IDAHO DEPARTMENT OF FISH AND GAME

Rod Sando, Director

Project W-170-R-24

Job Progress Report

BIGHORN SHEEP

Study I, Job 4

Prepared By: Jay Crenshaw ..... Clearwater Region
Lou Nelson..... Southwest Region
Jeff Rohlman.....Southwest Region (McCall)
Randy Smith..... Magic Valley Region
Brad Compton, Justin Naderman..... Upper Snake Region
Mike Scott.....Salmon Region

Compiled and Edited by: Dale Toweill

July 1, 1999 to June 30, 2000

September 2000

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Findings in this report are preliminary in nature and not for publication without permission of the Director of the Idaho Department of Fish and Game.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

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

LIST OF TABLES

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

LIST OF FIGURES

PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-24		
SUBPROJECT:	2-7	**STUDY NAME:**	Big Game Population Status, Trends, Utilization, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 1999 to June 30, 2000

BIGHORN SHEEP –STATEWIDE

ABSTRACT

In 1999 the Idaho Department of Fish and Game identified 15 controlled hunts for Rocky Mountain bighorn sheep. There were 58 permits for Rocky Mountain bighorn sheep rams in the regular season framework (August 30-October 13), and 4 permits for Rocky Mountain bighorn sheep in a late-hunt framework (October 13-31). Within the regular season framework, 25 Rocky Mountain bighorn sheep were harvested for a 47% success rate, and 2 were harvested in the late season framework for a 50% success rate. The success rate was 58% in 1998.

There were 9 controlled hunts for California bighorn sheep rams offered in 1999, and 43 permits. Successful hunters harvested 23 California bighorn sheep for a success rate of 53%, as compared with 67% in 1998.

Competition for Idaho bighorn sheep permits is keen. In 1999 there were 1,661 applicants for 105 permits overall, resulting in 1 of 15.8 hunters being successful, or each hunter having a 6.3% chance of obtaining a permit. There were 870 first-choice applicants for the 62 Rocky Mountain bighorn sheep permits, resulting in a drawing success rate of 7.1% (1 per 14 applicants). There were 797 first-choice applicants for the 43 California bighorn sheep permits, resulting in a drawing success rate of 5.4% (1 per 18.5 applicants). All permits were filled with first-choice applicants.

A majority of Idaho residents applied for California bighorn sheep permits (535, as compared with 396 applications for Rocky Mountain bighorn sheep controlled hunts). Among nonresidents, the majority of first-choice applications received were for Rocky Mountain bighorn sheep controlled hunts (474, as compared with 262 applications for California bighorn sheep controlled hunts). Among resident applicants, 12.3% were successful for Rocky Mountain bighorn sheep permits; 6.5% were successful in obtaining a permit to hunt California bighorns. Among nonresident applicants, 2.7% were successful in obtaining a permit to hunt Rocky Mountain bighorns, while 3% were successful in obtaining a permit for California bighorns.

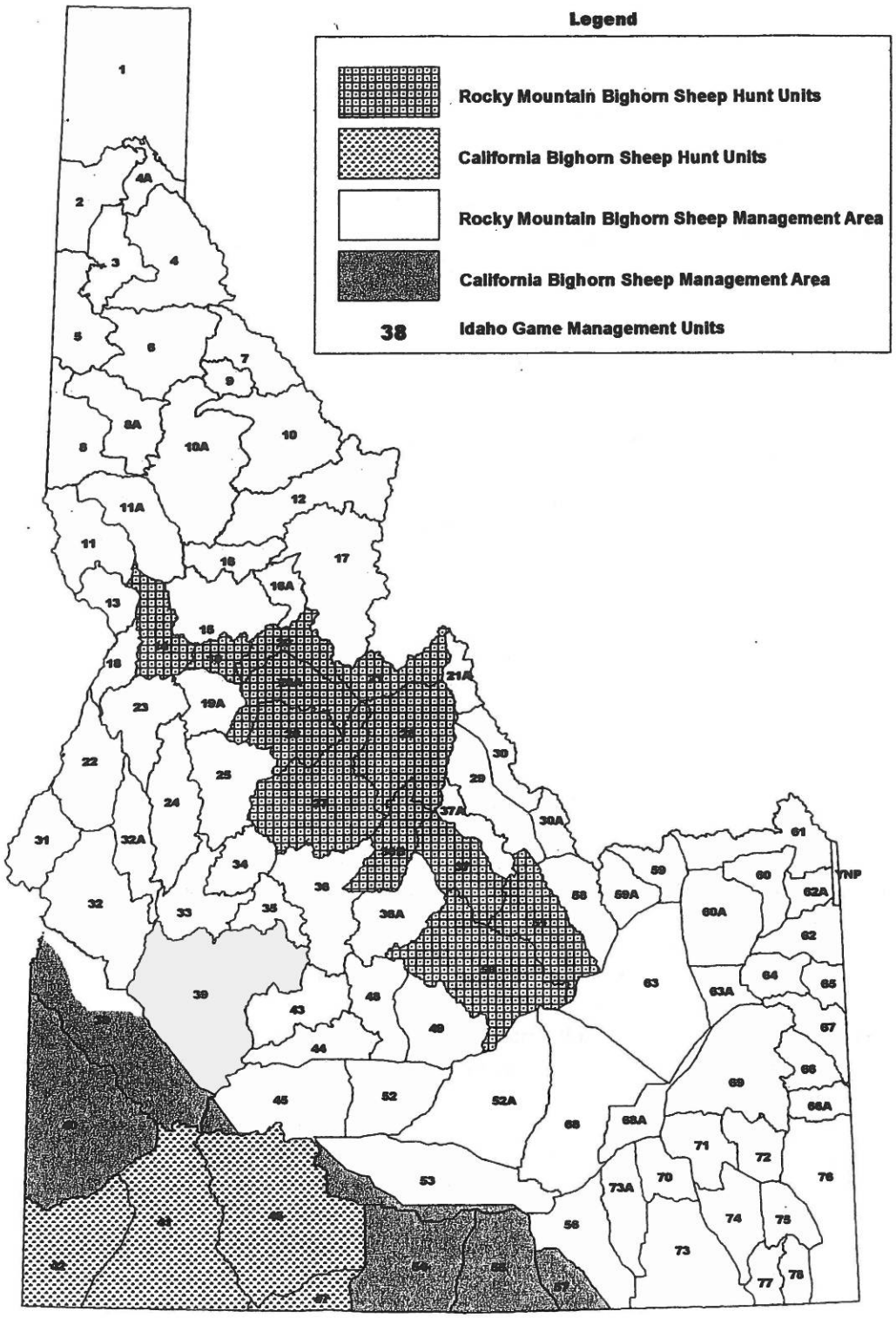


Figure 1. Rocky Mountain and California Bighorn Sheep Areas in Idaho.

PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-24		
SUBPROJECT:	2	**STUDY NAME:**	Big Game Population Status, Trends, Use, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 1999 to June 30, 2000

BIGHORN SHEEP - CLEARWATER REGION

UNITS 11, 13, AND 18
CONTROLLED HUNT AREA 11

ABSTRACT

Interest and support by The North American Foundation for Wild Sheep 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. These units will be top priority for future transplants in the Clearwater Region. The 1995-1999 survey results suggest a stable population in Unit 11 and recovery from the 1995-1996 epidemic; however, disease concerns still exist in the Snake River canyon. Hunt 11 was closed in 1997 after surveys indicated few legal rams remained in the population; however, the unit was opened to the 1999 lottery tag buyer. 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 The North American Foundation for Wild Sheep 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. As a result Hells Canyon of the Snake River will be the top priority for future transplants in the Clearwater Region. 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. Transplants have been conducted in all 3 units to reestablish populations.

The Unit 11 bighorn sheep population was reestablished from a transplant onto the Craig Mountain Wildlife Management Area. In 1984, 17 bighorn sheep (8 ewes and 9 rams) from Torrey Rim, Wyoming, were transplanted into the area. Additionally marked transplant stock from both Washington and Oregon have been observed mixing with bighorn sheep from the Wyoming transplant and vice versa. A limited hunt with 2 permits was offered in Unit 11 from 1993 to 1996. In 1997 the hunt was closed after surveys indicated few legal rams remained in the population.

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 population in the Snake River canyon. These bighorn sheep were transported to the IDFG Wildlife Health Laboratory in Caldwell after a joint capture effort by Idaho, Oregon, and Washington personnel. All but 8 of these bighorn sheep died by June 1996 despite intensive treatment in captivity. 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. Unit 11 lamb survival was very low in 1996, rebounded in 1997, and dropped again in 1998 and 1999.

The last-known native bighorn sheep in Unit 18 was observed in 1932. Speculation at that time attributed the loss of bighorn sheep to overhunting by miners and disease outbreaks associated with domestic sheep contact. Bighorn sheep were reintroduced into Hells Canyon with transplants of Salmon River stock in 1975-1976 (11 ewes and 10 rams) and 1979 (7 ewes). The population was augmented in 1990 with 30 bighorn sheep (20 ewes and 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 radiolocation flight (26 April 1991) after the survey found 10 bighorn sheep and 1 active radio. Subsequent helicopter surveys in

1992, 1993, and 1996 indicated that few animals remain 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 removal of the last remaining domestic sheep grazing permit offered by the Wallowa-Whitman National Forest should allow progress to be made on this issue.

POPULATION SURVEYS

Since the 1984 transplant the Unit 11 herd has grown at a moderate rate (Table 1). 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. Most recently lamb production has resulted in a slow increase in total bighorn sheep numbers. Three rams were removed from the population in May 2000 during exploratory movements. One radio-collared two-year-old ram was hit by a car on Highway 12 near Hatwai Creek, and two yearling rams were unsuccessfully darted in Clarkston, WA. Necropsy revealed that the two-year-old ram had recovered from a previous pneumonia infection.

In an attempt to increase lamb survival, a combination of a commercial cattle vaccine for Pasteurella and a bighorn sheep Pasteurella vaccine modified for the Colorado Division of Wildlife was tested on 6 of 12 bighorn ewes in Unit 11 captured and radio-collared in March 1997. One of these ewes was from the original 1984 transplant. All 12 Unit 11 bighorn ewes were pregnant at the time of capture and all lambs survived at least through September 1997. Similar tests were conducted on wild bighorn sheep herds at Black Butte, Washington and Wenaha, Oregon, and on 7 ewes captured in Washington during the 1995-1996 Pasteurella outbreak that now reside at the Idaho Wildlife Health Laboratory in Caldwell. Survival did not differ among lambs from vaccinated and unvaccinated ewes. Among the wild herds 1997 summer lamb survival was highest in the Unit 11 herd (100%) and lowest in the Wenaha, Oregon herd (30%).

Sightability model development has been ongoing since March 1998. Sightability has been assessed during 4 trials, 2 in March and 2 in December, in 7 herds in Idaho, Oregon, and Washington. Over the 4 trials, 216 of 234 radio-collared bighorn sheep (92%), 89 of 102 groups (87%), and 532 of 595 bighorn sheep (90%) have been observed during the helicopter surveys. Both the sightability model development and the vaccine test were conducted cooperatively under the "Hells Canyon Initiative."

As a consequence of recent efforts to rebuild the herds in Unit 13 through transplant operations, monitoring efforts of bighorn sheep in the unit have been renewed. The most recent count for this population in summer 2000 was 45 bighorn sheep (21 ewes, 16 lambs, 6 sublegal rams, and 2 legal rams) (Table 2).

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 3). However bighorn sheep continue to

be regularly observed at Bernard Creek. On 25 May 1999, 4 adult ewes, 1 yearling ewe, 1 yearling ram, and 2 lambs were observed at Bernard Creek. A similar group (6 adult bighorn sheep and 2 lambs) was observed from the air 16 June 1999. On 12 June 2000, 4 adult ewes, 1 yearling ewe, 1 yearling ram, and 3 lambs were observed at Bernard Creek.

HARVEST CHARACTERISTICS

The likelihood of participation by the state auction tag holder in the Unit 11 hunt as occurred from 1994-1996 led to a reduction in the number of permits offered in the unit from 2 to 1 in 1995 (Table 4). Odds of drawing a tag increased significantly in 1995, probably in large part due to the harvest of a record book ram in 1994. In 1996 the Unit 11 permittee and the statewide auction tag holder were successful in harvesting rams in Hunt 11. In 1997 the hunt was closed after surveys indicated few legal rams remained in the population. The Idaho State record bighorn ram was picked up in Unit 11 in 1997 and probably died in 1996. In 1999 the statewide lottery tag holder was allowed to hunt in Unit 11 and harvested a record book ram.

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 have 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 AND CLIMATIC 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 Wildlife Management Area and recently acquired Penne Lands. Land along the Salmon River is primarily privately owned, although the 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 (USFS) ownership. Approximately 110 acres of the Snake River corridor in Unit 13 (Ragtown Bar) was acquired by a conservation group for transfer to the USFS in 1998. Additionally a conservation easement was acquired by the BLM on several thousand acres in Unit 13 in the Salmon River drainage.

The recent 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 the 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 1996 wildfire burned approximately 16,100 acres of land managed by the USFS near Sheep Creek and 425 acres near Hells Canyon Dam in Unit 18.

Clearwater Region weather was considered "normal" for 1999-2000. Snowpack was 102% of average, while dry snow conditions resulted in 82% of average snow water equivalent. Winter conditions for big game were favorable throughout the region. A drier than normal spring (67% of average precipitation) initiated early snow melt and green-up.

TRAPPING AND TRANSPLANTS

Six bighorn sheep (3 ewes and 3 rams) from the Cadomin coal mine in Hinton, Alberta, Canada were released into Big Canyon Creek in Unit 13 on 13 February 1999 to supplement the population (12 ewes and 4 rams) transplanted from Spences Bridge, British Columbia in 1997. All bighorn sheep were radio-collared. Several of the rams summer in the Imnaha, Oregon bighorn sheep herd area and winter in with the Big Canyon herd. This transplant project was conducted cooperatively by the states of Idaho, Oregon, and Washington; the USFS; BLM; and the Foundation for North American Wild Sheep under the "Hells Canyon Initiative." Bighorn sheep from this transplant were also released at Muir Creek, Oregon (14 bighorn sheep). One of the Muir Creek ewes has joined the Big Canyon herd.

