

IDAHO DEPARTMENT OF FISH AND GAME

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Job Progress Report



MOOSE

Study I, Job 6

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**PROGRESS REPORT
SURVEYS AND INVENTORY**

STATE:	<u>Idaho</u>	JOB TITLE:	<u>Moose Surveys and Inventories</u>
PROJECT:	<u>W-170-R-24</u>		
SUBPROJECT:	<u>1-7, McCall</u>	STUDY NAME:	<u>Big Game Population Status, Trends, Utilization, and Associated Habitat</u>
STUDY:	<u>I</u>		
JOB:	<u>6</u>		<u>Studies</u>
PERIOD COVERED: July 1, 1999 to June 30, 2000			

MOOSE – STATEWIDE

ABSTRACT

In 1999 the Idaho Department of Fish and Game identified 117 controlled hunts for moose in Idaho, and allowed a total of 888 permits for antlered moose and 123 permits for antlerless moose. Hunters harvested 671 antlered moose for a success rate of 76%, and 101 antlerless moose for a success rate of 82%. The harvest of 772 moose overall in Idaho during 1999 yields a harvest success rate of 76%, as compared with 74% in 1998 and 77% in 1997.

Moose permits continue to be highly sought by Idaho sportsmen. Nonresidents were not allowed to apply for moose permits in Idaho in 1999. In 1999 there were 6,915 first-choice applicants for 888 antlered moose permits, providing a 7.8% success rate among applicants. There were 150 first-choice applicants for 123 antlerless moose permits, resulting in a success rate of 82%. Some controlled hunts were not filled with first-choice applicants; 7 permits for antlered moose and 21 permits for antlerless moose were awarded to applicants who had identified these hunts as their second choice.

Overall the success rate for moose controlled hunt permits was 1 in 7.0 in 1999, as compared with 1 in 7.1 in 1998 and 1 in 7.9 in 1997. A review of data since 1990 shows an increasing success rate among applicants for moose permits, as permit numbers have increased from 460 in 1990 to 1,011 in 1999.

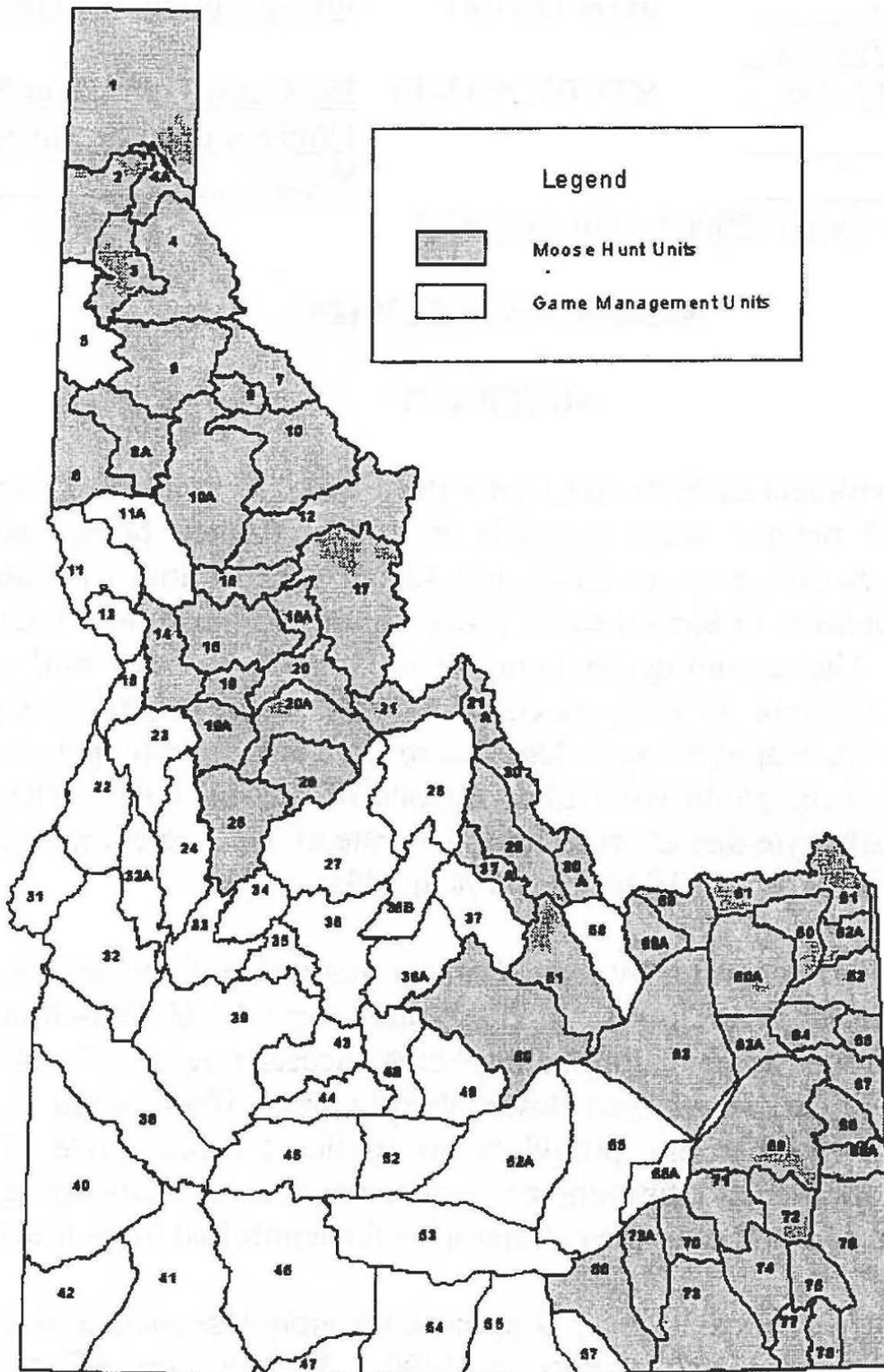


Figure 1. Management Units Open to Moose Hunting in 1999.

**PROGRESS REPORT
SURVEYS AND INVENTORY**

STATE: Idaho **JOB TITLE:** Moose Surveys and Inventories
PROJECT: W-170-R-24
SUBPROJECT: 1 **STUDY NAME:** Big Game Population Status, Trends, Use, and Associated Habitat
STUDY: I
JOB: 6
PERIOD COVERED: July 1, 1999 to June 30, 2000

MOOSE - PANHANDLE REGION

ABSTRACT

In 1999 the Panhandle Region continued to offer limited hunting for bull moose on a controlled hunt drawing basis. Drawing odds remained low (16 applications per permit), a consequence of few competing controlled hunt opportunities for other species in the Panhandle. There were a record 123 permits distributed among 15 hunts in eight management units during 1999. One hundred permit holders (81%) successfully bagged a bull moose.

Aerial survey information during January 2000 indicated moose densities of 0.5 moose per mile² in the surveyed portion of Unit 2, and 1.1 to 1.5 moose per mile² in the surveyed portion of Unit 1. The harvest rate for moose in Unit 1 is less than 10% for bulls. No cow harvest is currently allowed. These results provide justification for a substantial increase in moose hunting opportunity during the next biennial season framework beginning 2001.

UNITS 1, 2, 3, 4, 6, 7 AND 9

**CONTROLLED HUNT AREAS 1-1, 1-2, 1-3, 1-4, 1-5, 1-6,
1-7, 1-8, 1-9, 2, 3, 4, 6, 7, AND 9**

MANAGEMENT DIRECTION

1. Develop an index to moose population trends that does not rely solely on aerial surveys.
2. Place enforcement emphasis on known problem areas of illegal moose kills. Publicize moose poaching arrests and the statewide reward system (CAP) in the media.
3. Develop a program for warning deer and elk hunters that moose are in an area to reduce accidental kills of moose.
4. Continue to examine present controlled hunt boundaries to include areas not now open to hunting and to distribute moose hunters more evenly. Coordinate moose management and

permit levels along the Idaho/Washington border with the Washington Department of Game.

5. Continue collecting information on moose distribution and mortality from Department and other agency personnel and the hunting public.

BACKGROUND

For many years it was believed that the Panhandle Region provided little suitable moose habitat and that populations would remain relatively low. Open areas and extensive riparian areas that typify moose habitat are not widespread in the region. Rather, moose often utilize closed canopy timber with interspersed shrub fields and creek bottoms. Presently these populations are steadily expanding where timber harvesting and fire have created early-seral shrub fields.

Historically moose have been managed in Idaho for rapid population increases. Seasons have been set on a bulls-only, controlled-hunt basis with conservative permit levels. Currently moose are also managed on a one-kill-in-a-lifetime basis. In the Panhandle Region moose hunting is now authorized in Units 1, 2, 3, 4, 6, 7, and 9 (Table 1) with an 86-day season.

POPULATION SURVEYS

Unit 1

A population survey for moose was conducted for the Priest River drainage east of Priest River (harvest subunit 108) during late January 2000. A total 14.6 hours were expended in a Hughes 500D, sampling 28 of 98 search units in this 370-square-mile area. Helicopter and pilot contract charges totaled \$8,491.50.

Because this was our first intensive survey for this area, we had little information to allow stratification of search units. Four of the 98 search units were classified as a “high” moose density stratum based on observations of the local conservation officer. All four of these “highs” were flown, with 28 of the remaining 94 search units flown.

A total of 95 moose were observed. Under the assumption that we observed all moose in each search unit flown, the projected population would be 261 (0.7 per mile²), with 96 bulls and 51 calves per 100 cows. The maximum bull harvest rate experienced during 1999 would therefore be 10%, a very conservative harvest rate.

The Idaho Elk Sightability Model was developed over an extensive period in Idaho, including a broad spectrum of cover, snow, and group size factors. The development of the Wyoming Moose Model contains less data for development of model equations. Under the hypothesis that a moose has the same sightability as an elk under identical conditions of group size, cover, and snow, the results of the two models should be very close, even though the two models use slightly different variables. The use of a Hughes 500D, rather than a Hiller-Soloy, serves to act

as safety margin for management, yielding slightly lower population estimates than if this factor were taken into consideration because the Hughes has less visibility.

The elk model predicted 414 moose in subunit 108 (1.1 moose per mile²), indicating we saw 63% of the moose in those search units flown. The composition of the population was estimated at 88 bulls and 60 calves per 100 cows. With an estimated 162 bulls in the population, the 1999 harvest of 11 bulls would yield a maximum harvest rate of 6%, with 48 bull calves present during January for recruitment to the 2000 antlered bull classification.

The moose model predicted 546 moose in the same area (1.5 moose per mile²), indicating we saw 49% of the moose in those search units flown. The composition of the population was estimated at 79 bulls and 70 calves per 100 cows. With an estimated 169 bulls in the population, the 1999 harvest of 11 bulls would yield a maximum harvest rate of 6%, with 75 bull calves present during January for recruitment to the 2000 antlered bull classification.

Brief searches were conducted in areas adjacent to selected search units to help assess twinning rates. Thirty cow moose were classified in these adjacent areas, resulting in 71 cow moose observed overall. Of these, 58% had no calf, 42% had a single calf, no cows were observed with two calves, and two solitary calves were observed with no cow. While twin moose calves are commonly observed in the Selkirks during summer, there is no indication both twins are able to survive to midwinter. These data are in close agreement with those from surveys east of Bonner's Ferry during 1994. There 62% of cows were observed with no calf, 38% were observed with a single calf, and none were observed with two calves. Moose densities estimated east of Bonner's Ferry at the time were estimated at 0.8 moose per mile², using the elk sightability model (no moose sightability model was available in 1996).

Unit 2

The Department cooperated with the Washington Department of Fish and Wildlife to conduct a population survey for moose in the Mount Spokane area from I-90 to Blanchard, on both sides of the Washington and Idaho state line. The Idaho Department of Fish and Game contributed \$1,499 to these flights in our Unit 2. A Hughes 500D helicopter was used for the survey.

Washington delineated ten large search units for moose surveys in this roughly 270-square-mile area. Nine search units were flown with a total of 81 moose observed. Included were 43 cows, 14 bulls, 21 calves, and 3 unclassified moose, yielding ratios of 33 bulls and 49 calves per 100 cows.

The elk model predicted 126 moose in the Mount Spokane area, (0.5 moose per mile²), indicating we saw 71% of the moose in those search units flown. The composition of the population was estimated at 30 bulls and 49 calves per 100 cows.

The moose model predicted nearly identical statistics as the elk model, with an estimated 130 moose (0.5 moose per mile²). The moose model predicted 69% of the moose in areas

searched were observed. The composition of the population was estimated at 26 bulls and 52 calves per 100 cows.

The January 1996 flight of the Idaho portion of this area provides composition data for comparison. Both calf and bull recruitment has improved since 1996, when classification of 56 moose resulted in ratios of 60 bulls and 24 calves per 100 cows. Seventy-eight percent of cows had no calf, 22% had a single calf, and no cows had twin calves associated with them during January 1996.

RESEARCH

The Washington Department of Fish and Wildlife is conducting some research on moose in the Mount Spokane area to assess the impacts of poaching. The study area includes a portion of Idaho's Unit 2. Of six radio-collared adult cows, all six had twin calves during June 2000 (W. Myers, Washington Department of Fish and Wildlife personal communication July 25, 2000). The lack of twins observed during January is therefore not attributable to low birth rates.

