IDAHO DEPARTMENT OF FISH AND GAME

Stephen P. Mealey, Director

Project W-170-R-22

STATEWIDE SURVEYS AND INVENTORY

July 1, 1997 to June 30, 1998

BIGHORN SHEEP

JOB PROGRESS REPORT

STUDY I, JOB 4

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PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-22		
SUBPROJECT:	2-7	**STUDY NAME:**	Big Game Population Status, Trends, Utilization, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 1997 to June 30, 1998

BIGHORN SHEEP -STATEWIDE

ABSTRACT

There were 687 first choice and 452 second choice applicants for the 64 permits available for Rocky Mountain bighorn sheep in 1997. The statewide odds of drawing a permit were 1:11 for first choice applicants. There were 658 first choice and 443 second choice applicants for the 45 California bighorn ram permits available in 1997. The odds of drawing a permit were 1:15 for first choice applicants.

There were 32 Rocky Mountain bighorn sheep reported harvested by the 64 hunters in 1997 for a hunter success rate of 50%. Forty-five California bighorn ram hunters killed 31 animals for a success rate of 69%.

Figure 1. California Bighorn Sheep Area in Idaho (Crosshatch is Management Units With Hunting Season in 1997).

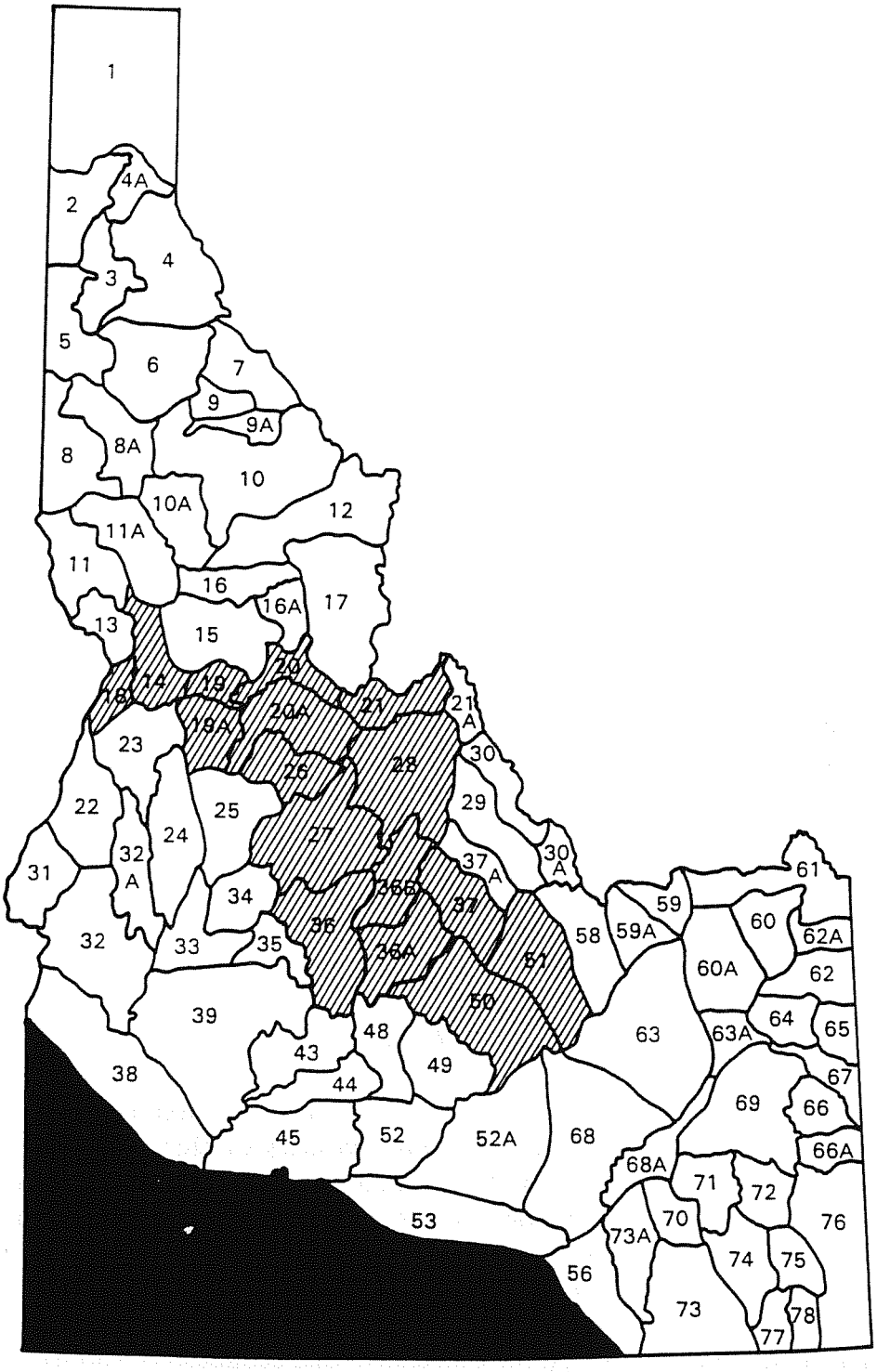

Figure 2. Rocky Mountain Bighorn Sheep Area in Idaho (Crosshatch is Management Units With Hunting Season in 1997).

PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-22		
SUBPROJECT:	2	**STUDY NAME:**	Big Game Population Status, Trends, Utilization, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 1997 to June 30, 1998

BIGHORN SHEEP - CLEARWATER REGION

UNITS 11, 13, AND 18
CONTROLLED HUNT AREA 11

ABSTRACT

Interest and support by the Foundation for North American 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. Sixteen bighorn sheep were released in Unit 13 in 1997. The 1995-1998 survey results suggest a stable population in Unit 11 and recovery from the 1995-96 epidemic; however, disease concerns still exist in the Snake River canyon. Monitoring efforts continue and include initiation of work on developing a sightability model for bighorn sheep in this area. Hunt 11 was closed in 1997 after surveys indicated few legal rams remained in the population.

MANAGEMENT DIRECTION

The Department plans to conduct helicopter surveys for bighorn sheep at least every 5 years to monitor population trends. 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. Interest and support by the Foundation for North American 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.

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, including 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 sheep in the population in the Snake River canyon. These sheep were transported to the IDFG Wildlife Health Laboratory in Caldwell in a joint effort by Idaho, Oregon, and Washington personnel. All but 8 sheep died by June 1996 despite intensive treatment in captivity. Periodic aerial surveys were conducted through spring 1996 by Idaho, Oregon, and Washington personnel. 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 sheep appeared to exhibit symptoms, but no deaths were attributed to the Washington-Oregon outbreak. Unit 11 lamb survival was very low in 1996, but rebounded in 1997.

