup> Ground count.

<sup>c</sup> Partial count.

<sup>d</sup> Incidental to other surveys.

<sup>e</sup> Includes 38 animals recently translocated from Montana.

Table 2. Bighorn sheep harvest and drawing odds by hunt area, Salmon Region, 1997-present.

Hunt area	Year	Permits	Harvest	Hunter success (%)	Days/hunter	First-choice applicants	Drawing odds
21	1997	3	3	100		34	1:11.3
	1998	3	2	67	10.7	43	1:14.3
	1999	3	3	100	8.7	51	1:17.0
	2000 <sup>a</sup>	3	1	50	1.0	44	1:14.7
	2001 <sup>a</sup>	4	4	100	5.7	60	1:20.0
	2002	3	2	67	8.5	105	1:35.0
	2003	3	0	0		60	1:20.0
	2004	3	3	100	4.0	79	1:26.3
	2005	3	2	67	4.5	59	1:19.7
	2006	3	2	67	2.5	106	1:35.3
27-1	1997	12	4	33		63	1:5.2
	1998	12	0	0		58	1:4.8
	1999	12	2	17	11.0	60	1:5.0
	2000 <sup>b</sup>	12	1	13		51	1:4.3
	2001 <sup>b</sup>	16	3	19	6.0	38	1:3.2
	2002	12	2	17	10.5	61	1:5.1
	2003	12	2	17	5.5	39	1:3.3
	2004	12	3	25	3.0	42	1:3.5
	2005	15	5	33	6.6	75	1:5.0
	2006	15	2	13	7.0	75	1:5.0
27-2	1997	6	1	17		83	1:13.8
	1998	6	3	50	5.0	42	1:7.0
	1999	6	1	17	10.0	99	1:17.0
	2000 <sup>a</sup>	6	3	60	4.5	64	1:10.7
	2001 <sup>a</sup>	7	5	71	10.8	43	1:7.2
	2002	6	0	0		58	1:9.7
	2003	6	2	33	7.0	43	1:7.2
	2004 <sup>c</sup>	7	4	57	5.0	35	1:5.8
	2005	6	0	0		48	1:8.0
	2006 <sup>c</sup>	7	2	29	9.0	48	1:8.0
27-3	1997	2	1	50		30	1:15.0
	1998 <sup>c</sup>	2	2	67		27	1:13.5
	1999	2	1	50	9.5	36	1:18.0
	2000 <sup>a,c</sup>	2	1	50	1.0	51	1:25.5
	2001 <sup>b</sup>	3	0	0		21	1:10.5
	2002	2	2	100	6.5	15	1:7.5
	2003	2	1	50	7.0	29	1:14.5
	2004	2	2	100	18.0	29	1:14.5
	2005 <sup>c</sup>	5	3	60	8.0	41	1:10.3
	2006	4	3	75	6.7	69	1:17.3
27-4	1997	3	1	33		22	1:7.3
	1998	3	2	67		36	1:12.0

Table 2. Continued.