HARVEST

Fifteen controlled hunts were authorized in the Panhandle Region in 1999 with a total of 123 permits. One hundred permit holders completed the mandatory report stating that they were successful in bagging a bull for a success rate of 81% (Table 2). Summaries of the individual controlled hunt units are shown in Table 3.

Controlled Hunt Odds

Most areas of Idaho have permits available for a variety of big game species. By forcing a choice between these moose and other big game permits, the Department has been successful in substantially improving drawing odds across most of the state. In the Panhandle the only big game species managed under a permit system is moose, making drawing odds poor for moose.

Interest in moose hunting in the Panhandle Region has been high since moose hunting began. The odds of drawing a permit have not changed substantially since 1993. While permit numbers have increased from 83 to 123, applications have increased at roughly the same rate, from 1,361 to 2,001 during the same period (Table 2). In 1999 the combined odds of drawing a moose permit were 1 to 16.

NONHARVEST MORTALITIES

Thirty-five moose mortalities were documented in the Panhandle Region during 1999 in addition to controlled hunts (Table 4). The bulk of these were illegal kills and roadkills. During 1999 there was a surge in roadkills reported, primarily in the Rathdrum/Spirit Lake area. Illegal kills declined dramatically during 1999.

MANAGEMENT IMPLICATIONS

Aerial surveys indicate our current management for moose is very conservative, with hunting mortality less than 10% documented where studied in the east Priest Lake portion of Unit 1. By comparison bull elk populations in the Panhandle commonly sustain 40% to 60% annual mortality due to hunting despite lower fecundity rates. Given the apparent potential to harvest more moose, and the high demand for moose hunting, it is prudent to survey the public to evaluate more aggressive hunting season frameworks and permit levels and enact more aggressive hunting where appropriate.

Table 1. 1999 Season Structure for Controlled Moose Hunts in the Panhandle Region.

1999	Season		
Hunt No. (s)	Dates	Length	Open For
3001 through 3014 and 3017	8/30-11/23	86 days	Antlered moose

Table 2. Summary of Moose Harvest and Drawing Odds in the Panhandle Region, 1985-1999.

Year	No. Permits	Harvest		Hunter Success	Days/ Hunter	First Choice Applicants	Drawing Odds
		M	F				
1990	42	38	0	90	10.7	849	1:20
1991	51	45	0	88	9.5	1,024	1:20
1992	51	44	0	86	9.3	1,071	1:21
1993	83	69	0	83	9.3	1,361	1:16
1994	83	63	0	76	8.5	1,430	1:17
1995	100	84	0	84	10.3	1,529	1:15
1996 ^a	100	74	0	74	7.4	1,516	1:15
1997	103	85	0	83	9.7	1,837	1:18
1998	103	91	0	88	8.6	1,623	1:16
1999	123	100	0	81	10.8	2,001	1:16

^a From 1990–1995, data are from a telephone survey of all hunters. Beginning in 1996, data are from mandatory check of successful hunters only.

Table 3. Summary of Moose Harvest and Drawing Odds by Hunt Area 1990-1999.

Area	Year	No. Permits	Harvest		Hunter Success	Days ^a / Hunter	Total First Choice Applications	Draw Odds
			M	F				
1-1	1990	4	3	0	75	12.5	74	1:19
	1991 ^b	6	5	0	83	13.3	51	1:09
	1992 ^b	6	5	0	83	7.8	77	1:13
	1993 ^b	9	7	0	78	8.3	75	1:08
	1994 ^b	9	3	0	33	12	90	1:10
	1995 ^b	10	5	0	50	12.8	86	1:09
	1996 ^b	10	5	0	50	8.8	76	1:08
	1997	8	7	0	89	15.5	108	1:14
	1998	8	7	0	89	7.4	98	1:12
	1999	10	9	0	90	11.4	125	1:12
1-2	1990	5	4	0	80	3.4	93	1:19
	1991	6	6	0	100	6.5	162	1:27
	1992	6	6	0	100	4.6	160	1:27
	1993	8	6	0	75	20.6	147	1:18
	1994	8	8	0	100	7.8	142	1:18
	1995	10	7	0	70	16.6	147	1:15

Table 3. Summary of Moose Harvest and Drawing Odds by Hunt Area 1990-1999 (continued).

Area	Year	No. Permits	Harvest		Hunter Success	Days ^a / Hunter	Total First Choice Applications	Draw Odds
			M	F				
	1996	10	9	0	90	5.2	139	1:14
	1997	10	8	0	80	9.4	131	1:13
	1998	10	7	0	70	10.5	109	1:11
	1999	10	6	0	60	14	132	1:13
1-3	1990	5	5	0	100	3.2	117	1:23
	1991	6	6	0	100	7.6	145	1:24
	1992	6	6	0	100	7.5	142	1:24
	1993	8	7	0	88	8.4	153	1:19
	1994	8	7	0	88	6.9	163	1:20
	1995	10	9	0	90	13.7	183	1:18
	1996	10	5	0	50	4	167	1:17
	1997	10	8	0	80	4.5	170	1:17
	1998	10	9	0	90	7.3	147	1:15
	1999	10	9	0	90	8.5	142	1:14
1-4	1990	3	2	0	67	11.3	31	1:10
	1991	4	4	0	100	7.8	62	1:16
	1992	4	4	0	100	15.3	68	1:17
	1993 ^c	6	6	0	100	8.6	58	1:10
	1994	6	3	0	50	12	62	1:10
	1995	8	6	0	75	12.4	61	1:08
	1996	8	5	0	63	7.8	69	1:09
	1997	0	0	0	0	0	0	0
	1998	0	0	0	0	0	0	0
	1999	10	5	0	50	13	81	1:08
1-5	1990	4	4	0	100	2.8	124	1:31
	1991	5	5	0	100	10.5	165	1:33
	1992	5	5	0	100	4.8	159	1:32
	1993	8	7	0	88	4.7	219	1:27
	1994	8	5	0	63	7.3	210	1:26
	1995	10	10	0	100	10.9	238	1:24
	1996	10	9	0	90	9.3	227	1:23
	1997	15	15	0	100	9.1	281	1:19
	1998	15	15	0	100	6.6	335	1:22
	1999	15	11	0	73	11.5	357	1:24
1-6	1990	3	3	0	100	12.3	65	1:22
	1991	4	2	0	50	15	57	1:14
	1992	4	2	0	50	16.8	75	1:19
	1993	6	5	0	83	12	66	1:11
	1994	6	5	0	83	10.8	88	1:15

Table 3. Summary of Moose Harvest and Drawing Odds by Hunt Area 1990-1999 (continued).

Area	Year	No. Permits	Harvest		Hunter Success	Days ^a / Hunter	Total First Choice Applications	Draw Odds
			M	F				
	1995	6	6	0	100	7.2	98	1:16
	1996	6	4	0	67	7	92	1:15
	1997	6	6	0	100	9.3	93	1:15
	1998	6	6	0	100	8.8	64	1:11
	1999	6	6	0	100	12.5	110	1:18
1-7	1990 ^d	6	6	0	100	11.8	165	1:28
	1991 ^d	6	5	0	83	5.3	164	1:27
	1992 ^d	6	6	0	100	9.8	154	1:26
	1993 ^d	12	11	0	92	12.5	247	1:21
	1994 ^d	12	12	0	100	6.5	245	1:20
	1995 ^d	18	18	0	100	9	268	1:15
	1996 ^d	18	17	0	94	9.6	280	1:16
	1997 ^e	8	7	0	88	10.3	64	1:08
	1998	8	8	0	100	11.8	63	1:08
	1999	10	8	0	80	13	77	1:08
1-8 ^f	1997	15	12	0	80	13	237	1:16
	1998	15	13	0	87	10	210	1:14
	1999	15	13	0	87	14.6	273	1:18
1-9 ^g	1993	2	2	0	100	20	25	1:13
	1994	2	2	0	100	2.5	26	1:13
	1995	2	2	0	100	8	25	1:13
	1996	2	2	0	100	3.5	31	1:16
	1997	2	1	0	50	7	25	1:13
	1998	2	2	0	100	7.1	24	1:12
	1999	2	1	0	50	5	27	1:13
2	1990	2	1	0	50	8.5	10	1:05
	1991	2	2	0	100	4	59	1:30
	1992	2	2	0	100	2	73	1:37
	1993	4	4	0	100	7	125	1:31
	1994	4	3	0	75	2.3	120	1:30
	1995	5	5	0	100	4.8	116	1:23
	1996	5	5	0	100	5	129	1:26
	1997	10	9	0	90	9	230	1:23
	1998	10	10	0	100	14	225	1:23
	1999	10	10	0	100	9.6	298	1:29
4-1 ^h	1990	2	1	0	50	8.5	10	1:05
	1991	2	1	0	50	25	21	1:11
	1992	2	2	0	100	4.5	19	1:09

Table 3. Summary of Moose Harvest and Drawing Odds by Hunt Area 1990-1999 (continued).

Area	Year	No. Permits	Harvest		Hunter Success	Days ^a / Hunter	Total First Choice Applications	Draw Odds
			M	F				
	1993	2	1	0	50	1	39	1:20
	1994	2	2	0	100	9	36	1:18
	1995	2	2	0	100	10	35	1:18
	1996	2	2	0	100	2	63	1:32
	1997	2	1	0	50	6	67	1:34
	1998	2	1	0	50	7.5	57	1:29
4-2 ⁱ	1990	2	2	0	100	3	18	1:09
	1991	2	1	0	50	4.5	16	1:08
	1992	2	1	0	50	20	26	1:13
	1993	2	2	0	100	4.5	18	1:09
	1994	2	2	0	100	10.5	24	1:12
	1995	2	1	0	50	10	22	1:12
	1996	2	2	0	100	10	23	1:12
	1997	2	1	0	50	4	37	1:19
	1998	2	2	0	100	10.6	30	1:15
3	1999	5	4	0	80	4.3	29	1:06
4	1999	5	4	0	80	8	110	1:22
6	1990	2	1	0	50	31	45	1:08
	1991	2	2	0	100	15	45	1:22
	1992	2	2	0	100	18	40	1:20
	1993	4	3	0	75	3	92	1:23
	1994	4	4	0	100	2.5	101	1:25
	1995	5	5	0	100	10.3	156	1:31
	1996	5	5	0	100	7.8	124	1:25
	1997	5	4	0	80	7	175	1:35
	1998	5	5	0	100	12	181	1:36
	1999	5	5	0	100	11.8	154	1:31
7 ^j	1990	2	2	0	100	15.5	37	1:18
	1991	4	4	0	100	7.5	51	1:13
	1992	4	1	0	25	13.8	47	1:12
	1993	8	5	0	63	8.4	56	1:07
	1994	8	4	0	50	14.5	87	1:11
	1995	8	4	0	50	11.9	68	1:09
	1996	8	2	0	25	2.5	46	1:06
	1997	5	4	0	80	9	60	1:12
	1998	5	1	0	20	17.7	48	1:10
	1999	5	4	0	80	6.5	56	1:11

Table 3. Summary of Moose Harvest and Drawing Odds by Hunt Area 1990-1999 (continued).

Area	Year	No. Permits	Harvest		Hunter Success	Days ^a / Hunter	Total First Choice Applications	Draw Odds
			M	F				
9	1990	2	2	0	100	20	23	1:12
	1991	2	2	0	100	10	26	1:13
	1992	2	1	0	50	8	32	1:16
	1993	4	3	0	75	4.5	41	1:10
	1994	4	3	0	75	7.8	40	1:10
	1995	4	4	0	100	6.7	26	1:07
	1996	4	2	0	50	5	50	1:13
	1997	5	2	0	40	9.5	44	1:09
	1998	5	5	0	100	10.6	32	1:06
	1999	5	5	0	100	7.4	30	1:06

^a The number of days per hunter was calculated from a telephone survey of successful and unsuccessful hunters from 1990 through 1996. Since 1997 these data have been calculated from successful hunters reporting on the mandatory moose check.

^b Hunt area 1-1 includes the Kootenai River drainage west of U.S. Highway 95. From 1991 through 1996 it included only that portion west of U.S. Highway 95 and north of the Myrtle Creek drainage.

^c Beginning in 1993 Callahan Creek, Raymond Creek, and other drainages entering the Kootenai River in Montana were split from this hunt as Hunt Area 1-9.

^d Includes the Priest and Salmo River drainages.

^e Includes the Priest River drainage east of Priest River.

^f Part of Hunt Area 1-7 prior to 1997.

^g Part of Hunt Area 1-4 prior to 1993.

^h Units 3 and 4 north of Interstate 90.

ⁱ Units 3 and 4 south of Interstate 90.

^j Prior to 1999 this hunt was split in two hunts, Unit 7 north of the St. Joe River (Hunt Area 7-1) and Unit 7 south of the St. Joe River (Hunt Area 7-2).

Table 4. Summary of all known moose mortalities in the Panhandle Region, excluding controlled hunts, since 1992.