The last known native bighorn sheep in Unit 18 was observed in 1932. Speculation at that time attributed the loss of 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 1975-76 (11 ewes and 10 rams) and 1979 (7 ewes). The population was augmented in 1990 with 30 bighorn sheep (10 rams and 20 ewes) from Whiskey Mountain, Wyoming.

A disease outbreak that occurred in 1983 resulted in a substantial decline in the Unit 18 bighorn sheep population. The outbreak was initially detected through the observation of a number of dead and sick bighorn sheep along the Snake River. Domestic sheep, bighorn sheep, elk, mule deer, mountain goats, and white-tailed deer were tested for a variety of diseases at that time. The testing detected the presence of Pasteurella spp., Parainfluenza III (PI-3), epizootic hemorrhagic disease, and Chlamydia in the bighorn sheep and PI-3 and Chlamydia in the domestic sheep.

Another disease outbreak was detected in April 1991. Several sick bighorn sheep and 2 dead ewes were reported in the vicinity of Granite Creek in Hells Canyon. A subsequent helicopter survey did not detect any bighorn sheep, but a fixed-wing radio-location flight (26 April 1991) after the

survey found 10 bighorn sheep including 1 with an 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

Results of aerial surveys have indicated a continual decline in the number of bighorn sheep in Unit 18 since the occurrence of disease outbreaks in 1983 and 1991 (Table 1). However, a ewe, a lamb, a 1/4-curl ram, and a 3/4-curl ram were observed along the Snake River at Bernard Creek in May 1998 and 3 ewes with lambs were observed along the river near Bernard Creek in June 1998.

Since the 1984 transplant, the Unit 11 herd has grown at a moderate rate (Table 2). Frequency of bighorn sheep surveys in Unit 11 increased in 1996 to monitor mortality and survival of lambs and to develop a sightability model as part of a research effort focusing on the Snake River/Hells Canyon complex. Lamb survival in 1996 was extremely low (7 lambs/100 ewes). This was presumably a residual effect of the 1995-96 Pasteurella outbreak in Oregon and Washington. Most recently, high lamb production has resulted in an increase in total sheep numbers.

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 1995-96 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 started in March 1998. Sightability was assessed using 59 radio-collared bighorn sheep in 6 herds in Idaho, Oregon, and Washington. Fifty-four of the radio-collared bighorn sheep (92%) and 22 of 26 groups (85%) were observed during the helicopter surveys. Both the sightability model development and the vaccine test were conducted cooperatively under the "Hells Canyon Initiative."

HARVEST CHARACTERISTICS

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 3).

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.

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 3). 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.

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 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 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 moderated considerably in 1997-1998 compared to the previous year. Although over 150% of average in October, precipitation declined throughout the winter and spring to average about 75% by the end of March. Snowpack followed a similar trend, falling to 68% of average. Lower snow depths positively affected survival of big game, thereby reducing winter mortality.

TRAPPING AND TRANSPLANTS

Sixteen bighorn sheep (12 ewes and 4 rams) from Spences Bridge, British Columbia (originally stock from Banff National Park) were released into Big Canyon Creek in Unit 13 on December 13, 1997. All adult bighorn sheep (15) were radio-collared. One ram lamb died shortly after release. Six bighorn sheep swam the Snake River in January and then swam back in March. At least 7 of the ewes lambed near Big Canyon Creek in May. One ram died in May, the other 2 rams traveled at least as far north as Dry Creek, and returned to Big Canyon Creek in June. The most recent count for this population in summer of 1998 was 21 bighorn sheep (12 ewes, 7 lambs, and 2 sublegal rams). This 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 (13 sheep) and Asotin Creek, Washington (10 sheep).

UNITS 14, 17, 19, AND 20
CONTROLLED HUNT AREAS 19, 20-1, 20-2, AND 20-3

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. Six rams were harvested by 10 permittees on hunts 19, 20-1, and 20-2 during the 1997 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 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 dispersed 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 4).

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. 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 5, 6, and 7). In addition, spring surveys were most recently conducted in Units 19 and 20 during May 1-3, 1993 and in Unit 17 from April 28-30, 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 sheep were observed on the last 3 surveys (Table 5). 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 6). 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 (Table 7).

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 in 1996 and 1997 (Table 8). In 1997, 10 permittees killed 6 rams for an average success rate of 60%.

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 moderated considerably in 1997-1998 compared to the previous year. Although over 150% of average in October, precipitation declined throughout the winter and spring to average about 75% by the end of March. Snowpack followed a similar trend, falling to 68% of average. Lower snow depths positively affected survival of big game, thereby reducing winter mortality.

TRAPPING AND TRANSPLANTS

No trapping or transplanting was conducted during the report period.

Table 1. Summary of Bighorn Sheep Data Survey for Unit 18, 1983-1998[a].

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
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

[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 data was collected incidentally in May and June.

Table 2. Summary of Bighorn Sheep Survey Data for Unit 11, 1992-1998[a].

Year	Ewes	Lambs	Rams			Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegals	Legals	Uncl.			
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

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

Table 3. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area, 1988-1997.

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	1:105.0
	Hunt 11 was closed in 1997.						
518	1987	2	1	50%	15.0	10	1:5.0
	1988	2	1	50%	11.0	17	1:8.5
	1989	2	1	50%	5.0	23	1:11.5
	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 sheep in Unit 11, raising participation by one permit.

Table 4. 1997 Season Structure for Bighorn Sheep in Units 14, 17, 19, and 20 in the Clearwater Region.

Hunt Areas	Dates	Season Length	Open For
19, 20-1, 20-2	Aug 30-Oct 13	45 Days	3/4 curl or 4 yr. old ram

Table 5. Summary of Bighorn Sheep Survey Data for Unit 17, 1981-1997[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			

[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 6. Summary of Bighorn Sheep Survey Data for Unit 19, 1981-1997[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				

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

Table 7. Summary of Bighorn Sheep Data for Unit 20, 1981-1997[a].

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
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				

[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 Harvest and Drawing Odds by Hunt Area, 1988-1997.

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
519-1	1988	3	2	67%	8.5	6	1:2.0
	1989	3	0	0%	0.7	17	1:5.7
	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
519-2	1988	2	2	100%	7.5	16	1:8.0
	1989	2	2	100%	5.5	13	1:6.5
	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	1988	6	3	50%	7.8	26	1:4.3
	1989	6	0	0%	10.7	33	1:5.5
	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
520-3	1988	3	2	67%	3.3	9	1:3.0
	1989	3	2	67%	3.3	8	1:2.7
	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
	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

Table 8. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area, 1988-1997 (Continued).