UNITS 14, 17, 19, AND 20
CONTROLLED HUNT AREAS 19, 20-1, AND 20-2

ABSTRACT

Bighorn sheep were hunted on a general-hunt basis in these units until 1971. Hunting pressure in the 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. Recent surveys in Units 17, 19, and 20 have 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. Five rams were harvested by 10 permittees on hunts 19, 20-1, and 20-2 during the 1999 hunting season. Aerial survey results from Unit 17 have suggested a 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 in Unit 19. At

present hunting is permitted only in the western portion of Unit 14 and in Units 17, 19, and 20. These units are further divided into 3 controlled hunts (Table 5).

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 transplanted into 2 sites in Unit 17 in the Selway-Bitterroot Wilderness in 1988. Fifteen bighorn sheep (10 ewes and 5 rams) were released near Tango Bar and 14 bighorn sheep (13 ewes and 1 ram) were released at Elevator Mountain. Recent surveys have suggested that neither transplant was successful. Bighorn sheep have not been observed in the Tango Bar area since the transplant. 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 (Tables 6, 7, and 8). In addition 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. No surveys for bighorn sheep were conducted in these units during the reporting period.

Total numbers of bighorn sheep observed during surveys have declined in Units 17, 19, and 20 since the early 1980s. From 99 to 121 bighorn sheep were observed in Unit 17, 1982 through 1984, whereas only 37 to 62 bighorn sheep were observed on the last 3 surveys (Table 6). Similarly 122 to 136 bighorn sheep were observed during 1983 and 1984 in Unit 19, but only 52 to 60 were observed in 1992, 1993, and 1996 (Table 7). In Unit 20, 207 to 230 bighorn sheep were observed during 1986 and 1987; however, this number declined in the past 3 surveys in 1993, 1994, and 1996 to a range of 66 to 87 (Table 8).

Lamb recruitment rebounded in Unit 19 in 1996 to 44.8 lambs per 100 ewes from lows in 1992 and 1993 of 5.3 and 0.0, respectively. In Unit 20 recruitment continued to be variable at 13.8 lambs, down from the 1981 to 1989 average (23.6) and from 1994 (22.4). Results from the 1994 and 1995 surveys in Unit 17 suggested favorable levels of lamb recruitment.

The loss of recruitment and overall decline in bighorn sheep numbers may be caused by disease. Diseases have apparently caused reduced lamb survival in adjacent herds along the 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.

HARVEST CHARACTERISTICS

Beginning in 1952 and lasting until 1970, bighorn sheep hunting in the Clearwater Region was offered on a general-hunt basis. From 1971 to 1981 permit levels and hunt boundaries remained the same with variations only in season length. In 1982 the 4 controlled hunts were expanded. The September-October season was split, creating 2 hunts within the same hunt boundary and

hunt numbers were changed. In 1985, 1 permit each was added to the September portion of the 4 hunts along the Salmon River (519-1, 520-1, 520-3, and 520-5).

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 519-2 and portions of Units 19A and 20A were combined into 519-L, and Hunts 520-3 and 520-5 were changed to Hunts 520-2 and 520-3. Hunts 520-2, 520-4, 520-6, and portions of Units 21 and 20A were incorporated into Hunt 520-L. Additionally Hunt 520-1 was expanded in area 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 have a higher success rate, were discontinued. The number of permits offered for early hunts was reduced from 25 to 15. In 1995 further changes were made to Unit 19 and 20 hunts to address population status concerns. Hunt Area 520-3 was added to Hunt Area 519 to become Hunt Area 19. Permit numbers were reduced to 2 each in Hunt Areas 20-1 (-4 permits) and 20-2 (-1 permit).

Harvest has been determined from telephone contacts of permittees prior to 1995 and from Big Game Mortality Reports beginning in 1996 (Table 9). In 1999, 10 permittees killed 5 rams for an average success rate of 50%.

HABITAT AND CLIMATIC 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 the fall of 1992, numerous lightning-caused fires occurred along the Salmon River breaks in Units 14 and 19. The fire activity may have diminished short-term habitat potential but can be expected to improve habitat conditions in the long term.

Clearwater Region weather was considered “normal” for 1999-2000. Snowpack was 102% of average, while dry snow conditions resulted in 82% of average snow water equivalent. Winter conditions for big game were favorable throughout the region. A drier than normal spring (67% of average precipitation) initiated early snow melt and green-up.

TRAPPING AND TRANSPLANTS

No trapping or transplanting was conducted during the report period.

Table 1. Summary of Bighorn Sheep Survey Data for Unit 11, 1992-1999[a].

Year	Ewes	Lambs	Rams		Uncl.	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegals	Legals				
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								
Dec. 1	40	13	7	12	0	72	32.5	47.5
Dec. 18	18	8	4	9	0	39	44.4	72.2
Dec. 23	16	4	5	9	0	36	25.0	87.5
1996								
Jan. 5	26	11	1	6	0	44	42.3	26.9
Jan. 30	24	10	5	1	0	40	41.7	25.0
Feb. 15	31	10	7	2	0	50	32.3	29.0
Feb. 28	29	8	8	2	0	47	27.6	34.5
Mar. 20	36	14	11	6	0	67	38.9	47.2
Jun. 20	19	11	10	5	0	45	57.9	78.9
Nov. 21	30	2	14	7	0	53	6.7	70.0
1997								
Jun. 27	28	23	4	8	0	63	82.1	42.9
Dec. 6	34	17	8	12	0	71	50.0	58.8
1998								
Mar. 18	35	15	12	11	0	73	42.8	65.7
Dec. 9	41	9	16	18	0	84	30.0	82.9
1999								
Mar. 22	44	8	11	17	0	80	18.1	63.6
Dec. 16	46	11	10	19	0	86	23.9	63.0

[a] Surveys prior to 1995 were conducted during December and January incidental to elk and mule deer surveys.

Table 2. Summary of Bighorn Sheep Data Survey for Unit 13, 1997-2000.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1997[a]											
Dec.	12	0	4	0	0	0	0	0	16	00.0	33.0
1998											
Oct 20	12	8	0	2	0	0	0	0	22	66.7	16.7
1999[b]											
Mar. 22	14	7	3	2	0	0	0	0	26	50.0	35.7
Dec. 17	17	12	4	2	2	0	0	2	37	70.6	47.1
2000											
Jun 13	21	16	4	2	2	0	0	2	45	76.2	38.1

[a] Transplant from British Columbia, Canada.

[b] Transplant from Alberta, Canada, of 6 bighorn sheep.

Table 3. Summary of Bighorn Sheep Survey Data for Unit 18, 1983-2000[a].

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1983	28	15	4	10	3	2	0	5	62	53.6	67.9
1984							ND				
1985							ND				
1986							ND				
1987	23	4	0	4	5	1	0	6	37	17.4	43.5
1988							ND				
1989							ND				
1990	16	0	3	2	1	0	0	1	22	0.0	37.5
1991							ND				
1992	1	0	0	0	1	0	0	1	2	0.0	100.0
1993	5	0	0	0	0	0	0	0	5	0.0	0.0
1994							ND				
1995							ND				
1996	0	0	0	0	0	0	0	0	0	-	-
1997							ND				
1998	3	3	1	0	1	0	0	1	8	100.0	67.0
1999	5	2	1	0	0	0	0	0	8	50.0	20.0
2000	5	3	1	0	0	0	0	0	9	60.0	20.0

[a] Surveys during 1983, 1990, and 1992 were conducted during winter (December through January) incidental to mule deer and elk surveys. The 1987, 1993, and 1996 surveys were conducted during spring (March through April). The 1998, 1999, and 2000 data were collected incidentally in May and June.

Table 4. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area, 1990-1999.

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
511	[a]1993	3	2	67%	3.5	76	1:38.0
	[a]1994	3	3	100%	1.0	61	1:30.5
	511 was changed to 11 in 1995.						
11	1995	1	0	0%	8.0	68	1:68.0
	[a]1996	2	2	100%	2.0	105	1:52.5
	Hunt 11 was closed in 1997.						
	[a]1999	1	1	100%	5.0	ND	ND
518	1990	2	0	0%	14.5	11	1:5.5
	1991	2	0	0%	12.0	14	1:7.0
	1992	2	2	100%	7.0	9	1:4.5
	518 was closed in 1993.						

[a] The state auction tag holder hunted for bighorn sheep in Unit 11, raising participation by one permit.

Table 5. 1999 Season Structure for Bighorn Sheep in Units 19 and 20 in the Clearwater Region.

Hunt Areas	Season		Permits
	Dates	Length	
19	Aug 30-Oct 13	45 Days	6
20-1	Aug 30-Oct 13	45 Days	2
20-2	Aug 30-Oct 13	45 Days	2

Table 6. Summary of Bighorn Sheep Survey Data for Unit 17, 1981-1999[a,b].

Year	Ewes	Lambs	Rams			Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegals	Legals	Uncl.			
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
1985					ND			
1986					ND			
1987					ND			
1988	22	8	12	1	0	43	36.4	59.1
1989					ND			
1990					ND			
1991	37	7	6	2	0	52	21.2	24.2
1992					ND			
1993					ND			
1994	20	4	6	6	0	37	20.0	60.0
1995	22	11	5	5	0	43	50.0	45.5
Est.	32	16	7	6	0	62	50.5	42.4
	18	10	4	4		33	43.0	31.8
1996					ND			
1997					ND			
1998					ND			
1999					ND			

[a] 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.

[b] The 1995 data were analyzed using the current bighorn sheep sightability model.

Table 7. Summary of Bighorn Sheep Survey Data for Unit 19, 1981-1999[a].

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1981	44	9	3	0	0	0	0	0	56	20.5	6.8
1982	76	14	4	3	2	1	0	3	100	18.4	13.2
1983	95	31	6	4	0	0	0	0	136	32.6	10.5
1984	92	25	1	2	2	0	0	2	122	27.2	5.4
1985							ND				
1986	69	9	3	4	3	1	0	4	89	13.0	15.9
1987	68	20	2	0	0	0	0	0	90	29.4	2.9
1988							ND				
1989	63	20	4	3	1	0	0	1	91	31.7	12.7
1990							ND				
1991							ND				
1992	38	2	1	4	7	0	0	7	52	5.3	31.6
1993	40	0	7	2	11	0	0	11	60	0.0	5.3
1994							ND				
1995							ND				
1996	32	14	5	0	2	3	0	5	56	44.8	31.3
1997							ND				
1998							ND				
1999							ND				

[a] The 1993 survey was conducted during spring (May). All other surveys were conducted during January and February coincident with elk surveys.

Table 8. Summary of Bighorn Sheep Data for Unit 20, 1981-1999[a].

			Rams					Total Legal	Total	Lambs:	Rams:
Year	Ewes	Lambs	I	II	III	IV	Uncl.	Rams	Sheep	100 Ewes	100 Ewes
1981	12	3	6	3	1	1	0	2	26	25.0	91.7
1982	78	19	3	8	15	6	0	21	129	24.4	41.0
1983	83	13	13	11	10	3	0	13	133	15.7	44.6
1984	107	29	6	15	14	6	0	20	177	27.1	38.3
1985							ND				
1986	132	31	14	15	19	19	0	38	230	23.5	50.8
1987	113	25	16	12	30	11	0	41	207	22.1	61.1
1988							ND				
1989	94	26	10	9	10	3	0	13	152	27.7	34.0
1990							ND				
1991							ND				
1992	68	13	3	8	10	4	0	14	106	19.1	36.8
1993	53	7	1	2	3	0	0	3	66	13.2	11.3
1994	49	11	10	3	12	2	0	14	87	22.4	55.1
1995							ND				
1996	51	7	4	5	7	3	1	10	78	13.8	39.2
1997							ND				
1998							ND				
1999							ND				

[a] The 1993 survey was conducted during spring (May). All other surveys were conducted during January and February coincident with elk surveys.

Table 9. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area, 1990-1999.

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
519-1	1990	3	2	67%	ND	9	1:3.0
	519-1 was changed to 519 in 1991.						
519	1991	5	1	20%	10.7	30	1:6.0
	1992	5	1	20%	6.8	11	1:2.2
	1993	3	0	0%	10.7	14	1:4.7
	1994	3	2	67%	8.0	16	1:5.3
	519 was changed to 19 in 1995 and was expanded to include 520-3.						
19	1995	6	4	67%	12.2	51	1:8.5
	1996	6	2	33%	ND	47	1:7.8
	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
519-2	1990	2	2	100%	4.5	16	1:8.0
	519-2 was changed to 519L in 1991; Unit 19A and part of Unit 20A were added to 519-L.						
519-L	1991	2	2	100%	5.5	47	1:23.5
	1992	2	2	100%	5.5	29	1:14.5
	519-L was closed in 1993.						
520-1	1990	6	2	33%	14.0	12	1:2.0
	520-1 was expanded to include portions of Units 17 and 21 in 1991.						
	1991	10	4	40%	11.6	37	1:3.7
	1992	10	5	50%	9.5	24	1:2.4
	1993	6	2	33%	10.3	40	1:6.7
	1994	6	2	33%	7.0	28	1:4.7
	520-1 was changed to 20-1 in 1995.						
20-1	1995	2	1	50%	9.5	15	1:7.5
	1996	2	2	100%	3.0	30	1:15.0
	1997	2	1	50%	9.0	23	1:11.5
	1998	2	2	100%	8.0	22	1:11.0
	1999	2	0	0	0	45	1:22.5
520-3	1990	3	0	0%	13.0	15	1:5.0
	520-3 was changed to 520-2 in 1991.						
	1991	5	1	20%	17.5	28	1:5.6
	1992	5	1	20%	11.4	23	1:4.6
	1993	3	0	0%	9.0	26	1:8.7

Table 9. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area, 1990-1999.