Year	Mortality Agent						Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Train Kill	Other	
1992	0	7	3	1	2	-	13
1993	1	3	1	1	1	-	7
1994	0	12	8	1	1	5	27
1995	2	20	5	3	0	3	33
1996	4	7	16	2	10	5	42
1997	5	5	9	3	4	2	23
1998	1	26	5	4	0	2	38
1999	0	7	20	4	1	3	35

**PROGRESS REPORT
SURVEYS AND INVENTORY**

STATE:	<u>Idaho</u>	JOB TITLE:	<u>Moose Surveys and Inventories</u>
PROJECT:	<u>W-170-R-24</u>		
SUBPROJECT:	<u>2</u>	STUDY NAME:	<u>Big Game Population Status, Trends, Use, and Associated Habitat</u>
STUDY:	<u>I</u>		<u>Studies</u>
JOB:	<u>6</u>		
PERIOD COVERED:	<u>July 1, 1999 to June 30, 2000</u>		

MOOSE - CLEARWATER REGION

ABSTRACT

From the mandatory check, Clearwater Region hunters reported a 1999 harvest of 170 antlered moose from 48 controlled hunts and 7 antlerless moose from 2 controlled hunts. Two hundred ninety-two permits were available and hunters reported success rates averaging 61%. Antlered and antlerless success rates were 60% and 85%, respectively. Drawing odds ranged from 1:0.5 (Hunt Area 12-4) to 1:25.0 (Hunt Area 8A).

UNITS 8, 8A, 10, 10A, 12, 14, 15, 16, 17, 19, AND 20

CONTROLLED HUNT AREAS 8, 8A, 10-1, 10-2, 10-3, 10-4, 10-5, 10A-1, 10A-2, 10A-3, 10A-4, 12-1, 12-2, 12-3, 12-4, 12-5, 12-6, 12-7, 12-8, 12-9, 12-10, 12-11, 14-1, 14-2, 15-1, 15-2, 15-3, 15-4, 15-5, 15-6, 15-7, 16-1, 16-2, 16A-1, 16A-2, 17-1, 17-2, 17-3, 17-4, 17-5, 17-6, 17-7, 19-1, 19-2, 20-1, 20-2, 20-3, AND 20-4

MANAGEMENT DIRECTION

Moose populations will be allowed to increase in units where habitat conditions will support expansion. Legal harvest will continue primarily for antlered bulls only; antlerless moose hunting opportunity will be continued in areas where population control measures are considered necessary. Moose harvest will be increased where feasible, decreased where necessary, and hunt boundaries reexamined to create new hunts as desired. Known mortality will be documented and information on numbers and distribution will be obtained from big game mortality report forms from the mandatory check.

Moose populations large enough to support hunts are found in all management units except 11, 11A, 13, and 18. Management units are divided into controlled hunts to disperse hunters and to direct harvest to specific areas.

Moose have been hunted with controlled hunts on a bulls-only and once-in-a-lifetime basis (if permittee is successful in harvesting a moose). However in 1999 two antlerless moose hunts

(Hunt 8-2 [4 permits] and Hunt 8A-2 [4 permits]) were initiated to increase hunting opportunity and address high cow densities. Since 1986 persons applying for moose permits have been prohibited from applying for any other controlled hunt. Unsuccessful permittees must wait 2 years before applying for another controlled moose hunt. Permit levels are based on trends in antler spread of harvested moose and hunter success rates of recent permittees in the respective controlled hunts.

Moose in the Clearwater Region use two distinct habitats. Some populations are found in climax vegetative cover. Summer feeding habits tend to be nocturnal in open, wet meadows, while diurnal activity is limited to adjacent forested areas. Logging may drastically reduce habitat for these populations. Winter habitat is selective toward subalpine fir and pacific yew plant communities. Other populations are adapted to seral plant communities, except in winter. These populations seem to be expanding in areas where extensive habitat manipulation has resulted in seral brushfields. Winter ranges appear to be timbered areas where yew-wood thickets are several hundred years old. Creating openings in these timber stands through logging may impact moose by eliminating these yew-wood thickets.

POPULATION SURVEYS

Moose in the Clearwater Region are usually censused incidental to elk surveys. Consequently some moose are not counted because these surveys are seldom flown at elevations where moose normally winter and because moose tend to prefer dense subalpine fir plant associations for winter habitat where they are less conspicuous. As a result no comparative population data have been collected on a regular basis on moose throughout the Clearwater Region.

During aerial surveys for elk in Unit 17 in January 1995, 4 search units within the elk survey area and 7 additional search units outside of the area were flown for moose. These search units were located on the north side of the lower Selway River and were delineated to assess moose densities using the moose sightability model (Unsworth et al. 1994, Beta 3 version). Sixteen moose (5 cows, 9 bulls, 1 calf, and 1 unclassified) were observed in Hunt Area 17-3, for an estimate of 35 ± 20 moose (8 cows, 18 bulls, 2 calves, 8 unclassified). Outside of the sightability survey area, 22 moose were observed (7 cows, 8 bulls, 3 calves, and 4 unclassified). Additionally, in Unit 16A, 19 moose (4 cows, 10 bulls, and 5 unclassified) were observed incidental to elk surveys.

During January 2000 a moose sightability survey was conducted across Hunt Areas 15-1, 15-2, 15-6, and 15-7 (north of Highway 14 and west of the American River drainage) concurrent with elk surveys in Unit 15. The objectives of the survey were to (1) obtain an adult population estimate to evaluate future population changes, and (2) to obtain a sex composition/bull population estimate as a baseline to evaluate the future effect(s) of recent permit increases. Contiguous hunt areas were selected where permits were recently increased to 10 in each area, in a sufficiently small area that could be surveyed with available budget constraints (13 hours of flight time) and still be adequate to obtain estimates with low sampling variances. In search units already selected for the elk survey, additional funds were expended to fly to higher

elevations beyond those normally surveyed for elk. Furthermore additional flight time was used to fly a large sample of the remaining subunits.

Twenty-six moose (7 cows, 9 bulls, 21 calves, 8 unclassified) were observed from a Hughes 500C helicopter during the survey. Sex classification was not always possible due to heavy vegetative cover and the lack of antlers on some moose. This data was initially analyzed with the moose model (Unsworth et al. 1994, Beta 3 version). The results were an unexpected estimate of 614 \pm 481 moose at the 90% C.I. level that was extrapolated from the 26 observed moose (corrected to 31 with the sampling design).

Further examination of the moose model revealed that during its development only 4 moose were in cover greater than 70%. As a result each moose is corrected to a range of 1.04 to 7.83 moose when observed in the first 4 cover classes (0-71% cover), but corrected to 34.38 moose in cover class 5, and to 100.0 moose in cover class 6 (90-100% cover). This effect is amplified when visibility declines and the intercept is decreased when the Hughes 500 helicopter is used for the survey. Therefore the 3 moose observed in greater than 70% cover during the Unit 15 survey contribute greatly to the total estimate. Considerations for avoiding this concern in future surveys might include conducting surveys at a time of year when they are found in less cover, or earlier in the winter (December) when antlers are consistently present to improve classification efforts.

HARVEST

Harvest levels, hunter success, and hunter days expended for 1999 were determined from big game mortality reports (Table 2). The 292 moose permits that were available in 1999 resulted in a reported harvest of 170 antlered moose and 7 antlerless moose. Mortality reports from some permittees were unaccounted for and were not used in calculating hunter success. Six permits were not filled during the controlled hunt drawing process due to lack of interest (4 permits in Unit 12 and 2 permits in Unit 17). The 1999 cumulative success rate (61%) was lower than the average (62%) for the past 5-year period (1994-1998). Success rates for antlered and antlerless moose were 60% and 86%, respectively. Drawing odds in 1999 were variable, ranging from 1:0.5 (Hunt Area 12-4) to 1:25.0 (Hunt Area 8A).

Reported moose mortalities resulting from other than legal harvest during controlled hunts have varied considerably by unit (Tables 3-14). Unit 15 continues to average the highest number of reported noncontrolled hunt mortalities in the region, followed by Units 10A and 12. It is likely that the level of mortality is considerably higher than reported in the Clearwater Region, particularly with respect to the Indian harvest and illegal kills categories.

CLIMATIC CONDITIONS

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

MANAGEMENT IMPLICATIONS

Permit levels will continue to be allocated based on trends in antler spread of harvested moose and hunter success rates of recent permittees. Numbers of permits may be increased or decreased as desired. However, because permit numbers have been increased significantly in the Clearwater Region since 1993 (+102), substantial increases in the near future are not anticipated.

All areas need more intensive work to determine population levels, trends, and habitat selection and use. Some moose populations are increasing and seem to respond favorably to extensive habitat alteration by silvicultural practices. However other populations may be displaced or eliminated because they cannot adapt to habitat changes, particularly where yew-wood thickets are eliminated through logging and where increased road densities make moose more vulnerable to illegal and Indian harvest.

LITERATURE CITED

Unsworth, J. W., F. A. Leban, D. J. Leptich, E. O. Garton, and P. Zager. 1994. Aerial Survey: User's Manual, Second Edition, Idaho Department of Fish and Game, Boise, ID. 84 pp.

Table 1. 1999 Season Structure for Controlled Moose Hunts 8-1, 8-2, 8A-1, 8A-2, 10-1 through 10-5, 10A-1 through 10A-5, 12-1 through 12-11, 14-1, 14-2, 15-1 through 15-7, 16-1, 16-2, 16A-1, 16A-2, 17-1 through 17-7, 19-1, 19-2, and 20-1 through 20-4 in the Clearwater Region.

Hunt Areas	Season		Open For
	Dates	Length	
All (Except 8-2 & 8A-2)	8/30-11/23	86 days	Antlered only
8-2 & 8A-2	10/15-11/23	40 days	Antlerless only

Table 2. Summary of Moose Harvest^a and Drawing Odds by Hunt Area 1990-1999.

Area	Year	No. Permits	Harvest		Hunter Success	Days ^b / Hunter	Total First Choice Applications	Draw Odds
			M	F				
308	1990	2	2	0	100	4.0	23	1:11.5
	1991	2	1	0	50	10.0	28	1:14.0
	1992	2	2	0	100	1.0	44	1:22.0
	1993	2	2	0	100	6.5	16	1:8.0
	1994	2	2	0	100	7.0	16	1:8.0
(Renamed Hunt Area 8 in 1995)								
8	1995	4	3	0	75	12.8	55	1:13.8
	1996	4	3	0	75	15.3	41	1:10.3
	1997	4	3	0	75	7.0	41	1:10.3
	1998	4	4	0	100	17.6	44	1:11.0
(Renamed Hunt Area 8-1 in 1999)								
8-1	1999	6	6	0	100	14.0	59	1:9.8
8-2	1999	4	0	4	100	1.0	2	1:1.0
308A	1993	2	2	0	100	12.5	46	1:23.0
	1994	2	2	0	100	20.0	42	1:21.2
(Renamed Hunt Area 8A in 1995)								
8A	1995	4	4	0	100	15.5	58	1:14.5
	1996	4	3	0	75	7.8	65	1:16.3
	1997	4	2	0	50	9.5	84	1:21.0
	1998	4	4	0	100	5.5	93	1:23.3
(Renamed Hunt Area 8A-1 in 1999)								
8A-1	1999	6	6	0	100	5.2	150	1:25.0
8A-2	1999	4	0	4	100	4.8	4	1:1.0
310-1	1990	4	3	0	75	10.8	50	1:12.5
	1991	4	2	0	50	10.0	23	1:5.7
	1992	4	4	0	100	12.0	18	1:4.5
	1993	4	4	0	100	9.0	31	1:15.5
	1994	4	1	0	33	7.3	31	1:7.8
(Renamed Hunt Area 10-1 in 1995)								
10-1	1995	6	4	0	80	2.6	19	1:3.2
	1996	6	3	0	50	9.0	22	1:3.7
	1997	6	4	0	67	11.5	17	1:2.8

Table 2. Summary of Moose Harvest^a and Drawing Odds by Hunter Odds and by Hunt Area 1989-1998 (Continued).

Area	Year	No. Permits	Harvest		Hunter Success	Days ^b / Hunter	Total First Choice Applications	Draw Odds	
			M	F					
	1998	6	5	0	83	11.3	24	1:4.0	
	1999	6	3	0	50	16.6	29	1:4.8	
310-2	1990	3	2	0	67	4.3	10	1:3.3	
	1991	3	2	0	75	2.7	16	1:5.3	
	1992	3	3	0	100	7.7	18	1:6.0	
	1993	3	3	0	100	7.0	24	1:8.0	
	1994	3	2	0	67	9.0	15	1:5.0	
(Renamed 10-2 in 1995)									
10-2	1995	3	1	0	34	8.0	12	1:4.0	
	1996	3	2	0	67	ND	16	1:5.3	
	1997	3	2	0	67	9.0	8	1:2.7	
	1998	3	1	0	33	9.0	14	1:4.7	
	1999	3	2	0	67	2.0	3	1:1.0	
310-3	1990	4	4	0	100	11.0	53	1:13.5	
	1991	5	5	0	100	9.3	90	1:18.0	
	1992	5	4	0	80	2.6	89	1:17.8	
	1993	6	6	0	100	9.0	83	1:13.8	
	1994	6	6	0	100	6.6	60	1:10.0	
(Renamed 10-3 in 1995)									
10-3	1995	6	6	0	100	6.0	69	1:11.5	
	1996	6	6	0	100	ND	56	1:9.3	
	1997	6	5	0	83	5.2	86	1:14.3	
	1998	6	5	0	83	5.4	89	1:14.8	
	1999	6	6	0	100	11.5	96	1:16.0	
310-4	1990	3	2	0	67	3.5	9	1:3.0	
	1991	3	2	0	67	6.0	11	1:3.7	
	1992	3	3	0	100	6.7	20	1:6.7	
	1993	4	2	0	50	11.0	15	1:3.8	
	1994	4	1	0	33	12.0	5	1:1.3	
(Renamed 10-4 in 1995)									
10-4	1995	4	0	0	0	14.0	6	1:1.5	
	1996	4	3	0	75	14.3	8	1:2.0	
	1997	4	2	0	50	3.5	7	1:1.7	
	1998	4	2	0	50	3.5	10	1:2.5	
	1999	4	2	0	50	15.0	5	1:1.3	
310-7	1990	2	1	0	50	11.0	9	1:4.5	
	1991	2	1	0	50	12.5	17	1:8.5	
	1992	2	1	0	50	12.5	11	1:5.5	
	(Renamed 310-5 in 1993)								
		1993	2	2	0	100	6.0	6	1:3.0
	1994	2	1	0	100	3.0	8	1:4.0	
(Renamed 10-5 in 1995)									
10-5	1995	4	3	0	75	10.8	8	1:2.0	
	1996	4	2	0	50	3.0	22	1:5.5	
	1997	4	3	0	75	12.7	16	1:4.0	

Table 2. Summary of Moose Harvest^a and Drawing Odds by Hunter Odds and by Hunt Area 1989-1998 (Continued).

