IDAHO DEPARTMENT OF FISH AND GAME

Steven M. Huffaker, Director

Project W-170-R-26

STATEWIDE SURVEYS AND INVENTORY

July 1, 2001 to June 30, 2002

BIGHORN SHEEP

JOB PROGRESS REPORT

STUDY I, JOB 4

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PROJECT:	W-170-R-26		
SUBPROJECT:	2-7	**STUDY NAME:**	Big Game Population Status, Trends, Use, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 2001 to June 30, 2002

BIGHORN SHEEP – STATEWIDE

Abstract

Idaho has huntable populations of both Rocky Mountain bighorn sheep and California bighorn sheep within its borders. Hunters may harvest only two bighorn sheep (one of each race) in their lifetime under current regulations.

The Idaho Department of Fish and Game authorized 15 controlled hunts and a total of 62 permits for Rocky Mountain bighorn sheep in 2001. In addition, 14 hunters who had deferred their permit for one year as a result of wildfires in their hunt area in 2000, hunted in 2001. The 76 hunters harvested 38 Rocky Mountain bighorn sheep in 2001, for a harvest success rate of 50% statewide. By comparison, 48 hunters harvested 28 Rocky Mountain bighorn sheep in 2000 (hunt success rate of 58%); 62 hunters harvested 27 Rocky Mountain bighorn sheep in 1999 for a harvest rate of 44%, and 64 hunters harvested 37 Rocky Mountain bighorn sheep in 1998 for a harvest rate of 58%. Two exceptionally large bighorn sheep rams, each scoring more than 190 Boone and Crockett points, were harvested in Big Game Management Unit 11.

The number of hunts and permits offered for California bighorn sheep declined sharply in 2001 due to survey data indicating a sharp decline in populations. Only 3 hunts and 13 permits were offered in 2001, as contrasted with a total of 9 hunts and a total of 43 permits for California bighorn sheep in 2000. Hunts in the Bruneau/Jarbidge and Little Jack Creek areas were closed for the 2001/2002 seasons to allow time for re-evaluation of population status. In 2001, only 12 permits holders hunted, and they harvested 9 California bighorns for a success rate of 75%. Previously, 43 hunters harvested 24 California bighorn sheep in 2000 for a harvest rate of 56%, 43 hunters harvested 23 California bighorn sheep in 1999 for a harvest rate of 53%, and 45 hunters harvested 30 California bighorn sheep in 1998 for a harvest rate of 67%.

Bighorn sheep permits are among the most desirable permits offered in Idaho. Each year a single permit, valid for any open bighorn sheep controlled hunt in Idaho, is offered at public auction. In 2001, this permit sold for $47,500 at the annual convention of the Foundation for North American Wild Sheep. In 2001, 1,040 first-choice applications were received for 62 available permits for Rocky Mountain bighorn sheep (nearly 17 applications per permit offered).

This number reflects a significant increase in the number of applications above the number received in 2000 (749). The majority (55%) of all applications (576) were received from nonresidents. By comparison, 749 first choice applications for 62 permits were received in 2000 (12 applications per permit), 870 in 1999 (14 applications per permit), and 782 first-choice applicants for 64 permits in 1998 (12 applications per permit).

The number of first choice applications received for California bighorn sheep permits dropped to less than half the number of applications in 2000, a result of the apparent decline in herd size and permit numbers. A total of 232 first choice applications for the 13 permits offered were received in 2001 (18 applications per permit). Unlike Rocky Mountain bighorn sheep, more of the first choice applicants (72%) were resident hunters. In 2000, 559 first-choice applications were received for 43 available permits for California bighorn sheep (13 applications per permit), and most (63%) were received from residents of Idaho. There were 797 first-choice applicants for 43 permits in 1999 (18.5 applicants per permit), and 726 first-choice applicants for 45 permits in 1998 (16 applications per permit).

Research efforts on Rocky Mountain bighorn sheep populations were focused on the tri-state (Idaho, Oregon, Washington) Hells Canyon Initiative. Research on California bighorn sheep on Jim Sage Mountain near Burley, Idaho, continued, in an effort to document habitat selection and population growth among bighorn sheep introduced onto Jim Sage Mountain nearly Burley, Idaho, in February 2000. In addition, concern about the decline of California bighorn sheep populations in southwestern Idaho resulted in plans to initiate a research study on the survival and recruitment of California bighorn sheep lambs in 2002, and evaluation of data collection and analysis procedures.

PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-26		
SUBPROJECT:	2	**STUDY NAME:**	Big Game Population Status, Trends, Use, and Associated Habitat Studies
STUDY:	I		
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PERIOD COVERED: July 1, 2001 to June 30, 2002

BIGHORN SHEEP – CLEARWATER REGION

UNITS 11, 13, AND 18

CONTROLLED HUNT AREA 11

Abstract

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

Management Direction

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

Background

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

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

Reports of dead and dying bighorn sheep on the Washington side of the Snake River opposite Unit 11 in December 1995 prompted the removal of 72 bighorn sheep from this area in an attempt to prevent the spread of pneumonia to other bighorn sheep in the population in the Snake River canyon. These bighorn sheep were transported to the IDFG Wildlife Health Laboratory in Caldwell after a joint capture effort by Idaho, Oregon, and Washington personnel. All but 8 of these bighorn sheep died by June 1996 despite intensive treatment in captivity. Periodic aerial surveys were conducted through spring 1996 by Idaho, Oregon, and Washington personnel to monitor bighorn sheep status. The disease spread along the Snake River from north of the Grande Ronde River, Washington to the Imnaha River, Oregon, and up the Grande Ronde River to the Wenaha River in Oregon. Some Idaho bighorn sheep appeared to exhibit symptoms, but no deaths were attributed to the Washington-Oregon outbreak. Unit 11 lamb survival was very low in 1996, high in 1997, dropped again in 1998 and 1999, rebounded in 2000 and 2001, but fell again in 2002.

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

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

Another disease outbreak was detected in April 1991. Several sick bighorn sheep and 2 dead ewes were reported in the vicinity of Granite Creek in Hells Canyon. A subsequent helicopter survey did not detect any bighorn sheep, but a fixed-wing radiolocation flight (26 April 1991) after the survey found 10 bighorn sheep and 1 active radio. Subsequent helicopter surveys in 1992, 1993, and 1996 indicated that few animals remained in the Unit 18 herd (Table 1). It is

likely that domestic sheep have introduced 1 or more diseases to the bighorn sheep in Unit 18 and that the disease(s) have either caused or contributed to the decline of the population. The 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.

Bighorn sheep were established in Big Canyon Creek in Unit 13 in December 1997 with a transplant of 12 ewes and 4 rams from Spences Bridge, British Columbia. The population was supplemented with six bighorn sheep (3 ewes and 3 rams) from the Cadomin coal mine in Hinton, Alberta, Canada on 13 February 1999. In summer 2000, the population was estimated at 45 bighorn sheep (21 ewes, 16 lambs, 6 sublegal rams, and 2 legal rams) (Table 2). During fall 2000 nearly all lambs died. Nine yearlings and adults were also found dead in 2000 and 2001, primarily due to scabies infection and pneumonia. In March 2002, the population was estimated at 32.

Population Surveys

Since the 1984 transplant, the Unit 11 herd has grown at a moderate rate (Table 1). Frequency of bighorn sheep surveys in Unit 11 increased in 1996 to monitor mortality and survival of lambs and to develop a sightability model as part of a research effort focusing on the Snake River Hells Canyon complex. Lamb survival in 1996 was extremely low (7 lambs:100 ewes). This was presumably a residual effect of the 1995-1996 *Pasteurella* outbreak in Oregon and Washington. Most recently lamb production has resulted in a slow increase in total bighorn sheep numbers. Three rams exhibiting exploratory movements were removed from the population in May 2000. One radio-collared two-year-old ram was hit by a car on Highway 12 near Hatwai Creek, and two yearling rams were darted near Clarkston, Washington but subsequently died. These may have come from Idaho or Washington. Necropsy revealed that the two-year-old ram hit by the car had recovered from a previous pneumonia infection.

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

Sightability model development has been ongoing since March 1998. Sightability has been assessed during 6 trials, 3 in March and 3 in December, in 7 herds in Idaho, Oregon, and Washington. Over the 6 trials, 359 of 397 radio-collared bighorn sheep (90%), 167 of 192 groups (87%), and 1,008 of 1,120 bighorn sheep (90%) have been observed during the

helicopter surveys. Both the sightability model development and the vaccine test were conducted cooperatively under the "Hells Canyon Initiative."

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

Harvest Characteristics

Hunting was initiated in Unit 11 in 1993. Twelve rams have been harvested to date. A limited hunt with 2 permits was offered in 1993 and 1994. The likelihood of participation by the state auction or lottery tag holder in the Unit 11 hunt, as occurred from 1993-1996, led to a reduction in the number of permits offered in the unit from 2 to 1 in 1995 (Table 4). Odds of drawing a tag declined significantly in 1995, probably in large part due to the harvest of a record book ram in 1994. In 1997, the hunt was closed after surveys indicated few legal rams remained in the population. The Idaho State record bighorn ram that probably died in 1996 was picked up in Unit 11 in 1997. In 1999, the statewide lottery tag holder was allowed to hunt in Unit 11 and harvested a record book ram. In 2001, the season was opened for one general draw tag and the statewide auction tag buyer. Two record book rams were taken. They received the bronze and first honorable mention awards for the 3rd and 4th largest Rocky Mountain bighorn rams taken by FNAWS members in 2001.

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

Habitat 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. Land along the Salmon River is primarily privately owned, although the Bureau of Land Management (BLM) manages much of the river corridor. The river breaks in Unit 13 are also primarily under private ownership with isolated tracts of BLM lands and state lands. The Snake River corridor in Unit 18 is entirely under U.S. Forest Service (USFS) ownership. Approximately 110 acres of the Snake River corridor in Unit 13 (Ragtown Bar) was acquired by a conservation group for

transfer to the USFS in 1998. Additionally a conservation easement was acquired by the BLM on several thousand acres in Unit 13 in the Salmon River drainage.

The 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 2000, the Maloney Creek wildfire burned approximately 70,000 acres along the Snake and Salmon Rivers between Maloney Creek on the Salmon River side and China Garden Creek on the Snake River. In Unit 18, wildfire burned approximately 16,100 acres of land managed by the USFS near Sheep Creek and 425 acres near Hells Canyon Dam in 1996.

The Clearwater Region experienced weather conditions in 2001-2002 that were considered normal. Snowpack in the Clearwater Basin was 117% of average (October through March) while the Salmon River Basin averaged 87% for the same time period. Snowfall was later than usual in the region with no accumulation at the lower elevations until after the first of December. This allowed big game populations to forage easily until mid-December. However, the presence of substantial snowpack that persisted later than normal into the spring likely had a negative effect on big game survival in herds that reside at higher elevations.

Trapping and Transplants

Twenty sheep (16 ewes and 4 rams) from the Missouri Breaks outside Havre, Montana were released along the Snake River upriver of Kirkwood Creek in Unit 18 on 13 February 2002. All sheep were radio-collared. One ewe died in Hiltsley Creek after apparently getting tangled in a barbed wire fence. The remainder have split up into small groups between Sheep Creek, Idaho and Copper Creek, Oregon.

In December 2000, Oregon Department of Fish and Wildlife released 15 sheep (14 radio-collared) at Quartz Creek, Oregon. These sheep have moved between Hells Canyon Reservoir and Copper Creek on both the Idaho and Oregon sides of the Snake River.

UNITS 14, 17, 19, AND 20

CONTROLLED HUNT AREAS 19, 20-1, AND 20-2

Abstract

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

Recent surveys in Units 17, 19, and 20 have suggested a decline in total bighorn sheep numbers and lamb recruitment that may be related to similar declines in adjacent units caused by diseases, primarily *Pasteurella* spp. The late hunts were dropped and permit levels were reduced substantially for the 1993-1994 hunts. Five rams were harvested by 10 permittees on hunts 19, 20-1, and 20-2 during the 2001 hunting season. Aerial survey results from Unit 17 have suggested a stable population.

Management Direction

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

Background

Rocky Mountain bighorn sheep populations are found in Units 14, 17, 19, and 20. The Unit 14 herd is limited to a few, scattered animals that likely disperse from adjacent herds to the east 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 hunt areas (Table 5).

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

Population Surveys

Bighorn sheep have usually been surveyed by helicopter coincidentally with elk sightability surveys in January and February (Tables 6, 7, and 8). From 5-14 February 2001, 15 hours were added to the elk survey flight time in Units 19 and 20 to allow total coverage of search units where bighorn sheep have been observed in the past. In Unit 17, 8 bighorn sheep were observed on 8-9 February 2001 during a bighorn sheep capture effort in the upper Selway River east of Magruder Crossing. Spring surveys were most recently conducted in Units 19 and 20 during 1-3 May 1993 and in Unit 17 from 28-30 April 1994.

Total numbers of bighorn sheep observed during surveys have declined in Units 17, 19, and 20 since the early 1980s. From 99 to 121 bighorn sheep were observed in Unit 17, 1982 through 1984, whereas only 37 to 62 bighorn sheep were observed on the last 3 surveys (Table 6). Eight

bighorn sheep (5 ewes and 3 class II rams) were observed during a helicopter search for bighorn sheep near Magruder Crossing in Sheep Creek on 8 February 2001. One hundred twenty-two to 136 bighorn sheep were observed during 1983 and 1984 in Unit 19, but only 52 to 60 were observed in 1992, 1993, and 1996 (Table 7). Although conducted with low sampling intensity, abundance of bighorn sheep observed in the 2001 survey in Unit 19 was within the expected range given recent levels. In Unit 20, 207 to 230 bighorn sheep were observed during 1986 and 1987; however, this number declined in surveys in 1993, 1994, and 1996 to a range of 66 to 87 (Table 8). Observed abundance in the Unit 20 survey in 2001 was alarmingly low. This may be related to the occurrence of large-scale fires that burned bighorn sheep habitat on both the north and south sides of the Salmon River during the summer of 2000. Of interest is the fact that the Three Bears Fire occurred throughout Hunt Area 20-2 and the Flossie Fire was south of the Salmon River, adjacent to Hunt Area 20-2. However, bighorn sheep numbers were "normal" in 20-2, and deficient in 20-1. Lamb recruitment remained high in Unit 19 in 2001 (47 lambs per 100 ewes) after rebounding in 1996 from lows in 1992 and 1993 of 5.3 and 0.0, respectively. In Unit 20, observed recruitment in 2001 continued to be variable at 27 lambs, up from the 1992-2000 average of 17. Results from the 1994 and 1995 surveys in Unit 17 suggested favorable levels of lamb recruitment.