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
	1994	3	1	33%	5.5	8	1:2.7
	520-2 was changed to 20-2 in 1995.						
20-2	1995	2	0	0%	ND	12	1:6.0
	1996	2	0	0%	ND	5	1:2.5
	1997	2	1	50%	8.0	12	1:6.0
	1998	2	2	100%	ND	16	1:8.0
	1999	2	1	50%	30.0	14	1:7.0
520-5	1990	3	2	67%	7.0	1	1:3.7
	520-5 was changed to 520-3 in 1991.						
520-3	1991	5	1	20%	9.2		131:2.6
	1992	5	1	20%	10.6	23	1:4.6
	1993	3	2	67%	5.5		171:5.7
	1994	3	2	67%	10.0	23	1:7.7
	520-3 was added to 19 in 1995.						
520-L	Hunts 520-2, 520-4, 520-6, and portions of Units 20A and 21 were incorporated into 520-L in 1991.						
	1991	2	2	100%	2.0	33	1:16.5
	1992	2	1	50%	8.5	32	1:16.0
	520-L was closed in 1993.						

PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-24		
SUBPROJECT:	3	**STUDY NAME:**	Big Game Population Status, Trends, Use, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 1999 to June 30, 2000

BIGHORN SHEEP - SOUTHWEST REGION, NAMPA

UNITS 41, 42, AND 46
CONTROLLED HUNT AREAS 741-1, 741-2, 742-1, AND 742-2

ABSTRACT

Aerial surveys of California bighorn sheep herds were conducted in June 2000. There was no major change in the observed bighorn sheep from the last survey in 1998 to 2000. Three hundred nine bighorn sheep were observed in the East Fork Owyhee River and 225 bighorn sheep were observed in the Big and Little Jacks Creek herd. The number of rams observed in Big and Little Jacks Creek herd dropped from 91 to 33. Twenty-one California bighorn sheep were harvested by 37 hunters.

MANAGEMENT DIRECTION

Management direction follows the statewide management direction which is to: 1) reintroduce bighorn sheep into as many suitable habitats as possible while keeping the Rocky Mountain and California bighorn sheep subspecies geographically separated; 2) maintain controlled hunt strategy and offer more hunter opportunity where consistent with management goals; 3) encourage bighorn sheep habitat improvement projects by land management agencies; 4) harvest rams under the present ¾ curl 4+ years regulation, but consider a ewe hunt on a trial basis; 5) harvest and/or remove for transplant no more than 15-20% of the observed legal rams in a hunt unit; and 6) promote the nonconsumptive 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; conduct a research study of California bighorn sheep population status, habitat needs, and livestock interactions; and increase permit levels as population status allows.

The goals for California bighorn sheep are to increase populations, establish new populations, increase harvest, and provide more recreation (Table 10).

BACKGROUND

Units 41, 42, and 46 (Fig. 1) are reserved for the California bighorn sheep subspecies; all other units are designated as Rocky Mountain bighorn sheep habitat. Interstate Highway 84 was selected as the boundary because it is readily definable and there are few places where suitable bighorn sheep habitat abuts this boundary from either the north or the south. Likelihood of bighorn sheep movement across this boundary is essentially nonexistent.

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 drainage. 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. Presently the Southwest Region contains as much as 10% of the North American population of this California bighorn sheep subspecies. Much suitable habitat remains unoccupied; there are significant opportunities to enhance population growth and geographic expansion of these bighorn sheep through a continuing transplant program. During this planning period, California bighorn sheep may be released into several areas of unoccupied habitat.

POPULATION SURVEYS

Aerial surveys of all established California bighorn sheep herds in Owyhee County were flown in August 1987 and again in June 1990. The Little Jacks Creek and Owyhee River have been regularly surveyed since 1983 (Tables 11 and 12). No bighorn sheep were observed in the South Fork Owyhee or Little Owyhee River drainages in 1987; but, in 1990, 32 bighorn sheep were seen in these two drainages. The number of bighorn sheep observed in the Owyhee River drainage decreased from 669 in 1993 to 347 in 1994 (Table 11). Prior to 1987 all known bighorn sheep areas on the East Fork Owyhee River drainage downstream to Red Canyon were surveyed. In 1987 a stratified random sample of the drainage was surveyed, as well as additional areas from Red Canyon downstream to the Oregon border. Since 1990 the survey area has included the whole drainage from the Oregon border upstream to approximately 5 miles above the point where the pipeline crosses the East Fork Owyhee River.

The drainage of the Little Jacks Creek/Shoofly Creek complex has been aerially surveyed since 1983 (Table 11). A research project to develop a sightability survey technique to correct for missed bighorn sheep has been conducted in the Little Jacks Creek area 1987-1991. June appears to offer the best "time window" during which to conduct bighorn sheep census flights, but a stratified random survey methodology does not appear to work due to extensive movements of bighorn sheep between sampling units as a response to helicopter disturbance. The number of bighorn sheep counted in 1993 was an all-time high. The Big Jacks Creek drainage was last surveyed in 1998 (Table 13).

Aerial surveys were conducted in June 2000. The weather conditions and plant phenology were favorable for the survey. The survey area was well covered and there were no problems with the survey operation. The East Fork Owyhee River herd showed little change from the 1998 survey, 334 bighorn sheep observed in 1998 and 309 observed in 2000 (Table 12). Both Big and Little Jacks Creek were surveyed in both 1998 and 2000 (Tables 11 and 13). In the past these areas have been treated as separate herds. With the increase in population in the Big Jacks Creek area, there appears to be interchange between the Big and Little Jacks Creek herds. With this interchange between the two areas, the population data should be combined and examined as one larger herd (Table 14). The largest change in this herd was the decline in number of observed rams. The scattered pockets of bighorn sheep habitat in Unit 40 were not surveyed in 2000.

HARVEST CHARACTERISTICS

The permit levels in most California bighorn sheep hunts were reduced in 1995. A ram hunt was also initiated in Big Jacks Creek in 1995. The decrease in permit levels resulted in some changes to the season dates. The ram hunts were changed from three 12-day hunts to two 16-day hunts in the Little Jacks Creek and Owyhee River areas. There was a 6-day no hunting period between each hunt. The two hunts spread out the hunting pressure and reduced the potential for conflict from hunter crowding. However, even with the two hunts, some hunters interfered with other hunters by their presence or the inappropriate use of off-road vehicles.

There were two changes in the season structure for 1999. The Big Jacks Creek hunt (41-4) was split into an early (41-4, Aug 30 – Sep 14) and a late (41-5, Sep 22 – Oct 8) hunt, similar to Little Jacks Creek area. Unit 40 contains several pockets of bighorn sheep habitat which have been occupied by bighorn sheep for several years. Unit 40 was added to Little Jacks Creek hunt areas 41-1 and 41-2. This will allow hunters to pursue the rams which reside in Unit 40. Hunters did not harvest any rams from Unit 40 in 1999.

The decreased number of permits did reduce the chances of drawing a California bighorn sheep permit (Tables 15 and 16). Based upon the mandatory reports, 37 hunters harvested 21 California bighorn rams in the 1999 controlled hunts for a 54% success rate (Tables 15 and 16).

HABITAT CONDITIONS

These units are characterized by large expanses of flat terrain dominated by sagebrush/grass vegetative types. The major drainage systems (the Bruneau, Jarbidge, and Owyhee Rivers) have formed steep canyons which provide the habitats preferred by California bighorn sheep. Grass-covered benches along these canyons provide foraging sites. Steepness of these canyons and isolation of 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 intensify adjacent to the canyons as the numbers of either or both increase.

The Bureau of Land Management (BLM) administers most of the habitats suitable for bighorn sheep within these units. Some parcels of US Forest Service, state, and private lands also contain suitable habitat. Most currently-occupied habitat is under study by the BLM for possible wilderness designation.

WINTER FEEDING

No winter feeding of bighorn sheep occurred in 1999-2000.

TRAPPING AND TRANSPLANTS

There was no trapping and transplant activity in Units 40, 41, and 42 in 1999-2000. A summary of transplant activity in Units 40, 41, and 42 is in Table 16.

MANAGEMENT IMPLICATIONS

California bighorn sheep were reintroduced into Little Jacks Creek in 1967. The first controlled hunt was held in 1975.

Prior to 1993 permit levels were held at a conservative level. This is in accordance with the plan that calls for no more than 20% removal of legal rams. However the continued increase in the California bighorn sheep herds has resulted in sportsmen's requests for an increase in the permit levels. Additionally the Owyhee River bighorn sheep population has been used to supply California bighorn sheep for reintroduction into other areas.

Hunting seasons since 1995-1996 have been modified in response to the 1994 population survey results. First, a new ram hunt has been started in Big Jacks Creek. This herd is now sufficiently established to support a limited ram hunt. Second, the ewe hunt in Little Jacks Creek has been temporarily closed. This ewe hunt will be reopened when the herd has recovered from the reduced population observed in 1994. Third, the number of ram permits in Little Jacks Creek and East Fork Owyhee River has been reduced in response to the reduced number of bighorn sheep in these herds. The hunts in each area have been combined to two, with each hunt 16 days long.

These bighorn sheep populations should continue to be monitored very closely. Aerial surveys should be conducted every year to monitor population trends, ram:ewe ratios, and lamb survival while these populations are being harvested for transplant and sport hunting at levels exceeding the plan's criteria. If the herd continues to show a declining trend for several years, the rate of bighorn sheep removal should be closely evaluated and adjusted so that the herd will continue to be a viable source of transplant stock. Aerial surveys should be flown during the best time of the year to increase sightability of bighorn sheep.

Table 10. 1999 Season Structure for Bighorn Sheep in the Southwest Region (Nampa).

Hunt Areas	Season		Permits
	Dates	Length	
41-1	Aug 30-Sep 14	16	4
41-2	Sep 22-Oct 8	16	4
41-4	Aug 30-Oct 8	40	3
41-5	Sep 22-Oct 8	16	2
42-1	Aug 30-Sep 14	16	10
42-2	Sep 22-Oct 8	16	10
42-3	Aug 30-Sep 14	16	2
42-4	Sep 22-Oct 8	16	2
46	Aug 30-Oct 14	46	6

Table 11. Summary of Bighorn Sheep Population Data for Little Jacks Creek, Hunt Area 741, 1983-2000.

Year	Ewes	Lambs	Rams		Uncl.	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegal	Legal				
1983	-	-	17	25	-	115	53	74
1984	No Data Collected							
1985 (August)	30	16	26	13	0	85	53	130
1985 (November)	40	18	22	16	0	96	95	45
1986	No Data Collected							
1987 (June)	84	49	26	25	0	184	58	61
1987 (August)	102	35	19	8	0	164	34	26
1988	73	29	56	26	0	184	40	112
1989	105	43	33	22	0	203	41	52
1990	78	32	54	33	5	202	41	113
1991	99	55	43	37	7	241	56	81
1992	81	42	35	36	0	194	52	88
1993	142	36	51	41	0	270	25	65
1994	107	40	41	16	0	204	37	53
1995	No Data Collected							
1996	95	33	39	14	0	181	38	40
1997	No Data Collected							
1998	57	18	35	11	3	124	32	81
1999	No Data Collected							
2000	63	20	8	5	0	96	32	21

Table 12. Summary of Bighorn Sheep Population Data for the Owyhee River, Hunt Area 742, 1983-2000.

Year	Ewes	Lambs	Rams		Uncl.	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegal	Legal				
1983	135	76	76	46	1	334	56	90
1984	No Data Collected							
1985	124	71	57	21	0	273	57	63
1986	No Data Collected							
1987	140	70	-	-	0	329	50	85
1988	No Data Collected							
1989	No Data Collected							
1990	339	183	71	46	0	639	54	35
1991	400	175	60	114	4	753	44	44
1992	323	142	101	54	0	620	44	48
1993	406	81	125	57	0	669	20	45
1994[a]	179	73	51	42	2	347	41	51
1994[b]	177	63	61	35	0	336	36	54
1995	No Data Collected							
1996	202	96	52	51	0	401	48	51
1997	No Data Collected							
1998	204	76	24	26	4	334	37	25
1999	No Data Collected							
2000	198	60	29	22	0	309	30	26

[a] June Survey
[b] July Survey

Table 13. Summary of Bighorn Sheep Population Data for Big Jacks Creek 1990-2000.

Year	Ewes	Lambs	Rams		Uncl.	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegal	Legal				
1990	14	10	-	-	-	38	-	-
1991	No Data Collected							
1992	No Data Collected							
1993	46	19	17	8	0	90	41	54
1994	No Data Collected							
1995	No Data Collected							
1996	No Data Collected							
1997	73	38	12	18	0	143	51	76
1998	59	30	25	20	0	134	51	76
1999	No Data Collected							
2000	78	31	9	11	0	129	40	26

Table 14. Summary of Bighorn Sheep Population Data for Combined Big and Little Jacks Creek Herds 1998-2000.

			Rams			Total	Lambs:	Rams:
Year	Ewes	Lambs	Sublegal	Legal	Uncl.	Sheep	100 Ewes	100 Ewes
1998	116	48	60	31	0	258	41	78
1999	No Data Collected							
2000	141	51	17	16	0	225	36	23

Table 15. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area, 1989-1999.