Area	Year	No. Permits	Harvest		Hunter Success	Days ^b / Hunter	Total First Choice Applications	Draw Odds
			M	F				
	1998	4	1	0	25	18.0	14	1:3.5
	1999	4	3	0	75	8.0	16	1:4.0
310-5	1990	5	4	0	80	19.5	30	1:6.0
	1991	5	3	0	50	9.0	22	1:4.4
	1992	5	5	0	100	4.2	17	1:3.4
	(Renamed 310A-1 in 1993)							
310A-1	1993	5	5	0	100	4.7	46	1:9.2
	1994	5	4	0	75	6.5	43	1:8.6
	1995	7	7	0	100	5.0	62	1:8.9
	1996	7	7	0	100	5.9	36	1:5.1
	1997	7	6	0	86	10.4	59	1:8.4
	1998	7	3	0	43	14.3	43	1:6.1
	1999	9	5	0	56	11.6	57	1:6.3
310-6	1990	3	3	0	100	7.3	22	1:7.3
	1991	3	3	0	100	6.0	19	1:6.3
	1992	3	3	0	100	6.0	27	1:9.0
	(Renamed 310A-2 in 1993)							
310A-2	1993	4	3	0	75	7.5	36	1:9.0
	1994	4	3	0	75	15.5	15	1:3.8
	(Renamed 10A-2 in 1995)							
10A-2	1995	6	6	0	100	11.8	35	1:5.8
	1996	6	4	0	67	8.3	47	1:7.8
	1997	6	6	0	100	15.5	28	1:4.7
	1998	6	4	0	67	5.3	38	1:6.3
	1999	8	5	0	63	4.6	33	1:4.1
10A-3	1995	5	3	0	67	11.3	17	1:3.4
	1996	5	3	0	60	25.0	11	1:2.2
	1997	5	3	0	60	24.3	57	1:11.8
	1998	5	2	0	40	6.5	14	1:2.8
	1999	5	2	0	40	13.0	6	1:1.2
10A-4	1995	5	5	0	100	5.6	70	1:14.0
	1996	5	5	0	100	10.	61	1:12.2
	1997	5	5	0	100	14.6	57	1:11.4
	1998	5	5	0	100	11.6	56	1:11.2
	1999	7	6	0	60	8.4	49	1:9.8
10A-5	1999	5	3	0	60	8.4	49	1:9.8
312-1	1990	2	2	0	100	6.0	13	1:6.5
	1991	2	2	0	100	3.5	6	1:3.0
	1992	2	2	0	100	7.5	20	1:10.0
	1993	3	3	0	100	6.3	17	1:5.7
	1994	3	2	0	6	16.3	14	1:4.7
	(Renamed 12-1 in 1995)							
12-1	1995	3	3	0	100	5.7	23	1:7.7
	1996	3	1	0	30	7.0	7	1:2.4

Table 2. Summary of Moose Harvest^a and Drawing Odds by Hunter Odds and by Hunt Area 1989-1998 (Continued).

Area	Year	No. Permits	Harvest		Hunter Success	Days ^b / Hunter	Total First Choice Applications	Draw Odds
			M	F				
	1997	3	0	0	0	ND	7	1:2.4
	1998	3	3	0	100	4.0	3	1:1.0
	1999	3	1	0	33	5.0	13	1:4.3
312-2	1990	2	2	0	100	1.0	16	1:8.0
	1991	3	3	0	100	1.3	23	1:11.5
	1992	3	3	0	100	6.3	22	1:11.0
	1993	4	3	0	67	13.0	16	1:4.0
	1994	4	1	0	33	10.3	17	1:4.3
	(Renamed 12-2 in 1995)							
12-2	1995	4	2	0	50	8.5	13	1:3.3
	1996	4	2	0	50	6.5	4	1:1.0
	1997	4	1	0	25	1.0	11	1:2.7
	1998	4	2	0	50	6.5	5	1:1.3
	1999	4	3	0	75	7.0	6	1:1.5
312-3	1990	3	2	0	67	3.0	22	1:7.3
	1991	3	3	0	100	1.3	14	1:4.7
	1992	3	1	0	33	7.7	11	1:3.7
	1993	4	4	0	100	2.3	9	1:2.3
	1994	4	0	0	0	9.3	14	1:3.5
	(Renamed 12-3 in 1995)							
12-3	1995	6	5	0	100	3.0	12	1:2.0
	1996	6	1	0	16	1.0	14	1:2.3
	1997	6	2	0	33	3.5	12	1:2.0
	1998	6	1	0	17	4.0	12	1:2.0
	1999	3	0	0	0	ND	4	1:1.3
312-4	1990	6	3	0	50	6.0	26	1:4.3
	1991	6	4	0	67	15.2	21	1:3.5
	1992	6	1	0	20	9.8	19	1:3.2
	1993	6	4	0	60	6.4	6	1:1.0
	1994	6	2	0	33	3.8	17	1:2.8
	(Renamed 12-4 in 1995)							
12-4	1995	6	2	0	40	5.8	17	1:2.8
	1996	6	2	0	33	5.5	14	1:2.4
	1997	6	0	0	0	ND	10	1:1.7
	1998	6	0	0	0	ND	5	1:1.0
	1999	6 ^e	1	0	17	6.0	3	1:0.5
312-5	1990	4	2	0	50	4.8	10	1:2.5
	1991	4	2	0	50	4.3	19	1:4.8
	1992	4	2	0	40	22.8	12	1:3.0
	1993	4	4	0	100	7.0	22	1:5.5
	1994	4	3	0	75	3.8	10	1:2.5
	(Renamed 2-5 in 1995)							
12-5	1995	6	2	0	40	4.8	9	1:1.5
	1996	6	2	0	33	1.0	3	1:1.0
	1997	6	2	0	33	2.0	16	1:2.7

Table 2. Summary of Moose Harvest^a and Drawing Odds by Hunter Odds and by Hunt Area 1989-1998 (Continued).

Area	Year	No. Permits	Harvest		Hunter Success	Days ^b / Hunter	Total First Choice Applications	Draw Odds
			M	F				
	1998	6	1	0	17	5.0	3	1:1.0
	1999	6	4	0	100	4.3	7	1:1.2
312-6	1990	3	3	0	100	13.7	14	1:4.7
	1991	4	3	0	75	13.3	5	1:1.3
	1992	4	1	0	33	6.7	7	1:1.8
	1993	5	1	0	25	8.8	22	1:4.4
	1994	5 ^e	0	0	0	8.8	9	1:1.8
(Renamed 12-6 in 1995)								
12-6	1995	5	2	0	50	4.0	5	1:1.0
	1996	5	2	0	40	5.0	2	1:1.0
	1997	5	2	0	40	2.0	6	1:1.2
	1998	5 ^e	0	0	0	ND	1	1:1.0
	1999	5	1	0	20	5.0	9	1:1.8
312-7	1990	4	1	0	25	10.7	10	1:2.5
	1991	4	2	0	50	6.3	10	1:2.4
	1992	4	1	0	25	4.5	6	1:1.5
	1993	4	0	0	0	7.8	8	1:2.0
	1994	4	1	0	33	6.0	4	1:1.0
(Renamed 12-7 in 1995)								
12-7	1995	4	0	0	0	2.5	17	1:4.3
	1996	4	2	0	50	4.0	10	1:1.5
	1997	4	2	0	50	3.5	5	1:1.3
	1998	4	0	0	0	ND	7	1:1.8
	1999	4	2	0	50	3.0	11	1:2.8
312-8	1990	4	4	0	100	11.5	11	1:2.8
	1991	4	1	0	25	12.5	12	1:3.0
	1992	4	3	0	75	7.3	17	1:4.3
	1993	4	3	0	75	11.3	14	1:3.5
	1994	4	1	0	50	5.5	7	1:1.8
(Renamed 12-8 in 1995)								
12-8	1995	6	2	0	25	8.3	6	1:1.0
	1996	6	3	0	50	6.5	7	1:1.2
	1997	6	1	0	17	ND	5	1:1.0
	1998	6 ^e	1	0	17	5.0	4	1:1.0
	1999	6 ^e	0	0	0	ND	2	1:1.0
312-9	1990	6	6	0	100	4.7	53	1:8.8
	1991	6	6	0	100	5.8	57	1:9.5
	1992	6	5	0	83	5.5	70	1:11.2
	1993	7	7	0	100	2.4	74	1:10.6
	1994	7	6	0	80	5.2	80	1:11.4
(Renamed 12-9 in 1995)								
12-9	1995	9	8	0	88	3.8	60	1:6.7
	1996	9	6	0	67	5.8	58	1:6.4
	1997	9	7	0	88 ^c	6.0	78	1:8.7
	1998	9	7	0	78	10.0	58	1:6.4
	1999	9	6	0	67	6.0	59	1:6.6

Table 2. Summary of Moose Harvest^a and Drawing Odds by Hunter Odds and by Hunt Area 1989-1998 (Continued).

Area	Year	No. Permits	Harvest		Hunter Success	Days ^b / Hunter	Total First Choice Applications	Draw Odds
			M	F				
312-10	1990	5	4	0	80	8.4	43	1:8.6
	1991	6	6	0	100	2.4	41	1:6.8
	1992	6	5	0	83	4.4	54	1:9.0
	1993	7	7	0	100	5.4	76	1:10.9
	1994	7	7	0	100	7.5	73	1:10.4
(Renamed 12-10 in 1995)								
12-10	1995	9	5	0	50	9.0	75	1:8.3
	1996	9	7	0	78	4.4	54	1:6.0
	1997	9	9	0	100	8.5	66	1:7.3
	1998	9	8	0	89	4.5	40	1:4.4
	1999	9	6	0	67	9.4	40	1:4.4
312-11	1990	4	4	0	100	4.8	25	1:6.4
	1991	4	3	0	75	15.8	19	1:4.8
	1992	4	4	0	100	6.0	11	1:2.8
	1993	4	3	0	75	5.5	23	1:5.8
	1994	4	3	0	75	7.0	21	1:5.3
(Renamed 12-11 in 1995)								
	1995	6	6	0	100	8.0	21	1:3.5
	1996	6	5	0	83	9.2	28	1:4.7
	1997	6	3	0	50	3.7	42	1:7.0
	1998	6	4	0	67	5.5	34	1:5.7
	1999	6	5	0	83	2.7	37	1:6.2
314	1990	3	3	0	100	2307	63	1:21.0
	1991	3	3	0	100	12.0	71	1:23.7
	1992	3	3	0	100	1207	70	1:23.3
(Split into Hunts 314-1 and 314-2 in 1993)								
314-1	1993	3	3	0	100	12.0	39	1:13.0
	1994	3	3	0	100	3.0	44	1:14.7
(Renamed 14-1 in 1995)								
14-1	1995	5	5	0	100	9.0	66	1:13.2
	1996	5	5	0	100	6.3	68	1:13.6
	1997	5	5	0	100	2.3	92	1:18.4
	1998	5	5	0	100	9.0	73	1:14.6
	1999	5	5	0	100	12.0	99	1:20.0
314-2	1993	3	3	0	100	5.3	10	1:3.3
	1994	3	2	0	50	4.5	32	1:10.7
(Renamed 14-2 in 1995)								
14-2	1995	5	5	0	100	4.3	45	1:9.0
	1996	5	5	0	100	5.0	45	1:1.9
	1997	5	4	0	80	5.5	69	1:13.8
	1998	5	3	0	60	3.0	51	1:10.2
	1999	5	4	0	80	3.8	58	1:11.6
315-1	1990	4	3	0	75	5.0	76	1:19.0
	1991	4	3	0	75	9.5	83	1:20.8
	1992	4	4	0	100	3.7	64	1:16.0

Table 2. Summary of Moose Harvest^a and Drawing Odds by Hunter Odds and by Hunt Area 1989-1998 (Continued).