Low recruitment rates and overall decline in bighorn sheep numbers over the long term in these units may be caused by disease and habitat conditions. Diseases have apparently caused reduced lamb survival in adjacent herds along 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. Additionally, the effects of recent wildfires on bighorn sheep populations in these areas is as yet unknown, but may affect adult survival and recruitment of young, and alter habitat use patterns and distribution.

Harvest Characteristics

Beginning in 1952 and lasting until 1970, bighorn sheep hunting in 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 and the September-October season was split, creating 2 hunts within the same hunt boundary. In 1985, 1 permit each was added to the September portion of the 4 hunts along 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 had higher success rates, were discontinued. The number of permits offered for early hunts was reduced from 25 to 15. In 1995, further changes were made to Units 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 was determined from telephone contacts of permittees prior to 1995 and from Big Game Mortality Reports beginning in 1996 (Table 9). In 2001, 10 permittees killed 5 rams for an average success rate of 50%. The current level of harvest is questionable given bighorn sheep plan guidelines which call for a minimum population of 100 bighorn sheep, and a maximum harvest of 20% of the legal rams observed on the previous survey. The 3 hunt areas contain 3 discreet bighorn sheep populations that are each below the 100 bighorn sheep minimum (Hunt Area 19: 62; Hunt Area 20-1: 17; Hunt Area 20-2: 25). Combined, there are only 104 bighorn sheep. In addition, with a total of 17 legal rams, maximum harvest would be 3 rams. The 5-year mean harvest in the 3 hunt areas was 4.8 rams. These data suggest that the current 10 permits should be reduced to 7: 4 in Hunt Area 19 and 3 in Hunt Area 20 (20-1 and 20-2 combined).

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. Extensive burns resulted from wildfires during the summer and fall of 2000. In Unit 19, the Lone Sheep Fire burned about 300 acres in the Gospel Hump Wilderness. The Three Bears and Flossie fires burned a total of about 120,000 acres in the Frank Church River-of-No-Return Wilderness in Unit 20. Fire activity may have diminished short-term habitat potential but can be expected to improve habitat conditions in the long term.

The Clearwater Region experienced weather conditions in 2001-2002 that were considered normal. Snowpack in the Clearwater Basin was 117% of average (October through March) while the Salmon River Basin averaged 87% for the same time period. Snowfall was later than usual in the region with no accumulation at the lower elevations until after the first of December. This allowed big game populations to forage easily until mid-December. However, the presence of substantial snowpack that persisted later than normal into the spring likely had a negative effect on big game survival in herds that reside at higher elevations.

Trapping and Transplants

As part of a statewide effort to monitor health in bighorn sheep populations, bighorn sheep were captured after immobilization with Carfentanil-filled darts to obtain throat and ear swabs and blood and fecal samples. During 2 trips up the Salmon River by jet boat into Unit 19 in November and December 2000, a total of 15 bighorn sheep (3 rams and 12 ewes) were sampled and eartagged. Additionally in Unit 17, 3 bighorn sheep (1 ram and 2 ewes) were processed during a trip by snowmachine into the upper Selway River area near Magruder Crossing at Sheep Creek 8-9 February 2001. Samples were taken from the ram, a 2½ year old, after it was observed from a helicopter being attacked and killed by a mountain lion.

Table 1. Summary of Bighorn Sheep Survey Data for Unit 11, 1992-2002[a]. Counts are not additive.

Year	Ewes	Lambs	Rams		Uncl.	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegal	Legal				
1992	30	8	6	13	0	57	26.7	63.3
1993	25	4	6	10	0	45	16.0	64.0
1994	45	15	7	10	0	77	33.3	37.8
1995								
12/1	40	13	7	12	0	72	32.5	47.5
12/18	18	8	4	9	0	39	44.4	72.2
12/23	16	4	5	9	0	36	25.0	87.5
1996								
1/5	26	11	1	6	0	44	42.3	26.9
1/30	24	10	5	1	0	40	41.7	25.0
2/15	31	10	7	2	0	50	32.3	29.0
2/28	29	8	8	2	0	47	27.6	34.5
3/20	36	14	11	6	0	67	38.9	47.2
6/20	19	11	10	5	0	45	57.9	78.9
11/21	30	2	14	7	0	53	6.7	70.0
1997								
6/27	28	23	4	8	0	63	82.1	42.9
12/6	34	17	8	12	0	71	50.0	58.8
1998								
3/18	35	15	12	11	0	73	42.8	65.7
12/9	41	9	16	18	0	84	30.0	82.9
1999								
3/22	44	8	11	17	0	80	18.1	63.6
12/16	46	11	10	19	0	86	23.9	63.0
2000								
12/11	56	28	8	16	24	130	50.0	42.0
2001								
3/22	55	30	8	28	0	121	54.6	50.9
2002								
3/20	61	10	16	34	0	121	16.0	62.5

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

Table 2. Summary of Bighorn Sheep Survey Data for Unit 13, 1997-2002.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1997[a]											
Dec.	12	0	4	0	0	0	0	0	16	0.0	33.0
1998											
10/20	12	8	0	2	0	0	0	0	22	66.7	16.7
1999[b]											
3/22	14	7	3	2	0	0	0	0	26	50.0	35.7
12/17	17	12	4	2	2	0	0	2	37	70.6	47.1
2000											
6/13	21	16	4	2	2	0	0	2	45	76.2	38.1
12/4	18	2	3	2	2	1	0	3	28	11.1	44.4
2001											
3/24	16	1	2	3	2	1	0	3	25	6.3	50.0
12/19	15	7	2	3	5	0	0	5	32	50.8	66.6
2002											
3/23	16	7	0	3	6	0	0	6	32	43.8	56.3

[a] Transplant from British Columbia, Canada.

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

Table 3. Summary of Bighorn Sheep Survey Data for Unit 18, 1983-2002[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	-	-	-	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-
1987	23	4	0	4	5	1	0	6	37	17.4	43.5
1988	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-
1990	16	0	3	2	1	0	0	1	22	0.0	37.5
1991	-	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-
1996	0	0	0	0	0	0	0	0	0	0.0	0.0
1997	-	-	-	-	-	-	-	-	-	-	-
1998	3	3	1	0	1	0	0	1	8	100.0	67.0
1999	5	2	1	0	0	0	0	0	8	50.0	20.0
2000	5	3	1	0	0	0	0	0	9	60.0	20.0
2001	4	2	0	1	0	0	0	0	7	50.0	25.0
2002	6	2	1	1	2	0	0	3	12	33.3	67.7

[a] Surveys during 1983, 1990, and 1992 were conducted during winter (December through January) incidental to mule deer and elk surveys. The 1987, 1993, and 1996 surveys were conducted during spring (March through April). The 1998, 1999, 2000, and 2002 data were collected incidentally from the Snake River in May and June. The 2001 data were collected incidentally from the Snake River in March.

Table 4. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area, 1992-2001.

Hunt Area	Year	No. Permits	Harvest	% Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
11	1993[a]	2	2	67	3.5	76	1:38.0
	1994[a]	2	3	100	1.0	61	1:30.5
	1995	1	2	100	8.0	68	1:68.0
	1996[a]	2	2	100	2.0	105	1:52.0
	1997	Closed					
	1998	Closed					
	1999[a]	0	1	100	5.0	0	-
	2000	Closed					
	2001[a]	1	2	100	2.0	222	1:222.0
18[b]	1992	2	2	100	7.0	9	1:4.5

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

[b] Unit 18 was closed in 1993.

Table 5. 2001 Season Structure for Bighorn Sheep in Units 11, 19, and 20 in the Clearwater Region.

Hunt Area	Season		Permits
	Dates	Length	
11	30 August-13 October	45 Days	1
19	30 August-13 October	45 Days	6
20-1	30 August-13 October	45 Days	2
20-2	30 August-13 October	45 Days	2

Table 6. Summary of Bighorn Sheep Survey Data for Unit 17, 1981-2002[a].

Year	Ewes	Lambs	Rams		Uncl.	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegal	Legal				
1981	16	7	1	0	31	55	43.8	6.3
1982	84	29	8	0	0	121	34.5	9.5
1983	38	8	10	1	42	99	21.1	28.9
1984	56	26	18	9	0	109	46.4	48.2
1985	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-
1988	22	8	12	1	0	43	36.4	59.1
1989	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-
1991	37	7	6	2	0	52	21.2	24.2
1992	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-
1994	20	4	6	6	0	37	20.0	60.0
1995[b]	22	11	5	5	0	43	50.0	45.5
1996	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-
2001[c]	2	0	1	0	0	3	-	-
2002	-	-	-	-	-	-	-	-

[a] The 1994 survey was conducted during spring (28-30 April). 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.

[c] The 2001 data were collected during a bighorn sheep capture effort in the upper Selway River east of Magruder Crossing.

Table 7. Summary of Bighorn Sheep Survey Data for Unit 19, 1981-2002[a].

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
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	-	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-
1989	63	20	4	3	1	0	0	1	91	31.7	12.7
1990	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-
1996	32	14	5	0	2	3	0	5	56	44.8	31.3
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-	-	-	-
2001	28	13	0	5	0	7	0	7	53	46.4	42.9
2002	-	-	-	-	-	-	-	-	-	-	-

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

Table 8. Summary of Bighorn Sheep Survey Data for Unit 20, 1981-2002[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	-	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-
1989	94	26	10	9	10	3	0	13	152	27.7	34.0
1990	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-
1996	51	7	4	5	7	3	1	10	78	13.8	39.2
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-	-	-	-
2001	22	6	10	0	13	0	0	13	51	27.3	104.6
2002	-	-	-	-	-	-	-	-	-	-	-

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

Table 9. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area, 1992-2001.

Hunt Area	Year	No. Permits	Harvest	% Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
19	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
	1995[a]	6	4	67	12.2	51	1:8.5
	1996	6	2	33	-	47	1:7.8
	1997	6	4	67	8.7	62	1:10.3
	1998	6	4	67	2.5	71	1:11.8
	1999	6	4	67	7.3	59	1:9.8
	2000	6	4	67	8.0	76	1:12.7
	2001	6	3	50	5.0	68	1:11.3
19-L[b]	1992	2	2	100	5.5	29	1:14.5
20-1	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
	1995	2	1	50	9.5	15	1:7.5
	1996	2	2	100	3.0	30	1:15.0
	1997	2	1	50	9.0	23	1:11.5
	1998	2	2	100	8.0	22	1:11.0
	1999	2	0	0	0.0	45	1:22.5
	2000	2	2	100	11.0	10	1:5.0
	2001	2	1	50	20.0	33	1:16.5
20-2	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
	1995	2	0	0	-	12	1:6.0
	1996	2	0	0	-	5	1:2.5
	1997	2	1	50	8.0	12	1:6.0
	1998	2	2	100	-	16	1:8.0
	1999	2	1	50	30.0	14	1:7.0
	2000	2	0	0	-	10	1:5.0
	2001	2	1	50	14.0	19	1:9.5
20-3[e]	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
20-L[f]	1992	2	1	50	8.5	32	1:16.0

[a] Hunt 19 was expanded in 1995 to include 20-3.

[b] Hunt 19-L was closed in 1993.

[c] Hunt 20-3 was added to Hunt 19 in 1995.

[c] Hunts 20-2, 20-4, 20-6, and portions of Units 20A and 21 were incorporated into Hunt 20-L in 1991. Hunt 20-L was closed in 1993.

PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-26		
SUBPROJECT:	3	**STUDY NAME:**	Big Game Population Status, Trends, Use, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 2001 to June 30, 2002

BIGHORN SHEEP – SOUTHWEST REGION, NAMPA

UNITS 41 AND 42

CONTROLLED HUNT AREAS 41, 42-1, AND 42-2

Abstract

Aerial surveys of California bighorn sheep herds were conducted in July 2002. The number of sheep observed (126) in the Little Jacks Creek and Big Jacks Creek herd decreased 44% from the count in 2000, but ground and aerial observations during the survey suggest sheep avoidance reaction to the helicopter may have been a more significant factor during this survey than in prior years. The survey crew detected only 50% of the radio-marked animals in this herd. Two hundred forty-nine bighorn sheep were observed during the survey in the Owyhee River area in 2002, a 19% reduction compared to the 2000 count. Disturbance and displacement of sheep by another helicopter during a portion of this survey may have contributed to the low count.

Department wildlife staff collected samples in March 2002 from 3 bighorn sheep populations to determine if these herds have been exposed to any disease agents that may be affecting population viability. The Department and University of Idaho also initiated a graduate research project to assess bighorn sheep productivity and survival in the Little and Big Jacks Creek population.

Thirteen hunters harvested 9 California bighorn sheep during the 2001 hunting season.

Management Direction

Reintroduce bighorn sheep into as many suitable habitats as possible while keeping the Rocky Mountain and California bighorn sheep subspecies geographically separated; maintain controlled hunt strategy and offer more hunter opportunity where consistent with management goals; encourage bighorn sheep habitat improvement projects by land management agencies; harvest rams under the present ¾ curl 4+ years regulation, but consider a ewe hunt on a trial basis; harvest and/or remove for transplant no more than 15-20% of the observed legal rams in a hunt

unit; and 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.

Background

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

Four releases of California bighorn sheep from British Columbia into Owyhee County in the 1960s provided the nucleus for the original herds along portions of the Owyhee River and in Little Jacks Creek. As those herds grew, hunting seasons were initiated. Beginning in 1980, 50 bighorn sheep were transplanted into other parts of the Owyhee, Bruneau, and Jarbidge River drainage. An additional 12 bighorn sheep from British Columbia were released into Idaho's Jarbidge River Canyon in 1984 when deep snows prevented Nevada Department of Wildlife personnel from reaching their proposed release site in Nevada. Much suitable habitat remains unoccupied; there are significant opportunities to enhance population growth and geographic expansion of these bighorn sheep through a continuing transplant program. During this planning period, California bighorn sheep may be released into several areas of unoccupied habitat.