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	First Choice Applicants	Drawing Odds
741-1	1989	3	2	67	6.0	54	1:18.0
741-1	1990	3	3	100	3.0	67	1:22.3
741-1	1991	3	3	100	4.0	60	1:20.0
741-1	1992	3	2	67	3.3	74	1:24.7
741-1	1993	5	3	60	5.6	64	1:12.8
741-1	1994	5	4	75	7.0	110	1:22.0
741-1	1995	5	5	100	8.5	84	1:16.8
741-1	1996	5	3	60	-.-	103	1:20.6
741-1	1997	5	3	60	-.-	86	1:17.2
741-1	1998	5	4	80	-.-	95	1:19.0
741-1	1999	4	3	75	-.-	115	1:28.7
741-2	1986	3	3	100	3.3	62	1:20.7
741-2	1987	3	1	33	4.5	56	1:18.7
741-2	1988	3	2	67	3.7	56	1:18.7
741-2	1989	3	3	100	1.0	35	1:11.7
741-2	1990	3	3	100	5.7	51	1:17.0
741-2	1991	3	3	100	3.3	62	1:60.7
741-2	1992	3	3	100	4.5	52	1:17.3
741-2	1993	5	4	80	4.0	48	1:9.6
741-2	1994	5	2	33	6.3	83	1:16.6
741-2	1995	5	5	100	3.8	86	1:17.2
741-2	1996	5	3	60	-.-	80	1:16.0
741-2	1997	5	3	60	-.-	57	1:11.4
741-2	1998	5	2	40	-.-	72	1:14.4
741-2	1999	4	3	75	-.-	82	1:20.5
741-3	1993	5	3	60	2.5	51	1:10.2
741-3	1994	5	5	100	5.3	42	1:8.4
741-4	1993	5	2	40	1.5	9	1:1.8
741-4	1994	5	3	75	4.8	6	1:1.2
741-4	1995	3	3	100	7.5	94	1:31.3
741-4	1996	3	3	100	-.-	71	1:23.7
741-4	1997	5	3	60	-.-	108	1:21.6
741-4	1998	5	5	100	-.-	110	1:22.0
741-4	1999	3	1	33	-.-	43	1:14.3
741-5	1999	2	2	100	-.-	34	1:17.0
742-1	1989	8	5	63	1.9	92	1:11.5
742-1	1990	8	7	88	3.4	115	1:14.4
742-1	1991	12	9	75	5.2	120	1:10.0
742-1	1992	12	10	83	4.5	167	1:13.9
742-1	1993	12	7	58	5.6	96	1:8.0:
742-1	1994	12	5	44	7.4	135	1:11.3
742-1	1995	10	6	60	7.4	110	1:11.1
742-1	1996	10	4	40	-.-	139	1:13.9

Table 15. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area, 1989-1999 (Continued).

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	First Choice Applicants	Drawing Odds
742-1	1997	10	6	60	-.-	93	1:9.3
742-1	1999	10	3	30	-.-	149	1:14.9
742-2	1988	10	7	70	-.-	144	1:14.4
742-2	1989	8	4	50	8.0	94	1:11.8
742-2	1990	8	6	75	4.1	67	1:8.4
742-2	1991	12	10	83	3.0	131	1:10.9
742-2	1992	12	11	91	4.2	164	1:13.7
742-2	1993	12	9	75	3.6	60	1:5.0
742-2	1994	12	8	67	5.4	127	1:10.6
742-2	1995	10	3	30	7.3	136	1:13.6
742-2	1996	10	5	50	-.-	90	1:9.0
742-2	1997	10	8	80	-.-	111	1:11.1
742-2	1998	10	7	70	-.-	124	1:12.4
742-2	1999	10	7	70	-.-	125	1:12.5
742-3	1986	3	2	67	1.0	43	1:14.3
742-3	1987	3	2	67	4.7	34	1:11.3
742-3	1993	12	5	42	6.8	75	1:6.3
742-3	1994	12	11	90	6.0	91	1:7.6
742-3	1997	3*	2	67	-.-	46	1:33.5
742-3	1998	2	2	100	-.-	58	1:29.0
742-3	1999	2	1	50	-.-	32	1:16.0
742-4	1986	3	3	100	6.0	30	1:10.0
742-4	1987	3	2	67	5.0	38	1:12.7
742-4	1997	2	2	100	-.-	56	1:28.0
742-4	1998	2	1	50	-.-	33	1:16.5
742-4	1999	2	1	50	-.-	27	1:13.5
742-5	1986	2	1	50	6.0	22	1:11.0
742-5	1987	2	1	50	3.0	22	1:11.0
746	1991	2	2	100	4.0	36	1:18.0
746	1992	2	2	100	7.0	34	1:17.0
746	1993	6	6	100	7.8	64	1:10.7
746	1994	6	2	40	6.4	91	1:15.2
746	1995	6	3	50	10.5	74	1:12.3
746	1996	6	4	67	-.-	75	1:12.5

Table 16. Summary of the Southwest Region (Nampa) Bighorn Sheep Harvest and Drawing Odds, 1990-1999.

Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
Calif.	1990	22	19	86	4.2	300	13.6:1
Calif.	1991	32	27	84	3.9	409	12.8:1
Calif.	1992	32	28	88	4.7	491	15.3:1
Calif.	1993	62	39	63	5.1	467	7.5:1
Calif.	1994	62	40	65	6.1	685	11.0:1
Calif.	1995	39	25	66	7.5	584	15.1:1
Calif.	1996	39	23	59	-.-	558	14.3:1
Calif.	1997	39	27	69	-.-	557	14.2:1
Calif.	1998	39	28	72	-.-	636	16.3:1
Calif.	1999	37	21	54	-.-	607	16.4:1
Calif.	10 Yr.	403	277	69	5.1	5,294	13.1:1

Table 17. Summary of Individual Bighorn Sheep Transplants in the Southwest Region (Nampa).

Date	Capture Site	Release Site	Adult[a] Male	Adult[a] Female	Kid Male	Kid Female	Total
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, Nevada	3	20	1	1	25
Dec 1993	E.F. Owyhee	Deschutes, Oregon	6	25	2	2	35
Dec 1993	E.F. Owyhee	Bruneau & Jarbidge Rivers & Big Cottonwood Cr	-	-	-	-	45

[a] When the age of transplanted bighorn sheep is not available, all are listed as adult.

PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-24		
SUBPROJECT:	3 (McCall)	**STUDY NAME:**	Big Game Population Status, Trends, Utilization, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 1999 to June 30, 2000

BIGHORN SHEEP - SOUTHWEST REGION, MCCALL

UNITS 22, 23, AND 31

ABSTRACT

No hunting or population surveys for bighorn sheep occurred in this area during the 1999-2000 reporting period.

MANAGEMENT DIRECTION

1. Follow statewide management direction.

2. Continue to work with the US Forest Service and livestock producers in the Hells Canyon National Recreation Area to minimize the potential for any disease transfer between domestic sheep and bighorn sheep.

3. Coordinate with the Oregon and Washington departments to release Rocky Mountain bighorn sheep in Hells Canyon.

4. Open additional hunts as transplanted populations become established and meet minimum population estimate criterion of 100.

5. 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 in Idaho. The Granite Creek drainage and the area from Granite Creek south to Hells Canyon Dam represent the current occupied bighorn sheep habitat in Unit 22. This population is nomadic and frequently moves north into Unit 18. Population data collected on this group of bighorn sheep are lumped with data collected in Unit 18. Movements west into Oregon have

been documented. Movements of radio-collared bighorn sheep from Oregon to Idaho and back have also been documented.

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 bighorn sheep reintroduction in Unit 22. Reintroduction of bighorn sheep will depend on the priority within the Hells Canyon reintroduction project and the availability of bighorn sheep from source populations.

UNITS 19A, 20A, AND 26
CONTROLLED HUNT AREAS 20A, 26, AND 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. No population surveys were conducted during the reporting period. A total of 14 harvest permits was issued in 1999 among 3 separate hunt areas. A total of seven rams was harvested for a 50% hunter success rate.

MANAGEMENT DIRECTION

1. Allow and/or encourage population increases.

2. Increase recreational opportunity.

3. Develop and/or continue with reintroduction programs.

4. 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 permit levels were reduced from a combined total of 11 to a new total of 6. Current season structures are displayed in Table 16. Population and harvest data reflect the new hunt area boundaries.

POPULATION SURVEYS

Bighorn sheep population surveys were last conducted in April 1999. Aerial survey results indicated bighorn sheep numbers are low but stable in Hunt Areas 20A, 26, and 26-L (Tables 19-21). A total of 230 bighorn sheep was observed in 1999 (144 ewes, 38 lambs, and 48 rams) for a 26:100:33 lamb:ewe:ram ratio. Lamb recruitment appears to have slightly increased over numbers observed in 1996.

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 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 14 permits was authorized for bighorn sheep Hunt Areas 20A, 26, and 26-L in 1999 (Table 22). A total of seven rams was harvested. This represents a 50% 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 1999 aerial bighorn sheep surveys indicated bighorn sheep recruitment may be improving, although the overall population still appears static. A research study conducted in April 2000 indicated that a highly virulent strain of Pasteurella spp is present

in the Big Creek sheep population. This evidence does not suggest that this population is out of trouble and permit levels should remain at current levels. The bighorn sheep population in this area will be monitored every other year as funding permits.

Table 18. Season Structure for Rocky Mountain Bighorn Sheep in 1999 in the Southwest Region.

Hunt Area	Season Dates	Length	Permits
20A	Aug 30-Oct 13	45 days	6
26	Aug 30-Oct 13	45 days	6
26-L	Oct 13-Oct 31	19 days	2

Table 19. Summary of Bighorn Sheep Population Data for Hunt Area 20A, 1992-1999.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1992	80	7	4	7	11	7	0	18	116	9	36
1993	62	10	1	5	11	4	1	15	94	16	34
1994	63	11	4	1	7	7	0	14	93	17	30
1995	53	11	5	0	6	4	0	10	79	21	28
1996	38	6	1	4	1	8	0	9	58	16	37
1997	No Data Collected										
1998	No Data Collected										
1999	35	11	0	2	2	1	0	3	51	31	14

Table 20. Summary of Bighorn Sheep Population Data for Hunt Area 26, 1992-1999.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1992[a]	91	26	0	10	11	19	8	30	165	29	44
1993	152	25	4	6	13	21	0	34	221	16	29
1994[a]	33	2	1	2	10	9	0	19	57	6	67
1995	129	18	6	7	10	9	0	19	179	14	25
1996	122	20	3	9	8	10	0	18	172	16	25
1997	No Data Collected										
1998	No Data Collected										
1999	109	27	9	14	12	8	0	20	179	25	39

[a] Incomplete survey.

Table 21. Summary of Bighorn Sheep Population Data for Hunt Area 26-L, 1987-1999.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1987	114	19	5	9	11	10	0	21	177	17	39
1988	116	18	3	7	8	12	0	20	172	16	33
1989	122	19	7	13	15	24	0	39	200	16	48
1990	No Data Collected										
1991	64	4	2	8	13	2	0	15	93	6	39
1992	62	20	0	5	6	14	0	20	107	32	40
1993	82	13	2	3	8	10	0	18	118	16	28
1994	22	1	1	2	7	5	0	12	38	5	68
1995	85	7	4	6	6	7	0	13	115	8	27
1996	73	9	1	7	4	7	0	11	101	12	26
1997	No Data Collected										
1998	No Data Collected										
1999	62	14	4	9	6	5	0	11	100	23	39

Table 22. Summary of Southwest Region Rocky Mountain Bighorn Sheep Harvest and Drawing Odds, 1991-1999.

Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	First Choice Applicants	Drawing Odds
20A	1991	6	4	67	10.6	29	1:4.8
	1992	6	2	40	15.4	46	1:7.7
	1993	6	3	50	19.2	27	1:4.5
	1994	6	3[a]	33	8.0	43	1:7.2
	1995	6	4	66	6.6	33	1:5.5
	1996	6	0	0	ND	72	1:12
	1997	6	5	83	3.6	41	1:6.8
	1998	6	5[a]	67	ND	75	1:12.5
	1999	6	3	50	ND	46	1:7.6
26	1991	8	4	50	5.4	39	1:4.9
	1992	8	3	38	15.3	42	1:5.3
	1993	6	3	50	7.5	43	1:7.2
	1994	6	2[b]	17	7.0	58	1:9.7
	1995	6	2	33	5.2	55	1:9.2
	1996	6	3	50	ND	39	1:6.5
	1997[c]	6	3	50	4.6	59	1:9.8
	1998	6	5	83	13.2	67	1:11.2
	1999	6	3	50	ND	84	1:14
26-L	1991	2	2	100	6.5	10	1:5
	1992	2	2	100	4.0	19	1:9.5
	1993	2	1	50	7.0	29	1:14.5
	1994	2	2	100	3.5	7	1:3.5
	1995	2	2	100	2.5	48	1:24
	1996	2	1	50	ND	24	1:12
	1997	2	2	100	6.0	28	1:14
	1998	2	2	100	5.0	53	1:26.5
	1999	2	1	50	10.0	82	1:41

[a] The auction tag permit holder harvested a bighorn sheep in Hunt Area 20A.

[b] Wildfires resulted in public access closures for this hunt area during the 1994 hunting season. The Commission allowed the two permit holders to relocate in other hunt areas. One of the permit holders harvested a bighorn sheep in Hunt Area 26-1. The other permit holder did not harvest a bighorn sheep.

[c] Hunt area restructured in 1997 to include former Hunt Area 26-2.

PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-24		
SUBPROJECT:	4	**STUDY NAME:**	Big Game Population Status, Trends, Use, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 1999 to June 30, 2000

BIGHORN SHEEP - MAGIC VALLEY REGION

UNITS 46, 47, 54, 55, AND 57

ABSTRACT

During early February 2000, 30 California bighorn sheep were reintroduced into suitable habitat on Jim Sage Mountain in Unit 55. Eleven sheep died in the first 5½ months following release primarily to mountain lion predation. Management options are being considered to relieve the predation pressure to a level that will allow the sheep population to increase and become established.

The bighorn sheep population in Unit 54 has decreased during the past 10 years as evidenced by poor lamb recruitment, low survival rates of radio-monitored ewes, and less frequent bighorn sheep observations. Disease is suspected as the primary cause of the population decline. It is estimated there are fewer than 35 bighorn sheep remaining in Unit 54.