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
	1996	2	0	0%	ND	5	1:2.5
	1997	2	1	50%	8.0	12	1:6.0
520-5	1988	3	1	33%	7.0	9	1:3.0
	1989	3	3	100%	7.5	4	1:4.7
	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	13	1:2.6
	1992	5	1	20%	10.6	23	1:4.6
	1993	3	2	67%	5.5	17	1:5.7
	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-22		
SUBPROJECT:	3	**STUDY NAME:**	Big Game Population Status, Trends, Utilization, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 1997 to June 30, 1998

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 Big Jacks Creek, Little Jacks Creek, and East Fork Owyhee River herds were conducted in 1998. A total of 134 bighorn sheep were observed in Big Jacks Creek, 124 in Little Jacks Creek, and 334 in the East Fork Owyhee River herd. A total of 27 California bighorn sheep were harvested by 40 hunters.

MANAGEMENT DIRECTION

Management direction follows the statewide management direction which is to: (1) reintroduce bighorn sheep into as many suitable habitats as possible, keep 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 3/4 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 9).

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 drainages. An additional 12 bighorn sheep from British Columbia were released into Idaho's Jarbidge River Canyon in 1984 when deep snows prevented Nevada Department of Wildlife personnel from reaching their proposed release site in Nevada. 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 Owyhee River and Little Jacks Creek have been regularly surveyed since 1983 (Tables 10 and 11). 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. The surveys in 1990, 1991, and 1992 included the whole drainage from the Oregon border upstream to approximately 6 miles above the confluence of Battle Creek and the East Fork Owyhee River. The East Fork Owyhee River was surveyed in June 1998. A total of 334 bighorn sheep were observed, an decrease from the 1996 survey results.

The drainage of the Little Jacks Creek/Shoofly Creek complex have been aerially surveyed since 1983 (Table 10). 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. A survey was conducted in June 1998. A total of 124 bighorn sheep were observed. This is a continued reduction from the 1994 survey.

The Big Jacks Creek drainage was surveyed in 1998 (Table 12). The Big Jacks Creek bighorn sheep population is essentially unchanged from 1997.

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 six-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.

The decreased number of permits did reduce the chances of drawing a California bighorn sheep permit (Tables 13 and 14). The individual who purchased the auction bighorn sheep tag hunted in area 42-3 and harvested a ram. Based upon the mandatory reports, 40 hunters harvested 27 California bighorn rams in the 1998 controlled hunts for a 69% success rate (Tables 13 and 14).

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 1997-98.

TRAPPING AND TRANSPLANTS

There was no trapping and transplant activity in Units 40, 41, and 42 in 1997-98. A summary of transplant activity in Units 40, 41, and 42 is in Table 15.

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.

The hunting seasons for 1995 and 1996 were modified in response to the 1994 population survey results. First, a new ram hunt was started in Big Jacks Creek. Second, the ewe hunt in Little Jacks Creek was 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 was reduced in response to the reduced number of bighorn sheep in these herds. The hunts in each area was combined into two hunts, each hunt is 16 days long.

The large increase in bighorn sheep numbers along the Owyhee River since this introduction indicates this area should be used for transplant stock for future reintroduction of California bighorn sheep. If the herd recovers from its reduced population, it should be a source of stock for trapping. Bighorn sheep from the Owyhee River drainage should be made available for transplant to suitable habitat.

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 9. 1998 Season Structure for Bighorn Sheep in the Southwest Region (Nampa).

Hunt No.(s)	Dates	Season Length(Days)	Open For
741-1	Aug 30-Sep 14	16	3/4 curl or 4 yr. old ram
741-2	Sep 22-Oct 8	16	3/4 curl or 4 yr. old ram
741-4	Aug 30-Oct 8	40	3/4 curl or 4 yr. old ram
742-1	Aug 30-Sep 14	16	3/4 curl or 4 yr. old ram
742-2	Sep 22-Oct 8	16	3/4 curl or 4 yr. old ram
746	Aug 30-Oct 14	46	3/4 curl or 4 yr. old ram

Table 10. Summary of Bighorn Sheep Population Data for Little Jacks Creek, Hunt Area 741, 1983-1998.

Year	Ewes	Lambs	Rams			Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegal	Legal	Uncl.			
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

Table 11. Summary of Bighorn Sheep Population Data for the Owyhee River, Hunt Area 742, 1983-1998.

Year	Ewes	Lambs	Rams			Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegal	Legal	Uncl.			
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

[a] June Survey
[b] July Survey

Table 12. Summary of Bighorn Sheep Population Data for Big Jacks Creek 1990-1998.

Year	Ewes	Lambs	Rams			Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegal	Legal	Uncl.			
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

Table 13. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area, 1986-1997.

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
741-1	1986	3	2	67	1.3	94	31.3:1
741-1	1987	3	3	100	6.0	94	31.3:1
741-1	1988	3	3	100	5.7	66	22.0:1
741-1	1989	3	2	67	6.0	54	18.0:1
741-1	1990	3	3	100	3.0	67	22.3:1
741-1	1991	3	3	100	4.0	60	20.0:1
741-1	1992	3	2	67	3.3	74	24.7:1
741-1	1993	5	3	60	5.6	64	12.8:1
741-1	1994	5	4	75	7.0	110	22.0:1
741-1	1995	5	5	100	8.5	84	16.8:1
741-1	1996	5	3	60	-.-	103	20.6:1
741-1	1997	5	3	60	-.-	86	17.2:1
741-2	1986	3	3	100	3.3	62	20.7:1
741-2	1987	3	1	33	4.5	56	18.7:1
741-2	1988	3	2	67	3.7	56	18.7:1
741-2	1989	3	3	100	1.0	35	11.7:1
741-2	1990	3	3	100	5.7	51	17.0:1
741-2	1991	3	3	100	3.3	62	60.7:1
741-2	1992	3	3	100	4.5	52	17.3:1
741-2	1993	5	4	80	4.0	48	9.6:1
741-2	1994	5	2	33	6.3	83	16.6:1
741-2	1995	5	5	100	3.8	86	17.2:1
741-2	1996	5	3	60	-.-	80	16.0:1
741-2	1997	5	3	60	-.-	57	11.4:1
741-3	1993	5	3	60	2.5	51	10.2:1
741-3	1994	5	5	100	5.3	42	8.4:1
741-4	1993	5	2	40	1.5	9	1.8:1
741-4	1994	5	3	75	4.8	6	1.2:1
741-4	1995	3	3	100	7.5	94	31.3:1
741-4	1996	3	3	100	-.-	71	23.7:1
741-4	1997	5	3	60	-.-	108	21.6:1
742-1	1986	4	1	25	5.3	60	15.0:1
742-1	1987	4	4	100	3.5	67	16.8:1
742-1	1988	8	1	13	10.1	119	14.9:1
742-1	1989	8	5	63	1.9	92	11.5:1
742-1	1990	8	7	88	3.4	115	14.4:1
742-1	1991	12	9	75	5.2	120	10.0:1
742-1	1992	12	10	83	4.5	167	13.9:1
742-1	1993	12	7	58	5.6	96	8.0:1
742-1	1994	12	5	44	7.4	135	11.3:1
742-1	1995	10	6	60	7.4	110	11.1:1
742-1	1996	10	4	40	-.-	139	13.9:1
742-1	1997	10	6	60	-.-	93	9.3:1
742-2	1986	4	1	25	8.8	52	13.0:1
742-2	1987	4	1	25	6.0	49	12.3:1
742-2	1988	8	8	100	5.1	90	11.3:1
742-2	1989	8	4	50	8.0	94	11.8:1
742-2	1990	8	6	75	4.1	67	8.4:1
742-2	1991	12	10	83	3.0	131	10.9:1
742-2	1992	12	11	91	4.2	164	13.7:1