Population Surveys

Aerial surveys of all established California bighorn sheep herds in Owyhee County were flown in August 1987 and again in June 1990. The Little Jacks Creek and Owyhee River have been regularly surveyed since 1983 (Tables 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 10). Prior to 1987, all known bighorn sheep areas on the East Fork Owyhee River drainage downstream to Red Canyon were surveyed. In 1987, a stratified random sample of the drainage was surveyed, as well as additional areas from Red Canyon downstream to the Oregon border. Since 1990, the survey area has included the whole drainage from the Oregon border upstream to approximately 5 miles above the point where the pipeline crosses the East Fork Owyhee River.

The drainage of the Little Jacks Creek/Shoofly Creek complex has been surveyed since 1983 (Table 10). A research project to develop a sightability survey technique to correct for missed bighorn sheep was 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.

Population surveys were conducted in July 2002. The weather conditions and plant phenology were favorable for the survey. The survey area was well covered and there were no problems with the survey operation. However, the number of sheep observed in the Jacks Creek drainages (126) declined 44% from the number observed in 2000 (225). The decline in total observed sheep is cause for concern, but ground and aerial observations of the reaction of sheep to the survey helicopter suggests that their dramatic escape response to the sound of the helicopter contributed to the low counts during this survey. Most sheep counted from the helicopter were already running for cover when first detected, and ground observers confirmed that sheep began running and/or sought cover in caves, slot canyons, or under overhanging rocks in response to the sound of the helicopter long before the aircraft was visible from the ground. The escape response was most dramatic in the Jack's Creek drainages where 38 bighorn sheep were captured by helicopter in March 2002 and radio-collared for a research project. In fact, aerial observers detected only 50% of the 34 radio-collared sheep known to be in the study area during the survey.

The reduced count during this survey was likely the result of an extreme escape response caused by the recent disturbance of sheep during the March capture operation. Although the dramatic decrease in number of observed sheep is reason for concern, these survey data should be evaluated with caution and the population reassessed within the next two years.

Big and Little Jacks Creek were both surveyed in 1998, 2000, and again in 2002 (Tables 10 and 12). In the past, these areas have been treated as separate herds. After the increase in the Big Jacks Creek area population over time, there appears to be at least some interchange between the Big Jacks and Little Jacks Creek herds. With this interchange between the two areas, it is most appropriate that the population data be combined and examined as one larger herd (Table 13).

There are scattered pockets of bighorn sheep habitat in Unit 40, but none of these areas were surveyed in 2000 or 2002.

The East Fork Owyhee River herd showed little change between the 1998 (334 bighorn sheep observed) and 2000 surveys (309 observed), but 19% fewer sheep were observed in 2002 (249 observed) compared to 2000 (Table 11). Escape behavior of sheep observed in the Owyhee River area was much less dramatic in response to the helicopter than in the Big and Little Jack's Creek drainages and many sheep were observed standing still or walking rather than running for cover. Conditions were good and the search area and effort were comparable to the 1998 and 2000 survey. However, during the 2002 survey of the Deep Creek drainage, the survey crew encountered another helicopter flying along the bottom of the canyon. Origin of the other

helicopter is unknown, but it is plausible that a sheep tag holder contracted a private helicopter to scout for sheep prior to his fall hunt. Regardless of the origin of this aircraft, it is highly probable that sheep were displaced from this search area during or prior to our survey effort. Six separate groups of sheep were observed in the Deep Creek Canyon area during the 2000 survey, but no sheep were observed there during our 2002 survey. If sheep were in fact displaced from the Deep Creek Canyon prior to our flight, the loss of these sheep from the 2002 survey count may explain a substantial portion of the difference in counts between the 2000 and 2002 survey totals.

Research

In response to concerns over sheep population status in the southwest region, the Department initiated 2 research projects in March 2002. Blood samples, fecal samples, ear swabs, and pharangeal swaps were taken from 10 sheep captured from the Owyhee River population, 10 from the Bruneau-Jarbidge population, and approximately 40 from the Jack's Creek population to determine if these populations are affected by any diseases that could potentially be affecting population viability. Samples are currently being assessed for disease agents by the University of Idaho's Caine Veterinary Teaching Center. Preliminary assessment of blood samples collected from 39 ewes in the Jack's Creek population indicated a pregnancy rate of 92%. Five of 7 ewes (71%) sampled in the Owyhee herd were pregnant.

In addition to disease testing, the Department and University of Idaho are cooperating on a mortality and productivity study in the Big and Little Jack's Creek Canyons. Thirty-six ewes and 1 young ram were captured by helicopter and radio-collared in March 2002. A university graduate student will monitor the marked sheep over the next 2 years and document ewe mortality, birth rates, lamb survival, and movements of marked sheep within and around the canyon complex.

Harvest

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

There were two changes in the season structure for 1999 and 2000. The Big Jacks Creek hunt (41-4) was split into an early (41-4, 30 Aug-14 Sep) and a late (41-5, 22 Sep-8 Oct) hunt, similar to the Little Jacks Creek area. Unit 40, which contains several pockets of occupied bighorn sheep habitat, was added to Little Jacks Creek hunt areas 41-1 and 41-2. However, hunters did not harvest any rams from Unit 40 in 1999 or 2000.

In the 2001 and 2002 hunting seasons (Table 14), Unit 40 was eliminated and the hunts in the Little Jacks and Shoofly drainages were closed because of concerns over declining numbers of sheep.

The decreased number of permits did reduce the chances of drawing a California bighorn sheep permit (Tables 15 and 16). Based upon the mandatory reports, 13 hunters harvested 9 California bighorn rams in the 2001 controlled hunts for a 69% success rate.

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 2001-2002.

Trapping and Transplants

There was no trapping and transplanting activity in Units 40, 41, and 42 during the period 1999-2002. A summary of transplant activity in Units 40, 41, and 42 is in Table 17.

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 was in accordance with the plan that called for no more than 20% removal of legal rams. Additionally, the Owyhee River bighorn sheep population has been used to supply California bighorn sheep for reintroduction into other areas.

Hunting seasons since 1995-1996 have been modified in response to the 1994 population survey results. First, a new ram hunt was started in Big Jacks Creek after the herd was sufficiently

established to support a limited ram hunt. Second, the ewe hunt in Little Jacks Creek was temporarily closed. 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. Finally, in response to survey results in 1998 and 2000, the hunt in Little Jacks Creek and Unit 40 was closed and the number of permits in the Big Jack's Creek drainage and the Owyhee River area were further reduced.

These bighorn sheep populations should continue to be monitored very closely. Aerial surveys should be conducted every-other year to monitor population trends, ram:ewe ratios, and lamb survival while these populations are being harvested for transplant and sport. 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.

Table 10. Summary of Bighorn Sheep Population Data for Little Jacks Creek, Hunt Area 41-1, 41-2, 41-3, 41-4, and 41-5, 1983-2002.

Year	Ewes	Lambs	Rams		Uncl.	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegal	Legal				
1983	-	-	17	25	-	115	53.0	74.0
1984	-	-	-	-	-	-	-	-
1985[a]	30	16	26	13	0	85	53.3	130.0
1985[b]	40	18	22	16	0	96	45.0	95.0
1986	-	-	-	-	-	-	-	-
1987[c]	84	49	26	25	0	184	58.3	60.7
1987[a]	102	35	19	8	0	164	34.3	26.5
1988	73	29	56	26	0	184	39.7	112.3
1989	105	43	33	22	0	203	41.0	52.4
1990	78	32	54	33	5	202	41.0	111.5
1991	99	55	43	37	7	241	55.6	80.8
1992	81	42	35	36	0	194	51.9	87.7
1993	142	36	51	41	0	270	25.4	64.8
1994	107	40	41	16	0	204	37.4	53.3
1995	-	-	-	-	-	-	-	-
1996	95	33	39	14	0	181	34.7	55.8
1997	-	-	-	-	-	-	-	-
1998	57	18	35	11	3	124	31.6	80.7
1999	-	-	-	-	-	-	-	-
2000	63	20	8	5	0	96	31.7	20.6
2001	-	-	-	-	-	-	-	-
2002	43	13	12	8	5	81	30.2	46.5

[a] August survey.
[b] November survey.
[c] June survey.

Table 11. Summary of Bighorn Sheep Population Data for the Owyhee River, Hunt Areas 42-1, 42-2, 42-3, 42-4, and 42-5, 1983-2002.

Year	Ewes	Lambs	Rams		Uncl.	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegal	Legal				
1983	135	76	76	46	1	334	56.3	90.4
1984	-	-	-	-	-	-	-	-
1985	124	71	57	21	0	273	57.3	62.9
1986	-	-	-	-	-	-	-	-
1987	140	70	-	-	0	329	50.0	85.0
1988	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-
1990	339	183	71	46	0	639	54.0	34.5
1991	400	175	60	114	4	753	43.8	43.5
1992	323	142	101	54	0	620	44.0	48.0
1993	406	81	125	57	0	669	20.0	44.8
1994[a]	179	73	51	42	2	347	40.8	52.0
1994[b]	177	63	61	35	0	336	35.6	54.3
1995	-	-	-	-	-	-	-	-
1996	202	96	52	51	0	401	47.5	51.0
1997	-	-	-	-	-	-	-	-
1998	204	76	24	26	4	334	37.3	24.5
1999	-	-	-	-	-	-	-	-
2000	198	60	29	22	0	309	30.3	25.8
2001	-	-	-	-	-	-	-	-
2002	164	50	25	9	1	249	30.5	20.7

[a] June survey.
[b] July survey.

Table 12. Summary of Bighorn Sheep Population Data for Big Jacks Creek, 1990-2002.

Year	Ewes	Lambs	Rams		Uncl.	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegal	Legal				
1990	14	10	-	-	-	38	71.4	-
1991	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-
1993	46	19	17	8	0	90	41.3	54.3
1994	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-
1997	73	38	12	18	0	141	52.1	41.1
1998	59	30	25	20	0	134	50.8	76.3
1999	-	-	-	-	-	-	-	-
2000	78	31	9	11	0	129	39.7	25.6
2001	-	-	-	-	-	-	-	-
2002	20	5	9	11	0	45	25.0	100.0

Table 13. Summary of Bighorn Sheep Population Data for Combined Big and Little Jacks Creek Herds, 1998-2002.

Year	Ewes	Lambs	Rams		Uncl.	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			Sublegal	Legal				
1998	116	48	60	31	0	258	41.4	78.4
1999	-	-	-	-	-	-	-	-
2000	141	51	17	16	0	225	36.2	23.4
2001	-	-	-	-	-	-	-	-
2002	63	18	21	19	5	126	28.6	63.5

Table 14. 2001 and 2002 Season Structure for Bighorn Sheep in the Southwest Region (Nampa).

Hunt Area	Season		Permits
	Dates	Length	
41	30 August-8 October	40 Days	3
42-1	30 August-14 September	16 Days	5
42-2	22 September-October 8	17 Days	5

Table 15. Summary of Bighorn Sheep Harvest and Drawing Odds by Hunt Area, 1989-2001.

Hunt Area	Year	No. Permits	Harvest	% Hunter Success	Days/ Hunter[a]	Total First Choice Applicants	Drawing Odds
41-1	1989	3	2	67	6.0	54	1:18.0
	1990	3	3	100	3.0	67	1:22.3
	1991	3	3	100	4.0	60	1:20.0
	1992	3	2	67	3.3	74	1:24.7
	1993	5	3	60	5.6	64	1:12.8
	1994	5	4	80	7.0	110	1:22.0
	1995	5	5	100	8.5	84	1:16.8
	1996	5	3	60	10.0	103	1:20.6
	1997	5	3	60	6.7	86	1:17.2
	1998	5	4	80	6.5	95	1:19.0
	1999	4	3	75	4.7	115	1:28.7
	2000[b]	4	2	50	3.5	83	1:20.8
41-2	1989	3	3	100	1.0	35	1:11.7
	1990	3	3	100	5.7	51	1:17.0
	1991	3	3	100	3.3	62	1:20.7
	1992	3	3	100	4.5	52	1:17.3
	1993	5	4	80	4.0	48	1:9.6
	1994	5	2	40	6.3	83	1:16.6
	1995	5	5	100	3.8	86	1:17.2
	1996	5	3	60	8.0	80	1:16.0
	1997	5	3	60	1.3	57	1:11.4
	1998	5	2	40	12.5	72	1:14.4
	1999	4	3	75	4.7	82	1:20.5
	2000	4	4	100	4.0	53	1:13.3
41[b]	2001	3	3	100	-	67	1:22.3
41-3	1993	5	3	60	2.5	51	1:10.2
	1994	5	5	100	5.3	42	1:8.4
41-4	1993	5	2	40	1.5	9	1:1.8
	1994	5	3	60	4.8	6	1:1.2
	1995	3	3	100	7.5	94	1:31.3
	1996	3	3	100	4.3	71	1:23.7
	1997	5	3	60	3.0	108	1:21.6
	1998	5	5	100	3.6	110	1:22.0
	1999	3	2	67	2.0	43	1:14.3
	2000	3	3	100	6.3	38	1:12.7
41-5	1999	2	2	100	5.5	34	1:17.0
	2000	2	2	100	3.0	44	1:22.0
42-1	1989	8	5	63	1.9	92	1:11.5
	1990	8	7	88	3.4	115	1:14.4
	1991	12	9	75	5.2	120	1:10.0
	1992	12	10	83	4.5	167	1:13.9
	1993	12	7	58	5.6	96	1:8.0
	1994	12	5	42	7.4	135	1:11.3
	1995	10	6	60	7.4	110	1:11.1
	1996	10	4	40	6.0	139	1:13.9
	1997	10	6	60	5.3	93	1:9.3

Table 15. Continued.