Aerial survey results indicate a substantial decline in the Jarbidge-Bruneau bighorn sheep population. Only 48 bighorn sheep were observed on the June 2000 survey; a 64% decline from the 1998 survey. Three of 6 hunters harvested rams in 1999.

MANAGEMENT DIRECTION

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

BACKGROUND

Bighorn sheep were extirpated from southern Idaho in the early 1900s. A program to reestablish bighorn sheep populations was initiated in the 1960s when California bighorn sheep, trapped in British Columbia, were released into historical habitat along the East Fork Owyhee River and in the Little Jacks Creek drainage. These early releases were successful and bighorn sheep populations increased and expanded their range in Owyhee County.

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. Since 1980, 413 bighorn sheep have been trapped in Owyhee County and moved to other sites in Idaho, Nevada, Oregon, and North Dakota. In 1992-1993 it was estimated there were more than 1,200 California bighorn sheep in Idaho. Population surveys in 1994 indicated a substantial decline in bighorn sheep populations in the East Fork Owyhee and Jacks Creek drainages and annual trapping/transplanting operations were discontinued. Surveys conducted from 1996-2000 indicate populations have not increased to 1992-1993 levels.

Units 46, 47, and 41 (east)

From 1982-1993 the Idaho Department and Nevada Division of Wildlife (NDOW) released 93 bighorn sheep into portions of the Jarbidge and Bruneau drainages (Table 17). The bighorn sheep released by NDOW in 1982 and 1984, with the objective of reestablishing a population in the Jarbidge Mountains, moved north and took up residence in the Jarbidge River Canyon in Idaho. Bighorn sheep have 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. Bighorn sheep have been observed as far north in the Bruneau Canyon as Cave Draw and are occasionally observed in the Sheep Creek and Mary's Creek drainages.

Unit 54

Because of the proximity of domestic sheep grazing allotments, potential habitat for bighorn sheep is restricted to the northeastern portion of the South Hills bordered by Trapper Creek on the south and Dry Creek on the west. From 1986-1993, 50 bighorn sheep were released into the Big Cottonwood drainage, and 24 bighorn sheep were released into the East Fork of Dry Creek (Table 23). The released bighorn sheep did well in Unit 54 until 1989 when high mortality of ewes and poor lamb survival were documented and the population began to decline. Disease from interaction with domestic sheep is believed to be the cause of the decline. Currently fewer than 35 bighorns persist in Unit 54.

Units 55 and 57

During 1999 domestic sheep grazing on federal allotments in Unit 55 ended, clearing the way for bighorn sheep releases. In February 2000, 30 California bighorn sheep were reintroduced into suitable habitat on the Jim Sage Mountains.

POPULATION SURVEYS

Unit 54

There were no aerial surveys conducted during the 1999-2000 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 a decline in bighorn sheep numbers. On 26 October 1999, a group of 11 sheep (1 ram, 7 ewes, and 3 lambs) were observed on the southern pastures of the Big Cottonwood Wildlife Management Area (BCWMA). Bighorn sheep had not been observed at the BCWMA since 1997. Six bighorn sheep (2 rams, 3 ewes, and 1 lamb) were observed in the East Fork Dry Creek during mid-March 2000. Sightings of as many as 9 bighorns (1 ram, 5 ewes, and 2 lambs) were reported from Rock Creek Canyon near Harrington Fork during the reporting period. The total bighorn sheep population in Unit 54 is estimated to be less than 35 head.

Units 46, 47, and 41 (east)

An aerial survey conducted on 24-25 June 2000 suggests a substantial decline in bighorn sheep numbers. Only 48 bighorn sheep were observed on the survey; a 64% decline from the survey conducted in 1998 (Table 24).

HARVEST CHARACTERISTICS

Unit 54

There is no legal harvest of bighorn sheep in Unit 54.

Units 46, 47, and 41 (east)

From 1991-1999, 47 hunters harvested 31 rams (66% success) from the Jarbidge/Bruneau population (Hunt Area 46). Ages of harvested rams range from 4.5 years to 12.5 years with a mean of 7.3 years (SD=1.82, N=31) and a median of 6.5 years. In 1999, 3 of 6 hunters were successful taking a 9½-year-old ram and two 4½-year-old rams.(Table 25).

TRAPPING AND TRANSPLANTS

On 6-8 February 2000, 30 California bighorn sheep, captured in the John Day River drainage in Oregon, were reintroduced into the Jim Sage Mountains in Unit 55 (Table 23). The reintroduction was the culmination of more than 2 years of work by the Department in cooperation with the Idaho Chapter of the Foundation for North American Wild Sheep (FNAWS), Bureau of Land Management (BLM), U.S Forest Service (USFS), Cassia County, and local ranching interests. The presence of domestic sheep grazing allotments on BLM and USFS lands and the potential for disease transmission to wild sheep had prohibited bighorn sheep releases in this area in the past. A bighorn sheep release became possible when local sheep producer, Roscoe Ward, converted part of his BLM sheep-grazing permit to cattle and was reimbursed by FNAWS for AUMs that were not converted to cattle.

In the 5½ months following the release (February–June 2000), the bighorn sheep have remained on Jim Sage Mountain within 5 miles of the release site. Mortality from release through 30 June 2000 has been 37%. Of the 11 sheep that died, 8 were killed by mountain lions, 1 by coyotes, and 2 died as a result of accidents. Department personnel killed an 18-month-old male lion that

preyed on 2 bighorn sheep shortly after their release. The Department is currently considering options for managing mountain lions that would reduce predation on sheep.

Nine of 11 adult ewes have been observed with lambs this spring, bringing the bighorn sheep population on Jim Sage Mountain to 28 head. A graduate research project was started in May 2000 to monitor population dynamics, movements, and habitat use of the new bighorn population.

MANAGEMENT STUDIES

Unit 54

There were no bighorn sheep with functioning radio transmitters remaining in Unit 54 during the reporting period.

Unit 46 and 47

On 1 July 2000, a telemetry flight was conducted to locate 4 bighorn sheep that were believed to have functioning radio-collars. It was hoped that locating these bighorn sheep would provide some insight into why the numbers of bighorn sheep observed on the aerial survey had declined to such a great extent. Two of the 4 bighorn sheep had died, lending some support to the possibility of die-off in the population. The other 2 bighorn sheep were not located; however, 2 radio-collared bighorn sheep were observed on the aerial survey, suggesting that large numbers of bighorn sheep were probably not missed on the survey.

MANAGEMENT IMPLICATIONS

The high rate of mountain lion predation on the reintroduced Jim Sage bighorn sheep population is a concern and, if left unchecked, could jeopardize the success of the transplant. Management of the mountain lion population should be undertaken to assist in the establishment of a viable, self-sustaining bighorn sheep population.

The future of the bighorn sheep population in Unit 54 is uncertain. In the Big Cottonwood area, poor summer lamb survival, a high mortality rate of radioed ewes, and less frequent bighorn sheep observations indicate a continued decline in bighorn sheep numbers. The close proximity of 2 domestic sheep allotments and the possibility of a disease outbreak is a major factor in the successful establishment of a viable bighorn sheep population in Unit 54. While we have no conclusive evidence that disease is a problem, the rapid decline of the Dry Creek herd and the timing of summer lamb mortality would strongly suggest that disease played a role. We estimate there are fewer than 35 bighorn sheep in Unit 54.

The substantial decline of the Jarbidge-Bruneau bighorn sheep population is indicative of a disease die-off although no conclusive evidence is available. It should be noted that a die-off in a bighorn sheep population near Contact, Nevada, about 50 miles from the Jarbidge Canyon, was

documented in 1999. Another aerial survey should be considered in 2001 to document the full extent of the population decline.

Table 23. Summary of Bighorn Sheep Transplants in Units 54 and 55, Magic Valley Region.

Date	Capture Site	Release Site	Adult		Lambs		Total
			Male	Female	Male	Female	
12/17-20/86	East Fork Owyhee River	Big Cottonwood (Unit 54)	2	10	1	2	15
12/16/87	Little Jacks Creek	Big Cottonwood (Unit 54)	3	6	0	1	10
11/15/88	Poison/ Shoofly Cr.	Big Cottonwood (Unit 54)	5	8	0	1	14
12/6/91	East Fk. Owyhee River	East Fk. Dry Cr. (Unit 54)	2	9	1	2	14
12/20/93	East Fk. Owyhee River	East Fk. Dry Cr. (Unit 54)	1	7	1	1	10
12/19/93	East Fk. Owyhee River	Big Cottonwood (Unit 54)	3	8	0	0	11
2/6-8/00	John Day River, Oregon	Jim Sage Mtn. (Unit 55)	7	15	2	6	30
Totals			23	63	5	13	104

Table 24. Summary of Bighorn Sheep Population Data for Hunt Area 46, 1990-2000.

Year	Ewes	Lambs	Rams		Uncl.	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegal	Legal				
1990	51	12	8	13	0	84	23.5	41.2
1993	51	8	39	16	0	114	15.7	107.8
1994	76	24	15	17	0	132	31.6	42.1
1996	102	33	14	15	[a]5	169	33.0	33.0
1997	62	25	21	10	3	121	40.3	50.0
1998	85	18	26	6	0	135	21.2	37.6
2000	33	7	6	2	0	48	21.2	24.2

[a] 4 were unclassified rams.

Table 25. Summary of Bighorn Sheep Harvest and Drawing Odds in Hunt Area 46, 1991-1999.

Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	First Choice Applicants	Total Drawing Odds
1991	2	2	100	4.0	36	18.0:1
1992	2	2	100	7.0	34	17.0:1
1993	[a]7	6	86	7.7	94	15.7:1
1994	6	2	33	6.4	91	15.2:1
1995	6	3	50	10.5	74	12.3:1
1996	6	4	67	ND	75	12.5:1
1997	6	5	83	6.3	101	16.8:1
1998	6	4	67	ND	90	15.0:1
1999	6	3	50	ND	190	31.7:1

[a] The winner of the lottery permit hunted here in addition to the 6 authorized permits.

PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-24		
SUBPROJECT:	6	**STUDY NAME:**	Big Game Population Status, Trends, Utilization, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 1999 to June 30, 2000

BIGHORN SHEEP - UPPER SNAKE REGION

UNITS 51 (PART), 58, 59A, 61, 64, 65, AND 67

ABSTRACT

No population surveys were conducted during the 1999-2000 reporting period. However, 14 sheep were observed incidental to a deer sightability survey in Unit 58 and 7 sheep were observed on the south tip of the Lemhi Range on a flight conducted to determine bighorn sheep presence/absence around the Berenice domestic sheep allotment. Domestic-bighorn sheep contacts are a concern in the Lost River, Lemhi, and Beaverhead Ranges.

Bighorn sheep 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.

MANAGEMENT DIRECTION

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, losses 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 subalpine ranges. The winter ranges are mostly sagebrush-grass or curlleaf mountain mahogany types where precipitation is low. The U.S. Forest Service (USFS) generally administers summer ranges, whereas the Bureau of Land Management (BLM) primarily manages the winter ranges.

Changes in land and livestock management practices have resulted in improved range conditions for bighorn sheep in much of these units. Improved grazing management, water developments,

controlled burns on bighorn sheep ranges, and closing or changing domestic sheep allotments to eliminate domestic-bighorn sheep contact could further improve conditions for bighorn sheep in this area

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 improved habitat and reintroductions, have all contributed to increased bighorn sheep numbers in these units.

Bighorn sheep obtained from the Whiskey Mountain, Wyoming, herd was released in Badger and Uncle Ike Creeks in Unit 51 in 1983 and 1984.

Bighorn sheep trapped from Panther Creek, Idaho, were released into Long, Skull, and Bloom Canyons of Unit 58 in four transplants between 1976 and 1982.

GOALS

1. Increase population.

2. Increase recreational opportunity.

3. Maintain or increase harvest.

4. Revamp season framework.

5. Continue reintroduction program.

6. Attempt to manipulate one bighorn sheep population below carrying capacity to prevent periodic die-off.

7. Investigate if domestic sheep have a role in disease transmission.

BACKGROUND

Eighty-two Rocky Mountain bighorn sheep were released in Units 51 and 58 between 1976 and 1984. All of the bighorn sheep released in these units were transplants from either Panther Creek, Idaho, or Whiskey Mountain, Wyoming.

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 to 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 open it again for a few years. This herd has high nonconsumptive appeal.

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 the winter and few summer observations in consecutive years, we assume there is no established herd in Idaho.

POPULATION CHARACTERISTICS

Aerial counts of these populations have generally been made in conjunction with aerial surveys for other big game animals. Ground observations have been reported on several occasions. Very few sheep were observed in Unit 51 between Badger Creek and Williams Creek during helicopter surveys for deer and elk in January and February 1999 (Table 26). It was thought this was because the wintering conditions were so mild that the sheep were still dispersed on transition range. Bighorn sheep in Unit 51 were again observed in Uncle Ike Creek and the foothill area between Horse Creek and Williams Creek.

Fourteen sheep (6 rams and 8 ewes) were observed in the Goddard-Skull canyon area of Unit 58 during a deer sightability survey January 28 and 29, 2000 (Table 27). This was fewer sheep than has been observed incidental to past deer and elk surveys; however, sheep may have been above the area surveyed for deer because of the mild wintering conditions.

WEATHER CONDITIONS

The summer of 1999 had higher than normal temperatures and below normal precipitation. Winter conditions during 1999-2000 were very mild with lower than normal snow accumulation.

MANAGEMENT IMPLICATIONS

Bighorn sheep populations in the Upper Snake Region do not occupy all available habitats. 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, and 59A.

The greatest concern for the future of bighorn sheep in the Region is interaction with domestic sheep. The Department is currently working with the USFS and BLM to identify all the domestic sheep allotments that overlap with bighorn sheep range in the Lost River, Lemhi, and Beaverhead Ranges. Once this is done rapid response action plans will be discussed with the respective agency and sheep permittee to minimize the potential of bighorn-domestic sheep interaction and to quickly remove bighorn sheep that have come into contact with domestic sheep.