Hunt area	Year	Permits	Harvest	Hunter success (%)	Days/hunter	First-choice applicants	Drawing odds
27-L	1999	3	2	67	2.0	36	1:12.0
	2000	3	1	33	1.0	22	1:7.3
	2001	3	1	33	4.0	56	1:18.7
	2002	3	2	67	5.0	53	1:17.7
	2003	3	3	100	6.3	67	1:22.3
	2004	3	2	67	4.5	104	1:34.7
	2005	3	1	33	16.0	98	1:32.7
	2006	3	1	33	9.0	116	1:38.7
	1997	2	1	50		63	1:31.5
	1998	2	1	50		106	1:53.0
	1999	2	1	50		98	1:49.0
	2000	2	2	100	5.0	88	1:44.0
	2001	2	2	100	6.0	80	1:40.0
	2002	2	0	0		74	1:37.0
	2003	2	1	50	9.0	61	1:30.5
	2004	2	1	50	1.0	55	1:27.5
	2005	2	1	50	6.0	19	1:9.5
2006	2	1	50	6.0	29	1:14.5	
28-1	1997	2	0	0		13	1:6.5
	1998	2	1	50		11	1:5.5
	2003	2	1	50	2.0	47	1:23.5
	2004	2	0	0		29	1:14.5
	2005	2	0	0		18	1:9.0
	2006	2	1	50	17.0	18	1:9.0
28-2	1997	3	2	67		33	1:11.0
	1998	3	2	67		37	1:12.3
	2003	2	2	100	1.5	128	1:64.0
	2004	2	1	50	2.0	112	1:56.0
	2005	2	1	50	9.0	63	1:31.5
	2006	2	1	50	1.0	52	1:26.0
28	1999	3	0	0		41	1:13.7
	2000 <sup>d</sup>	3	0	0		37	1:12.3
	2001 <sup>d</sup>	5	2	40	11.0	36	1:12.0
	2002	3	2	67	17.5	10	1:3.3
30	2001	2	2	100	7.0	96	1:48.0
	2002	2	1	50	2.0	43	1:21.5
	2003	2	2	100	14.5	78	1:39.0
	2004	2	2	100	2.0	58	1:29.0
	2005	2	2	100	5.0	110	1:55.0
	2006	2	2	100	4.5	97	1:48.5
36B	1997	4	2	50		65	1:16.2
	1998	4	2	50		57	1:14.2
	1999	4	4	100	14.0	50	1:12.5

Table 2. Continued.

Hunt area	Year	Permits	Harvest	Hunter success (%)	Days/hunter	First-choice applicants	Drawing odds	
37	2000 <sup>d</sup>	4	1	50	7.0	57	1:14.3	
	2001 <sup>d</sup>	6	5	83	9.6	61	1:15.3	
	2002	4	4	100	9.3	74	1:18.5	
	2003	4	3	75	5.7	85	1:21.3	
	2004	4	4	100	8.3	86	1:21.5	
	2005	4	4	100	5.3	185	1:46.3	
	2006	4	3	75	4.0	172	1:43.0	
	1997	3	1	33		55	1:18.3	
	1998	3	2	67		61	1:20.3	
	1999	3	1	33	4.0	69	1:23.0	
	2000	3	3	100	6.0	85	1:28.3	
	2001	2	2	100	5.5	60	1:30.0	
	2002 <sup>c</sup>	3	3	100	4.3	82	1:41.0	
	2003	2	1	50	2.0	85	1:42.5	
	2004	2	1	50	2.0	67	1:33.5	
	2005	2	2	100	7.0	70	1:35.0	
	2006	2	2	100	9.0	94	1:47.0	
	37A	2005	1	1	100	1.0	178	1:178.0
		2006	1	1	100	19.0	29	1:29.0

<sup>a</sup> One permit deferred until 2001 season.

<sup>b</sup> Four permits deferred until 2001 season.

<sup>c</sup> The state auction or lottery tag holder hunted for bighorn sheep in Salmon Region, raising participation by 1 permit.

<sup>d</sup> Two permits deferred until 2001 season.

Table 3. Bighorn sheep harvest and drawing odds, Salmon Region, 1983-present.

Year	Permits	Harvest	Hunter success (%)	First-choice applicants	Drawing odds
1983	79	30	38	591	1:7.5
1984	79	30	38	492	1:6.2
1985	92	37	40	495	1:5.4
1986	92	37	40	622	1:6.8
1987	117	36	31	680	1:5.8
1988 <sup>a</sup>	118	35	30	751	1:6.4
1989	130	61	47	658	1:5.1
1990 <sup>a</sup>	131	48	37	751	1:5.7
1991 <sup>a</sup>	136	47	35	830	1:6.1
1992 <sup>b</sup>	137	55	40	681	1:5.0
1993	68	26	38	433	1:6.4
1994	69	20	29	475	1:6.9
1995	45	17	38	430	1:9.6
1996	45	16	36	461	1:10.2
1997	40	16	40	461	1:11.5
1998 <sup>a</sup>	41	17	42	478	1:12.0
1999	38	15	39	540	1:14.2
2000 <sup>a,c</sup>	38	13	46	499	1:13.1
2001 <sup>c</sup>	50	26	52	551	1:14.1
2002 <sup>a</sup>	39	18	46	575	1:14.7
2003	40	18	45	722	1:18.1
2004 <sup>a</sup>	41	23	56	696	1:17.4
2005 <sup>a</sup>	47	22	47	964	1:21.0
2006 <sup>a</sup>	47	21	45	905	1:19.7

<sup>a</sup> The state auction or lottery tag holder hunted for bighorn sheep in Salmon Region, raising participation by 1 permit.