Area	Year	No. Permits	Harvest		Hunter Success	Days ^b / Hunter	Total First Choice Applications	Draw Odds
			M	F				
15-1	1993	5	5	0	100	5.0	56	1:11.2
	1994	5	4	0	80	12.8	71	1:14.2
	(Renamed 15-1 in 1995)							
	1995	7	5	0	72	7.4	69	1:9.9
	1996	7	6	0	86	5.0	62	1:8.9
	1997	7	3	0	43	5.3	76	1:10.8
	1998	7	7	0	100	4.3	60	1:8.6
	1999	10	8	0	80	9.6	79	1:7.9
315-2	1990	5	3	0	60	6.5	70	1:4.0
	1991	6	6	0	100	9.0	95	1:15.8
	1992	6	5	0	83	4.3	78	1:13.0
	1993	7	7	0	100	8.4	78	1:11.1
	1994	7	7	0	100	8.0	52	1:7.4
(Renamed 15-2 in 1995)								
15-2	1995	9	8	0	88	11.0	67	1:7.4
	1996	9	9	0	100	7.3	71	1:7.9
	1997	9	6	0	67	7.0	65	1:7.2
	1998	9	8	0	89	8.6	57	1:6.3
	1999	10	8	0	80	6.1	58	1:5.8
315-3	1990	5	3	0	60	6.8	35	1:7.5
	1991	5	5	0	100	7.8	45	1:9.0
	1992	5	3	0	67	6.7	25	1:5.0
	1993	5	3	0	67	3.7	34	1:6.8
	1994	5	5	0	100	1.0	20	1:4.0
(Renamed 15-3 in 1995)								
15-3	1995	5	3	0	40	11.2	46	1:9.2
	1996	5	3	0	60	8.0	21	1:4.2
	1997	5	4	0	80	7.5	24	1:4.8
	1998	5	4	0	80	6.8	26	1:5.2
	1999	5	4	0	80	5.3	38	1:7.6
315-4	1990	4	3	0	75	6.0	66	1:16.5
	1991	4	3	0	75	16.3	37	1:9.3
	1992	4	4	0	100	17.3	37	1:9.3
	1993	5	3	0	67	13.3	48	1:9.6
	1994	5	5	0	100	15.0	47	1:9.4
(Renamed 15-4 in 1995)								
15-4	1995	5	5	0	100	7.5	40	1:8.0
	1996	5	2	0	40	8.0	26	1:5.2
	1997	5	5	0	100	9.4	25	1:5.0
	1998	5	2	0	40	4.5	24	1:4.8
	1999	5	3	0	60	11.7	20	1:4.0
315-5	1990	6	6	0	100	7.7	54	1:10.8
	1991	7	7	0	100	6.7	65	1:12.7
	1992	7	7	0	100	4.0	70	1:10.0
	1993	8	8	0	100	13.5	83	1:10.4
	1994	8	7	0	87	8.3	58	1:7.3

Table 2. Summary of Moose Harvest^a and Drawing Odds by Hunter Odds and by Hunt Area 1989-1998 (Continued).

Area	Year	No. Permits	Harvest		Hunter Success	Days ^b / Hunter	Total First Choice Applications	Draw Odds
			M	F				
			(Renamed 15-5 in 1995)					
15-5	1995	10	10	0	100	5.3	89	1:8.9
	1996	10	10	0	100	7.3	73	1:7.3
	1997	10	8	0	80	8.5	98	1:9.8
	1998	10	9	0	90	9.3	56	1:5.6
	1999	10	9	0	90	5.2	81	1:8.1
315-6	1990	4	4	0	100	9.8	23	1:5.8
	1991	4	3	0	75	7.0	46	1:11.5
	1992	4	4	0	100	2.0	35	1:8.8
	1993	5	5	0	100	3.0	36	1:7.2
	1994	5	5	0	100	5.2	43	1:8.6
			(Renamed 15-6 in 1995)					
15-6	1995	7	7	0	100	6.0	43	1:6.1
	1996	7	7	0	100	8.3	44	1:6.3
	1997	7	5	0	71	3.6	30	1:4.3
	1998	7	7	0	100	18.6	33	1:4.7
	1999	10	10	0	100	7.6	48	1:4.8
315-7	1990	4	4	0	100	6.0	35	1:8.8
	1991	5	5	0	100	18.2	37	1:7.4
	1992	5	5	0	100	6.6	54	1:10.8
	1993	6	6	0	100	13.2	41	1:6.8
	1994	6	6	0	100	5.0	38	1:6.3
			(Renamed 15-7 in 1995)					
15-7	1995	8	6	0	72	7.1	54	1:6.8
	1996	8	6	0	75	14.6	40	1:5.0
	1997	8	6	0	75	7.5	28	1:3.5
	1998	8	7	0	88	7.2	31	1:3.9
	1999	10	8	0	80	8.6	62	1:6.2
316-1	1990	4	3	0	75	9.3	44	1:11.0
	1991	4	4	0	75	4.0	37	1:9.3
	1992	4	4	0	100	4.5	44	1:11.0
	1993	5	5	0	100	3.3	41	1:8.2
	1994	5	5	0	100	3.6	60	1:12.0
			(Renamed 16-1 in 1995)					
16-1	1995	7	6	0	84	5.7	49	1:7.0
	1996	7	5	0	71	8.4	41	1:5.9
	1997	7	4	0	57	11.75	57	1:8.1
	1998	7	4	0	57	5.5	51	1:7.3
	1999	7	7	0	100	7.6	51	1:7.3
316-2	1990	4	3	0	75	2.3	33	1:8.3
	1991	4	4	0	100	4.0	34	1:8.5
	1992	4	3	0	75	7.5	22	1:5.5
	1993	5	4	0	80	9.5	30	1:6.0
	1994	5	5	0	100	6.6	43	1:8.6
			(Renamed 16-2 in 1995)					
16-2	1995	7	6	0	86	8.7	41	1:5.9

Table 2. Summary of Moose Harvest^a and Drawing Odds by Hunter Odds and by Hunt Area 1989-1998 (Continued).

Area	Year	No. Permits	Harvest		Hunter Success	Days ^b / Hunter	Total First Choice Applications	Draw Odds
			M	F				
	1996	7	4	0	57	1.8	24	1:3.4
	1997	7	6	0	86	10.8	37	1:5.3
	1998	7	7	0	100	6.7	28	1:4.0
	1999	7	7	0	100	5.4	38	1:5.4
316A	1990	4	4	0	100	14.0	56	1:14.0
	1991	4	4	0	100	8.0	53	1:13.3
	1992	4	4	0	100	5.3	42	1:10.5
(Split into Hunts 316A-1 and 316A-2 in 1993)								
316A-1	1993	3	3	0	100	4.0	20	1:6.7
	1994	3	3	0	100	5.7	34	1:11.3
(Renamed 16A-1 in 1995)								
16A-1	1995	5	5	0	100	7.8	31	1:6.2
	1996	5	2	0	40	2.0	27	1:5.4
	1997	5	4	0	80	4.7	25	1:5.0
	1998	5	4	0	80	9.0	21	1:4.2
	1999	5	3	0	60	10.0	13	1:2.6
316A-2	1993	2	1	0	50	8.5	0	1:1.0
	1994	2	0	0	0	15.0	9	1:4.5
(Renamed 16A-2 in 1995)								
16A-2	1995	2	d	d	d	d	7	1:3.5
	1996	2	0	0	0	ND	14	1:7.0
	1997	2	1	0	50	2.0	8	1:4.0
	1998	2	1	0	50	5.0	22	1:11.0
	1999	2	2	0	100	4.5	8	1:4.0
317-1	1990	4	2	0	50	8.0	7	1:1.8
	1991	4	2	0	50	9.3	8	1:2.0
	1992	4	3	0	67	5.3	9	1:2.3
	1993	4	1	0	33	8.3	10	1:2.5
	1994	4	0	0	0	19.5	5	1:1.3
(Renamed 17-1 in 1995)								
17-1	1995	4	1	0	25	7.5	4	1:1.0
	1996	4	0	0	0	ND	4	1:1.0
	1997	4	0	0	0	ND	0	1:1.0
	1998	4	0	0	0	ND	0	1:0.0
	1999	4	3	0	75	3.0	3	1:0.8
317-2	1990	4	3	0	75	3.3	13	1:3.3
	1991	4	2	0	50	5.0	7	1:1.8
	1992	4	3	0	75	8.3	10	1:2.5
	1993	4	3	0	75	8.0	11	1:2.8
	1994	4	3	0	67	6.0	8	1:2.0
(Renamed 17-2 in 1995)								
17-2	1995	6	2	0	33	5.5	15	1:2.5
	1996	6	2	0	50	2.5	2	1:0.3
	1997	6	4	0	67	6.0	8	1:1.3
	1998	6	0	0	0	ND	5	1:1.3
	1999	6	0	0	0	ND	4	1:0.7

Table 2. Summary of Moose Harvest^a and Drawing Odds by Hunter Odds and by Hunt Area 1989-1998 (Continued).

Area	Year	No. Permits	Harvest		Hunter Success	Days ^b / Hunter	Total First Choice Applications	Draw Odds
			M	F				
317-3	1990	4	1	0	25	12.8	12	1:3.0
	1991	4	1	0	25	14.3	5	1:1.3
	1992	4	2	0	50	5.3	12	1:3.0
	1993	4	3	0	67	4.3	6	1:1.5
	1994	4	2	0	67	4.0	16	1:4.0
(Renamed 17-3 in 1995)								
17-3	1995	4	2	0	50	9.0	7	1:1.8
	1996	4	0	0	0	ND	4	1:1.0
	1997	4	1	0	25	4.0	2	1:0.5
	1998	4	1	0	25	3.0	5	1:1.3
	1999	4	1	0	25	1.0	6	1:1.5
317-4	1990	4	3	0	75	1.3	12	1:3.0
	1991	4	3	0	75	5.3	18	1:4.5
	1992	4	4	0	100	7.6	28	1:7.0
	1993	4	3	0	75	4.3	17	1:4.3
	1994	4	3	0	100	6.0	13	1:3.2
(Renamed 17-4 in 1995)								
17-4	1995	6	4	0	60	6.0	12	1:2.0
	1996	6	2	0	33	1.5	17	1:2.8
	1997	6	2	0	33	9.0	13	1:2.2
	1998	6	1	0	17	4.0	5	1:0.8
	1999	6	2	0	33	1.5	18	1:3.0
317-5	1990	3	0	0	0	9.5	2	1:0.7
	1991	5	1	0	20	10.6	4	1:0.8
	1992	5	1	0	20	11.0	7	1:1.4
	1993	5	3	0	67	16.5	4	1:0.8
	1994	5	1	0	25	11.0	2	1:0.4
(Renamed 17-5 in 1995)								
17-5	1995	5	1	0	25	9.5	3	1:0.6
	1996	5	0	0	0	ND	5	1:1.0
	1997	5	0	0	0	ND	0	1:1.0
	1998	5	0	0	0	ND	3	1:0.6
	1999	5	1	0	20	1.0	3	1:0.6
317-6	1990	5	2	0	50	5.3	17	1:3.4
	1991	5	3	0	60	11.5	8	1:1.6
	1992	5	2	0	33	17.3	7	1:1.4
	1993	5	3	0	50	7.3	13	1:2.6
	1994	5	1	0	20	9.4	10	1:2.0
(Renamed 17-6 in 1995)								
17-6	1995	5	1	0	25	10.3	10	1:2.0
	1996	5	2	0	40	7.5	5	1:1.0
	1997	5	2	0	40	3.5	5	1:1.0
	1998 ^e	5	1	0	20	3.0	4	1:0.8
	1999	5	1	0	20	14.0	11	1:2.2

Table 2. Summary of Moose Harvest^a and Drawing Odds by Hunter Odds and by Hunt Area 1989-1998 (Continued).

Area	Year	No. Permits	Harvest		Hunter Success	Days ^b / Hunter	Total First Choice Applications	Draw Odds
			M	F				
317-7	1990	5	2	0	40	5.3	5	1:3.0
	1991	5	3	0	60	6.0	4	1:0.8
	1992	5	1	0	20	9.8	14	1:2.8
	1993	5	1	0	25	10.0	3	1:0.6
	1994	5	3	0	50	5.0	7	1:1.4
(Renamed 17-7 in 1995)								
17-7	1995	5	2	0	33	8.7	15	1:3.0
	1996	5	2	0	40	1.5	8	1:1.6
	1997	5	2	0	50	7.0	9	1:1.8
	1998	5	1	0	20	3.0	4	1:0.8
	1999	5	3	0	60	6.4	10	1:2.0
319-1	1990	2	1	0	50	9.0	5	1:2.5
	1991	2	2	0	100	4.0	15	1:7.5
	1992	2	2	0	100	5.5	20	1:10.0
	1993	2	2	0	100	16.5	13	1:6.5
	1994	2	2	0	100	6.0	14	1:7.0
(Renamed 19-1 in 1995)								
19-1	1995	4	3	0	75	8.5	17	1:4.3
	1996	4	4	0	100	1.3	12	1:1.3
	1997	4	4	0	100	11.5	133	1:3.3
	1998	4	3	0	75	4.7	21	1:5.3
	1999	4	3	0	75	6.5	15	1:3.8
319-2	1990	10	5	0	50	9.3	22	1:2.2
	1991	10	7	0	70	9.4	37	1:3.7
	1992	10	7	0	70	7.0	31	1:3.1
	1993	10	8	0	80	4.9	39	1:3.9
	1994	10	6	0	56	7.0	20	1:2.0
(Renamed 19-2 in 1995)								
19-2	1995	10	5	0	55	4.3	54	1:5.4
	1996	10	5	0	50	4.4	32	1:3.2
	1997	10	5	0	50	7.4	23	1:2.3
	1998	10	7	0	70	3.0	16	1:1.6
	1999	10	4	0	40	2.3	27	1:2.7
320-1	1990	3	1	0	33	16.3	18	1:6.0
	1991	3	3	0	100	8.3	8	1:2.7
	1992	3	2	0	67	5.3	21	1:7.0
	1993	3	3	0	100	16.0	8	1:2.7
	1994	3	2	0	100	4.0	21	1:7.0
(Renamed 20-1 in 1995)								
20-1	1995	5	4	0	80	10.2	23	1:4.6
	1996	5	3	0	60	3.4	24	1:4.8
	1997	5	4	0	80	4.3	11	1:2.2
	1998	5	3	0	60	7.3	12	1:2.4
	1999	5	3	0	60	4.7	21	1:4.2
320-2	1990	3	2	0	67	4.3	25	1:8.3
	1991	3	3	0	100	9.7	15	1:5.0

Table 2. Summary of Moose Harvest^a and Drawing Odds by Hunter Odds and by Hunt Area 1989-1998 (Continued).