At least two USFS sheep allotments (Dry Creek and Long Lost) overlap with bighorn sheep in the Lost River Range. In the Lemhi Range the Berenice BLM allotment on the Lost River side of the Range and the mahogany BLM allotment on the Birch Creek side of the Range overlap with bighorn sheep range. The mahogany sheep allotment also includes USFS land. Four sheep

allotments (Reno Gulch [BLM], and Snaky Canyon, Rocky Canyon, and Nicholia Canyon [USFS]) in the Beaverhead Range overlap with bighorn sheep range.

On at least one occasion bighorn sheep intermingled with domestic sheep in South Creek during the fall. Concern for domestic-bighorn sheep interaction and disease transmission has been discussed with both the BLM and the domestic sheep permittee of the Berenice allotment. The BLM is in the process of renewing this lease. Because of concerns expressed by IDFG, the BLM provided funding for an hour of helicopter time to look for bighorn sheep on the tip of the Lemhi Range around the Berenice sheep allotment. This survey was done March 22, 2000 and covered the area from South Creek around to the first canyon east of East Creek. Seven bighorn sheep were observed, 6 (1 class 2 ram, 4 ewes, and one lamb) were observed on BLM land below the mouth of South Creek and 1 class 2 ram was observed on USFS land on the ridge west of Black Canyon. The 6 sheep below the mouth of South Creek were within the Berenice sheep allotment and the ram was on USFS land within a mile of the allotment boundary. This information has been given to the BLM, but a decision about renewing the lease has not yet been made. A rapid response action plan will need to be developed if the lease is renewed to deal with potential domestic-bighorn sheep interactions on this allotment.

The bighorn sheep population in the south Beaverhead Range use private land on the Waggoner and Simmonds Ranches at the mouth of Goddard Canyon and Skull Canyon during rut and early winter. Contact with domestic sheep on the Waggoner Ranch during winters prior to 1987 is known to have occurred on several occasions. Although these ranches no longer run domestic sheep, the bighorns daily come down and feed with corralled cattle during the winter. A solution to this concern does not exist at this time.

A USFS volunteer mapped bighorn sheep summer distribution and water availability in the Beaverhead Range July 27 through August 7, 1992. Most of the bighorn sheep were observed on the ridges and open side slopes at 9,400 to 10,000 feet elevation from Copper Mountain north to the head of Timber Creek (Sections 23, 24, 25; T10N, R30E). Bighorn sheep were using several of the guzzlers that the USFS and the Foundation for North American Wild Sheep installed and a spring complex at the corners of Sections 13 and 24 for water. There was also evidence that domestic sheep had bedded on the ridges in Sections 12 and 13 in previous years.

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 the fall prior to the rut. Currently, there are no plans to map the location of water sources or install additional water developments in the range.

The Dubois District, Targhee Forest, has implemented several habitat projects for bighorn sheep in the South Beaverhead Range. Seven water developments, three of these in cooperation with the Foundation for North American Wild Sheep, have been installed for bighorn sheep. Other water developments for upland game, deer, and elk on USFS and BLM lands are also available to bighorn sheep on transition range. The USFS has also conducted prescribed burns to reduce sagebrush density and improve forage quality for bighorn sheep in this area.

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. According to Montana Fish, Wildlife and Parks personnel, hunters complain that the bighorn sheep move into Idaho and are unavailable during the hunting season. A cooperative agreement between the two state agencies allowing hunters to hunt in either state when a small herd of big game animals occurs on the state line has been approved by the Idaho Fish and Game Commission. If the Montana Commission approves a similar regulation and the two states develop an acceptable allocation mechanism, this bighorn sheep herd could provide limited hunting opportunity to Idaho hunters.

The bighorn sheep that are occasionally observed during the 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, plant community succession makes it unsuitable to support bighorns today. Domestic sheep also heavily graze the range. Therefore, management is directed to document bighorn sheep observations, protection of the bighorn sheep, and nonconsumptive use.

In November 1999 the Region received reports of a bighorn ram on the Menen Buttes. About a week later a farmer southwest of Ucon reported a bighorn ram in his field. Investigation found a ¾ curl ram that appeared to be in good physical condition. The origin of the ram was unknown; however, there was a strong likelihood the ram may have come into contact with domestic sheep so an attempt was made to capture it and take it to the wildlife lab at Caldwell. The capture attempt resulted in the loss of the ram. However, when the capture attempt was reported in the local paper, the Region received reports of a ram of similar description seen in the vicinity of the Red Road in Unit 60A a few weeks earlier. Later a Forest Service employee reported seeing a bighorn ram along Interstate 15 near Spencer in October. If these reports are true, it is possible the ram came from the Beaverhead herd.

Table 26. Summary of Rocky Mountain Bighorn Sheep Population Data for Unit 51, 1989-1999.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1989	No data collected										
1990	No data collected										
1991	No data collected										
1992	No data collected										
1993[a]	14	7		5[b]			0	0	26	50	36
1994	No data collected										
1995[c]	11	7		4[b]		4[b]	0	4	26	64	73
1996	No data collected										
1997	No data collected										
1998	No data collected										
1999	No data collected										
2000[d]	4	1		2							

[a] Incidental to aerial elk sightability counts, winter 1992-1993 and 1993-1994.
[b] Rams classified to sublegal and legal only.
[c] Incidental to aerial mule deer sightability survey, winter 1994-1995. The entire bighorn sheep winter range was not surveyed.
[d] Only the area from South Creek around to the first canyon east of East creek was surveyed.

Table 27. Summary of Rocky Mountain Bighorn Sheep Population Data for Unit 58 1989-1999.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1989	No data collected										
1990	No data collected										
1991	No data collected										
1992	11	6		5[b]		1[b]	0	1	23	55	55
1993[a]	14	8					12[c]		34	57	86
1994	No data collected										
1995[d]	27	16		6[b]		11[b]	0	11	60	59	63
1996	No data collected										
1997	No data collected										
1998	No data collected										
1999	No data collected										
2000[d]	8	0			6[c]						

[a] Ground classification of bighorn sheep coming onto bait - Goddard Face, winter 1992-1993.
[b] Rams classified to sublegal and legal only.
[c] Rams not classified, but some were legal.
[d] Incidental to aerial mule deer sightability surveys. The entire bighorn sheep winter range was not surveyed.

PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-24		
SUBPROJECT:	7	**STUDY NAME:**	Big Game Population Status, Trends, Utilization, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 1999 to June 30, 2000

BIGHORN SHEEP - 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, 36B, 37

ABSTRACT

During the 1989-1991 period, Salmon Region bighorn sheep populations experienced major, rapid declines on the order of 30-50%, followed by several subsequent years of very poor lamb recruitment. Recent aerial surveys suggest that lamb production, although still low (18-32 lambs per 100 ewes), is beginning to improve in Units 21, 27, 28, 30, and 36B. In Unit 36A, however, lamb production was still very low (4 lambs per 100 ewes). Bighorn sheep populations, with the possible exception of Unit 36A, have apparently stabilized after several years of decline.

During the 1999 hunting season, 38 controlled hunt permittees harvested 15 rams for an overall success rate of 39%.

MANAGEMENT DIRECTION

Follow statewide direction to increase bighorn sheep populations, harvest, and recreational opportunity. Continue to establish new herds via transplanting. Recognize the nonconsumptive values of bighorn sheep. Conduct bighorn sheep disease research. Conduct bighorn sheep census flights on at least a five-year rotation. Establish at least one hunt for female bighorn sheep. Attempt to manipulate one bighorn sheep population below carrying capacity to prevent periodic die-offs. Maintain hunts only where bighorn sheep population size is estimated to be at least 100 animals. Annually harvest no more than 20% of the legal rams observed during the most recent survey.

BACKGROUND

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

This area is in the Frank Church River-of-No-Return Wilderness Area, and managed by the U.S. Forest Service (USFS). Most bighorn sheep of the Salmon River country winter along the river breaks corridor and then migrate to sub-alpine habitats during the summer. However some bighorn sheep remain along the Middle Fork of the Salmon River during the summer, where they provide a valuable visual resource for river float parties.

Past grazing practices, especially on the upper river winter ranges, changed some ranges from grassland to brush-dominated habitats. However recent range trends are back toward grass-dominated habitat types because of changes in livestock and fire management.

Hunt numbers 527-1, 527-2, 527-7, and 527-8 were combined into one hunt (27-1) in 1987. In 1991 the north end of Hunt Area 27-1 (Brush Creek to Big Creek) was combined into Hunt Area 26-2. Hunt Area 27-4 (Camas Creek to Warm Springs Creek east of the Middle Fork) was previously part of Hunt 36B but was created as a separate hunt in 1989 to facilitate a better distribution of hunters and harvest. Hunts 27-4, 27-5, and 27-6 were combined into one hunt in 1991 (27-3) to allow hunters a better likelihood of finding a ram. Hunts 28-1 and 28-2 were combined into one hunt, as was Hunts 36B-1, 36B-2 and 36B-3 into 36B in 1997.

Units 21 and 28 contain the bighorn sheep habitats of the Panther Creek drainage and along the roaded portion of the main Salmon River below the town of 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 bighorn sheep populations were considered to be high-quality herds, exhibiting good lamb production and herd growth through the 1970s. However the Panther Creek population experienced a population decline in the early 1980s, probably due to weather-related mortality. These bighorn sheep suffered a major population decline (-50%) during 1989-1990, possibly caused by Pasteurella haemolytica pneumonia. Poor lamb recruitment followed the immediate population decline, persisting for at least three years afterward.

Both units are well-roaded, with potential for copper or cobalt mining, geothermal development, and timber harvest, which could lead to even more development and roads. The increased roading can lead to high levels of unregulated harvest.

The Panther Creek bighorn sheep population had been our primary source of Rocky Mountain bighorn sheep transplant stock, with 125 bighorn sheep removed for transplant since the

mid-1970s. During the 1981-1985 planning period, new trapping sites were developed in Unit 21 along the main Salmon River. However trapping and transplanting have been curtailed since populations and productivity have declined.

Viewing and photographing these bighorn sheep along the Salmon River and Panther Creek roads is a popular recreational pastime. We expect this type of nonconsumptive use to increase in importance.

Much of the remainder of the Salmon Region (Units 21A, 30, 30A, 36, 36A, 37, 37A, 50, and 51) supported Rocky Mountain bighorn sheep herds in the past. By the early 1900s bighorn sheep were eliminated from most of the area and populations severely reduced in the remaining habitats. Vegetative changes due to livestock use on winter ranges, disease losses, 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 in sub-alpine ranges. The winter ranges are mostly sagebrush/grass types where precipitation is low. Summer ranges are generally administered by the USFS, whereas; winter ranges are managed primarily by the Bureau of Land Management.

Recent changes in land management practices have resulted in improved range conditions for bighorn sheep. Improved grazing management and controlled burns on bighorn sheep ranges could further improve conditions for bighorn sheep in other units. There are good opportunities for increases in existing bighorn sheep herds, and some possibilities for reintroductions. Many of our recent releases of bighorn sheep have occurred in these units. By 1991 all of these bighorn sheep herds had experienced major losses followed by poor lamb production in ensuing years. Some herds began to recover recruitment after 3-4 years, but others (Unit 36A) still have poor production.

The Mt. Borah bighorn sheep population in Units 37, 50, and 51 was started from releases of seven bighorn sheep from Morgan Creek in 1969 and 24 bighorn sheep from Banff Park, Alberta, Canada in August 1970. The first hunt was authorized in 1981 and has become very popular with bighorn sheep hunters. By 1992 this population had suffered the same decline and persistent low recruitment as other Salmon Region bighorn sheep herds. Permit numbers were correspondingly reduced from a peak of 19 permits in 1992 to 3 permits in 1995.

In 1982, 8 Rocky Mountain bighorn sheep from Panther Creek were released in Birch Creek southwest of Challis in Unit 36B. This transplant was an attempt to stimulate growth of a small, stable population of bighorn sheep in the area. In January 1985, 22 bighorn sheep obtained from Oregon were released in Unit 30A near Leadore. Since 1986 a total of 54 bighorn sheep have been released at two sites in Unit 37A and an additional 17 have been released in Unit 30A.

POPULATION SURVEYS

In May 2000, Unit 37 bighorn sheep populations were surveyed by helicopter. Few bighorn sheep were found and production was low. Some bighorn sheep may have been missed in the count. Bighorn sheep were also counted incidental to other big game counts in portions of Units 21, 28, 30, 30A, 36A, and 36B. During April 1999, Unit 27 bighorn sheep populations were surveyed by helicopter. In addition bighorn sheep in Unit 28 were counted incidental to a February 1999 elk survey, and the Unit 30/30A bighorn sheep herd was counted incidental to April deer surveys. Salmon Region bighorn sheep populations experienced major young and adult mortality (apparently disease-related) beginning in 1989-1990 and very poor lamb production for several years afterward (generally at 10 or fewer lambs per 100 ewes). Although ewe to lamb ratios were still somewhat low, recent surveys suggest that the past several years' trend of very poor lamb production may be reversing. Lamb production during this year's surveys varied from 18 to 32 lambs per 100 ewes.

HARVEST CHARACTERISTICS

Poor lamb survival the past few years 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 (Tables 43 and 45). Of 17 hunts in the Salmon Region, 4 hunts were eliminated, 10 hunts had reduced permit levels, and 3 hunts stayed the same. One new hunt, 36B-3, was initiated in Unit 36B south of Challis Creek. Because hunter success was very high (80%) during the October 21-November 5 late hunts, most of these hunts were eliminated to allow more regular season hunter opportunity. The remaining late hunt, 527-L, was shifted earlier (October 13-October 31).

During 1999 a total of 15 rams were taken by 38 hunters for an overall success rate of 39%.

Mandatory Check

Since 1974 a mandatory check-in of harvested rams has been in effect. Ages of rams are determined by counting the number of annual rings present. Horn measurements are taken during the mandatory check and an identification pin is set in the right horn.