Hunt Area	Year	No. Permits	Harvest	% Hunter Success	Days/ Hunter[a]	Total First Choice Applicants	Drawing Odds
	1998	10	7	70	6.6	144	1:14.4
	1999	10	3	30	2.3	149	1:14.9
	2000	10	2	20	7.0	77	1:7.7
	2001	5	3	60	-	76	1:13.3
42-2	1989	8	4	50	8.0	94	1:11.8
	1990	8	6	75	4.1	67	1:8.4
	1991	12	10	83	3.0	131	1:10.9
	1992	12	11	91	4.2	164	1:13.7
	1993	12	9	75	3.6	60	1:5.0
	1994	12	8	67	5.4	127	1:10.6
	1995	10	3	30	7.3	136	1:13.6
	1996	10	6	60	3.7	90	1:9.0
	1997	10	8	80	4.8	111	1:11.1
	1998	10	7	70	4.7	124	1:12.4
	1999	10	7	70	6.6	125	1:12.5
	2000	10	5	50	3.4	100	1:10.0
	2001	5	3	60	-	89	1:17.9
42-3	1993	12	5	42	6.8	75	1:6.3
	1994	12	11	90	6.0	91	1:7.6
	1997	2	2	100	1.0	46	1:23.0
	1998	2	2	100	5.0	58	1:29.0
	1999	2	1	50	2.0	32	1:16.0
	2000	2	1	50	2.0	45	1:22.5
42-4	1997	2	2	100	2.0	56	1:28.0
	1998	2	2	100	9.0	33	1:16.5
	1999	2	1	50	2.0	27	1:13.5
	2000	2	2	100	4.0	43	1:21.5
46	1991	2	2	100	4.0	36	1:18.0
	1992	2	2	100	7.0	34	1:17.0
	1993	6	6	100	7.8	64	1:10.7
	1994	6	2	33	6.4	91	1:15.2
	1995	6	3	50	10.5	74	1:12.3
	1996	6	4	67	6.5	75	1:12.5

[a] From 1989-1995, data are from a telephone survey of all hunters. Beginning in 1996, data are from mandatory check of successful hunters only.

[b] Hunt 41-1 was closed in 2001 and Hunt 41-2 was renamed Hunt 41.

Table 16. Summary of the Southwest Region (Nampa) California Bighorn Sheep Harvest and Drawing Odds, 1990-2001.

Year	No. Permits	Harvest	% Hunter Success	Days/ Hunter[a]	Total First Choice Applicants	Drawing Odds
1990	22	19	86	4.2	300	1:13.6
1991	32	27	84	3.9	409	1:12.8
1992	32	28	88	4.7	491	1:15.3
1993	62	39	63	5.1	467	1:7.5
1994	62	40	65	6.1	685	1:11.0
1995	39	25	64	7.5	584	1:15.1
1996	39	23	59	6.4	558	1:14.3
1997	39	27	69	3.4	557	1:14.2
1998	39	29	74	6.8	636	1:16.3
1999	37	22	59	5.0	607	1:16.4
2000	37	21	57	4.2	483	1:13.1
2001	13	9	69	-	232	1:17.9
10-year avg. (1992-2001)	40	26	65	5.5	530	1:13.3

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

			Adult[a]		Lambs		
Date	Capture Site	Release Site	Male	Female	Male	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, NV	3	20	1	1	25
Dec 1993	E.F. Owyhee	Deschutes, OR	6	25	2	2	35
Dec 1993	E.F. Owyhee	Bruneau/Jarbidge R & Big Cottonwood Cr	-	-	-	-	45

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

PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-26		
SUBPROJECT:	3 (McCall)	**STUDY NAME:**	Big Game Population Status, Trends, Utilization, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 2001 to June 30, 2002

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 2001-2002 reporting period.

Management Direction

Follow statewide management direction. 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. Coordinate with the Oregon and Washington departments to release Rocky Mountain bighorn sheep in Hells Canyon. Open additional hunts as transplanted populations become established and meet minimum population estimate criterion of 100. Complete inventories of potential release sites, assess status of recently established herds, and increase bighorn sheep numbers through transplants.

Background

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

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

Population Surveys

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

Harvest Characteristics

No bighorn sheep hunting was authorized during this reporting period.

Management Implications

Available habitat exists for the bighorn sheep population to expand into in Unit 22. However, the bighorns in Unit 22 are precariously close to domestic sheep allotments and pose a disease vector risk to other bighorn sheep in Hells Canyon. Management recommendations for this area are dependent upon the status of domestic sheep grazing. Coordination with the Payette National Forest and livestock producers is necessary to minimize the potential for any disease transfer between domestic sheep and bighorn sheep.

UNITS 19A, 20A, AND 26

CONTROLLED HUNT AREAS 20A, 26, AND 26-L

Abstract

The bighorn sheep hunt areas in Units 20A and 26 were restructured during implementation of the 1991-1995 Bighorn Sheep Management Plan and again in 1997. Population surveys were conducted in Units 20A and 26 from 19-28 February 2002. Numbers of sheep observed were lower than that observed in the 1999 survey. A total of 15 harvest permits were issued in 2001 among 3 separate hunt areas, including a rain-check tag held over from the 2000 hunting season. A total of 4 rams were harvested for a 27% hunter success rate.

Management Direction

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

Background

Hunting seasons for bighorn sheep in Units 20A and 26 were restructured with the implementation of the 1991-1995 Bighorn Sheep Management Plan. Prior to this plan there were 5 hunt areas (20A-1, 20A-2, 20A-3, 26-1, and 26-2) in these units. Hunt Area 20A-1 remained unchanged. Hunt Area 20A-3 was incorporated into Hunt Area 20A-2. Hunt Areas 26-1 and 26-2 included all of Unit 26 and were stratified by season dates, but in 1992 a portion of Hunt Area 20A-2 was incorporated into Hunt Area 26-1 and a portion of 27-1 was

incorporated into Hunt Area 26-2. The season dates for Hunt Areas 26-1 and 26-2 were made concurrent in 1991. Hunt Area 26-L was created in 1992 and incorporated portions of both Hunt Areas 26-1 and 26-2. This hunt was designed to provide a low permit level, high quality hunt close to the rut period. Hunt areas were restructured again in 1997 in response to declining bighorn sheep survey numbers. Hunt Area 20A-1 was eliminated and Hunt Area 20A-2 became Hunt Area 20A. Hunt Areas 26-1 and 26-2 were combined and permit levels were reduced from a combined total of 11 to a new total of 6. Current season structures are displayed in Table 18. Population and harvest data reflect the new hunt area boundaries.

Population Surveys

Bighorn sheep population surveys were conducted between 19 and 28 February 2002. Aerial survey results indicated bighorn sheep numbers are low but static in Hunt Areas 20A, 26, and 26-L (Tables 19-21). A total of 193 bighorn sheep were observed in 2002 (121 ewes, 40 lambs, and 32 rams) for a 33:100:26 lamb:ewe:ram ratio. Lamb recruitment appears to have slightly increased over numbers observed in 1999. Ram:ewe ratios were lower in 2002 when compared to 1999.

Harvest Characteristics

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

A combined total of 15 permits were authorized for bighorn sheep Hunt Areas 20A, 26, and 26-L in 2001 (Table 22). This total includes the rain-check recipient held over from the 2000 season. A total of 4 rams were harvested. This represents a 27% (4 out of 15) hunter success rate.

Management Implications

The permit level in Hunt Areas 26-1 and 26-2 was reduced by 2 and 9, respectively, in 1993. This reduction was in response to continued recruitment problems in the Big Creek and Middle Fork Salmon River drainages. The low number of legal rams observed in Hunt Area 26-2 and the fact that no hunters were able to harvest a legal ram during the 1995 and 1996 seasons indicated that management restrictions were necessary. In 1997, the permits for Hunt Area 26-2 were dropped, and Hunt Area 26-2 was combined with Hunt Area 26-1 to form new Hunt Area 26. The bighorn sheep population in hunt area 20A showed a similar trend, but permit levels remained constant. The 1999 and 2002 bighorn sheep aerial surveys indicated bighorn sheep recruitment may be improving, although the overall population still appears static and ram numbers appear to be declining.

A research study conducted in April 2000 indicated that a highly virulent strain of *Pasteurella* spp is present in the Big Creek bighorn sheep population. This evidence does not suggest that

this population is stable. Permit levels should be reduced during the next regulation cycle to bolster mature rams in the population. This bighorn sheep population will be monitored every other year as funding permits.

Table 18. Season Structure for Rocky Mountain Bighorn Sheep in 2001 in the Southwest Region.

	Season		
Hunt Area	Dates	Length	Permits
20A	August 30-October 13	45 Days	6
26	August 30-October 13	45 Days	6
26-L	October 13-October 31	19 Days	2

Table 19. Summary of Bighorn Sheep Population Data for Hunt Area 20A, 1989-2002.

			Rams					Total Legal	Total	Lambs:	Rams:
Year	Ewes	Lambs	I	II	III	IV	Uncl.	Rams	Sheep	100 Ewes	100 Ewes
1989	76	13	5	8	6	8	0	14	116	17.1	35.5
1990	-	-	-	-	-	-	-	-	-	-	-
1991	72	3	4	2	20	4	0	24	105	4.2	41.7
1992	80	7	4	7	11	7	0	18	116	8.8	36.3
1993	62	10	1	5	11	4	1	15	94	16.1	33.9
1994	63	11	4	1	7	7	0	14	93	17.5	30.2
1995	53	11	3	3	6	7	0	13	83	20.8	35.8
1996	38	6	1	4	1	8	0	9	58	15.8	36.8
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999	35	11	0	2	2	1	0	3	51	31.4	14.3
2000	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-
2002	35	14	1	2	3	3	0	6	58	40.0	25.7

Table 20. Summary of Bighorn Sheep Population Data for Hunt Area 26[a], 1989-2002.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1989	180	28	11	17	18	26	0	44	270	15.6	40.0
1990	-	-	-	-	-	-	-	-	-	-	-
1991	93	4	5	8	20	6	0	26	136	4.3	41.9
1992	91	26	0	10	11	19	8	30	165	28.6	44.0
1993	108	22	3	3	11	18	0	29	165	20.4	32.4
1994[b]	33	2	1	2	9	10	0	19	57	6.1	66.7
1995	95	10	3	3	7	9	0	16	131	10.5	23.2
1996	99	11	2	9	7	10	0	17	138	11.1	28.3
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999	88	23	5	12	10	8	0	18	146	26.1	39.8
2000	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-
2002	86	26	6	7	8	2	0	10	135	30.2	26.7

[a] Unit 27 data not included.
[b] Incomplete survey.

Table 21. Summary of Bighorn Sheep Population Data for Hunt Area 26-L, 1987-2002.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1987	114	19	5	9	11	10	0	21	177	16.7	30.7
1988	116	18	3	7	8	12	0	20	172	15.5	25.9
1989	122	19	7	13	15	24	0	39	200	15.6	48.4
1990	-	-	-	-	-	-	-	-	-	-	-
1991	64	4	2	8	13	2	0	15	93	6.3	39.1
1992	62	20	0	5	6	14	0	20	107	32.3	40.3
1993	82	13	2	3	8	10	0	18	118	15.9	28.0
1994	22	1	1	2	7	5	0	12	38	4.5	68.2
1995	85	7	4	6	6	7	0	13	115	8.2	27.1
1996	73	9	1	7	4	7	0	11	101	12.3	26.0
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999	62	14	4	9	6	5	0	11	100	22.6	38.7
2000	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-
2002	50	16	3	6	5	1	0	6	81	32.0	30.0

Table 22. Summary of Southwest Region Rocky Mountain Bighorn Sheep Harvest and Drawing Odds, 1992-2001.

Hunt Area	Year	No. Permits	Harvest	% Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
20A	1992	6	2	33	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	67	6.6	33	1:5.5
	1996	6	0	0	-	72	1:12.0
	1997	6	5	83	3.6	41	1:6.8
	1998	6	5[a]	67	-	75	1:12.5
	1999	6	3	50	-	46	1:7.6
	2000	6	4	67	-	77	1:12.8
	2001	6	1	17	-	57	1:9.5
26	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	-	39	1:6.5
	1997[c]	6	3	50	4.6	59	1:9.8
	1998	6	5	83	13.2	67	1:11.2
	1999	6	3	50	-	84	1:14.0
	2000	6[d]	4	80	-	100	1:16.7
	2001	7[e]	2	29	-	69	1:11.5
26-L	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	1:24.0
	1996	2	1	50	-	24	1:12.0
	1997	2	2	100	6.0	28	1:14.0
	1998	2	2	100	5.0	53	1:26.5
	1999	2	1	50	10.0	82	1:41.0
	2000	2	2	100	11.5	80	1:40.0
	2001	2	1	50	-	21	1:10.5

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

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

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

[d] One permit holder opted for a rain-check tag in 2001 due to forest fire area closures during part of the 2000 season.

[e] Includes one rain-check recipient from the 2000 hunting season.

PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-26		
SUBPROJECT:	4	**STUDY NAME:**	Big Game Population Status, Trends, Use, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 2001 to June 30, 2002

BIGHORN SHEEP – MAGIC VALLEY REGION

UNITS 46, 47, 54, 55, AND 57

Abstract

During 2000 and 2001, 45 California bighorn sheep were reintroduced into suitable habitat on Jim Sage Mountain in Unit 55. Since release, 22 of the 45 bighorn sheep have died, primarily from mountain lion predation. However, 11 of the 22 mortalities occurred within the first 4 months of the initial release and survival since then has been fair. The estimated bighorn population of 48 sheep is similar to last year.

The bighorn sheep population in Unit 54 has decreased during the past 10 years to fewer than 25 bighorn sheep. Disease is the suspected, but unverified, cause of the population decline. There are no future plans to augment the existing population because of the proximity of domestic sheep grazing allotments.

Aerial survey results from June 2000 suggest the Jarbidge/Bruneau bighorn sheep population had declined by more than 50%. The hunting season was closed for the 2001 and 2002 seasons because of the decline. In March 2002, 10 bighorns were captured and radio-collared to provide survival and movement data. Samples were also taken for disease and pregnancy testing. Only 3 of 6 tested ewes were pregnant.