Table 13. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area, 1986-1996 (Continued).

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
742-2	1993	12	9	75	3.6	60	5.0:1
742-2	1994	12	8	67	5.4	127	10.6:1
742-2	1995	10	3	30	7.3	136	13.6:1
742-2	1996	10	5	50	-.-	90	9.0:1
742-2	1997	10	8	80	-.-	111	11.1:1
742-3	1986	3	2	67	1.0	43	14.3:1
742-3	1987	3	2	67	4.7	34	11.3:1
742-3	1993	12	5	42	6.8	75	6.3:1
742-3	1994	12	11	90	6.0	91	7.6:1
742-3	1997	3*	2	67	-.-	46	33.5:1
742-4	1986	3	3	100	6.0	30	10.0:1
742-4	1987	3	2	67	5.0	38	12.7:1
742-4	1997	2	2	100	-.-	56	28.0:1
742-5	1986	2	1	50	6.0	22	11.0:1
742-5	1987	2	1	50	3.0	22	11.0:1
746	1991	2	2	100	4.0	36	18.0:1
746	1992	2	2	100	7.0	34	17.0:1
746	1993	6	6	100	7.8	64	10.7:1
746	1994	6	2	40	6.4	91	15.2:1
746	1995	6	3	50	10.5	74	12.3:1
746	1996	6	4	67	-.-	75	12.5:1

Table 14. Summary of the Southwest Region (Nampa) Bighorn Sheep Harvest and Drawing Odds, 1987-1997.

Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
Calif.	1987	22	14	64	4.7	360	16.4:1
Calif.	1988	22	14	64	6.2	331	15.1:1
Calif.	1989	22	14	64	4.2	275	12.5:1
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.	10 Yr.	393	270	68	5.1	5,017	12.8:1

Table 15. 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 was 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-22		
SUBPROJECT:	3 (McCall)	**STUDY NAME:**	Big Game Population Status, Trends, Utilization, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 1997 to June 30, 1998

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 1997-98 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.

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 1991-95 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 1997 among 3 separate hunt areas. A total of 10 rams was harvested for a 71% hunter success rate.

MANAGEMENT DIRECTION

1. Allow and/or encourage population increases.

2. Increase recreational opportunity.

3. Develop and/or continue with existing reintroduction programs.

4. Monitor existing 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 1991-95 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 are reconfigured to reflect the new hunt area boundaries.

POPULATION SURVEYS

Bighorn sheep population surveys were not conducted during the reporting period. Past population surveys indicate that the total number of bighorn sheep observed continues to decline in Unit 20A (Tables 17 and 18). These areas have poor recruitment (lamb:ewe = 13:100 and 16:100 in former Hunt Area 20A-1 and current Hunt Area 20A, respectively) and low numbers of legal rams.

Total numbers of bighorn sheep observed continues to decline in Unit 26 hunt areas (Tables 19 and 20). The most notable decline is in Hunt Area 26-2, which has low overall numbers, as well as low numbers of legal rams. Low recruitment of lambs is also a problem in these hunt areas.

HARVEST CHARACTERISTICS

Harvest data are generated from a mandatory hunter report regulation for all bighorn sheep hunt permittees. Successful permittees must present their bighorn sheep horns to a Department office and complete a harvest report within 10 days of the date of kill. Unsuccessful permittees 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 1997 (Table 21). A total of 10 rams was harvested. This represents a 71% hunter success rate.

MANAGEMENT IMPLICATIONS

The number of permits in hunt area 20A-1 was reduced from 5 to 2 in 1985. This reduction was in response to a die-off of bighorn sheep in the lower South Fork Salmon River and the main Salmon River downstream from the confluence of the South Fork. There has been no evidence of disease-related mortality in this area since 1985. The 1985 die-off reduced the opportunity for bighorn sheep to expand their distribution west into Unit 19A. A large wildfire burned through this hunt area in the summer of 1994. Not only did this fire eliminate much of the mountain mahogany winter range in the lower South Fork Salmon River drainage, it also resulted in the direct mortality of an unknown number of bighorn sheep. The large decline in legal rams since 1991 (16 in 1991 to 4 in 1996) coupled with the precipitous decline of bighorn sheep observed in 1993 (78) versus that observed in 1996 (33) suggested management action be taken. Hence, this hunt was terminated in 1997. The bighorn sheep population in this area will be monitored as funding permits.

The permit levels in hunts 26-1 and 26-2 were 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 this area will be monitored as funding permits.

Table 16. 1997 Season Structure for Rocky Mountain Bighorn Sheep in the Southwest Region (all seasons open for ¾ curl or 4 year old ram).

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 17. Summary of Bighorn Sheep Population Data for former Hunt Area 20A-1, 1984-1996.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1984	No data collected										
1985	22	4	2	1	9	0	0	9	38	18	45
1986	57	19	1	5	5	3	0	8	92	33	25
1987	No data collected										
1988	No data collected										
1989	50	12	5	7	2	1	0	3	77	24	30
1990	No data collected										
1991	33	5	2	4	11	5	0	16	60	15	67
1992	49	5	2	1	9	3	0	12	69	10	31
1993	51	13	2	2	9	1	0	10	78	25	27
1994	50	10	2	4	6	2	0	8	74	20	28
1995	44	9	0	1	3	1	0	4	58	20	11
1996	24	3	1	1	3	1	0	4	33	13	25

Table 18. Summary of Bighorn Sheep Population Data for Hunt Area 20A, 1992-1996.