<sup>b</sup> Both the state auction and lottery tag holders hunted for bighorn sheep in Salmon Region, raising participation by 2 permits.

<sup>c</sup> Eleven of these permits were deferred until 2001 season because of wildfires.

Table 4. Bighorn sheep mortality, Salmon Region, 1993-present.

Year	Controlled harvest	Native American harvest <sup>a</sup>	Illegal kill	Other	Total
1993	26	0	0	30	56
1994	20	5	0	23	48
1995	17	3	0	38	58
1996	16	1	0	17	34
1997	16	2	0	28	46
1998	17	1	2	26	46
1999	15	1	1	24	41
2000	13	2	0	23	38
2001	26	0	1	26	53
2002	18	4	0	28	50
2003	18	0	0	25	53
2004	23	3	1	33	60
2005	22	0	0	24	46
2006	21	1	0	36	58

<sup>a</sup> Native American harvest information has not been consistently available and is incomplete.

Table 5. Bighorn sheep translocation, Salmon Region, 1968-present.

Year	Capture site		Release site		Adults		Lambs		Total
	Unit/State	Location	Unit/State	Location	M	F	M	F	
1968-69	36B	Morgan Cr.	37	Mahogany Cr.	1	4	1	1	7
1969-70	Canada	Banff Park	37	Mahogany Cr.	5	19	0	0	24
1974-75	28	Burnt Gulch	18	Granite Cr.	1	10	2	0	13
1975-76	28	Pretty Gulch	18	Granite Cr.	5	10	4	2	21
	28	Bacon Ranch	58	Blue Dome	1	3	1	1	6
1977-78	28	Burnt Gulch	58	Long Canyon	2	8	0	2	12
1978-79	28	Burnt Gulch	Oregon	Imnaha R.	5	9	1	0	15
	28	Burnt Gulch	18	Bernard Cr.	0	7	0	0	7
1979-80	Wyoming	Whiskey Mt.	50	Elbow Canyon	3	10	2	2	17
	Wyoming	Whiskey Mt.	50	Jaggles Canyon	2	5	2	2	11
1981-82	28	Clear Cr.	36B	Birch Cr.	2	3	0	3	8
	28	Clear Cr.	58	Goddard Canyon	1	3	2	0	6
	28	Pretty Gulch	58	Goddard Canyon	0	3	0	0	3
	28	Burnt Gulch	58	Bloom Canyon	2	8	0	4	14
1983-84	28	Pretty Gulch	Oregon	Imnaha R.	3	8	0	0	11
	Oregon	Lostine R.	21	Shoup Bridge	3	7	3	3	16
1984-85	28	Burnt Gulch	Oregon	Grande Ronde R.	5	5	0	1	11
	21	Cove Cr.	Oregon	Grande Ronde R.	1	10	3	2	16
	Oregon	Lostine R.	30A	Rocky Canyon	3	14	3	2	22
1985-86	21	Ebenezer Bar	Oregon	Minam R.	2	9	1	0	12
	Oregon	Lostine R.	37A	Falls Cr.	4	11	1	2	18
1987-88	36A	E. Fk. Salmon R.	37A	Morse Cr.	3	9	1	0	13
	36B	Morgan Cr.	30A	Cedar Gulch	4	11	2	0	17
	36B	Morgan Cr.	28	Williams Cr.	2	4	0	0	6
1988-89	36B	Morgan Cr.	37A	Falls Cr.	2	18	2	1	23
	36B	Morgan Cr.	17	Tango Bar	5	9	1	0	15
	36B	Morgan Cr.	17	Elevator Mt.	2	11	0	1	14
1991-92	36B	Morgan Cr.	Wyoming	Bighorn Mts.	2	16	2	2	22
2004-05	Montana	Sun R.	37/50	Lost River Range	4	50	1	7	62