Management Direction

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

Background

Bighorn sheep were extirpated from southern Idaho in the early 1900s. In 1963, the Department initiated a program to reestablish California bighorn sheep populations in the Owyhee River and

Little Jacks Creek drainages in Owyhee County. These early releases were successful and bighorn sheep populations increased and expanded their range in 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. In 1992 it was estimated there were more than 1,200 California bighorn sheep in Idaho. From 1980-1992, Idaho's healthy California bighorn populations provided a source for numerous reintroduction projects and 413 sheep were trapped and moved to other locations in Idaho, Nevada, Oregon, and North Dakota. 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 1996-2001 indicate populations have not increased to pre-1994 levels.

Units 46, 47, and 41 (east) - From 1982-1993 the Idaho Department of Fish and Game (IDFG) and Nevada Division of Wildlife (NDOW) released 93 bighorn sheep into portions of the Jarbidge and Bruneau drainages (Table 17). The bighorn sheep released by NDOW in 1982 and 1984, with the objective of reestablishing a population in the Jarbidge Mountains, moved north and took up residence in the Jarbidge River Canyon in Idaho. Bighorn sheep have also been released by the Department near the confluence of the Jarbidge and West Fork Bruneau Rivers, at Dorsey Creek, and near Black Rock Pocket on the West Fork Bruneau Canyon. Bighorn sheep are distributed throughout the Jarbidge and West Fork Bruneau canyons upstream from their confluence. Bighorns have been observed as far north in the Bruneau Canyon as Cave Draw and are occasionally observed in the Sheep Creek and Mary's Creek drainages.

Unit 54 - Because of the proximity of domestic sheep grazing allotments, potential habitat for bighorn sheep is restricted to the northeastern portion of the South Hills bordered by Trapper Creek on the south and Dry Creek on the west. From 1986-1993, 50 California bighorn sheep were released into the Big Cottonwood drainage, and 24 bighorns were released into the East Fork of Dry Creek (Table 23). The released bighorn sheep did well in Unit 54 until 1989 when high mortality of ewes and poor lamb survival were documented and the population began to decline. Disease from interaction with domestic sheep is believed to be the cause of the decline although it has not been verified. Wild sheep were known to have contacted a farm flock of domestic sheep near Big Cottonwood WMA and were also observed intermingling with domestic sheep on the Sawtooth Forest. Currently fewer than 25 bighorn sheep persist in Unit 54.

Units 55 and 57 - During 1999, domestic sheep grazing on federal allotments in Unit 55 ended, clearing the way for bighorn sheep releases. In February 2000 and February 2001, 45 California bighorn sheep were reintroduced into suitable habitat on the Jim Sage Mountains (Unit 55). Studies are currently ongoing to monitor the success of the releases and future releases into the nearby Albion Mountains may be considered. Unit 57 is currently considered unsuitable habitat because of domestic sheep grazing.

Population Surveys

Units 46, 47, and 41 (east) - There were no population surveys conducted during the 2001-02 reporting period. The previous survey, conducted in June 2000, indicated a substantial decline in sheep numbers. Only 48 bighorn sheep were observed on the survey, a 64% decline from the survey conducted in 1998 (Table 24).

Unit 54 - There were no aerial surveys conducted during the 2001-02 reporting period. Data collected were limited to incidental sightings and observations made during mule deer flights.

Observations of bighorn sheep in Unit 54 have become more infrequent in recent years, reflecting a decline in bighorn sheep numbers. During the reporting period, a small group of 12-15 bighorns was observed on Big Cottonwood WMA, frequently during the summer. In the Dry Creek drainage, no bighorn sheep were observed during October and December mule deer flights. There were also several sightings of bighorn sheep in Rock Creek Canyon near Harrington Fork. The total bighorn sheep population in Unit 54 is estimated to be less than 25 head.

Harvest Characteristics

Units 46, 47, and 41 (east) - From 1991-2000, 53 hunters harvested 34 rams from the Jarbidge/Bruneau population (Hunt Area 46). Annual hunter success rates have ranged from 33% to 100% and averaged 68%. Ages of harvested rams range from 4.5 years to 12.5 years with a mean of 7.2 years (SD=1.76, N=34) and a median of 6.5 years. In 2000, 3 of 7 hunters were successful, taking 5½-, 6½-, and 7½-year-old rams (Table 25). The hunting season in the Jarbidge/Bruneau area was eliminated in 2001 because of low bighorn sheep numbers.

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

Trapping and Transplants

No trap and transplant activities occurred during the 2001-02 reporting period.

Forty five California bighorns were released in the Jim Sage Mountains (Unit 55) in 2000 and 2001 (Table 23). Monitoring of this reintroduced bighorn sheep population continued during the reporting period. Twenty two of the 45 released bighorns (49%) have died. Eleven of the 22 mortalities (50%) occurred within the first four months of the initial release in February 2000. Since that time, survival has been within the expected range. Mountain lions were the cause of 71% of the sheep deaths and 82% (9/11) of the mortalities that occurred within the first four months of the initial release were attributed to mountain lions. Observed lamb production in 2000, 2001, and 2002 was 9 lambs, 14 lambs, and 8 lambs, respectively. The estimated population size in early June 2002, was 48 sheep (40 yearling and adult ewes and rams and 8 lambs). Idaho State University graduate student, Gretchen Fowles, has completed her field work and made progress on her analysis and thesis writing.

Management Studies

Units 46 and 47 - During March 2002, 10 bighorn sheep (7 ewes and 3 rams) were captured in the Jarbidge and Bruneau canyons to provide samples for disease testing, as well as data on condition and pregnancy rates. All 10 bighorns were radio-collared to provide information on seasonal movements and survival. The 7 ewes captured ranged in age from 4.75 to 8.75 years. A subjective assessment indicated 6 of the ewes were in good or very good condition and 1 ewe was poor. Only 3 of 6 ewes were pregnant. While inference about the entire population cannot be made from a sample of 6 ewes, the low observed pregnancy rate is indicative of a "stressed" sheep population.

Unit 55 - Radio-monitoring of the Jim Sage bighorn sheep population will continue bimonthly.

Management Implications

Units 46 & 47 - Results from the June 2000 aerial survey suggest a >50% decline in the Jarbidge/Bruneau California bighorn sheep population. Observed lamb production in June 1998 and June 2000 was very low (21 lambs and 22 lambs/100 ewes, respectively) indicating recruitment rates lower than what might be expected to allow the herd to grow. The substantial and rapid decline of the bighorn sheep population is indicative of a disease die-off, although no conclusive evidence is available. It should be noted that a die-off in the bighorn sheep population near Contact, Nevada, about 50 miles from the Jarbidge Canyon, was documented in 1999. Also, wild sheep have been observed mixing with a domestic flock at a ranch in Mary's Creek south of Grasmere. Both the Mary's Creek and Contact areas are a possible source of disease for the Jarbidge/Bruneau herd. Recent sampling also suggests that pregnancy rates may be low which is another indication of a decline in herd health. Because of the overall decline in bighorn sheep numbers and observation of only 2 legal rams on the June 2000 survey, the hunting season in this area was closed for the 2001 and 2002 seasons. Another population survey is scheduled for June 2002.

Unit 54 - The future of the bighorn sheep population in Unit 54 is uncertain. It is believed there are currently fewer than 25 bighorn sheep remaining in the unit. Disease is believed to be the cause of the decline, although we have no conclusive evidence. Wild bighorns were known to have contacted a farm flock of domestic sheep near Big Cottonwood Canyon and a wild bighorn ram was observed intermingling with domestic sheep near Dry Creek. In addition, the rapid decline of the Dry Creek herd and the timing of summer lamb mortality strongly suggest that disease played a role. Presently, there are no plans to attempt any further bighorn sheep releases in the unit.

Unit 55 - The high rate of mountain lion predation on the reintroduced Jim Sage bighorn sheep population has declined to a "more acceptable" level and is not currently a significant concern. Monitoring of the new population will continue and additional releases to augment the population will be considered, if necessary, to assist in the establishment of a viable, self-sustaining bighorn sheep population. New bighorn sheep releases are currently being considered for the Albion Mountain Range that is 5-10 miles west of the Jim Sage Mountains.

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

			Adult		Lambs		
Date	Capture Site	Release Site	Male	Female	Male	Female	Total
12/17-20/86	East Fork Owyhee River	Big Cottonwood (Unit 54)	2	10	1	2	15
12/16/87	Little Jacks Creek	Big Cottonwood (Unit 54)	3	6	0	1	10
11/15/88	Poison/Shoofly Creek	Big Cottonwood (Unit 54)	5	8	0	1	14
12/6/91	East Fork Owyhee River	East Fork Dry Creek (Unit 54)	2	9	1	2	14
12/19/93	East Fork Owyhee River	Big Cottonwood (Unit 54)	3	8	0	0	11
12/20/93	East Fork Owyhee River	East Fork Dry Creek (Unit 54)	1	7	1	1	10
2/6-8/00	John Day River, Oregon	Jim Sage Mountain (Unit 55)	7	15	2	6	30
2/1/01	Hart Mountain NWR, Oregon	Jim Sage Mountain (Unit 55)	0	14	0	1	15
Totals			23	77	5	14	119

Table 24. Summary of bighorn sheep population data, Jarbidge/Bruneau area (Hunt Area 46), 1990-2000 (Obs = observed, Est = estimated).

	Ewes		Lambs		Sublegal Rams		Legal Rams		Unclassified		Total		Lambs: 100 Ewes	Rams: 100 Ewes
Year	Obs	Est	Obs	Est	Obs	Est	Obs	Est	Obs	Est	Obs	Est ±90%CI		
1990	51	-	12	-	8	-	13	-	0	-	84	-	23.5	41.2
1993	51	79	8	13	39	53	16	20	0	0	114	165±37	16.5	92.4
1994	76	101	24	31	15	19	17	23	0	0	132	171±31	30.7	41.6
1996	102	147	33	43	14	20	15	22	[a]5	7	169	239±44	29.3	31.3
1997	62	83	25	34	21	33	10	14	3	4	121	168±40	41.0	56.6
1998	85	138	18	29	26	41	6	11	0	0	135	220±44	21.0	37.7
2000	33	45	7	10	6	8	2	3	0	0	48	66±18	22.2	24.4

[a] 4 were unclassified rams.

Table 25. Summary of Bighorn Sheep Harvest and Drawing Odds in Hunt Area 46, 1991-2000.

Year	No. Permits	Harvest	% Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
1991	2	2	100	4.0	36	1:18.0
1992	2	2	100	7.0	34	1:17.0
1993	7[a]	6	86	7.7	94	1:15.7
1994	6	2	33	6.4	91	1:15.2
1995	6	3	50	10.5	74	1:12.3
1996	6	4	67	-	75	1:12.5
1997	6	5	83	-	101	1:16.8
1998	6	4	67	-	90	1:15.0
1999	5[b]	3	50	-	190	1:31.7
2000	7[b]	3	43	-	76	1:12.7

[a] The winner of the lottery permit hunted here in addition to the 6 authorized permits.
[b] A hunter successfully drawn for the 1999 season was given a rain-check to hunt in 2000.

PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-26		
SUBPROJECT:	6	**STUDY NAME:**	Big Game Population Status, Trends, Utilization, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 2001 to June 30, 2002

BIGHORN SHEEP – UPPER SNAKE REGION

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

Abstract

Bighorn sheep in the Lost River Range are managed and reported by the Salmon Region. Bighorn sheep in the Lemhi and Beaverhead Ranges are not hunted. The Lionhead bighorn sheep are hunted in Montana, but not Idaho. There is not an established bighorn sheep herd in the Bighole Mountains.

No population survey was conducted during this reporting period. Twenty six bighorn sheep were observed on the Unit 58 side of the Beaverhead Range incidental to a deer survey in March 2002.

Five adult ewe bighorn sheep were radio-marked on the Unit 51 side of the Lemhi Range in March 2001. These sheep were radio-tracked during the summer, fall and winter 2001-2002.

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, loss to disease, and indiscriminate harvest by settlers and miners probably were the main causes of bighorn sheep declines.

Habitats are diverse, generally mountainous types, with bighorn sheep summering mostly at higher elevations on alpine and subalpine ranges. The winter ranges are mostly sagebrush-grass or curlleaf mountain mahogany types where precipitation is low. The U.S. Forest Service (USFS) generally administers summer ranges, whereas the Bureau of Land Management (BLM) primarily manages the winter ranges.

Changes in land and livestock management practices have resulted in improved range conditions for bighorn sheep in much of these units. Improved grazing management, water developments, controlled burns on bighorn sheep ranges, and closing or changing domestic sheep allotments to eliminate domestic-bighorn sheep contact could further improve conditions for bighorn sheep in this area.

Subsistence and indiscriminate harvest of bighorn sheep by early settlers and pioneering travelers was greatly reduced after establishment of the Idaho Department of Fish and Game in 1937. Some general bighorn sheep hunts were authorized through 1970, but since then all bighorn sheep hunts have been by permit only. These restrictions, along with improved habitat and reintroductions, have all contributed to increased bighorn sheep numbers in these units.

Bighorn sheep obtained from the Whiskey Mountain, Wyoming, herd 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.

Management Goals

Increase population. Increase recreational opportunity. Maintain or increase harvest. Revamp season framework. Continue reintroduction program. Attempt to manipulate one bighorn sheep population below carrying capacity to prevent periodic die-off. Investigate whether domestic sheep have a role in disease transmission.

Background

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

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

Bighorn sheep are occasionally observed during summer in the Bighole Mountain area of Units 64, 65, and 67. We believe these are pioneering bighorn sheep from Grand Teton National Park. Since we have no reports or observations of these bighorn sheep during 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. Only 14 bighorn sheep (2 lambs, 5 ewes, and 7 rams) were observed in the Lemhi Range (Units 51 and 58) during a mountain goat survey 1-5 August 2000 (Table 26). Bighorn sheep were observed in Uncle Ike Creek, Horse Creek, on Diamond Peak, and in Keg Gulch and Rocky Canyon.

The 5 sheep that were radio-marked on the Unit 51 side of the Lemhi Range March 2001 spent the summer at upper elevations between the head of Uncle Ike Creek and Diamond Peak and were found in Uncle Ike Creek and the Horse Creek-Williams Creek area during the fall and winter of 2001-2002. Movement to winter distribution occurred between 27 October and 29 January.