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

Table 19. Summary of Bighorn Sheep Population Data for Hunt Area 26, 1992-1996.

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

[a] Incomplete survey.

Table 20. Summary of Bighorn Sheep Population Data for Hunt Area 26-L, 1983-1996.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1983	No Data Collected										
1984	No Data Collected										
1985	No Data Collected										
1986	No Data Collected										
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	ND	ND
1995	85	7	4	6	6	7	0	13	115	8	27
1996	73	9	1	7	4	7	0	11	101	12	26

Table 21. Summary of Southwest Region Rocky Mountain Bighorn Sheep Harvest and Drawing Odds, 1991-1997.

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
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
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

[a] The auction tag permittee harvested a bighorn sheep in Hunt Area 20A-2.

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

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-22		
SUBPROJECT:	4	**STUDY NAME:**	Big Game Population Status, Trends, Utilization, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 1997 to June 30, 1998

BIGHORN SHEEP - MAGIC VALLEY REGION

UNITS 46, 47, 54, 55, AND 57

ABSTRACT

The bighorn sheep population in Unit 54 has decreased substantially during the past 4-5 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. The bighorn sheep population in Unit 54 is currently estimated to be less than 30 bighorn sheep.

In the Jarbidge/Bruneau canyons, the number of bighorn sheep observed in 1998 (135 bighorn sheep) was 12% more than in 1997 but 17% lower than in 1996. In 1998, observed production was low (21 lambs/100 ewes). The observed ram ratio was acceptable (38 rams/100 ewes); however, only 6 legal rams were observed. During the 1997 hunting season, 5 of 6 hunters were successful. The bighorn sheep population in the Jarbidge/Bruneau area is believed to be well below the carrying capacity of the available habitat.

MANAGEMENT DIRECTION

Increase existing populations; reintroduce bighorn sheep into suitable historical habitats; conduct research on habitat use and interactions with livestock; 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 1992-93, 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 1996-98 indicate populations have not increased to 1992-93 levels.

Units 46 and 47

Between 1982 and 1993, the Idaho Department and Nevada Division of Wildlife (NDOW) released 93 bighorn sheep into portions of the Jarbidge and Bruneau drainages (Table 16). The bighorn sheep released by NDOW in 1982 and 1984, with the objective of reestablishing a population in the Jarbidge Mountains, moved downstream 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 Sheep Creek.

Unit 54

Efforts to reestablish a bighorn sheep population in Unit 54 began in 1982 with the completion of an environmental analysis by the Sawtooth National Forest. Because of the proximity of domestic sheep grazing allotments, potential habitat for bighorn sheep was restricted to the northeastern portion of the South Hills bordered by Trapper Creek on the south and Dry Creek on the west. Fifty bighorn sheep were released into the Big Cottonwood drainage from 1986-93, and 24 bighorn sheep were released into the East Fork of Dry Creek (approximately 7 miles west of Big Cottonwood) in 1991 and 1993 (Table 22). It was expected that bighorn sheep from the Dry Creek and Cottonwood areas will eventually connect to become one bighorn sheep population.

Units 55 and 57

There are currently no bighorn sheep in Units 55 and 57. Reintroduction efforts have not been undertaken because of potential habitat overlap with domestic sheep grazing allotments.

POPULATION SURVEYS

Unit 54

There were no aerial surveys conducted during the 1997-98 reporting period. Data collected were limited to incidental observations and observations made during radio-telemetry work.

Big Cottonwood -- Observations of bighorn sheep in Big Cottonwood Canyon indicate low summer survival of lambs during the past 3 years. On 2 July 1997, a group of 3 ewes (including a radio-marked ewe) with 3 lambs was observed. Between mid-August and late December, this same radioed ewe was frequently observed with a group of 9 other ewes and only one lamb. The estimated bighorn sheep population in the Big Cottonwood Canyon area in December 1997 was believed to be less than 20 bighorn sheep.

Dry Creek -- Four bighorn sheep were observed in Medley Creek in April 1998 during helicopter mule deer surveys. This was the first observation of bighorn sheep in the Dry Creek drainage since November 1996 when a group of approximately 20 bighorn sheep was observed. During three helicopter surveys in 1997 (February, April, and June), no bighorn sheep were observed. Three ewes from the Dry Creek reintroduction were observed several times in Rock Creek Canyon during the 1997-98 reporting period. These bighorn sheep moved to Rock Creek Canyon in late 1993 and took up residence there.

Units 46 and 47

Helicopter surveys, typically conducted in June, indicated annual increases in bighorn sheep numbers between 1990 and 1996. In 1998, 135 bighorn sheep were observed, 17% less than in 1996 and 12% more than in 1997 (Table 23). We observed 4 of 6 radio-collared bighorn sheep in the survey area, suggesting that approximately one-third of the bighorn sheep may have been missed during the survey. Observed lamb production in 1998 (21.2 lambs per 100 ewes) was 39% lower than the 1994-97 mean of 35 lambs per 100 ewes and is the lowest lamb ratio observed since 1993. Only 6 of 32 rams observed on the 1998 survey were legal (Table 23).

HARVEST CHARACTERISTICS

Unit 54

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

Units 46 and 47

From 1991-1997, 35 hunters harvested 24 rams (69% success) from the Jarbidge/Bruneau population (Hunt Area 46). Ages of harvested rams (N=24) range from 4.5 years to 12.5 years with a mean of 7.3 years and a median of 6.5 years. In 1997, 5 of 6 hunters were successful and took two 5½-year-old rams, one 6½-year-old ram, and two 8½-year-old rams (Table 24).

TRAPPING AND TRANSPLANTS

There were no bighorn sheep trapped or transplanted in the Magic Valley Region during the 1996-97 reporting period.

MANAGEMENT STUDIES

Unit 54

During 1997, 4 of 6 radio-monitored bighorn ewes died. Cause of death was undetermined for all 4 bighorn sheep. Currently, only 1 radio-collared bighorn sheep is being monitored.

Unit 46 and 47

Four of the 17 bighorn sheep released in the Jarbidge/Bruneau drainage in December 1993 were radio-collared to provide data on movements and survival. During the June 1997 aerial survey, only 1 of the radio-collared ewes was observed. A telemetry flight was conducted in July 1997 and another ewe with a functioning radio was found 6 miles south of Grasmere in Marys Creek in a group that included 4 ewes, 3 lambs, and 1 ram. This area is considered marginal bighorn sheep habitat and is far outside the area routinely flown on aerial surveys. Ogden Environmental radio-collared 5 bighorn sheep in 1997 to be used in studies to assess the impacts of low elevation training flights by the Air Force.