**APPENDIX A**  
**IDAHO**  
**2006 SEASON**  
**BIGHORN SHEEP RULES**



# Moose, Bighorn Sheep and Mountain Goat



**Controlled Hunt Seasons  
2005 and 2006**

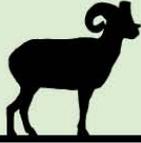
**REGULATIONS**



*Photo courtesy Dave Grickson, U.S. Fish and Wildlife Service*

- **Controlled Hunt application period:  
April 1 - April 30**
- **Persons applying for controlled hunts  
MUST submit tag and application fees.  
See pages 5-6.**
- **New information is highlighted.**



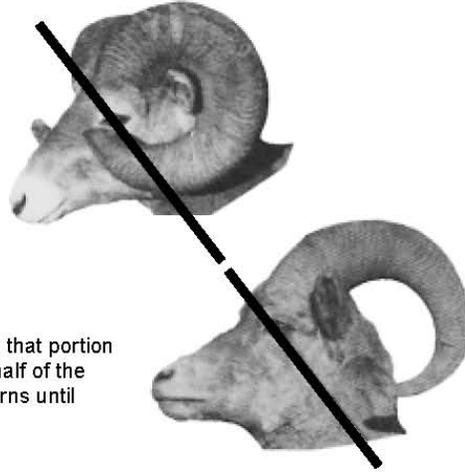


## 2005 & 2006 BIGHORN SHEEP HUNTING SEASONS

- Only bighorn sheep rams having 3/4-curl or greater horns or exceeding four years of age may be taken in any hunt open for rams only.

Determination of a 3/4 curl shall be made from a side view of the head. A ram shall be considered 3/4 curl if an imaginary straight line extending downward from the front of the base of the horn through the center of the eye socket intersects any portion of the horn.

Any hunter taking a bighorn ram must leave that portion of the skull plate containing the upper one-half of the eye socket naturally attached to both the horns until after the horns have been pinned by IDFG.



### MANDATORY CHECK AND REPORT REQUIREMENTS

Any hunter killing a bighorn sheep ram must present the horns to an IDFG regional office within 10 days of the date of the kill. *The IDFG headquarters office is not equipped to check in "mandatory check" species. In the Boise area, these animals can be checked at IDFG's volunteer office at 109 W. 44th St. in Garden City, between 10 a.m. and 3 p.m. weekdays.*

**Successful hunters must complete a big game mortality report, available at IDFG regional offices, within 10 days of the date of the kill.**

A hunter may authorize another person to comply with the above report requirements if that person complies with those requirements and possesses the necessary information to accurately complete the form.

**Unsuccessful permittees must present or mail their unused tags to an IDFG office within 10 days after the close of the season for which the tag was valid. Cancelled tags will be returned to the hunter upon request. Failure to report may result in future ineligibility in bighorn sheep drawings.**

### MANDATORY TRAINING

Anyone drawing a sheep permit must view a short bighorn sheep video at an IDFG office before hunting bighorn sheep. Attendees will be issued a certificate of completion that must be carried by the permittee during the hunt.

The video is available at IDFG offices between 8 a.m. and 4 p.m., Monday through Friday, except holidays.

Any hunter who will be with an Idaho licensed outfitter or guide at all times while hunting sheep may choose to have the outfitter or guide attend in the hunter's place. This option may be accomplished by notifying IDFG, in writing, the name, address, and phone number of the designated outfitter or guide. Notification must be sent to the Idaho Department of Fish and Game, c/o Sheep School, P.O. Box 25, Boise, Idaho 83707 and must be received by IDFG prior to attendance by the designated outfitter or guide.