Check Station

No check stations are operated specifically to check bighorn sheep hunters. Hunters are required by regulation to check in the head and horns of bighorn sheep harvested in Idaho within ten days of date of kill.

Nonhunting Mortalities

Region-wide, nonhunting 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 46).

Under historic treaty rights, Sho-Ban Indians from the Fort Hall Indian Reservation are allowed to hunt bighorn sheep for subsistence uses. However Sho-Ban bighorn sheep season dates, permit levels, and harvest data are generally not available to the Department.

CLIMATIC CONDITIONS

Summer 1999 was dry and the vegetation cured out early in the growing season. The winter snowpack reached about 80% of normal. Winter temperatures were generally mild, seldom dropping below zero Fahrenheit. Cool temperatures and wet weather persisted through late spring. Although the cumulative impact of the winter was moderate, animals entered the winter in average body condition, which should have produced average overwinter survival.

HABITAT CONDITIONS

Land management practices over the past 25 years have improved bighorn sheep habitat. Water developments and 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 domestics.

Several major fires 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, Pole Creek to Warm Springs, Grouse Creek, Camas Creek, and Marble Creek have been beneficial to bighorn sheep and elk.

TRAPPING AND TRANSPLANTS

The Salmon Region had a very active trapping and transplanting program for a number of years (Table 47). Bighorn sheep have been taken from Units 21, 28, 36A, and 36B for transplants to other parts of Idaho and to other states. Within the Salmon Region, Units 28, 30A, 37/50, and 37A have all received transplant stock in attempts to reestablish extirpated herds. However stagnant to declining bighorn sheep populations with poor productivity suggest that transplant from the Salmon Region herds would be unwise in the near future. Some release sites are available in the Salmon Region if a transplant source population can be identified.

No bighorn sheep were trapped or transplanted within the Salmon Region during 1998-1999.

DISEASE

During an apparent disease outbreak in winter 1988-1989, bighorn sheep in several areas of the Salmon Region and adjacent regions were sampled for disease pathogens. Bighorn sheep tested positive for Pasteurella multocida and P. haemolytica (biotypes/serotypes A_1, A_{11}, T_3, T_4, and T_{10}). Both haemolytic and nonhaemolytic types of P. haemolytica were found. Antibody titers to Respiratory Syncytial Virus (RSV), Parainfluenza (PI3), and Brucellosis (B. 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 (Protostrongulus spp.) loads tend to be very high in the Salmon Region bighorn sheep. Scabies (Psoroptes spp.) is occasionally evident but rarely severe on any individual bighorn sheep. The poor population performance of the Salmon Region bighorn sheep in recent years may well be an indication of residual disease problems.

MANAGEMENT IMPLICATIONS

Hunting of 3/4 curl bighorn rams has no effect on total bighorn sheep populations when annual harvest is restricted to 20% or less 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 plan calls for ewe removal via trapping and transplanting and/or hunting to maintain bighorn sheep populations at lower densities, which are less susceptible to die-offs.

Virtually all the 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 (Unit 36A) it first appeared in 1990-1991. However, in most of the region, the decline first was noted in the winter of 1989-1990. In all cases poor lamb to ewe ratios continued through at least 1991-1992. Aerial surveys suggest that lamb recruitment is improving in Units 21, 27, 28, 30, and 36B, but that Unit 36A still suffers poor production. Salmon Region bighorn sheep herds probably will not produce surplus animals for transplant stock in the near future. In addition poor lamb crops have resulted in fewer rams available to hunters. Four- to eight-year-old rams comprise the bulk of the hunter harvest. Permit levels in many hunts have been and will remain reduced as several years in a row of poor ram recruitment work their way through bighorn sheep populations.

Table 28. Summary of Bighorn Sheep Population Data for Hunt Area 21.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
88-89	93	49	14	11	9	22	-	31	198	53	60
89-90	41	4	6	4	7	10	-	17	72	10	66
90-91	60	5	10	8	2	2	-	4	87	8	37
91-92	72	8	1	13	14	5	-	19	113	11	46
92-93	97	24	14	10	10	3	-	13	158	25	38
93-95	No Data Collected										
95-96	62	20	10	12	8	9	1	17	122	32	63
96-99	No Data Collected										
99-00	47	5	1	11	8	2		10	74	11	47
	(Incidental to deer/elk counts, Unit 21 and Unit 28-Panther Creek)										

Table 29. Summary of Bighorn Sheep Population Data for Hunt Area 21A.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
97-98	9	3	1	-	1	-	-	1	14	33	22
	(Incidental to elk surveys)										
98-99	No Data Collected										
99-00	No Data Collected										

Table 30. Summary of Bighorn Sheep Population Data for Hunt 27-1.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
88-89	77	39	3	9	29	12	3	41	172	51	69
89-90	No Data Collected										
90-91	108	3	5	12	19	6	-	25	153	3	39
91-92	No Data Collected										
92-93	90	14	5	1	5	14	-	19	129	16	28
93-94	No Data Collected										
94-95	58	13	6	12	6	3	-	9	98	22	47
	(Partial count incidental to elk surveys)										
95-98	No Data Collected										
98-99	56	14	7	8	13	5	-	18	103	25	59
99-00	No Data Collected										

Table 31. Summary of Bighorn Sheep Population Data for Hunt 27-2.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
88-89	57	19	3	10	4	2	38	6	133	33	33
89-90	43	5	2	6	7	12	-	19	75	12	63
90-91	60	2	3	2	4	2	-	6	73	3	18
91-92	No Data Collected										
92-93	36	2	1	7	4	4	-	8	54	6	44
93-94	No Data Collected										
94-95	16	4	-	3	1	-	-	1	24	25	25
	(Partial count incidental to elk surveys)										
95-98	No Data Collected										
98-99	54	16	7	8	5	1	-	6	91	30	39
99-00	No Data Collected										

Table 32. Summary of Bighorn Sheep Population Data for Hunt 27-3.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
88-89	80	35	7	9	11	11	1	22	154	44	48
89-90	No Data Collected										
90-91	88	7	2	10	13	3	-	16	123	8	32
91-92	No Data Collected										
92-93	62	17	7	4	8	11	-	19	109	27	48
93-94	No Data Collected										
94-95	30	3	1	1	3	2	-	5	40	10	23
	(Partial count incidental to elk surveys)										
95-98	No Data Collected										
98-99	67	12	3	8	9	3	-	12	102	18	34
99-00	No Data Collected										

Table 33. Summary of Bighorn Sheep Population Data for Hunt Area 27-4.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
88-89	28	11	1	9	0	2	-	2	51	39	43
89-90	No Data Collected										
90-91	36	3	5	8	5	1	-	6	58	8	53
91-92	No Data Collected										
92-93	29	12	2	4	2	0	1	2	50	41	21
93-94	No Data Collected										
94-95	3	-	-	1	-	1	-	1	5	-	-
	(Partial count incidental to elk surveys)										
95-98	No Data Collected										
98-99	2	-	1	1	6	8	-	14	18	-	-
99-00	No Data Collected										

Table 34. Summary of Bighorn Sheep Population Data for Hunt 28-1.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
88-89	62	24	7	6	5	7	2	12	113	39	40
89-90	34	7	3	3	3	5	-	8	55	21	41
90-91	31	7	2	9	7	5	-	12	61	23	74
91-92	17	8	0	3	3	3	-	6	34	47	53
92-95	No Data Collected										
95-96	29	6	5	1	1	1	-	2	43	21	28
96-98	No Data Collected										
98-99	22	7	4	4	2	-	-	2	39	32	45
	(Incidental to elk survey)										
99-00	No Data Collected										

Table 35. Summary of Bighorn Sheep Population Data for Hunt 28-2.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
88-89	93	30	9	5	14	23	1	37	175	32	55
89-90	36	4	1	8	7	12	-	19	68	11	41
90-91	51	9	2	13	9	17	-	26	101	18	80
91-92	66	2	2	3	12	3	-	15	88	3	30
92-95	No Data Collected										
95-96	57	7	5	5	2	3	-	5	79	12	26
96-98	No Data Collected										
98-99	71	23	10	3	8	5	-	13	120	32	37
	(Incidental to elk survey)										
99-00	No Data Collected										

Table 36. Summary of Bighorn Sheep Population Data for the Williams Creek-Perreau Creek portion of Unit 28.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
90-91	8	4	2	7	2	0	-	2	23	50	138
91-95	No Data Collected										
95-96	11	3	0	3	5	0	-	5	22	27	73
96-98	No Data Collected										
98-99	9	2	2	5	3	1	-	4	22	22	122
	(Incidental to deer survey)										
99-00	No Data Collected										

Table 37. Summary of Bighorn Sheep Population Data for Units 30-30A.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
91-92	19	2	3	6	2	0	-	2	32	11	58
92-96	No Data Collected										
96-97	3	5	1	5	5	7	-	12	26	-	-
97-98	No Data Collected										
98-99	29	9	3	5	1	3	-	4	50	31	41
99-00	23	2	0	8	12	4	3	16	52	9	104
	(Incidental to deer surveys)										

Table 38. Summary of Bighorn Sheep Population Data for Unit 37A.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
91-92	36	2	1	2	5	3	1	8	50	6	31
92-97	No Data Collected										
97-98	11	4	6	4	3	2	-	5	30	36	136
	(Partial count incidental to elk survey)										
98-00	No Data Collected										

Table 39. Summary of Bighorn Sheep Population Data for Hunt 36A.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
88-89	No Data Collected										
89-90	98	47	2	13	20	8	3	28	191	48	44
90-91	84	7	5	11	12	9	-	21	128	8	44
91-92	85	3	3	8	10	7	-	17	116	4	33
92-93	63	5	4	6	10	7	-	17	95	8	43
93-94	65	2	4	6	6	8	-	14	91	3	37
94-95	No Data Collected										
95-96	61	7	1	1	3	5	-	8	78	11	16
96-97	53	2	0	1	2	3	-	5	60	4	11
97-99	No Data Collected										
99-00	34	5	7	5	1	1	-	2	53	15	41
	(Incidental to deer/elk surveys)										

Table 40. Summary of Bighorn Sheep Population Data for Morgan Creek Sheep (Unit 36B)

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
88-89	No Data Collected										
89-90	66	10	11	18	12	13	-	25	130	15	82
90-91	89	18	9	16	13	14	-	27	159	20	58
91-92	75	10	10	11	16	6	1	22	129	13	57
92-93	47	9	1	14	7	4	-	11	82	19	55
	(Partial count incidental to elk surveys)										
93-94	54	3	1	6	14	4	-	18	82	6	46
	(Partial count incidental to deer surveys)										
94-95	No Data Collected										
95-96	66	13	12	6	7	1	-	8	105	20	39
96-97	61	19	2	5	7	3	-	10	97	31	28
97-100	No Data Collected										
99-00	32	16	2	7	11	4		15	72	50	75
	(Incidental to deer/elk surveys)										

Table 41. Summary of Bighorn Sheep Population Data for Birch Creek Sheep (Unit 36B)

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
88-90	No Data Collected										
90-91	23	4	0	1	2	4	-	6	34	17	30
91-92	No Data Collected										
92-93	27	4	1	5	6	4	-	10	47	15	59
	(Partial count incidental to elk surveys)										
93-94	7	3	0	0	2	0	-	2	12	43	29
	(Partial count incidental to deer surveys)										
94-95	No Data Collected										
95-96	30	0	0	0	6	1	-	7	37	0	23
96-97	29	3	2	2	1	1	-	2	38	10	21
97-99	No Data Collected										
99-00	14	2	2	4	1	0	0	1	23	14	50
	(Incidental to deer/elk surveys)										

Table 42. Summary of Bighorn Sheep Population Data for Hunt Area 37.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
82-83	90	16	14	7	7	2	-	9	136	18	33
83-86	No Data Collected										
86-87	100	22	7	8	17	6	4	23	164	22	38
87-91	No Data Collected										
91-92	38	1	2	3	3	0	-	3	47	3	21
92-93	No Data Collected										
93-94	54	4	5	8	7	6	-	13	84	7	48
94-99	No Data Collected										
99-00	38	8	3	2	4	0	-	4	55	21	24

Table 43. 1999 Season Structure for Bighorn Sheep in the Salmon Region.

Hunt Areas	Season Dates	Season Length	Permits
21, 27-4, 28, 37	Aug 30-Oct 13	45 days	3
27-1	Aug 30-Oct 13	45 days	12
27-2	Aug 30-Oct 13	45 days	6
27-3	Aug 30-Oct 13	45 days	2
36B	Aug 30-Oct 13	45 days	4
27-L	Oct 13-Oct 31	19 days	2

Table 44. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area.

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
21	1989	7	2	29	14.6	42	1: 6.0
	1990	7	3	43	11.9	81	1:11.6
	1991	7	2	29	14.8	69	1: 9.9
	1992	7	4	57	11.0	35	1: 5.0
	1993	3	3	100	11.5	20	1: 6.7
	1994	3	0	0	9.7	50	1:16.7
	1995	3	1	33	22.3	36	1:12.0
	1996	3	3	100	5.7	53	1:17.7
	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
21-L	1991	2	3[a]	100	5.5	45	1:22.5
	1992	2	2	100	10.5	42	1:21.0
27-1	1989	36	9	26	6.7	75	1: 2.1
	1990	36	6	17	11.0	76	1: 2.1
	1991	30	5	17	10.8	93	1: 3.1
	1992	30	7	23	11.6	66	1: 2.2
	1993	30	3	10	12.1	61	1: 2.0
	1994	30	2	7	9.9	74	1: 2.5
	1995	12	2	17	9.1	39	1: 3.2
	1996	12	2	17	-	34	1: 2.8
	1997	12	4	33	-	63	1: 5.2
	1998	12	0	0	-	58	1: 4.8
	1999	12	2	17	11	60	1: 5.0
27-2	1989	10	7	70	5.6	53	1: 5.3
	1990	10	4	40	14.7	57	1: 5.7
	1991	10	3	30	7.6	39	1: 3.9
	1992	10	6	60	13.9	32	1: 3.2
	1993	6	2	33	6.7	35	1: 5.8
	1994	6	1	17	10.0	41	1: 6.8
	1995	6	4	67	3.8	45	1: 7.5
	1996	6	3	50	-	44	1: 7.3
	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

Table 44. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area (Continued).