MANAGEMENT IMPLICATIONS

The potential for reintroducing bighorn sheep into unoccupied habitat in Units 54, 55, and 57 is currently limited because of the presence of domestic sheep grazing allotments. The BLM bighorn sheep permittee on Jim Sage Mountain in Unit 55 (Roscoe and Joyce Ward) has requested a change in livestock class to cattle. The Wards also submitted a Grant-In-Aid request for $74,000 to the Foundation of North American Wild Sheep (FNAWS) for monetary reimbursement for AUMs that would not be converted by BLM from sheep to cattle. FNAWS agreed to fund half of the request and has asked the Department to fund the remainder. This project would also result in the removal of domestic sheep from the Cache Peak area of the Sawtooth National Forest. It is recommended a reintroduction of bighorn sheep be pursued if domestic sheep are removed from the area.

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. Only 4 bighorn sheep are known to exist in the Dry Creek drainage.

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 30 bighorn sheep in Unit 54 compared to an estimated 50 bighorn sheep in 1996.

The Jarbidge/Bruneau bighorn sheep population appears to have stabilized or declined slightly from 1996 levels. The population is still considered to be well below the carrying capacity of the suitable habitat. This population will be monitored annually, if possible, and augmented in the future, if necessary. In addition, suitable habitat has been identified in the Bruneau Canyon downstream from its confluence with the Jarbidge and in Sheep Creek. Releases in these areas may be pursued when transplant stock becomes available.

Table 22. Summary of Individual Bighorn Sheep Transplants in Unit 54, 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	2	10	1	2	15
12/16/87	Little Jacks Creek	Big Cottonwood	3	6	0	1	10
11/15/88	Poison/ Shoofly Cr.	Big Cottonwood	5	8	0	1	14
12/6/91	East Fk. Owyhee River	East Fork Dry Creek	2	9	1	2	14
12/20/93	East Fk. Owyhee River	East Fork Dry Creek	1	7	1	1	10
12/19/93	East Fk. Owyhee River	Big Cottonwood	3	8	0	0	11
Totals			16	48	3	7	74

Table 23. Summary of Bighorn Sheep Population Data for Hunt Area 46, 1990-98

Year	Ewes	Lambs	Rams			Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegal	Legal	Uncl.			
1990	51	12	8	13	0	84	23.5	41.2
1993	51	8	39	16	0	114	15.7	107.8
1994 (August)	76	24	15	17	0	132	31.6	42.1
1996	102	33	14	15	5[a]	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

[a] 4 were unclassified rams

Table 24. Summary of Bighorn Sheep Harvest and Drawing Odds in Hunt Area 46, 1991-97.

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	7[a]	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

[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-22		
SUBPROJECT:	6	**STUDY NAME:**	Big Game Population Status, Trends, Utilization, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 1997 to June 30, 1998

BIGHORN SHEEP - UPPER SNAKE REGION

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

ABSTRACT

No population surveys were conducted during the 1997-98 reporting period. Domestic-wild sheep contacts are a concern in the Lemhi and Beaverhead Ranges.

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, 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 on alpine and subalpine ranges. The winter ranges are mostly sagebrush-grass types where precipitation is low. Summer ranges are generally administered by the U.S. Forest Service (USFS), whereas winter ranges are managed primarily by the Bureau of Land Management (BLM).

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-wild sheep contact could further improve conditions for bighorn sheep in this area. There are some opportunities for increases in existing bighorn sheep herds in these units.

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 were 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-offs.

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 occur 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. A helicopter survey was conducted in Units 51 and 58 during deer trend counts in December 1994 (Tables 27 and 28). Observed bighorn sheep in Unit 51 were similar to the number observed in 1993, but the 60 bighorn sheep observed in Unit 58 was the highest number counted to date. Bighorn sheep in Unit 51 were again observed in Uncle Ike Creek and the foothill area between Horse Creek and Williams Creek. In Unit 58, a lone legal ram was observed on the ridge between Peterson and Deadman Canyons, and all the rest were distributed between Long Canyon and Blue Canyon, with the highest number along Goddard face.

The summer of 1997 had near normal temperature and above normal precipitation.

Bighorn sheep populations in the Upper Snake Region do not occupy all available habitat. 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.

MANAGEMENT IMPLICATIONS

Bighorn sheep that were introduced into the south Lemhi Range (Unit 51) in 1983 and 1984 appear to be stable. A helicopter survey for deer was conducted in December 1994 and found 26 bighorn sheep with a good lamb:ewe ratio (Table 25). Bighorn sheep were again found on the sagebrush-grassland slopes in the Horse Creek drainage. No hunt has yet been authorized on this herd.

The greatest concern for this herd is contact with domestic sheep on BLM lands. On several occasions some of the wild sheep have intermingled with domestic sheep in South Creek during the fall. The wild-domestic sheep intermingling has been discussed with the Idaho Falls District BLM. The permittee has been requested to keep the domestic sheep out of South Creek and from intermingling with the wild sheep. This issue needs to be further addressed when the Big Butte Area Resource Plan is revised.

Available free water is unevenly distributed along the Lemhi Range. 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 water developments in the range.

Forty-one bighorn sheep were introduced into the South Beaverhead Range in four transplants between 1976 and 1982. This herd has not grown as quickly as expected. A helicopter survey in December 1994 found 60 bighorn sheep. This count indicated a higher population and improved lamb:ewe and ram:ewe ratios than the previous surveys (Table 26). Legal ram numbers were much improved. These bighorn sheep use private land on the Simmonds and Waggoner Ranches during rut and early winter, and contact with domestic sheep on the Waggoner Ranch during winters prior to 1987 is known to have occurred on several occasions.

A USFS volunteer mapped bighorn sheep 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.

The Nicholia-Chandler Canyon domestic sheep allotment on bighorn sheep summer range in Unit 59A and allotments on BLM lands in Unit 58 are still a concern for future success of this herd.

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 would 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 wild sheep today. The range is also heavily grazed by domestic sheep. Therefore, management is directed to document bighorn sheep observations, protection of the bighorn sheep, and nonconsumptive use.

Table 25. Summary of Rocky Mountain Bighorn Sheep Population Data for Unit 51, 1988-1998.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1988	14	8		6[b]		3[b]	0	3	31	57	64
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										

[a] Incidental to aerial elk sightability counts, winter 1992-93 and 1993-94.
[b] Rams classified to sublegal and legal only.
[c] Incidental to aerial mule deer sightability survey, winter 1994-95. The entire bighorn sheep winter range was surveyed.