Area	Year	No. Permits	Harvest		Hunter Success	Days ^b / Hunter	Total First Choice Applications	Draw Odds
			M	F				
	1992	3	3	0	100	7.0	19	1:6.3
	1993	4	2	0	50	6.3	15	1:3.8
	1994	4	0	0	0	15.0	14	1:3.5
	(Renamed 20-2 in 1995)							
20-2	1995	1995	4	0	0	0	11.0	1:3.0
	1996	4	2	0	50	3.0	16	1:4.0
	1997	4	1	0	25	2.0	14	1:3.5
	1998	4	2	0	50	30.0	21	1:5.3
	1999	4	1	0	25	5.0	5	1:1.3
320-3	1990	2	1	0	50	3.0	5	1:2.5
	1991	2	1	0	50	10.0	7	1:3.5
	1992	2	1	0	50	14.5	3	1:1.3
	1993	2	0	0	0	8.0	8	1:4.0
	1994	2	2	0	100	6.0	5	1:2.5
	(Renamed 20-3 in 1995)							1:1.5
20-3	1995	2	1	0	50	7.0	3	1:1.5
	1996	2	0	0	0	ND	6	1:3.0
	1997	2	1	0	50	5.0	3	1:1.5
	1998	2	2	0	100	6.0	6	1:3.0
	1999	2	1	0	50	2.0	6	1:3.0
320-4	1990	2	2	0	100	9.5	9	1:4.5
	1991	2	2	0	100	2.0	9	1:4.5
	1992	2	2	0	100	5.0	6	1:3.0
	1993	3	2	0	67	16.7	7	1:2.3
	1994	3	3	0	100	7.5	4	1:1.3
	(Renamed 20-4 in 1995)							
20-4	1995	3	0	0	0	4.0	9	1:3.0
	1996	3	2	0	67	2.0	11	1:3.7
	1997	3	0	0	0	ND	6	1:1.7
	1998	3	1	0	33	3.0	4	1:1.3
	1999	3	1	0	33	1.0	9	1:3.0

^a Harvest statistics derived from hunter telephone survey (prior to 1996) or big game mandatory report.

^b Days per hunter is for successful hunters only beginning in 1996.

^c One permittee returned tag prior to season start.

^d Failure to make contact with either permittee during telephone survey of hunters; therefore, no harvest estimates were generated.

^e Some permits not sold.

Table 3. Summary of All Known Moose Mortalities in Unit 8, 1990-present.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1990		1				1
1991		1				1
1992			1			1
1993						0
1994						0
1995			1			1
1996						0
1997						0
1998						0
1999						0

Table 4. Summary of All Known Moose Mortalities in Unit 8A, 1990-present.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1990						0
1991	1	1				2
1992		2	1			3
1993		1	1			2
1994	1					1
1995						0
1996						0
1997						0
1998						0
1999		1				1

Table 5. Summary of All Known Moose Mortalities in Unit 10, 1990-present.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1990	2	5				7
1991	3	5	1			9
1992		4	1	2		7
1993		1				1
1994						0
1995	1					1
1996		1			1	2
1997		1				1
1998						0
1999						0

Table 6. Summary of All Known Moose Mortalities in Unit 10A, 1990-present.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1990		2				2
1991	1	1				2
1992	3	4		1	1	9
1993	2	3	1			6
1994		1				1
1995	2					2
1996		1	1			2
1997		2				2
1998						0
1999					4	4

Table 7. Summary of All Known Moose Mortalities in Unit 12, 1990-present.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1990	1	5	1			7
1991	2	2	1			5
1992	2	4	2		1	9
1993	1	1	2			4
1994			1			1
1995		1	3		1	5
1996	2		2		3	7
1997		1	1		2	4
1998						0
1999	2				2	4

Table 8. Summary of All Known Moose Mortalities in Unit 14, 1990-present.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1990	1	1				2
1991		1				1
1992		7				7
1993		3				3
1994		2				2
1995		1	1	1		3
1996		1				1
1997						0
1998	2				1	3
1999	2					2

Table 9. Summary of All Known Moose Mortalities in Unit 15, 1990-present.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1990	5	4				9
1991	11	7	1			19
1992	3	5		3	2	13
1993	2	8			2	12
1994		7	1	1	2	11
1995	3	1	2	3	1	10
1996	2	2		3	1	8
1997	1	12	1	2		16
1998	3	2	3		2	10
1999	1				2	3

Table 10. Summary of All Known Moose Mortalities in Unit 16, 1990-present.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1990	7	4				11
1991		1				1
1992	2	7				9
1993	1	7	1			9
1994	1					1
1995		1				1
1996		2	1			3
1997		1				1
1998	1				1	2
1999	1					1

Table 11. Summary of All Known Moose Mortalities in Unit 16A, 1990-present.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1990	2	1				3
1991						0
1992						0
1993	1	5				6
1994		1				1
1995						0
1996		2				2
1997					1	1
1998						0
1999						0

Table 12. Summary of All Known Moose Mortalities in Unit 17, 1990-present.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1990						0
1991		6			1	7
1992						0
1993						0
1994					3	3
1995						0
1996						0
1997						0
1998					1	1
1999						0

Table 13. Summary of All Known Moose Mortalities in Unit 19, 1990-present.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1990						0
1991	1	1				2
1992						0
1993		2				2
1994		1				1
1995	1					1
1996						0
1997					1	1
1998						0
1999						0

Table 14. Summary of All Known Moose Mortalities in Unit 20, 1990-present.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1990						0
1991						0
1992						0
1993						0
1994		1				1
1995	3					3
1996					1	1
1997		1			1	2
1998		1				1
1999						0

**PROGRESS REPORT
SURVEYS AND INVENTORY**

STATE: Idaho **JOB TITLE:** Moose Surveys and Inventories
PROJECT: W-170-R-24
SUBPROJECT: 3, McCall **STUDY NAME:** Big Game Population Status, Trends, Utilization, and Associated Habitat Studies
STUDY: I
JOB: 6
PERIOD COVERED: July 1, 1999 to June 30, 2000

MOOSE - SOUTHWEST REGION (MCCALL)

ABSTRACT

Both permit holders in newly established Hunt Area 19A harvested moose in 1999. Four moose were harvested in Hunt Areas 20A-1, 20A-2, and 20A-3 during the 1999 season. Hunter success was 57%. Both permit holders also harvested moose in Hunt Area 25. One moose was harvested by one of the two permit holders in Hunt Area 26 in 1999. No population trend or herd composition surveys were conducted in Units 19A, 20A, 25, or 26 during the reporting period.

UNITS 19A, 20A, 25, AND 26

CONTROLLED HUNT AREA 20A

MANAGEMENT DIRECTION

Management will be consistent with the statewide management direction delineated in the 1991-1995 Moose Management Plan (pages 15-17).

BACKGROUND

Moose observations have been increasing in Units 19A, 20A, 25, and 26. As a result a 2-permit hunt was initiated in Unit 20A in 1983. Further increases in moose sightings led to subdivision of the unit in 1995 into three hunt areas, 20A-1, 20A-2, and 20A-3, consisting of 2, 3, and 2 permits, respectively. This increase in moose observations in Unit 26 led to the establishment of a 2-permit hunt in 1997. Consequently two new hunts, Hunt Area 19A and Hunt Area 25, were created in 1999 consisting of two permits each.

POPULATION SURVEYS

No moose population surveys were conducted during the reporting period.

HARVEST CHARACTERISTICS

Two new moose hunts were added in the Southwest Region in 1999 (Table 1). Harvest data are generated through a mandatory hunter report requirement. Both permit holders harvested moose in the newly created Hunt Area 19A (Table 2). No moose were harvested in Hunt Area 20A-1 in 1999. A total of two moose was harvested in each of Hunt Areas 20A-2 and 20A-3 in 1999. Hunter success was 57% for all three hunt areas combined. Two permit holders harvested moose in the maiden year of Hunt Area 25. One permit holder harvested a moose for a 50% success rate in Hunt Area 26 in 1999.

MANAGEMENT IMPLICATIONS

Because reliable population data are not available and difficult to generate, permit levels have been conservative. The frequency and location of reports indicate pioneering populations exist in game management units adjacent to or near Units 20A and 26 (e.g., 19A, 24, 25). Two, 2-permit moose hunts were implemented in Units 19A (Hunt Area 19A) and 25 (Hunt Area 25) in 1999. All areas need intensive data collection to determine population levels, trends, and habitat selection.

Table 1. The 1999 season structure for controlled moose Hunt Areas 19A, 20A-1, 20A-2, 20A-3, 25, and 26 in the Southwest Region (all hunts open for antlered moose only).

Hunt Areas	Season		
	Dates	Length	Permits
19A	8/30-11/23	86 days	2
20A-1, 2, and 3	8/30-11/23	86 days	7
25	8/30-11/23	86 days	2
26	8/30-11/23	86 days	2

Table 2. Moose harvest and drawing odds by Hunt Area in Units 19A, 20A, 25, and 26, 1995-1999.

Area	Year	No. Permits	Harvest		Hunter Success	Total Days/ Hunter	First Choice Applicants	Drawing Odds
			M	F				
19A ^a	1999	2	2	0	100	18.5	39	1:19.5
20A-1 ^b	1995	2	2	0	100	2.0	13	1:6.5
	1996	2	1	0	50	ND	13	1:6.5
	1997	2	0	0	0	ND	9	1:4.5
	1998	2	2	0	100	1.5	2	1:1
	1999	2	0	0	0	ND	4	1:2
20A-2	1995	3	3	0	100	2.3	9	1:3
	1996	3	2	0	67	ND	6	1:2
	1997	3	3	0	100	1.7	3	1:1
	1998	3	1	0	33	ND	4	1:1.3
	1999	3	2	0	67	ND	3	1:1
20A-3	1995	2	2	0	100	7.5	16	1:8
	1996	2	1	0	50	ND	19	1:9.5
	1997	2	2	0	100	12.0	14	1:7
	1998	2	0	0	0	ND	13	1:6.5
	1999	2	2	0	100	ND	7	1:3.5
25 ^c	1999	2	2	0	100	8.5	38	1:19
26 ^d	1997	2	2	0	100	1.5	23	1:11.5
	1998	2	1	0	50	ND	19	1:9.5
	1999	2	1	0	50	4.5	14	1:7

^a Hunt Area 19A was established in 1999.

^b Hunt Area 320A was partitioned into Hunt Areas 20A-1, 20A-2, and 20A-3 in 1995.

^c Hunt Area 25 was established in 1999.

^d Hunt Area 26 was established in 1997.

**PROGRESS REPORT
SURVEYS AND INVENTORY**

STATE:	<u>Idaho</u>	JOB TITLE:	<u>Moose Surveys and Inventories</u>
PROJECT:	<u>W-170-R-24</u>		
SUBPROJECT:	<u>4</u>	STUDY NAME:	<u>Big Game Population Status, Trends</u>
STUDY:	<u>I</u>		<u>Use, and Associated Habitat</u>
JOB:	<u>6</u>		<u>Studies</u>
PERIOD COVERED:	<u>July 1, 1999 to June 30, 2000</u>		

MOOSE - MAGIC VALLEY REGION

ABSTRACT

The frequency of observations suggest moose have increased in the Big Wood River and Trail Creek areas of Units 48 and 49, and in all of Unit 56. Legal harvest was authorized in the Magic Valley Region for the first time in 1999 in Unit 56.

UNITS 43, 44, 45, 46, 47, 48, 49, 52, 52A, 53, 54, 55, 56, AND 57

MANAGEMENT DIRECTION

Follow statewide management direction; allow established populations to expand; transplant moose where feasible; and increase effort to record sightings and mortalities.

BACKGROUND

Prior to 1990 transient moose were recorded from throughout the Magic Valley Region, but there were no viable, resident populations. In recent years moose numbers in the region have increased as a result of natural ingress and transplants, and viable populations, capable of sustaining limited harvest, occur in Units 48-49 and Unit 56.

POPULATION SURVEYS

Aerial population surveys for moose have not been conducted in the region. In recent years observations indicate increasing numbers of moose along the Big Wood River in Unit 48 and in the Trail Creek drainage on the Units 48-49 border. The increase in moose numbers is primarily the result of movement of moose from Unit 50. Moose releases in Unit 44 have also probably contributed to the increased moose population. During the 1999-2000 reporting period, observations suggested there were 90+ moose in the Big Wood and Trail Creek areas. Populations in the Sublett area (Unit 56) appear to be stable or slightly increasing and observations are common.

HARVEST CHARACTERISTICS

Illegal kills have accounted for most of the verified moose mortality in the Magic Valley Region (Table 1). Since reintroduction efforts began in 1986, 8 verified or suspected illegal kills have been documented in Units 44 and 48. During the 1999-2000 reporting period, no reports of illegally taken moose were submitted. During the 1980s Indian harvest was prevalent in Unit 56 and was believed to be the primary factor preventing the establishment of a viable moose population. In 1999, 1 moose kill was documented as an Indian harvest in Unit 49.