Twenty six bighorn sheep (6 rams, 7 ewes, and 13 unclassified adults) were observed in the Reno Gulch-Bruce Canyon area of Unit 58 during a deer sightability survey March 2002 (Table 27).

Weather Conditions

The summer of 2001 had higher than normal temperatures and below normal precipitation. Winter conditions during 2001-2002 had lower than normal snow accumulation but lacked the usual winds to blow the ridges bare and temperatures were consistently in the zero to mid-teen level. These conditions made it difficult for wintering big game to find adequate food and required more energy to get around.

Management Implications

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

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

At least two USFS domestic sheep allotments (Dry Creek and Long Lost) overlap with bighorn sheep in the Lost River Range. In the Lemhi Range, the Bernice BLM allotment on the Lost River side of the Range and the Mahogany Butte BLM allotment on the Birch Creek side of the Range overlap with bighorn sheep range. The Mahogany Butte domestic sheep allotment also includes USFS land. Five domestic sheep allotments (Mahogany Butte [BLM], Reno Gulch

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

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

The bighorn sheep population in the south Beaverhead Range uses private land on the Waggoner and Simmonds Ranches at the mouth of Goddard Canyon and Skull Canyon during rut and early winter. Although these ranches no longer run domestic sheep, the bighorn sheep daily come down and feed with corralled cattle during the winter.

On 2 occasions bighorn sheep were observed on domestic sheep range above Rattlesnake Point and Reno Gulch during the winter of 2000-2001 and again in March 2002. As a result of these observations, the Department met with the USFS and BLM to develop contingency plans similar to what was developed for the Bernice allotment. To date, draft plans from these 2 agencies have not been received.

A USFS volunteer mapped bighorn sheep summer distribution and water availability in the Beaverhead Range 27 July - 7August 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 (FNAWS) installed and a spring complex at the corners of Sections 13 and 24 for water. There was also evidence that domestic sheep had bedded on the ridges in Sections 12 and 13 in previous years.

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

The Dubois District, Targhee Forest, implemented several habitat projects for bighorn sheep in the South Beaverhead Range during the late 1980s to mid 1990s. Seven water developments, three of these in cooperation with FNAWS, were 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 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. 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. However, the Montana Commission has not approved a similar agreement.

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 bighorn sheep today. Domestic sheep also heavily graze the range. Therefore, management is directed to document bighorn sheep observations, protection of the bighorn sheep, and nonconsumptive use.

Table 26. Summary of Rocky Mountain Bighorn Sheep Population Data for Unit 51, 1992-2002.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1992	-	-	-	-	-	-	-	-	-	-	-
1993[a]	14	7	0	5[b]	0	0	0	0	26	50.0	35.7
1994	-	-	-	-	-	-	-	-	-	-	-
1995[c]	11	7	0	4[b]	0	4[b]	0	4	26	63.6	72.7
1996	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-
2000[d]	4	1	-	2	-	-	-	-	-	-	-
2000[e]	5	2	1	5	3	0	0	3	16	40.0	180.0
2001	-	-	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-	-	-

[a] Incidental to aerial elk sightability counts, winter 1992-1993.
[b] Rams classified to sublegal and legal only.
[c] Incidental to aerial mule deer sightability survey, winter 1994-1995. The entire bighorn sheep winter range was not surveyed.
[d] Only the area from South Creek around to the first canyon east of East Creek was surveyed.
[e] Incidental to helicopter mountain goat survey of the entire Lemhi Range 1-5August 2000.

Table 27. Summary of Rocky Mountain Bighorn Sheep Population Data for Unit 58, 1992-2002.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1992	11	6	5[a]	0	0	1[a]	0	1	23	54.5	54.5
1993[b]	14	8	0	0	0	0	12[c]	0	34	57.1	85.7
1994	-	-	-	-	-	-	-	-	-	-	-
1995[d]	27	16	0	6[a]	0	11[a]	0	11	60	59.3	63.0
1996	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-
2000[d]	8	0	0	0	0	0	6[c]	0	14	0.0	75.0
2001[d]	4	0	7	0	6	0	0	6	17	0.0	325.0
2002[d]	7	0	0	5	1	0	13	1	26	0.0	85.7

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

PROGRESS REPORT
SURVEYS AND INVENTORY

STATE:	Idaho	**JOB TITLE:**	Bighorn Sheep Surveys and Inventories
PROJECT:	W-170-R-26		
SUBPROJECT:	7	**STUDY NAME:**	Big Game Population Status, Trends, Utilization, and Associated Habitat Studies
STUDY:	I		
JOB:	4		

PERIOD COVERED: July 1, 2001 to June 30, 2002

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, 30, 36B, 37

Abstract

From 1989-1991, bighorn sheep populations in the Salmon Region experienced major, rapid declines (30-50%), followed by several years of very low lamb recruitment. Recent aerial surveys suggest lamb production, although still low (approximately 25 lambs per 100 ewes), is beginning to improve in several units. Lamb production was still notably low in Unit 36B and parts of Unit 27. In general, bighorn sheep populations may be stabilizing after several years of decline.

During the 2001 hunting season, 39 controlled hunt permits for bighorn sheep rams (≥3/4 curl or >4 years old) were authorized in 10 hunt areas. In addition, 11 permit holders who deferred their permits until 2001 because of wildfire activity in the region during 2000 were authorized to hunt. Fifty permittees harvested 26 rams (52% success). The average age of harvested rams was 6.8 years. The chance of being drawn from among 551 applicants for bighorn sheep permits in 2001 (7.1%) was slightly lower than in 2000 and still below the previous 5-year average of 8.3%.

Management Direction

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

Background

The Salmon Region contains approximately two-thirds of Idaho's Rocky Mountain bighorn sheep and offers two-thirds of the hunting opportunity. Habitats, bighorn sheep population characteristics (Tables 28-42), land management activities, and human access all vary considerably across the region, presenting a variety of bighorn sheep management situations.

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

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

Hunt areas 527-1, 527-2, 527-7, and 527-8 were combined into 1 hunt (27-1) in 1987. In 1991, the north end of Hunt Area 27-1 (Brush Creek to Big Creek) was incorporated into Hunt Area 26. Hunt Area 27-4 (Camas Creek to Warm Springs Creek east of the Middle Fork Salmon River) was previously part of Hunt 36B, but was created as a separate hunt in 1989 to facilitate better distribution of hunters and harvest. Hunts 27-4, 27-5, and 27-6 were combined into 1 hunt in 1991 (27-3) to allow hunters a better likelihood of finding a ram. In 1997, Hunt Area 36B was formed by combining hunts 36B-1, 36B-2 and 36B-3, and hunts 28-1 and 28-2 were combined into 1 hunt and the area was enlarged in 1999.

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

Bighorn sheep populations in units 21 and 28 were considered high-quality herds, exhibiting high lamb production and herd growth through the 1970s. However, populations along Panther Creek experienced a decline in the early 1980s, probably due to weather-related mortality. The same herd suffered a major population decline (approximately 50%) during 1989-1990, possibly

caused by *Pasteurella haemolytica* pneumonia. Low lamb recruitment followed the decline and persisted for 3 years.

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

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

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

The Mt. Borah bighorn sheep population in units 37, 50, and 51 resulted from releases of 7 bighorn sheep from Morgan Creek in 1969 and 24 bighorn sheep from Banff Park, Alberta, Canada in August 1970. The first hunt in Hunt Area 37 was authorized in 1981 and the area has become very popular with bighorn sheep hunters. By 1992, the Mt. Borah population had suffered the same decline and persistent low recruitment as other bighorn sheep herds in the region. Permit numbers were correspondingly reduced from a peak of 19 permits in 1992 to 3 in 1995.

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

Population Surveys

No aerial surveys specifically for bighorn sheep were conducted in the reporting period. Bighorn sheep were counted incidental to other big game in portions of units 21, 27, 28, 30, 30A, and 36B. Compared to previous surveys in these areas, total bighorn sheep numbers for comparable

survey effort were stable to slightly higher. The region-wide lamb:100 ewes ratio in 2002 was 25.4, slightly higher than in 2001.

Salmon Region bighorn sheep populations experienced major young and adult mortality (apparently disease-related) beginning in 1990 and very low lamb production for several years afterward (generally ≤10 lambs per 100 ewes). Although ewe to lamb ratios were still somewhat low, recent surveys suggest that the trend of very low lamb production in recent years may be reversing. Lamb production during this year's surveys ranged from 13 to 29 lambs per 100 ewes in units with moderate sample sizes of ewes.

Harvest Characteristics

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

Harvest and hunter information was compiled from Big Game Mortality Reports (BGMRs). Successful hunters must present bighorn sheep horns to an IDFG representative within 10 days of harvest and complete a BGMR. At the time of check-in, an identification pin is set in the right horn. Ten controlled hunts with 39 permits were authorized for 2001 in the Salmon Region. Hunters could harvest a male bighorn sheep with ≥3/4 horn curl or >4 years old. Eleven holders of bighorn sheep permits for 2000 opted to defer their permits until the 2001 hunting season because of wildfires in the region, including several areas normally occupied by bighorn sheep. Success among 50 active hunters was 52% in 2001. Bighorn sheep season structure (Table 43) has been essentially unchanged since 1991. Permit levels (Tables 44-50) were modified slightly from 2000 to 2001. Of 286 permits issued since 1995, 118 hunters harvested rams (41% success).

Chances of drawing a Salmon Region bighorn sheep permit dropped sharply in the early 1990s, primarily because of severe reductions in permits. Chances have continued to decline steadily since the mid-1990s, from 10.4% in 1995 to <8% after 1998. The average chance of drawing a permit since 1995 was 8.4%.

Region-wide, nonhunting mortalities peaked during the suspected disease die-off period (1990-1992) and subsided afterward as mortality rates decreased and bighorn sheep numbers reached low ebb (Table 51). 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. Twenty-six nonhunting mortalities were recorded during the reporting period.

Climatic Conditions

Summer 2001 was relatively dry. However vegetation at higher elevations apparently remained relatively lush, in part due to above normal summer precipitation. Winter conditions were relatively mild with temperatures and snow accumulation generally slightly below average. Animals, therefore, entered winter in average body condition, then encountered a mild to average winter, which should have produced average to relatively high overwinter survival. Snowpack was below average (70-85% of normal) and snowmelt occurred somewhat later than normal. Onset of spring weather and associated plant phenology was apparently delayed by approximately 2-3 weeks. Water-year precipitation has been below average, so drier-than-average conditions prevailed through the end of the reporting period.

Habitat Conditions

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

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

Capture and Translocation

The Salmon Region had a very active capture and translocation program for a number of years (Table 52). Bighorn sheep were taken from units 21, 28, 36A, and 36B for translocation to other parts of Idaho and to other states. Within the region, units 28, 30A, 37/50, and 37A have all received bighorn sheep in attempts to reestablish extirpated herds. However, stagnant to declining bighorn sheep populations characterized by low productivity suggest that translocation from Salmon Region herds would be unwise in the near future. Some release sites are available in the Salmon Region if an appropriate source population can be identified. No bighorn sheep were captured or translocated within the region during 2001-2002.

Disease

During an apparent disease outbreak in winter 1988-1989, bighorn sheep in several areas of the Salmon Region and adjacent regions were sampled for disease pathogens. Bighorn sheep tested positive for *Pasteurella multocida* and *P. haemolytica* (biotypes/serotypes A_1, A_{11}, T_3, T_4, and T_{10}). Both haemolytic and nonhaemolytic types of *P. haemolytica* were found. Antibody titers to Respiratory Syncytial Virus (RSV), Parainfluenza (PI3), and Brucellosis (*Brucella ovis*) are common. However, there does not appear to be a correlation between RSV/PI3 titers and sick bighorn sheep or *Pasteurella* positive bighorn sheep. Lungworm (*Protostrongulus* spp.) loads tend to be very high in Salmon Region bighorn sheep. Scabies (*Psoroptes* spp.) is occasionally evident but rarely severe on any individual bighorn sheep. Poor population performance of Salmon Region bighorn sheep in recent years may well be an indication of residual disease problems.

Management Implications

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

Virtually all Salmon Region bighorn sheep populations have recently experienced poor population performance, particularly low lamb production. In some units (37, 50, 51) productivity has been low for several years while in others (36A) low productivity did not appear until 1991. However, in most of the region, declines were first noted during winter 1989-1990. In all cases, low lamb:ewe ratios continued through at least 1992. Aerial surveys suggest lamb recruitment is improving somewhat in most units. However, overall lamb:ewe ratios are still low compared to historical levels and productivity is notably low in a few units (36B and parts of 27). Salmon Region bighorn sheep herds probably will not produce surplus animals for translocation in the near future. Small lamb crops have resulted in fewer rams available to hunters. Four- to 8-year old rams comprise the bulk of hunter harvest. Permit levels in many hunts were reduced and will remain low as several years of reduced ram recruitment continue to impact absolute ram numbers.

Table 28. Bighorn sheep population data, Unit 21, Salmon Region, 1989-present.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1989	93	49	14	11	9	22	0	31	198	52.7	60.2
1990	41	4	6	4	7	10	0	17	72	9.8	65.9
1991	60	5	10	8	2	2	0	4	87	8.3	36.7
1992	72	8	1	13	14	5	0	19	113	11.1	45.8
1993	97	24	14	10	10	3	0	13	158	24.7	38.1
1994	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-
1996	62	20	10	12	8	9	1	17	122	32.3	62.9
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-
2000[a]	47	5	1	11	8	2	0	10	74	10.6	46.8
2001	40	16	5	11	9	4	0	13	85	40.0	72.5
2002[a]	10	7	0	6	3	0	0	3	26	70.0	90.0

[a] Incidental to deer and elk surveys.

Table 29. Bighorn sheep population data, Unit 21A, Salmon Region, 1998-present.

Year	Ewes	Lambs	Rams I	Rams II	Rams III	Rams IV	Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
1998[a]	9	3	1	0	1	0	0	1	14	33.3	22.2
1999	-	-	-	-	-	-	-	-	-	-	-
2000	5	4	0	1	0	0	0	0	10	80.0	20.0
2001	-	-	-	-	-	-	-	-	-	-	-
2002[b]	7	6	2	1	2	0	0	2	18	85.7	71.4

[a] Incidental to elk survey.
[b] Ground count.