Table 26. Summary of Rocky Mountain Bighorn Sheep Population Data for Unit 58 1988-1998.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1988	13	3				1[b]	0	1	17	23	8
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										

[a] Ground classification of bighorn sheep coming onto bait - Goddard Face, winter 1992-93.
[b] Rams classified to sublegal and legal only.
[c] Rams not classified, but some were legal.
[d] Incidental to aerial mule deer sightability survey, winter 1994-95. The entire bighorn sheep winter range was surveyed.

PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-22		
SUBPROJECT:	7	**STUDY NAME:**	Big Game Population Status, Trends, Utilization, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 1997 to June 30, 1998

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, 28-1, 28-2, 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. January 1995, April 1996, and January-February 1997 aerial surveys suggest that lamb production, although still low (20-25 lambs per 100 ewes), is beginning to improve in Units 21, 27, 28, 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 1997 hunting season, 40 controlled hunt permittees harvested 16 rams for an overall success rate of 40%.

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 subalpine 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.

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 1989-90, 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 1981-85 planning period, new trapping sites were developed in Unit 21 along the main Salmon River. However, trapping and transplanting has 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 subalpine 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, 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, eight 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

During January and February 1997, Unit 36A and 36B bighorn sheep populations were surveyed (Tables 38 and 39). Herd composition data were collected incidental to January 1997 elk surveys in Units 30 and 30A and incidental to February 1998 elk surveys in Units 21A and 37A. Virtually all the Salmon Region bighorn sheep herds are stable to declining. Salmon Region bighorn sheep populations experienced major young and adult mortality (apparently disease-related) beginning in 1989-90 and very poor lamb production for several years afterward (generally at 10 or fewer lambs per 100 ewes). Although ewe:lamb ratios were still somewhat low, recent surveys suggest that the past several years' trend of very poor lamb production may be reversing in Unit 36B. However, Unit 36A still had a very low lamb:ewe ratio (4 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 44). 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 1997, a total of 16 rams were taken by 40 hunters for an overall success rate of 40%.

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 (1990-92) and subsided afterward as mortality rates decreased and bighorn sheep numbers reached low ebb (Table 45).

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 1997 was exceptionally wet, producing lush, abundant forage. Very little snow fell until late January 1998; total snowpacks through the remainder of the winter were somewhat below average. Winter temperatures were mild, seldom dropping below zero Fahrenheit. Animals therefore entered the winter in excellent body condition, then encountered a mild winter, which should have produced excellent 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.

During July 1985, a major forest fire (Butte Fire) occurred in Unit 21 and burned approximately 30,000 acres affecting winter, transition, and summer ranges of bighorn sheep. Approximately 9,000 acres of critical bighorn sheep winter range burned between Cove Creek and Fountain Creek along the main Salmon River, causing a complete loss of that year's vegetation growth. The long-term effects of this fire should be beneficial to bighorn sheep.

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 TRANSPLANTING

The Salmon Region had a very active trapping and transplanting program for a number of years (Table 46). 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 1997-98.

DISEASE

During an apparent disease outbreak in winter 1988-89, 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. Midwinter Blood Urea Nitrogen (BUN) levels suggest that many of these bighorn sheep are in poor nutritional status. 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 1991-95 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 1990-91. However, in most of the region, the decline first was noted in the winter of 1989-90. In all cases, poor lamb:ewe ratios continued through at least 1991-92. Aerial surveys suggest that lamb recruitment is improving in Units 21, 27, 28, 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 27. 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
93-94	No Data Collected										
94-95	No Data Collected										
95-96	62	20	10	12	8	9	1	17	122	32	63
96-97	No Data Collected										
97-98	No Data Collected										

Table 28. 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)										

Table 29. 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)										
95-96	No Data Collected										
96-97	No Data Collected										
97-98	No Data Collected										

Table 30. 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)										
95-96	No Data Collected										
96-97	No Data Collected										
97-98	No Data Collected										

Table 31. 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)										
95-96	No Data Collected										
96-97	No Data Collected										
97-98	No Data Collected										

Table 32. 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)										
95-96	No Data Collected										
96-97	No Data Collected										
97-98	No Data Collected										

Table 33. 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
92-93	No Data Collected										
93-94	No Data Collected										
94-95	No Data Collected										
95-96	29	6	5	1	1	1	-	2	43	21	28
96-97	No Data Collected										
97-98	No Data Collected										

Table 34. 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
92-93	No Data Collected										
93-94	No Data Collected										
94-95	No Data Collected										
95-96	57	7	5	5	2	3	-	5	79	12	26
96-97	No Data Collected										
97-98	No Data Collected										

Table 35. 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	Rams Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
90-91	8	4	2	7	2	0	-	2	23	50	138
91-92	No Data Collected										
92-93	No Data Collected										
93-94	No Data Collected										
94-95	No Data Collected										
95-96	11	3	0	3	5	0	-	5	22	27	73
96-97	No Data Collected										
97-98	No Data Collected										

Table 36. Summary of Bighorn Sheep Population Data for Units 30-30A.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Rams Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
91-92	19	2	3	6	2	0	-	2	32	11	58
92-93	No Data Collected										
93-94	No Data Collected										
94-95	No Data Collected										
95-96	No Data Collected										
96-97	3	5	1	5	5	7	-	12	26	-	-
97-98	No Data Collected										

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

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Rams 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
92-93	No Data Collected										
93-94	No Data Collected										
94-95	No Data Collected										
95-96	No Data Collected										
96-97	No Data Collected										
97-98	11	4	6	4	3	2	-	5	30	36	136
	(Partial count incidental to elk survey)										

Table 38. Summary of Bighorn Sheep Population Data for Hunt 36A.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Rams 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
97-98	No Data Collected										

Table 39. Summary of Bighorn Sheep Population Data for Hunt Areas 36B-1 and 36B-2.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Rams 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
97-98	No Data Collected										

Table 40. Summary of Bighorn Sheep Population Data for Hunt 36B-3.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Rams Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
88-89	No Data Collected										
89-90	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
97-98	No Data Collected										

Table 41. Summary of Bighorn Sheep Population Data for Hunt Area 37.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Rams Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
88-89	No Data Collected										
89-90	No Data Collected										
90-91	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
94-95	No Data Collected										
95-96	No Data Collected										
96-97	No Data Collected										
97-98	No Data Collected										

Table 42. 1997 Season Structure for Bighorn Sheep in the Salmon Region.