In 1999 a new hunt with 5 permits was established in Hunt Area 56 (includes Units 56, 73, and 73A). Five bulls were harvested with 4 taken in Unit 56 and 1 in Unit 73 (Table 2).

TRAPPING AND TRANSPLANTING

In 1981-1982 the Department identified that suitable, unoccupied moose habitat existed in Units 43 and 44 and requested the Sawtooth National Forest conduct an environmental analysis for the establishment of a moose population on the Fairfield Ranger District. Upon completion of the analysis in 1983, arrangements were made to translocate "problem" moose from urban areas in the Upper Snake and Southeast Regions to Units 43 and 44. During the period from March 1986 through June 2000, 31 moose (6 adult or yearling bulls, 16 adult or yearling females, 7 male calves, and 2 female calves) were released.

No moose were released in the region during this reporting period. Two radio-collared moose, released in the Little Smoky drainage on the Unit 43-44 border in 1997, have moved substantial distances from the release site. One of the moose has been reported several times near Idaho City in Unit 39 and the other has been located numerous times on Bennett Mountain in Unit 45.

MANAGEMENT IMPLICATIONS

Efforts to reintroduce moose in Units 43 and 44 have not succeeded in establishing a moose population in those units. Most of the released moose have been illegally killed or have moved from the area.

The Big Wood River moose population (Units 48 and 49) is expanding and has potential for additional growth. Adequate habitat exists in the Big Wood watershed and moose have been transplanted to adjacent Units 36, 43, 44, and 50. Although several human-moose conflicts occurred in the Big Wood River Valley during the 1999-2000 winter, public support is strong for moose population expansion in the area. The possibility of a hunting season in Units 48 and 49 will be discussed for 2001.

Table 1. Summary of All Known Nonhunter-Caused Moose Mortalities in the Magic Valley Region, 1986-1999. (M=Male, F=Female, A=Adult, Y=Yearling, C=Calf).

Year	Unit	Mortality Agent					Total
		Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1986	44		1 FY				1
1988	56			1 MA	1 MA		2
1989	44		3 (FA, MA, C)	1 C			4
1990	44		1 FY				1
1991	44				1 FY		1
1992	53			1 MA			1
1993	44		1 FA				1
1995	56		1 FA			1 FA	2
1996	46, 48		2 (MY, MA)				2
1998	56					1MA	1
1999	49	1(MA)					1

Table 2. Summary of Moose Harvest and Drawing Odds in Hunt Area 56, 1999^a.

Year	No. Permits	Harvest		Hunter Success	Days/Hunter	First Choice Applicants	Drawing Odds
		M	F				
1999	5	5	0	100	16.0	28	1:6

^a This hunt was first authorized during 1999. The hunt area includes Units 56, 73, and 73A.

**PROGRESS REPORT
SURVEYS AND INVENTORY**

STATE: Idaho **JOB TITLE:** Moose Surveys and Inventories
PROJECT: W-170-R-24
SUBPROJECT: 5 **STUDY NAME:** Big Game Population Status, Trends,
STUDY: I Utilization, and Associated Habitat
JOB: 6 Studies
PERIOD COVERED: July 1, 1999 to June 30, 2000

MOOSE - SOUTHEAST REGION

ABSTRACT

Number of moose permits remained the same in 1999 with 129 antlered-only and 56 antlerless-only permits. Mandatory harvest reports identified a minimum of 103 antlered and 50 antlerless moose harvested. Data for controlled hunt number 3075 (Units 56, 73, and 73A) are reported under the Magic Valley Region-subproject 4.

UNITS 66A, 70, 71, 72, 73, 73A, 74, 75, 76, 77, AND 78

**CONTROLLED HUNT AREAS 66A-1, 66A-2, 70, 71-1, 71-2, 71-3, 72, 73, 73A,
74, 75-1, 75-2, 76-1, 76-2, 76-3, 76-4, 76-5, 76-6, 77, 78**

MANAGEMENT DIRECTION

Management direction for moose in the Southeast Region follows that for the state in general; to provide "high-quality" hunting and other moose-related recreational opportunities. Consequently, permit levels are conservative, and hunter success is high relative to hunts for other cervid species. For antlered-only hunts, emphasis is on providing each hunter with the opportunity to harvest a mature bull moose. Antlerless-only moose hunting is also offered due to relatively high moose populations. Nonconsumptive values of moose are also important.

The 1991-1995 Moose Management Plan established the goals of providing high-quality moose hunting and other moose-related recreational experiences for as many people as possible, assisting the expansion of moose populations into available habitat, and increasing permit numbers where possible.

BACKGROUND

Prior to the 1950s there were too few moose in the Southeast Region to justify harvest. The first hunt for moose in the region was held in 1959 when 5 antlered-only permits were issued for a portion of Unit 76. With continued growth of the population, harvest has increased to recent levels of over 150 moose in 11 units. Illegal moose harvest may be substantial (Kuck 1984) although reporting of these cases is sporadic. The Department issued a small number of permits good for any moose in several units from 1975 to 1990. An average of 80% of that harvest was antlered moose. In 1991 antlerless-only hunts were instituted in Units 66A and 76. Since 1991 permits have been issued for antlered or antlerless-only moose. Antlerless moose hunts start later than antlered hunts to provide more time for calf development alongside their cows.

Portions of the region continue to be colonized by moose, and populations apparently are increasing. Notably, moose appear to be expanding in Units 73 and 73A.

POPULATION SURVEYS

Moose aerial surveys were conducted in January 2000 in hunt units 76-1/76-2 and data entered into a sightability model (Unsworth et al 1994). Thirty search units were stratified for moose density, and 19 flown during the survey. Two hundred eighty-six moose consisting of 74 cows, 100 bulls, and 42 calves were observed (Table 1). Estimates of 510 (\pm 83) total moose including 174 (\pm 30) bulls, 236 (\pm 41) cows, and 100 (\pm 26) calves were generated using the Hiller-Siloy Wyoming-based model. The overall correction factor of 26% is similar to other years' model runs in these hunt units. Between surveys done in 1994 and 2000, cow:calf ratios remained similar, whereas bull:cow ratios increased nearly one-third (Table 1).

HARVEST CHARACTERISTICS

Hunting season lengths for antlered and antlerless moose remained at 86 days (30 August-23 November) and 40 days (15 October-23 November), respectively, in 1999 (Table 2). One hundred eighty-five permits (129 antlered and 56 antlerless) were issued in 1999. A telephone survey to estimate total harvest was not conducted. Minimum reported harvest was available through a mandatory mortality report of successful hunters. Reported harvest totaled 153; 103 antlered and 50 antlerless moose (Table 3). It is probable that some harvest went unreported, as 7 persons drawing tags did not meet the mandatory check or report criteria.

Minimum overall hunter success rate for the region was 83%, comprised of 89% for antlerless-only permits and 80% for antlered-only permits (Table 3). These are extremely high success rates for hunting cervids. Further analysis shows that mean number of days afield for hunters with bull tags range from 5.8 to 14.2 days afield in 1999 (Table 3). Mean participation days are much lower for those with antlerless-only tags.

Other sources of moose mortality are illegal, Indian harvest, natural, road-kills, and other. For 1999, 8 nonharvest mortalities were reported, including 4 road-kills (Table 4).

CLIMATIC CONDITIONS

Winter 1999-2000 snow depths were slightly below the 30-year average, with snow levels at 70-100% of average in most drainages. Average temperature during the winter was similar to the 30-year norm.

HABITAT CONDITIONS

Succession of aspen stands into conifer may negatively affect moose habitat in the future. Treatment to retard succession may slow potential decreases. Development and disturbance associated with mining and timber harvest in the eastern portion of the region continued. Livestock grazing and other development of riparian areas impacts moose habitat in many parts of the region.

MANAGEMENT IMPLICATIONS

Aerial surveys and the mandatory mortality report provide the majority of information available for management. Use of sightability models such as Anderson (1994) and Unsworth et al. (1994) for estimating populations appear to be promising and their use should continue. Continued conservative permit levels might allow for passive population expansion and growth, particularly in those areas being newly colonized. With continued high harvest success rates, and sightability models showing no decrease in population levels, more harvest opportunity could be made available. Standardization of flight and aerial survey techniques is proving valuable and should be continued.

These high success rates in conjunction with high participation rates point to 2 observations: (1) tremendous selectivity is being used in harvesting specific animals, and (2) the difficulty in drawing permits (particularly for bulls) drives hunters to make sure they fill their permit. It seems the goals of a high-quality opportunity for mature bulls in the harvest are being met.

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- Unsworth, J. W., F. A. Leban, D. J. Leptich, E. O. Garton, and P. Zager. 1994. Aerial survey: user's manual, second edition. Idaho Department of Fish and Game, Boise, ID 84 pp.

Table 1. Total observed moose by sex/age class, and model estimates of moose from aerial surveys in the Southeast Region, Idaho 1993-2000.

Hunt Area Year	Observed		Estimate	
	Total	Bull:Cow:Calf	Total	Bull:Cow:Calf
76-1, 2				
1994	90	42:100:42	432	26:100:50
2000	286	74:100:42	510 ∇ 83	74:100:42
76-3, 4				
1993	104	76:100:37	192	76:100:36
1997	89	85:100:44	190	100:100:53
76-5, 6				
1991	136	49:100:60	---	---
1995	121	55:100:40	167	54:100:34
76				
1999	140	100:100:62	583 ∇ 146	99:100:60
66A				
1995	159	69:100:49	285	67:100:43

Table 2. Moose hunting season structure for the Southeast Region of Idaho, 1999.

Tag Type	Season Dates	Season Length	Hunt Units
		(Days)	
Antlered	8/30-11/23	86	66A-1, 66A-2, 70, 71-1, 71-2, 72, 74, 75-1, 76-1, 76-3, 76-5
Antlerless	10/15-11/23	40	66A-2, 71-3, 75-2, 76-2, 76-4, 76-6

Table 3. Summary of moose harvest and drawing odds by hunt area, 1990-1999.

Area	Year	No. Permits	Harvest		% Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
			M	F				
66A-1	1990	10A	8	0	80	8.0	104	1:10.4
	1991	15A	14	0	93	10.2	205	1:13.7
	1992	15A	15	0	100	7.4	175	1:11.7
	1993	25A	24	0	96	7.3	178	1:7.1
	1994	25A	22	0	90	5.8	194	1:7:8
	1995	30A	28	0	93	8.9	274	1:9.1
	1996	30A	24	0	80	6.4	212	1:7.1
	1997	30A	26	0	87	7.4	232	1:7.7
	1998	30A	22	0	73	5.4	212	1:7.1
	1999	30A	22	0	73	7.0	262	1:8.7
66A-2	1990	5ES	3	2	100	4.6	50	1:10.0
	1991	5AL	0	4	80	3.3	18	1:3.6
	1992	5AL	0	3	60	4.3	9	1:2.8
	1993	10AL	0	9	86	7.2	28	1:2.8
	1994	10AL	0	10	100	2.7	38	1:3:8
	1995	12AL	0	9	75	3.7	20	1:1.7
	1996	12AL	0	8	67	1.5	19	1:1.6
	1997	12AL	0	7	58	6.9	15	1:1.3
	1998	12AL	0	8	67	3.3	20	1:1.6
	1999	12AL	0	12	100	1.7	11	1:1.0
70	1993	5A	3	0	60	7.5	19	1:3.8
	1994	5A	5	0	100	5.5	8	1:1:6
	1995	5A	4	0	80	11.6	36	1:7.2
	1996	5A	3	0	60	6.0	10	1:2.0
	1997	5A	4	0	80	21.0	29	1:5.8
	1998	5A	5	0	100	6.0	16	1:3.2
	1999	5A	4	0	80	11.3	30	1:6.0
71	1989	3A	3	0	100	9.0	6	1:2.0
	1990	5A	4	0	80	6.0	45	1:9.0
	1991	5A	5	0	100	8.5	28	1:5.6
	1992	5A	5	0	100	8.0	38	1:7.6
71-1	1993	5A	5	0	100	7.5	31	1:6:2
	1994	5A	5	0	100	10.2	54	1:10:8
	1995	5A	5	0	100	2.8	33	1:6.6
	1996	5A	4	0	80	6.0	51	1:10.0
	1997	5A	3	0	60	2.0	36	1:7.2

Table 3. Summary of moose harvest and drawing odds by hunt area, 1990-1999 (continued).