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
27-3	1989	19	5	26	8.0	44	1: 2.3
	1990	19	6	32	8.8	61	1: 3.2
	1991	19	2	11	13.2	50	1: 2.6
	1992	19	1	5	11.4	25	1: 1.3
	1993	2	0	0	7.0	18	1: 9.0
	1994	2	2	100	7.0	14	1: 7.0
	1995	2	1	50	5.5	30	1:15.0
	1996	2	0	0	12.5	16	1: 8.0
	1997	2	1	50	-	30	1:15.0
	1998	2	2[b]	67	-	27	1:13.5
	1999	2	1	50	9.5	36	1:18.0
27-4	1990	8	5	62	9.4	40	1: 5.0
	1991	8	6	75	9.8	42	1: 5.2
	1992	8	2	25	10.7	45	1: 5.6
	1993	3	2	67	10.0	18	1: 6.0
	1994	3	1	33	7.0	11	1: 3.7
	1995	3	1	33	8.3	28	1: 9.3
	1996	3	1	33	-	27	1: 9.0
	1997	3	1	33	-	22	1: 7.3
	1998	3	2	67	-	36	1:12.0
	1999	3	2	67	2.0	36	1:12.0
27-L	1991	2	1	50	9.0	23	1:11.5
	1992	2	2	100	9.0	38	1:19.0
	1993	2	2	100	5.0	18	1: 9.0
	1994	2	1	50	6.0	30	1:15.0
	1995	2	2	100	8.0	22	1:11.0
	1996	2	1	50	-	69	1:34.5
	1997	2	1	50	-	63	1:31.5
	1998	2	1	50	-	106	1:53.0
	1999	2	1	50	-	98	1:49.0
28	1989	12	4	33	7.9	45	1: 3.8
	1990	12	2	17	15.4	34	1: 2.8
	1991	12	2	17	13.4	41	1: 3.4
	1992	12	4	33	13.1	39	1: 3.2
	1993	2	1	50	19.5	10	1: 5.0
	1994	2	0	0	14.0	15	1: 7.5
	1995	2	0	0	8.5	10	1: 5.0

Table 44. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area (Continued).

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
	1996	2	1	50	-	10	1: 5.0
	1997	2	0	0	-	13	1: 6.5
	1998	2	1	50	-	11	1: 5.5
	1999	3	0	0	-	41	1:14.0
28 (combined)	1989	7	6	83		8.8	60
	1: 8.6						
	1990	7	3	43	14.6	80	1:11.4
	1991	7	2	29	14.1	77	1:11.0
	1992	7	3	43	17.0	58	1: 8.3
	1993	3	2	67	12.0	43	1:14.3
	1994	3	1	33	10.3	29	1: 9.7
	1995	3	0	0	10.5	32	1:10.7
	1996	3	0	0	-	33	1:11.0
	1997	3	2	67	-	33	1:11.0
	1998	3	2	67	-	37	1:12.3
36A	1989	5	2	40	25.6	44	1: 8.8
	1990	5	3	60	8.7	37	1: 7.4
	1991	5	3	60	10.6	29	1: 5.8
	1992	5	3	60	14.3	45	1: 9.0
	1993	5	3	60	12.3	40	1: 8.0
	1994	6	2	33	9.5	50	1:10.0
	1995	3	1	33	16.3	33	1:11.0
	1996	3	2	67	-	39	1:13.0
	1997-2000 Closed						
36A-L	1991	2	1	50	7.0	15	1: 7.5
	1992	2	1	50	9.5	17	1: 8.5
36B-1	1989	6	4	67	5.5	54	1: 9.0
	1990	6	5	83	9.5	44	1: 7.3
	1991	6	3	50	20.3	68	1:11.3
	1992	6	1	17	19.4	17	1: 2.8
	1993	2	1	50	7.5	16	1: 8.0
	1994	2	1	50	5.0	18	1: 9.0
	1995	2	1	50	13.0	19	1: 9.5
	1996	2	1	50	-	27	1:13.5

Table 44. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area (Continued).

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
36B-2	1989	4	4	100	2.7	26	1: 6.5
	1990	4	4	100	8.0	49	1:12.2
	1991	4	2	50	14.7	33	1: 8.2
	1992	4	4	100	2.3	33	1: 8.2
	1993	2	2	100	14.0	45	1:22.5
	1994	2	2	100	9.5	23	1:11.5
	1995	2	2	100	21.5	29	1:14.5
	1996	2	0	50	-	26	1:13.0
36B-3	1993	2	2	100	6.5	25	1:12.5
	1994	2	1	50	8.5	25	1:12.5
	1995	2	1	50	9.5	24	1:12.0
	1996	2	1	50	-	9	1: 4.5
36B-L	1991	2	2	100	4.0	18	1: 9.0
	1992	2	4[a,b]	100	22.0	40	1:20.0
36B	1997	4	2	50	-	65	1:16.2
	1998	4	2	50	-	57	1:14.2
	1999	4	4	100	14	50	1:12.5
37	1989	16	14	88	8.6	186	1:11.6
	1990	16	7[a]	41	12.4	192	1:12.0
	1991	17	9	53	7.6	152	1: 8.9
	1992	17	9	53	10.4	129	1: 7.6
	1993	6	3	50	12.2	84	1:14.0
	1994	6	6	100	7.5	95	1:15.8
	1995	3	1	33	15.0	83	1:27.7
	1996	3	1	33	9.0	74	1:24.7
	1997	3	1	33	-	55	1:18.3
	1998	3	2	67	-	61	1:20.3
	1999	3	1	33	4	69	1:23
50 Combined	1991	2	1	50	13.5	36	1:18.0
	1992	2	2	100	9.0	20	1:10.0

[a] Auction permit harvest included.
[b] Lottery permit harvest included.

Table 45. Summary of Salmon Region Bighorn Sheep Harvest and Drawing Odds.

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
Salmon Region	1988[a]	118	35	30	10.9	751	1: 6.4
	1989	130	61	47	8.4	658	1: 5.1
	1990[a]	131	48	37	11.4	751	1: 5.7
	1991[a]	136	47	35	11.3	830	1: 6.1
	1992[a,b]	137	55	40	12.0	681	1: 5.0
	1993	68	26	38	10.8	433	1: 6.4
	1994	69	20	29	7.6	475	1: 7.0
	1995	45	17	38	11.6	430	1: 9.6
	1996	45	16	36	-	461	1:10.2
	1997	40	16	40	-	461	1:11.5
	1998[b]	41	17	41	-	478	1:12.0
	1999	38	15	39	8.5	421	1:11.0

[a] Auction permit harvest included.
[b] Lottery permit harvest included.

Table 46. Salmon Region Bighorn Sheep Mortality.

Year	Controlled Harvest	Indian Harvest*	Illegal Kill	Other	Total
1989-90	57	2	0	48	107
1990-91	44	0	1	72	117
1991-92	44	1	0	55	100
1992-93	55	10	1	32	98
1993-94	26	0	0	30	56
1994-95	20	5	0	23	48
1995-96	17	3	0	38	58
1996-97	16	1	0	17	34
1997-98	16	2	0	28	46
1998-99	17	1	2	26	46
1999-00	15	1	1	24	41

* Indian harvest information has not been consistently available and is incomplete.

Table 47. Summary of Individual Bighorn Sheep Transplants in the Salmon Region.

Date	Capture Site	Release Site	Adult Male	Adult Female	Lamb Male	Lamb Female	Total
1968-69	36B-Morgan Cr	37 -Mahogany Cr	1	4	1	1	7
1969-70	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 Can	2	8	0	2	12
1978-79	28 -Burnt Gulch	OR -Imnaha River	5	9	1	0	15
	28 -Burnt Gulch	18 -Bernard Cr	0	7	0	0	7
	WY -Whiskey Mt	50 -Elbow Can	3	10	2	2	17
1979-80	WY -Whiskey Mt	50 -Jaggles Can	2	5	2	2	11
1981-82	28 -Clear Cr	36B-Birch Cr	2	3	0	3	8
	28 -Clear Cr	58 -Goddard Can	1	3	2	0	6
	28 -Pretty Gulch	58 -Goddard Can	0	3	0	0	3
	28 -Burnt Gulch	58 -Bloom Can	2	8	0	4	14
1983-84	28 -Pretty Gulch	OR -Imnaha River	3	8	0	0	11
	OR -Lostine Mts	21 -Shoup Bridge	3	7	3	3	16
1984-85	28 -Burnt Gulch	OR -Grande Ronde	5	5	0	1	11
	21 -Cove Cr	OR -Grande Ronde	1	10	3	2	16
	OR -Lostine Mts	30A-Rocky Can	3	14	3	2	22
1985-86	21 -Ebenezer Bar	OR -Minam River	2	9	1	0	12
	OR -Lostine Mts	37A-Falls Cr	4	11	1	2	18
1987-88	36A-East Fork	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	WY -Bighorn Mts	2	16	2	2	22

Submitted by:

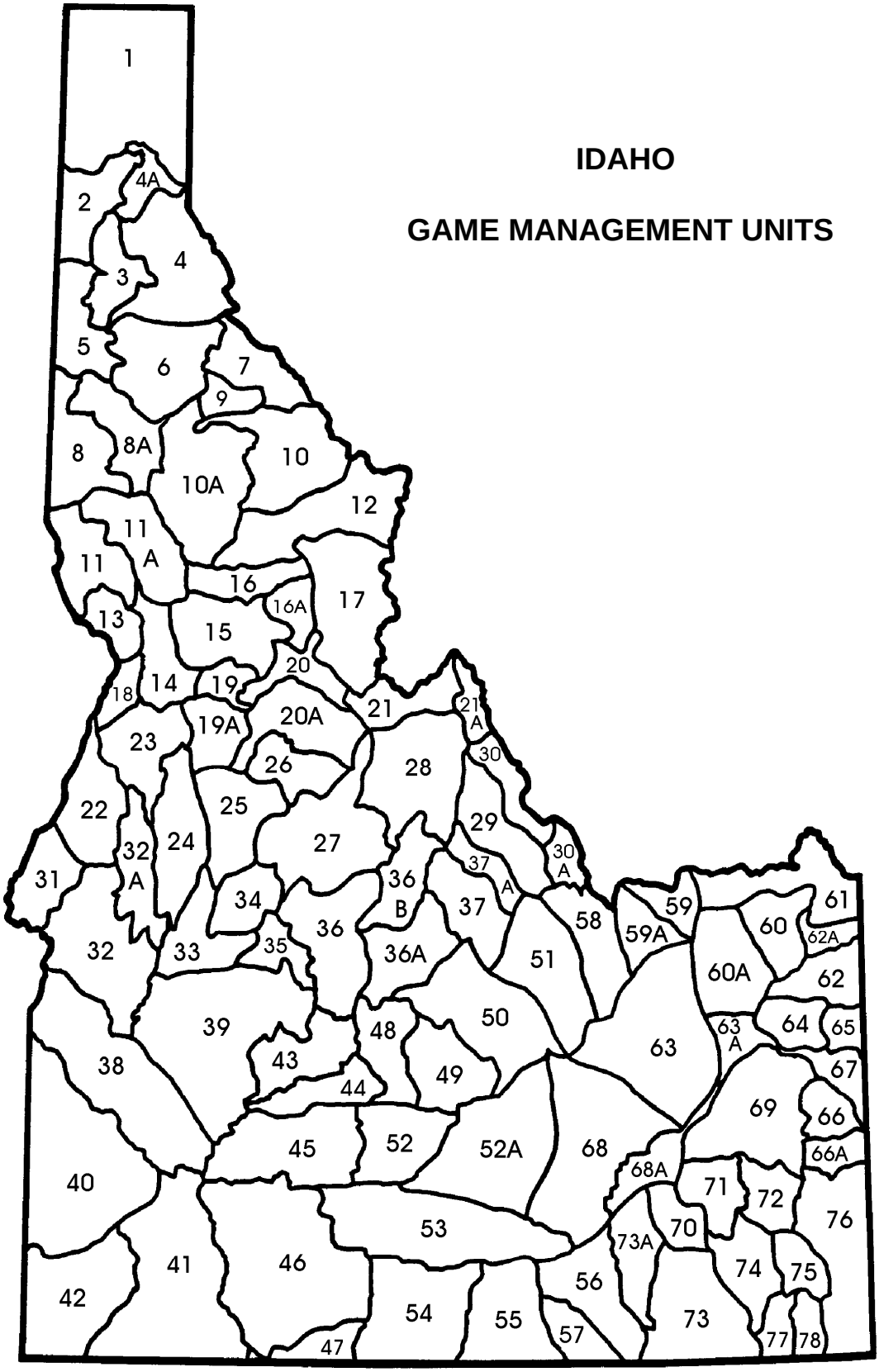
Jay Crenshaw	*Lou Nelson*	*Jeff Rohlman*
Regional Wildlife Manager	Regional Wildlife Manager	Regional Wildlife Manager
Randy Smith	*Carl Anderson*	*Brad Compton*
Regional Wildlife Manager	Regional Wildlife Manager	Regional Wildlife Manager
Mike Scott	*Justin Naderman*	*Greg Painter*
Regional Wildlife Manager	Regional Wildlife Biologist	Regional Wildlife Biologist

Approved by: IDAHO DEPARTMENT OF FISH AND GAME

Wayne Melquist	*Tom Parker*
Wayne Melquist State Nongame Wildlife Manager Federal Aid Coordinator	Tom Parker, Acting 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.