**2005 & 2006 BIGHORN SHEEP CONTROLLED HUNTS - RAMS ONLY**  
**ALL 5000 SERIES HUNTS ARE FOR ROCKY MOUNTAIN BIGHORNS;**  
**ALL 7000 SERIES HUNTS ARE FOR CALIFORNIA BIGHORNS.**  
**80 TOTAL PERMITS INCLUDING SPECIAL LOTTERY AND AUCTION TAG**

**Rocky Mountain Bighorn Rams: North of Interstate Highway 84 - 64 Permits**

Hunt No.	Season Dates	Controlled Hunt Area	Permits	Notes
5001	Aug 30 - Oct 13	11	2	
5002	Aug 30 - Oct 13	19*	6	
5003	Aug 30 - Oct 13	20-1*	2	
5004	Aug 30 - Oct 13	20-2	2	
5005	Aug 30 - Oct 13	20A	2	
5006	Aug 30 - Oct 13	21	3	
5007	Aug 30 - Oct 13	26*	2	
5008	Aug 30 - Oct 13	27-1	15	
5009	Aug 30 - Oct 13	27-2	6	
5010	Aug 30 - Oct 13	27-3*	4	
5011	Aug 30 - Oct 13	27-4*	3	
5012	Aug 30 - Oct 13	28-1	2	
5013	Aug 30 - Oct 13	28-2	2	
5014	Aug 30 - Oct 13	30*	2	
5015	Aug 30 - Oct 13	36B*	4	
5016	Aug 30 - Oct 13	37*	2	
5017	Aug 30 - Oct 13	37A	1	NEW HUNT
5018	Oct 13 - Oct 31	26L	2	
5019	Oct 13 - Oct 31	27L*	2	

**California Bighorn Rams: South of Interstate Highway 84 - 16 Permits**

Hunt No.	Season Dates	Controlled Hunt Area	Permits	Notes
7001	Aug 30 - Oct 8	41*	3	
7002	Aug 30 - Sep 14	42-1*	5	
7003	Sep 22 - Oct 8	42-2*	5	
7004	Aug 30 - Oct 8	46*	3	

*\*See controlled hunt area descriptions. This unit includes other units or parts of other units.*

## HUNT AREA DESCRIPTIONS

**Hunt Area 11** — That portion of Unit 11 that drains into the Snake River downstream from the mouth of the Salmon River to, but excluding, the Tenmile Creek Canyon drainage.

**Hunt Area 19**—Those portions of Units 14, 19 and 20 from the Red River Ranger Station-White Water Ranch Road (Forest Service Road 421) downstream to and including the Wind River drainage.

**Hunt Area 20-1**—That portion of Unit 20 upstream from Sabe Creek, that portion of Unit 21 downstream from the Horse Creek Trail (Forest Service Trail 159) and Reynolds Creek Trail (Forest Service Trail 067) and that portion of Unit 17 upstream from the Witter Ridge Trail (Forest Service Trail 75) and the Thompson Flat-Wood Hump-Surprise Creek Trail (Forest Service Trail 031).

**Hunt Area 20-2**—That portion of Unit 20 downstream from the Nez Perce-Bitterroot Forest boundary along Sabe Creek to the Red River Ranger Station-White Water Ranch Road.

**Hunt Area 20A**—Those portions of Unit 20A up-stream from and including the Butts Creek drainage to the Middle Fork of the Salmon River, and within the Middle Fork of the Salmon River drainage upstream to Papoose Creek-Papoose Lake-Coyote Springs.

**Hunt Area 21**—That portion of Unit 21 downstream from the Spring Creek Road (Forest Service Road 038) to the Horse Creek Trail (Forest Service Trail 159) and Reynolds Creek Trail (Forest Service Trail 067).

**Hunt Area 26**—All of Unit 26 and that portion of Unit 20A within the Middle Fork of the Salmon River drainage upstream from Papoose Creek-Papoose Lake-Coyote Springs and that portion of Unit 27 on the west side of the Middle Fork of the Salmon River from Big Creek upstream to and including the Brush Creek drainage.

**Hunt Area 26-L**—All of Unit 26.

**Hunt Area 27-1**—That portion of Unit 27 west of the Middle Fork of the Salmon River upstream from, but excluding, the Brush Creek drainage to and including the Indian Creek drainage.