Table 30. Bighorn sheep population data, Hunt Area 27-1, Salmon Region, 1989-present.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1989	77	39	3	9	29	12	3	41	172	50.6	68.8
1990	-	-	-	-	-	-	-	-	-	-	-
1991	108	3	5	12	19	6	0	25	153	2.8	38.9
1992	-	-	-	-	-	-	-	-	-	-	-
1993	90	14	5	1	5	14	0	19	129	15.6	27.8
1994	-	-	-	-	-	-	-	-	-	-	-
1995[a]	58	13	6	12	6	3	0	9	98	22.4	46.6
1996	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999	56	14	7	8	13	5	0	18	103	25.0	58.9
2000	-	-	-	-	-	-	-	-	-	-	-
2001	80	13	5	2	10	6	0	16	116	16.3	28.8
2002[a]	45	9	11	7	16	3	0	19	91	20.0	82.2

[a] Incidental to elk survey, partial count.

Table 31. Bighorn sheep population data, Hunt Area 27-2, Salmon Region, 1989-present.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1989	57	19	3	10	4	2	38	6	133	33.3	33.3
1990	43	5	2	6	7	12	0	19	75	11.6	62.8
1991	60	2	3	2	4	2	0	6	73	3.3	18.3
1992	-	-	-	-	-	-	-	-	-	-	-
1993	36	2	1	7	4	4	0	8	54	5.6	44.4
1994	-	-	-	-	-	-	-	-	-	-	-
1995[a]	16	4	0	3	1	0	0	1	24	25.0	25.0
1996	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999	54	16	7	8	5	1	0	6	91	29.6	38.9
2000	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-
2002[a]	28	8	0	3	9	1	0	10	49	28.6	46.4

[a] Incidental to elk survey, partial count.

Table 32. Bighorn sheep population data, Hunt Area 27-3, Salmon Region, 1989-present.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1989	80	35	7	9	11	11	1	22	154	43.8	47.5
1990	-	-	-	-	-	-	-	-	-	-	-
1991	88	7	2	10	13	3	0	16	123	8.0	31.8
1992	-	-	-	-	-	-	-	-	-	-	-
1993	62	17	7	4	8	11	0	19	109	27.4	48.4
1994	-	-	-	-	-	-	-	-	-	-	-
1995[a]	30	3	1	1	3	2	0	5	40	10.0	23.3
1996	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999	67	12	3	8	9	3	0	12	102	17.9	34.3
2000	-	-	-	-	-	-	-	-	-	-	-
2001[b]	34	7	0	3	1	0	0	1	45	20.6	11.8
2002[a]	31	4	6	3	7	4	0	11	55	12.9	64.5

[a] Incidental to elk survey, partial count.
[b] Partial count.

Table 33. Bighorn sheep population data, Hunt Area 27-4, Salmon Region, 1989-present.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1989	28	11	1	9	0	2	0	2	51	39.3	42.9
1990	-	-	-	-	-	-	-	-	-	-	-
1991	36	3	5	8	5	1	0	6	58	8.3	52.8
1992	-	-	-	-	-	-	-	-	-	-	-
1993	29	12	2	4	2	0	1	2	50	41.4	27.6
1994	-	-	-	-	-	-	-	-	-	-	-
1995[a]	3	0	0	1	0	1	0	1	5	0.0	66.7
1996	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999	2	0	1	1	6	8	0	14	18	0.0	
2000	-	-	-	-	-	-	-	-	-	-	-
2001[b]	10	1	0	0	0	0	0	0	11	10.0	0.0
2002[a]	26	5	2	2	4	0	1	4	40	19.2	30.8

[a] Incidental to elk survey, partial count.
[b] Partial count.

Table 34. Bighorn sheep population data, west side of lower Panther Cr., Salmon Region, 1989-present.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1989	62	24	7	6	5	7	2	12	113	38.7	40.3
1990	34	7	3	3	3	5	0	8	55	20.6	41.2
1991	31	7	2	9	7	5	0	12	61	22.6	74.2
1992	17	8	0	3	3	3	0	6	34	47.1	52.9
1993	-	-	-	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-
1996	29	6	5	1	1	1	0	2	43	20.7	27.6
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999[a]	22	7	4	4	2	0	0	2	39	31.8	45.5
2000	-	-	-	-	-	-	-	-	-	-	-
2001[a]	15	2	0	0	7	2	0	9	26	13.3	60.0
2002[a]	10	5	0	0	2	0	0	2	17	50.0	20.0

[a] Incidental to elk survey.

Table 35. Bighorn sheep population data, east side of lower Panther Cr., Salmon Region, 1989-present.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1989	93	30	9	5	14	23	1	37	175	32.3	54.8
1990	36	4	1	8	7	12	0	19	68	11.1	77.8
1991	51	9	2	13	9	17	0	26	101	17.6	80.4
1992	66	2	2	3	12	3	0	15	88	3.0	30.3
1993	-	-	-	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-
1996	57	7	5	5	2	3	0	5	79	12.3	26.3
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999[a]	71	23	10	3	8	5	0	13	120	32.4	36.6
2000	-	-	-	-	-	-	-	-	-	-	-
2001	49	11	4	6	3	2	0	5	67	22.4	30.6
2002[a]	50	11	6	2	12	1	0	13	82	22.0	42.0

[a] Incidental to elk survey.

Table 36. Bighorn sheep population data, Williams Creek to Perreau Creek portion of Unit 28, Salmon Region, 1991-present.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1991	8	4	2	7	2	0	0	2	23	50.0	137.5
1992	-	-	-	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-
1996	11	3	0	3	5	0	0	5	22	27.3	72.7
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999[a]	9	2	2	5	3	1	0	4	22	22.2	122.2
2000	-	-	-	-	-	-	-	-	-	-	-
2001[a]	27	9	4	5	4	0	0	4	49	33.3	48.1
2002	-	-	-	-	-	-	-	-	-	-	-

[a] Incidental to deer survey.

Table 37. Bighorn sheep population data, units 30 and 30A, Salmon Region, 1992-present.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1992	19	2	3	6	2	0	0	2	32	10.5	57.9
1993	-	-	-	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-	-	-	-
1997	3	5	1	5	5	7	0	12	26		
1998	-	-	-	-	-	-	-	-	-	-	-
1999	29	9	3	5	1	3	0	4	50	31.0	41.4
2000[a]	23	2	0	8	12	4	3	16	52	8.7	104.3
2001[a]	18	9	5	2	9	1	0	10	44	50.0	94.4
2002[a]	15	4	1	7	9	1	0	10	37	26.7	120.0

[a] Incidental to deer survey.

Table 38. Bighorn sheep population data, Unit 37A, Salmon Region, 1992-present.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1992	36	2	1	2	5	3	1	8	50	5.6	30.6
1993	-	-	-	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-	-	-	-
1995	-	-	-	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-
1998[a]	11	4	6	4	3	2	0	5	30	36.4	136.4
1999	-	-	-	-	-	-	-	-	-	-	-
2000	-	-	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-	-	-

[a] Incidental to elk survey, partial count.

Table 39. Bighorn sheep population data, Unit 36A, Salmon Region, 1990-present.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1990	98	47	2	13	20	8	3	28	191	48.0	43.9
1991	84	7	5	11	12	9	0	21	128	8.3	44.0
1992	85	3	3	8	10	7	0	17	116	3.5	32.9
1993	63	5	4	6	10	7	0	17	95	7.9	42.9
1994	65	2	4	6	6	8	0	14	91	3.1	36.9
1995	-	-	-	-	-	-	-	-	-	-	-
1996	61	7	1	1	3	5	0	8	78	11.5	16.4
1997	53	2	0	1	2	3	0	5	60	3.8	11.3
1998	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-
2000[a]	34	5	7	5	1	1	0	2	53	14.7	41.2
2001	27	7	1	2	0	0	0	0	37	25.9	11.1
2002	-	-	-	-	-	-	-	-	-	-	-

[a] Incidental to deer and elk surveys.

Table 40. Bighorn sheep population data, Morgan Creek area, Unit 36B, Salmon Region, 1990-present.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1990	66	10	11	18	12	13	0	25	130	15.2	81.8
1991	89	18	9	16	13	14	0	27	159	20.2	58.4
1992	75	10	10	11	16	6	1	22	129	13.3	57.3
1993[a]	47	9	1	14	7	4	0	11	82	19.1	55.3
1994[a]	54	3	1	6	14	4	0	18	82	5.6	46.3
1995	-	-	-	-	-	-	-	-	-	-	-
1996	66	13	12	6	7	1	0	8	105	19.7	39.4
1997	61	19	2	5	7	3	0	10	97	31.1	27.9
1998	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-
2000[b]	32	16	2	7	11	4	0	15	72	50.0	75.0
2001	77	10	6	8	21	5	3	26	130	13.0	51.9
2002[a]	17	3	0	1	6	5	0	11	32	17.6	70.6

[a] Incidental to other surveys, partial count.
[b] Incidental to deer and elk surveys.

Table 41. Bighorn sheep population data, Birch Creek area, Unit 36B, Salmon Region, 1991-present.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1991	23	4	0	1	2	4	0	6	34	17.4	30.4
1992	-	-	-	-	-	-	-	-	-	-	-
1993[a]	27	4	1	5	6	4	0	10	47	14.8	59.3
1994[a]	7	3	0	0	2	0	0	2	12	42.9	28.6
1995	-	-	-	-	-	-	-	-	-	-	-
1996	30	0	0	0	6	1	0	7	37	0.0	23.3
1997	29	3	2	2	1	1	0	2	38	10.3	20.7
1998	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-
2000[b]	14	2	2	4	1	0	0	1	23	14.3	50.0
2001	21	2	2	3	4	0	0	4	32	9.5	42.9
2002[b]	5	0	0	5	11	1	0	12	22	0.0	340.0

[a] Incidental to other surveys, partial count.
[b] Incidental to deer and elk surveys.

Table 42. Bighorn sheep population data, Hunt Area 37, Salmon Region, 1983-present.

Year	Ewes	Lambs	Rams				Uncl.	Total Legal Rams	Total Sheep	Lambs: 100 Ewes	Rams: 100 Ewes
			I	II	III	IV					
1983	90	16	14	7	7	2	0	9	136	17.8	33.3
1984	-	-	-	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-
1987	100	22	7	8	17	6	4	23	164	22.0	38.0
1988	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-
1992	38	1	2	3	3	0	0	3	47	2.6	21.1
1993	-	-	-	-	-	-	-	-	-	-	-
1994	54	4	5	8	7	6	0	13	84	7.4	48.1
1995	-	-	-	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-	-	-	-
1997	-	-	-	-	-	-	-	-	-	-	-
1998	-	-	-	-	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	-	-	-	-	-
2000	38	8	3	2	4	0	0	4	55	21.1	23.7
2001	-	-	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-	-	-

Table 43. Season structure for controlled bighorn sheep hunts, Salmon Region, 2001-2002.

Hunt Area	Season		Permits
	Dates	Length	
21	August 30-October 13	45 Days	3
27-1	August 30-October 13	45 Days	12
27-2	August 30-October 13	45 Days	6
27-3	August 30-October 13	45 Days	2
27-4	August 30-October 13	45 Days	3
27-L	October 13-31	19 Days	2
28	August 30-October 13	45 Days	3
30	August 30-October 13	45 Days	2
36B	August 30-October 13	45 Days	4
37	August 30-October 13	45 Days	2

Table 44. Summary of bighorn sheep harvest and drawing odds for Hunt Areas 21 and 21-L, Salmon Region, 1989-present.

Hunt Area	Year	No. Permits	Harvest	% Hunter Success	Days/ Hunter[a]	Total First Choice Applicants	Drawing Odds
21	1989	7	2	29	14.6	42	1:6.0
	1990	7	3	43	11.9	81	1:11.6
	1991	7	2	29	14.8	69	1:9.9
	1992	7	4	57	11.0	35	1:5.0
	1993	3	3	100	11.5	20	1:6.7
	1994	3	0	0	9.7	50	1:16.7
	1995	3	1	33	22.3	36	1:12.0
	1996	3	3	100	5.7	53	1:17.7
	1997	3	3	100	-	34	1:11.3
	1998	3	2	67	10.7	43	1:14.3
	1999	3	3	100	8.7	51	1:17.0
	2000	3[b]	1	50	1.0	44	1:14.7
	2001	4[b]	4	100	5.7	60	1:20.0
	2002	3	-	-	-	105	1:35.0
21-L	1991	2	3[c]	100	5.5	45	1:22.5
	1992	2	2	100	10.5	42	1:21.0

[a] Days/hunter based only on partial sample of successful hunters beginning 1996.
[b] One permit in Hunt Area 21 deferred until 2001 season.
[c] Auction permit harvest included.

Table 45. Summary of bighorn sheep harvest and drawing odds for Hunt Areas 27-1 and 27-2, Salmon Region, 1989-present.

Hunt Area	Year	No. Permits	Harvest	% Hunter Success	Days/ Hunter[a]	Total First Choice Applicants	Drawing Odds
27-1	1989	36	9	26	6.7	75	1:2.1
	1990	36	6	17	11.0	76	1:2.1
	1991	30	5	17	10.8	93	1:3.1
	1992	30	7	23	11.6	66	1:2.2
	1993	30	3	10	12.1	61	1:2.0
	1994	30	2	7	9.9	74	1:2.5
	1995	12	2	17	9.1	39	1:3.2
	1996	12	2	17	-	34	1:2.8
	1997	12	4	33	-	63	1:5.2
	1998	12	0	0	-	58	1:4.8
	1999	12	2	17	11.0	60	1:5.0
	2000	12[b]	1	13	-	51	1:4.3
	2001	16[b]	3	19	6.0	38	1:3.2
	2002	12	-	-	-	61	1:5.1
27-2	1989	10	7	70	5.6	53	1:5.3
	1990	10	4	40	14.7	57	1:5.7
	1991	10	3	30	7.6	39	1:3.9
	1992	10	6	60	13.9	32	1:3.2
	1993	6	2	33	6.7	35	1:5.8
	1994	6	1	17	10.0	41	1:6.8
	1995	6	4	67	3.8	45	1:7.5
	1996	6	3	50	-	44	1:7.3
	1997	6	1	17	-	83	1:13.8
	1998	6	3	50	5.0	42	1:7.0
	1999	6	1	17	10.0	99	1:17.0
	2000	6[c]	3	60	4.5	64	1:10.7
	2001	7[c]	5	71	10.8	43	1:7.2
	2002	6	-	-	-	58	1:9.7

[a] Days/hunter based only on partial sample of successful hunters beginning 1996.
[b] Four permits in Hunt Area 27-1 deferred until 2001 season.
[c] One permit in Hunt Area 27-2 deferred until 2001 season.