Hunt No.	Season Dates	Season Length	Open For
21, 27-1, 27-2, 27-3, 27-4, 28-1, 28-2, 36A, 36B-1, 36B-2, 36B-3, 37	8/30-10/13	45 days	3/4 curl or 4 yr. old ram
27-L	10/13-10/31	19 days	3/4 curl or 4 yr. old ram

Table 43. 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	1988	7	2	29	9.7	72	1:10.3
	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
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	1988	36	3	8	9.3	71	1: 2.0
	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
27-2	1988	10	5	50	10.8	60	1: 6.0
	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

Table 43. Summary of Bighorn 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	1988	19	2	11	10.3	58	1: 3.1
	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
27-4	1989	8	4	50	8.4	29	1: 3.6
	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
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
28-1	1988	12	4	33	11.3	47	1: 3.9
	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
	1996	2	1	50	-	10	1: 5.0
	1997	2	0	0	-	13	1: 6.5
28-2	1988	7	1	14	18.7	70	1:10.0
	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
36A	1988	5	3	60	17.7	43	1: 8.6
	1989	5	2	40	25.6	44	1: 8.8

Table 43. Summary of Bighorn Harvest and Drawing Odds by Hunt Area (Continued).

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
	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	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	1988	5	2	40	11.3	39	1: 7.8
	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
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
37	1988	16	13[a]	76	10.1	291	1:18.2
	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

Table 43. Summary of Bighorn Harvest and Drawing Odds by Hunt Area (Continued).

Hunt Area	Year	No. Permits	Harvest	Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
50-L	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 44. 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

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

Table 45. Salmon Region Bighorn Sheep Mortality.

Year	Controlled Harvest	Indian Harvest*	Illegal Kill	Other	Total
1988-89	34	0	0	26	60
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

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

Table 46. Summary of Individual Bighorn Sheep Transplants in the Salmon Region.

Date	Capture Site	Release Site	Adult Male	Adult Female	Lamb Male	Lamb Female	Total
68-69	36B-Morgan Cr	37 -Mahogany Cr	1	4	1	1	7
69-70	Banff Park	37 -Mahogany Cr	5	19	0	0	24
74-75	28 -Burnt Gulch	18 -Granite Cr	1	10	2	0	13
75-76	28 -Pretty Gulch	18 -Granite Cr	5	10	4	2	21
	28 -Bacon Ranch	58 -Blue Dome	1	3	1	1	6
77-78	28 -Burnt Gulch	58 -Long Can	2	8	0	2	12
78-79	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
79-80	WY -Whiskey Mt	50 -Jaggles Can	2	5	2	2	11
81-82	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
83-84	28 -Pretty Gulch	OR -Imnaha River	3	8	0	0	11
	OR -Lostine Mts	21 -Shoup Bridge	3	7	3	3	16
84-85	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
85-86	21 -Ebenezer Bar	OR -Minam River	2	9	1	0	12
	OR -Lostine Mts	37A-Falls Cr	4	11	1	2	18
87-88	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
88-89	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
91-92	36B-Morgan Cr	WY -Bighorn Mts	2	16	2	2	22

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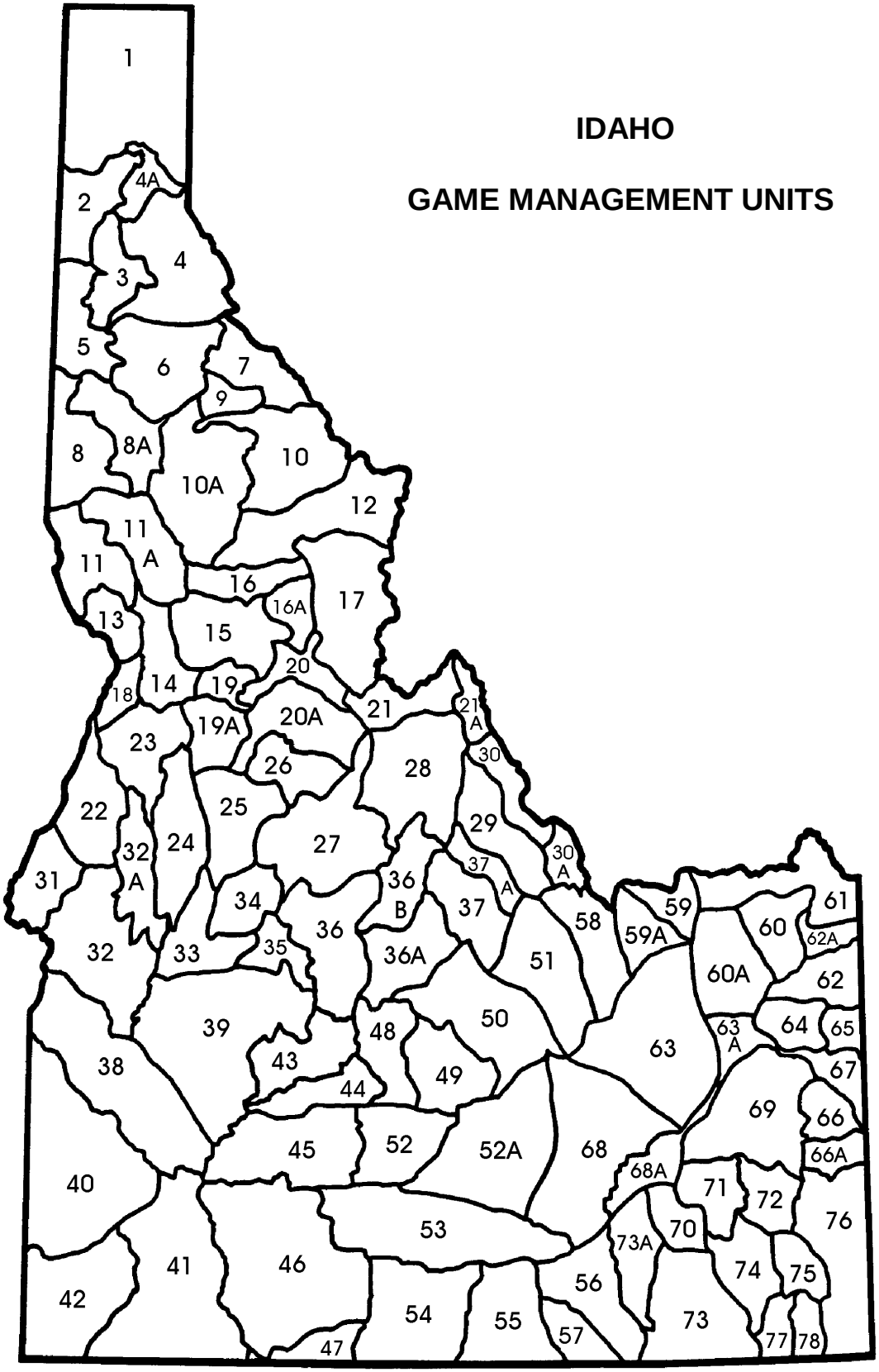

FEDERAL AID IN WILDLIFE RESTORATION

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.