**Hunt Area 27-2**—That portion of Unit 27 east of the Middle Fork of the Salmon River upstream from its mouth to the Waterfall Creek Trail (Forest Service Trail 045).

**Hunt Area 27-3**—That portion of Unit 27 east of the Middle Fork of the Salmon River upstream from the Waterfall Creek Trail (Forest Service Trail 045) to and including the Camas Creek drainage on the north side of Camas Creek, and that portion of Unit 28 within the Camas Creek drainage

north of Camas Creek and west of the Silver Creek-Meyers Cove Road (Forest Service Road 108).

**Hunt Area 27-4**—That portion of Unit 27 within the Loon Creek drainage; that portion of Unit 27 east of the Middle Fork of the Salmon River, south of Camas Creek, and northwest of Fly Creek Trail (Forest Service Trail 124); that portion of Unit 36 within the Yankee Fork drainage.

**Hunt Area 27-L**—That portion of Unit 20A within the Middle Fork of the Salmon River drainage, and that portion of Unit 27 on the west side of the Middle Fork of the Salmon River downstream from but excluding the Pistol Creek drainage and the east side of the Middle Fork of the Salmon River downstream from but excluding the Camas Creek drainage.

**Hunt Area 28-1**—That portion of Unit 28 west of Panther Creek downstream from and including Big Deer Creek drainage.

**Hunt Area 28-2** — That portion of Unit 28 east of Panther Creek, and north of the Hat Creek drainage.

**Hunt Area 30** — All of Units 30 and 30A.

**Hunt Area 36B**—All of Unit 36B; that portion of Unit 28 south of and including the Hat Creek drainage; that portion of Unit 28 west of the Panther Creek Road and south of the Silver Creek- Meyers Cove Road; and that portion of Unit 27 southeast of Fly Creek Trail (Forest Service Trail 124) and northeast of the Sleeping Deer Road (Forest Service Road 086).

**Hunt Area 37**—All of Unit 37 and that portion of Unit 50 east of U.S. Highway 93 and that portion of Unit 51 west of the Howe-Goldburg Road.

**Hunt Area 37A** — All of Unit 37A.

**Hunt Area 41** — That portion of Unit 41 within the Big Jack Creek drainage, Little Jack and Shoofly drainages and all of Unit 40.

**Hunt Areas 42-1 and 42-2**— All of Unit 42 and that portion of Unit 41 within the East Fork and South Fork of the Owyhee River drainages outside the Duck Valley Indian Reservation boundary.

**Hunt Area 46** — Those portions of Units 41, 46 and 47 within the Bruneau and Jarbidge River drainages upstream from and including Sheep Creek drainage.

Submitted by:

*Jay Crenshaw*  
Regional Wildlife Manager

*Jon Rachael*  
Regional Wildlife Manager

*Jeff Rohlman*  
Regional Wildlife Manager

*Randy Smith*  
Regional Wildlife Manager

*Daryl Meints*  
Regional Wildlife Manager

*Tom Keegan*  
Regional Wildlife Manager

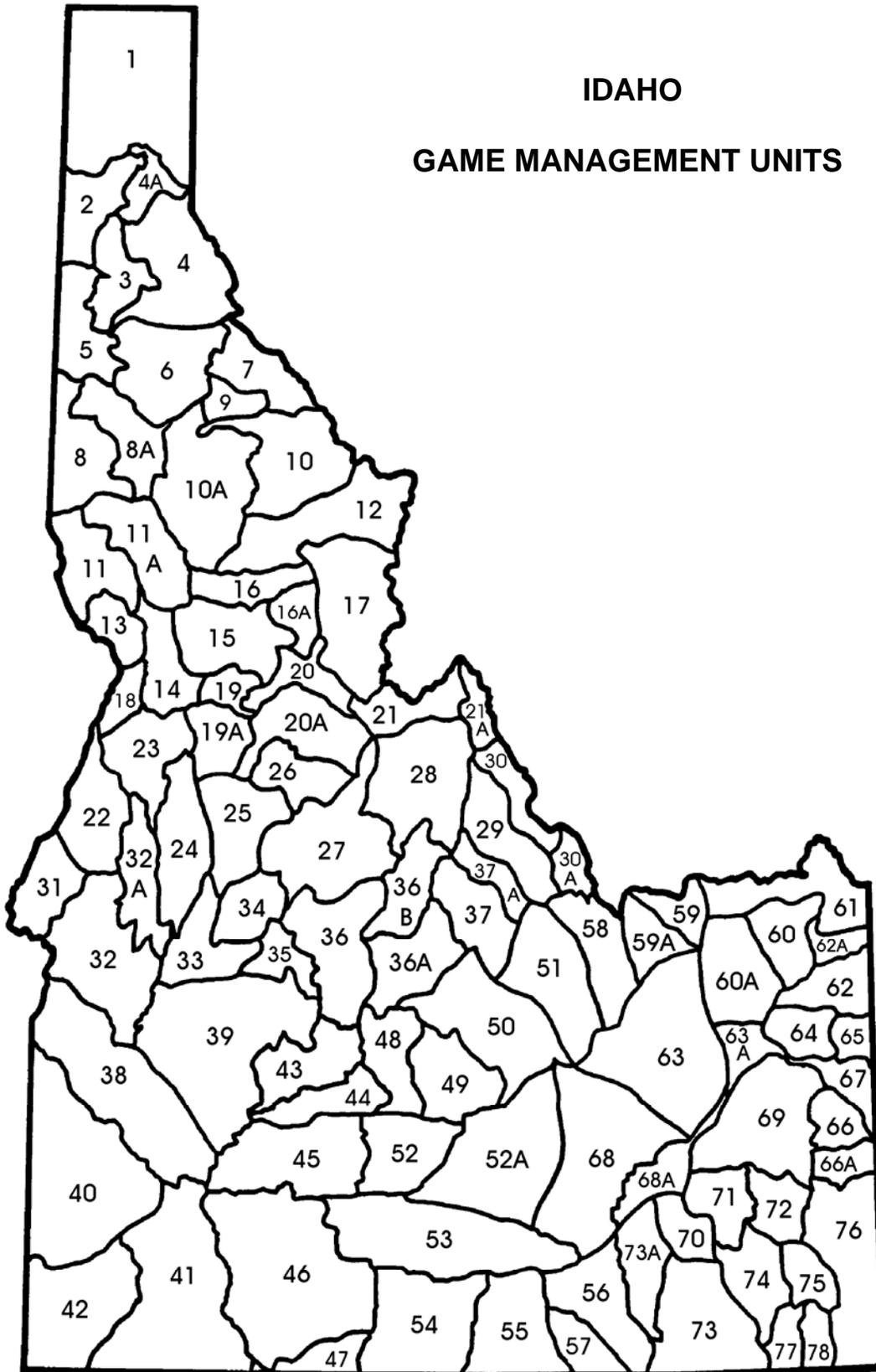
Approved by: IDAHO DEPARTMENT OF FISH AND GAME

*Dale E. Towell*  
Dale E. Towell  
Wildlife Program Coordinator  
Federal Aid Coordinator

*J. W. Unsworth*  
James W. Unsworth, Chief  
Bureau of Wildlife

# IDAHO

## GAME MANAGEMENT UNITS



## FEDERAL AID IN WILDLIFE RESTORATION

The Federal Aid in Wildlife Restoration Program consists of funds from a 10% to 11% manufacturer's excise tax collected from the sale of handguns, sporting rifles, shotguns, ammunition, and archery equipment. The Federal Aid program then allots the funds back to states through a formula based on each state's geographic area and the number of paid hunting license holders in the state. The Idaho Department of Fish and Game uses the funds to help restore, conserve, manage, and enhance wild birds and mammals for the public benefit. These funds are also used to educate hunters to develop the skills, knowledge, and attitudes necessary to be responsible, ethical hunters. Seventy-five percent of the funds for this project are from Federal Aid. The other 25% comes from license-generated funds.