Table 46. Summary of bighorn sheep harvest and drawing odds for Hunt Areas 27-3 and 27-4, Salmon Region, 1989-present.

Hunt Area	Year	No. Permits	Harvest	% Hunter Success	Days/ Hunter[a]	Total First Choice Applicants	Drawing Odds
27-3	1989	19	5	26	8.0	44	1:2.3
	1990	19	6	32	8.8	61	1:3.2
	1991	19	2	11	13.2	50	1:2.6
	1992	19	1	5	11.4	25	1:1.3
	1993	2	0	0	7.0	18	1:9.0
	1994	2	2	100	7.0	14	1:7.0
	1995	2	1	50	5.5	30	1:15.0
	1996	2	0	0	12.5	16	1:8.0
	1997	2	1	50	-	30	1:15.0
	1998	2	2[b]	67	-	27	1:13.5
	1999	2	1	50	9.5	36	1:18.0
	2000	2[c]	1[d]	50	1.0	51	1:25.5
	2001	3[c]	0	0	-	21	1:10.5
	2002	2	-	-	-	15	1:7.5
27-4	1990	8	5	62	9.4	40	1:5.0
	1991	8	6	75	9.8	42	1:5.2
	1992	8	2	25	10.7	45	1:5.6
	1993	3	2	67	10.0	18	1:6.0
	1994	3	1	33	7.0	11	1:3.7
	1995	3	1	33	8.3	28	1:9.3
	1996	3	1	33	-	27	1:9.0
	1997	3	1	33	-	22	1:7.3
	1998	3	2	67	-	36	1:12.0
	1999	3	2	67	2.0	36	1:12.0
	2000	3	1	33	1.0	22	1:7.3
	2001	3	1	33	4.0	56	1:18.7
	2002	3	-	-	-	53	1:17.7

[a] Days/hunter based only on partial sample of successful hunters beginning 1996.
[b] Lottery permit harvest included.
[c] One permit in Hunt Area 27-3 deferred until 2001 season.
[d] Auction permit harvest included.

Table 47. Summary of bighorn sheep harvest and drawing odds for Hunt Areas 27-L and 28 Salmon Region, 1989-present.

Hunt Area	Year	No. Permits	Harvest	% Hunter Success	Days/ Hunter[a]	Total First Choice Applicants	Drawing Odds
27-L	1991	2	1	50	9.0	23	1:11.5
	1992	2	2	100	9.0	38	1:19.0
	1993	2	2	100	5.0	18	1:9.0
	1994	2	1	50	6.0	30	1:15.0
	1995	2	2	100	8.0	22	1:11.0
	1996	2	1	50	-	69	1:34.5
	1997	2	1	50	-	63	1:31.5
	1998	2	1	50	-	106	1:53.0
	1999	2	1	50	-	98	1:49.0
	2000	2	2	100	5.0	88	1:44.0
	2001	2	2	100	6.0	80	1:40.0
	2002	2	-	-	-	74	1:37.0
28	1989	12	4	33	7.9	45	1:3.8
	1990	12	2	17	15.4	34	1:2.8
	1991	12	2	17	13.4	41	1:3.4
	1992	12	4	33	13.1	39	1:3.2
	1993	2	1	50	19.5	10	1:5.0
	1994	2	0	0	14.0	15	1:7.5
	1995	2	0	0	8.5	10	1:5.0
	1996	2	1	50	-	10	1:5.0
	1997	2	0	0	-	13	1:6.5
	1998	2	1	50	-	11	1:5.5
	1999	3	0	0	-	41	1:13.7
	2000	3[b]	0	0	-	37	1:12.3
	2001	5[b]	2	40	11.0	36	1:12.0
	2002	3	-	-	-	10	1:3.3
28 Combined	1989	7	6	83	8.8	60	1:8.6
	1990	7	3	43	14.6	80	1:11.4
	1991	7	2	29	14.1	77	1:11.0
	1992	7	3	43	17.0	58	1:8.3
	1993	3	2	67	12.0	43	1:14.3
	1994	3	1	33	10.3	29	1:9.7
	1995	3	0	0	10.5	32	1:10.7
	1996	3	0	0	-	33	1:11.0
	1997	3	2	67	-	33	1:11.0
	1998	3	2	67	-	37	1:12.3

[a] Days/hunter based only on partial sample of successful hunters beginning 1996.
[b] Two permits in Hunt Area 28 deferred until 2001 season.

Table 48. Summary of bighorn sheep harvest and drawing odds for Hunt Areas 30, 36A, 36A-L, 36B-1, 36B-2, 36B-3, and 36B-L Salmon Region, 1989-present.

Hunt Area	Year	No. Permits	Harvest	% Hunter Success	Days/ Hunter[a]	Total First Choice Applicants	Drawing Odds
30	2001	2	2	100	7.0	96	1:48.0
	2002	2	-	-	-	43	1:21.5
36A	1989	5	2	40	25.6	44	1:8.8
	1990	5	3	60	8.7	37	1:7.4
	1991	5	3	60	10.6	29	1:5.8
	1992	5	3	60	14.3	45	1:9.0
	1993	5	3	60	12.3	40	1:8.0
	1994	6	2	33	9.5	50	1:8.3
	1995	3	1	33	16.3	33	1:11.0
	1996	3	2	67	-	39	1:13.0
36A-L	1991	2	1	50	7.0	15	1:7.5
	1992	2	1	50	9.5	17	1:8.5
36B-1	1989	6	4	67	5.5	54	1:9.0
	1990	6	5	83	9.5	44	1:7.3
	1991	6	3	50	20.3	68	1:11.3
	1992	6	1	17	19.4	17	1:2.8
	1993	2	1	50	7.5	16	1:8.0
	1994	2	1	50	5.0	18	1:9.0
	1995	2	1	50	13.0	19	1:9.5
	1996	2	1	50	-	27	1:13.5
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	0	-	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[b,c]	100	22.0	40	1:20.0

[a] Days/hunter based only on partial sample of successful hunters beginning 1996.
[b] Auction permit harvest included.
[c] Lottery permit harvest included.

Table 49. Summary of bighorn sheep harvest and drawing odds for Hunt Areas 36B, 37, and 50, Salmon Region, 1989-present.

Hunt Area	Year	No. Permits	Harvest	% Hunter Success	Days/ Hunter[a]	Total First Choice Applicants	Drawing Odds
36B	1997	4	2	50	-	65	1:16.2
	1998	4	2	50	-	57	1:14.2
	1999	4	4	100	14.0	50	1:12.5
	2000	4[b]	1	50	7.0	57	1:14.3
	2001	6[b]	5	83	9.6	61	1:15.3
	2002	4	-	-	-	74	1:18.5
37	1989	16	14	88	8.6	186	1:11.6
	1990	16	7[c]	41	12.4	192	1:12.0
	1991	17	9	53	7.6	152	1:8.9
	1992	17	9	53	10.4	129	1:7.6
	1993	6	3	50	12.2	84	1:14.0
	1994	6	6	100	7.5	95	1:15.8
	1995	3	1	33	15.0	83	1:27.7
	1996	3	1	33	9.0	74	1:24.7
	1997	3	1	33	-	55	1:18.3
	1998	3	2	67	-	61	1:20.3
	1999	3	1	33	4.0	69	1:23.0
	2000	3	3	100	6.0	85	1:28.3
	2001	2	2	100	5.5	60	1:30.0
	2002	2	-	-	-	82	1:41.0
50	1991	2	1	50	13.5	36	1:18.0
Combined	1992	2	2	100	9.0	20	1:10.0

[a] Days/hunter based only on partial sample of successful hunters beginning 1996.
[b] Two permits in Hunt Area 36B deferred until 2001 season.
[c] Auction permit harvest included.

Table 50. Summary of bighorn sheep harvest and drawing odds, Salmon Region, 1989-present.

Year	No. Permits	Harvest	% Hunter Success	Days/ Hunter[a]	Total First Choice Applicants	Drawing Odds
1988[b]	118	35	30	10.9	751	1:6.4
1989	130	61	47	8.4	658	1:5.1
1990[b]	131	48	37	11.4	751	1:5.7
1991[b]	136	47	35	11.3	830	1:6.1
1992[b,c]	137	55	40	12.0	681	1:5.0
1993	68	26	38	10.8	433	1:6.4
1994	69	20	29	7.6	475	1:7.0
1995	45	17	38	11.6	430	1:9.6
1996	45	16	36	-	461	1:10.2
1997	40	16	40	-	461	1:11.5
1998[c]	41	17	41	-	478	1:11.7
1999	38	15	39	8.5	421	1:14.2
2000[b]	38[d]	13	46	3.9	499	1:13.1
2001	50[d]	26	52	7.9	551	1:14.1
2002	39	-	-	-	575	1:14.7

[a] Days/hunter based only on partial sample of successful hunters beginning 1996.
[b] Auction permit harvest included.
[c] Lottery permit harvest included.
[d] Eleven of these permits were deferred until 2001 season because of wildfires.

Table 51. Bighorn sheep mortality, Salmon Region, 1989-present.

Year	Controlled Harvest	Indian Harvest[a]	Illegal Kill	Other	Total
1989-90	57	2	0	48	107
1990-91	44	0	1	72	117
1991-92	44	1	0	55	100
1992-93	55	10	1	32	98
1993-94	26	0	0	30	56
1994-95	20	5	0	23	48
1995-96	17	3	0	38	58
1996-97	16	1	0	17	34
1997-98	16	2	0	28	46
1998-99	17	1	2	26	46
1999-00	15	1	1	24	41
2000-01	13	2	0	23	38
2001-02	26	0	1	26	53

[a] Indian harvest information has not been consistently available and is incomplete.

Table 52. Bighorn sheep translocation history, Salmon Region, 1968-present.

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

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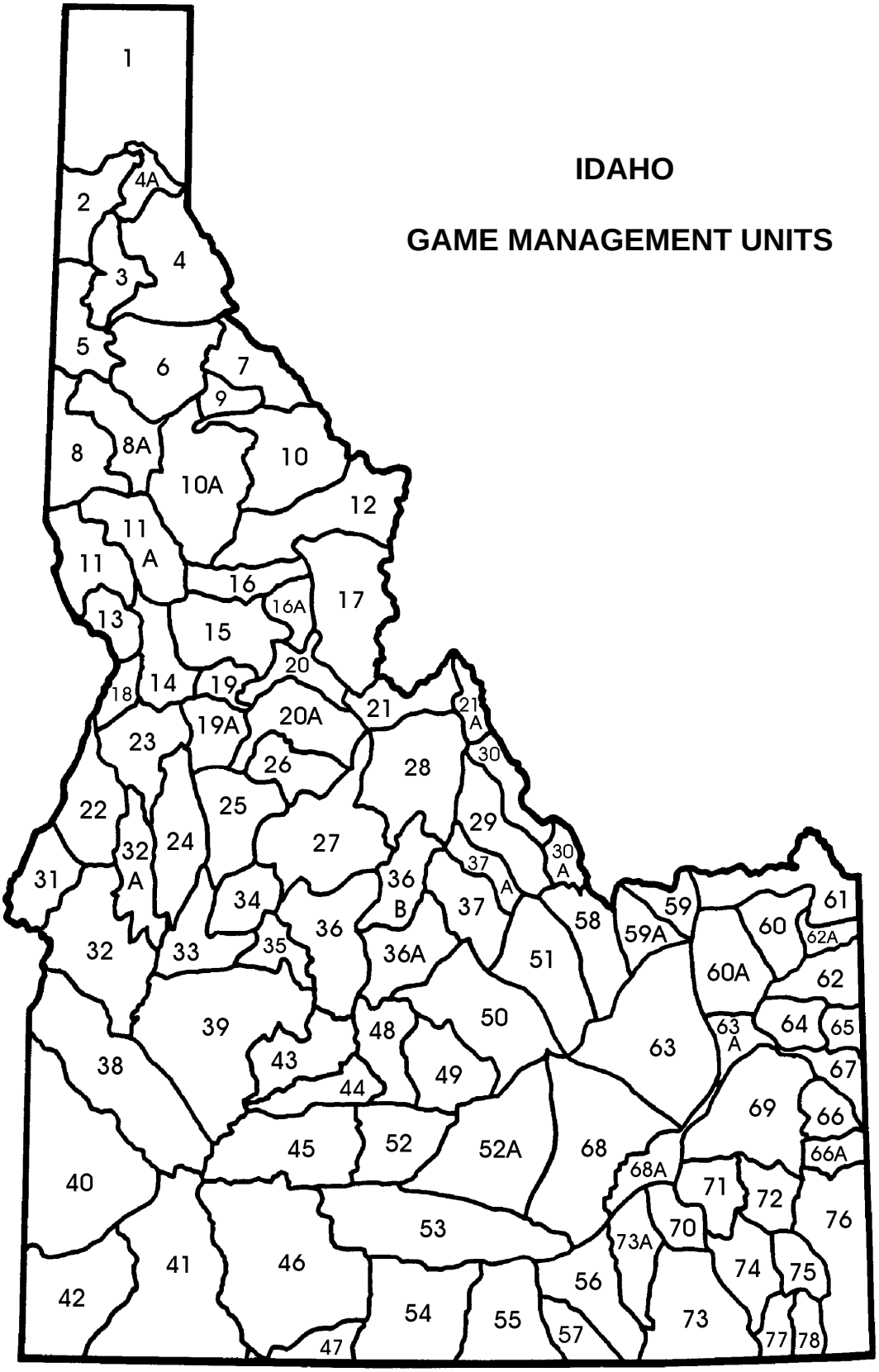
IDAHO

GAME MANAGEMENT UNITS



FEDERAL AID IN WILDLIFE RESTORATION

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