Area	Year	No. Permits	Harvest		% Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
			M	F				
	1998	5A	4	0	80	7.3	39	1:7.8
	1999	5A	5	0	100	9.0	57	1:11.4
71-2	1993	5A	5	0	100	13.2	8	1:1.6
	1994	5A	5	0	100	8.0	35	1:7:0
	1995	5A	5	0	100	9.0	16	1:3.2
	1996	5A	5	0	100	10.8	22	1:4.4
	1997	5A	5	0	100	13.0	16	1:3.2
	1998	5A	5	0	100	6.4	15	1:3.0
	1999	5A	1	0	20	12.0	15	1:3.0
71-3	1999	5AL	0	4	80	3.7	3	1:1.0
72	1990	5A	4	0	80	8.2	40	1:8.0
	1991	5A	4	0	80	7.8	19	1:3.8
	1992	5A	5	0	100	14.4	22	1:4.4
	1993	5A	5	0	100	2.3	29	1:5.8
	1994	5A	5	0	100	4.7	21	1:4:2
	1995	5A	5	0	100	5.2	32	1:6.4
	1996	5A	3	0	60	6.0	27	1:5.3
	1997	5A	5	0	100	3.0	28	1:5.6
	1998	5A	4	0	80	5.8	34	1:6.8
	1999	5A	5	0	100	6.8	47	1:9.4
74	1990	5A	4	0	80	10.8	30	1:6.0
	1991	5A	2	0	40	8.8	23	1:4.6
	1992	5A	5	0	100	5.0	14	1:2.8
	1993	5A	5	0	100	4.5	38	1:7.6
	1994	5A	2	0	40	11.0	11	1:2:2
	1995	5A	5	0	100	5.2	16	1:3.2
	1996	5A	3	0	60	2.3	22	1:4.4
	1997	5A	3	0	60	23.3	18	1:3.6
	1998	5A	3	0	60	12.0	25	1:5.0
	1999	5A	2	0	40	6.5	19	1:3.8
75	1990	5A	5	0	100	19.0	25	1:5.0
	1991	5A	5	0	100	13.0	27	1:5.4
	1992	5A	5	0	100	8.5	31	1:6.2
	1993	5A	3	0	60	8.3	22	1:4.4
	1994	5A	4	0	80	14.0	30	1:6.0

Table 3. Summary of moose harvest and drawing odds by hunt area, 1990-1999 (continued).

Area	Year	No. Permits	Harvest		% Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
			M	F				
	1995	5A	5	0	100	19.3	36	1:7.2
	1996	5A	3	0	60	9.3	27	1:5.3
	1997	10A	7	0	70	5.6	45	1:4.5
		5AL	0	5	100	3.6	3	1:1.0
	1998	10A	9	0	90	11.6	34	1:3.4
		5AL	0	2	40	1.5	2	1:1.0
75-1	1999	10A	10	0	100	12.1	31	1:3.1
75-2	1999	5AL	0	4	80	3.3	10	1:2.0
76-1	1990	30A	25	0	83	7.9	174	1:5.8
	1991	30A	23	0	76	7.6	263	1:8.8
	1992	30A	24	0	80	5.9	256	1:8.5
	1993	30A	24	0	80	10.8	161	1:5.4
	1994	30A	26	0	88	5.8	200	1:6.7
	1995	20A	16	0	82	8.2	158	1:7.9
	1996	20A	18	0	90	6.7	190	1:9.1
	1997	20A	16	0	80	4.2	174	1:8.7
	1998	20A	16	0	80	6.2	171	1:8.6
	1999	20A	19	0	95	10.7	274	1:13.7
76-2	1990	10ES	5	5	100	5.2	52	1:5.2
	1991	10AL	1	8	90	2.3	21	1:2.1
	1992	10AL	0	7	70	4.3	29	1:2.9
	1993	10AL	0	10	100	3.4	18	1:1.8
	1994	10AL	0	10	100	3.0	27	1:2.7
	1995	20AL	0	15	75	4.5	37	1:1.9
	1996	20AL	1	15	80	2.9	42	1:2.1
	1997	20AL	3	12	75	3.0	23	1:1.2
	1998	20AL	3	11	70	3.5	39	1:2.0
	1999	20AL	0	18	90	3.9	30	1:1.5
76-3	1990	10A	10	0	100	8.9	43	1:4.3
	1991	15A	13	0	87	7.2	103	1:6.9
	1992	15A	15	0	100	5.6	65	1:4.3
	1993	15A	14	0	93	12.5	78	1:5.2
	1994	15A	14	0	93	13.2	60	1:4.0
	1995	15A	15	0	100	11.2	89	1:5.9
	1996	15A	14	0	93	6.4	80	1:5.3

Table 3. Summary of moose harvest and drawing odds by hunt area, 1990-1999 (continued).

Area	Year	No. Permits	Harvest		% Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
			M	F				
	1997	15A	14	0	93	7.9	79	1:5.3
	1998	15A	12	0	80	10.3	73	1:4.9
	1999	15A	13	0	87	11.3	84	1:5.6
76-4	1990	5ES	3	2	100	9.4	15	1:3.0
	1991	5AL	0	5	100	6.5	23	1:4.6
	1992	5AL	0	4	80	4.0	4	1:0.8
	1993	5AL	0	5	100	5.5	9	1:1.8
	1994	5AL	0	5	100	4.0	7	1:1.4
	1995	7AL	0	4	57	4.0	8	1:1.1
	1996	7AL	0	7	100	3.8	6	1:1.0
	1997	7AL	1	3	57	2.0	8	1:1.1
	1998	7AL	0	4	57	3.6	12	1:7.1
	1999	7AL	1	6	100	2.6	3	1:1.0
76-5	1990	20A	17	0	85	6.1	74	1:3.7
	1991	20A	16	0	80	14.0	123	1:6.2
	1992	20A	14	0	70	8.2	85	1:4.3
	1993	20A	16	0	80	8.7	73	1:3.7
	1994	20A	15	0	75	7.9	80	1:4.0
	1995	25A	15	0	61	9.3	117	1:4.7
	1996	25A	17	0	68	5.1	121	1:4.8
	1997	15A	12	0	80	9.1	85	1:5.7
	1998	15A	9	0	60	6.0	46	1:3.1
	1999	15A	9	0	60	5.8	85	1:5.7
76-6	1990	5ES	3	0	60	8.0	26	1:5.2
	1991	5AL	1	3	80	4.0	2	1:0.2
	1992	5AL	0	5	100	2.0	18	1:3.6
	1993	5AL	0	5	100	4.4	5	1:1.0
	1994	5AL	1	4	100	3.3	6	1:1.2
	1995	7AL	0	4	57	4.0	11	1:1.6
	1996	7AL	0	4	57	3.0	8	1:1.1
	1997	7AL	2	4	86	2.2	6	1:1.0
	1998	7AL	0	3	43	3.7	4	1:1.0
	1999	7AL	0	5	71	1.8	4	1:1.0
77	1990	5A	3	0	60	17.0	28	1:5.6
	1991	5A	5	0	100	9.3	16	1:3.2
	1992	5A	5	0	100	7.8	52	1:10.4

Table 3. Summary of moose harvest and drawing odds by hunt area, 1990-1999 (continued).

Area	Year	No. Permits	Harvest		% Hunter Success	Days/ Hunter	Total First Choice Applicants	Drawing Odds
			M	F				
	1993	5A	4	0	80	17.0	5	1:1.0
	1994	5A	5	0	100	13.0	29	1:5.8
	1995	7A	6	0	86	18.6	21	1:3.0
	1996	7A	4	0	57	11.5	26	1:3.7
	1997	7A	6	0	86	7.3	20	1:2.9
	1998	7A	4	0	57	6.3	28	1:4.0
	1999	7A	6	0	86	14.2	28	1:4.0
78	1990	5A	4	0	80	13.0	32	1:6.4
	1991	5A	5	0	100	22.8	39	1:7.8
	1992	5A	5	0	100	25.5	39	1:7.8
	1993	5A	5	0	100	9.0	26	1:5.2
	1994	5A	5	0	100	15.6	32	1:6.4
	1995	7A	6	0	86	15.0	28	1:4.0
	1996	7A	6	0	86	13.8	58	1:8.3
	1997	7A	6	0	86	21.7	32	1:4.6
	1998	7A	7	0	100	11.0	34	1:4.9
	1999	7A	7	0	100	10.4	33	1:4.7

* A = Antlered Only, AL = Antlerless Only, ES = Either Sex

** Harvest for 1996-2000 is based on mandatory mortality reports only, data for 1984-1995 from telephone survey.

Table 4. Summary of reported nonhunting moose mortalities in the Southeast Region, Idaho 1991-1999.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1991-92	0	3	3	1	0	7
1992-93	0	0	1	0	0	1
1993-94	0	0	2	1	1	4
1994-95	0	8	1	0	0	9
1995-96	0	29	5	0	10	44
1996-97	1	2	5	0	1	9
1997-98	0	1	3	5	1	10
1998-99	0	1	4	3	0	8

**PROGRESS REPORT
SURVEYS AND INVENTORY**

STATE:	<u>Idaho</u>	JOB TITLE:	<u>Moose Surveys and</u>
PROJECT:	<u>W-170-R-24</u>		<u>Inventories</u>
SUBPROJECT:	<u>6</u>	STUDY NAME:	<u>Big Game Population Status,</u>
STUDY:	<u>I</u>		<u>Trends, Utilization, and</u>
JOB:	<u>6</u>		<u>Associated Habitat Studies</u>
PERIOD COVERED:	<u>July 1, 1999 to June 30, 2000</u>		

MOOSE - UPPER SNAKE REGION

ABSTRACT

Twenty controlled hunts with 320 permits were offered for antlered moose in the Upper Snake Region in 1999. These totals represent an increase of one additional hunt (Hunt Area 51) and 91 permits over 1998 levels. A total of 278 antlered moose were harvested (87% hunter success) as determined by mandatory harvest reports. An additional four hunts with 59 (+12) permits were offered for antlerless moose in 1999, resulting in the harvest of 46 animals (78% hunter success). Drawing odds ranged from 1:1 in Hunt Areas 60A-2 and 63A-2 (antlerless only) to 11:2 in Hunt Area 69-1.

No population surveys were conducted specifically for moose during this reporting period. However moose were counted incidentally during deer and elk sightability survey flights in Units 50, 58, 59/59A, 60A, 66, and 69.

Five moose were captured and relocated within the region during this reporting period as a result of nuisance complaints around residences or in towns.

**UNITS 59, 59A
CONTROLLED HUNT AREA 59**

Description: Hunt Area 59 - All of Units 59 and 59A.

BACKGROUND

Hunts Areas 59 and 59A were combined in 1993 and renamed Hunt Area 59. Twenty antlered-only permits were offered in 1999 (Table 1). Prior to 1993, two hunts with a total of 12 antlered-only permits were offered in these units (Table 2). Old Hunt Area 59 had been open continuously since 1974 with permit levels fluctuating between four and eight with over 90% hunter success reported. Hunt Area 59A was closed in 1978 after one moose was harvested in the preceding four years. In 1983 this hunt was reopened and two permits were issued annually

through 1988 with 100% hunter success. Four permits were issued each season from 1989-1992 with 100% hunter success. Permit levels have increased steadily since that time.

POPULATION SURVEYS

A moose trend count was flown in Units 59 and 59A on December 17 and 18, 1994. A Bell Model G47 Soloy helicopter was used to fly the survey. Counting conditions were good, with eight or more inches of relatively new snow cover present over the entire area. All probable moose habitat was surveyed.

A total of 179 moose (129 in Unit 59 and 50 in Unit 59A) with a bull:cow:calf ratio of 44:100:54 was counted on the survey. Of the 40 bulls counted, 13 were classified as yearlings, 20 as adults, and 7 had already shed antlers.

Few previous data are available for comparison. Prior to this count no surveys had been conducted in Unit 59 since 1984 (64 total moose), and Unit 59A had never been surveyed specifically for moose. However, during deer and elk sightability surveys conducted in 1991-1992, 1993-1994, and 1999-2000, moose were counted on an incidental basis. In 1991-1992, 46 moose were counted in Unit 59 and 71 in Unit 59A. In 1993-1994 a total of 49 moose were observed in Unit 59 and 46 in Unit 59A (unclassified). The 1999-2000 survey resulted in a total count of 90 moose, including 10 bulls, 19 cows, 13 calves, and 48 unclassified.

HARVEST CHARACTERISTICS

Table 2 summarizes controlled hunt harvest data from 1989 to present. However no telephone survey of 1996-1998 moose permit holders was conducted. Therefore harvest estimates were derived from mandatory harvest reports and are not directly comparable with previous telephone survey estimates. Sixteen permits for antlered moose were offered in 1998 and 15 animals were harvested for a 94% hunter success rate. Mean antler spread was 33.63 inches.

Statewide drawing odds have improved substantially in most units due to regulation changes implemented in 1986. In 1998 drawing odds were 9.5:1 in Hunt Area 59 (Table 2).

All known nonhunting moose mortalities for Units 59 and 59A from 1990 through 1999 are summarized in Table 3. Known illegal kill was a serious problem in the early 1980s when it nearly equaled controlled harvest, but has been of lesser importance based upon documented mortalities in recent years.

CLIMATIC CONDITIONS

After an unusually cool and wet spring in 1999, the summer and fall were warm and dry. Winter precipitation was below normal and temperatures were well above average. The spring of 2000 came early, and warm and dry conditions have persisted.

HABITAT CONDITIONS

Habitat consists primarily of conifer/sagebrush ecotones and aspen. Riparian areas are limited and discontinuous. Habitat extends down major drainages that have willows. Improving riparian zone management would increase habitat quality and quantity in this area.

DEPREDACTIONS, TRAPPING, AND TRANSPLANTING

No depredations, trapping, or transplantation operations occurred during this reporting period.

MANAGEMENT IMPLICATIONS

General observations indicate the moose population in these units is increasing. Permit levels will be adjusted in response to data analysis.

UNITS 64, 65, AND 67 CONTROLLED HUNT AREAS 64-1, 64-2, 65, 67-1, 67-2

Description: Hunt Areas 64-1 and 64-2 - All of Unit 64.

Description: Hunt Area 65 - All of Unit 65.

Description: Hunt Area 67-1 - That portion of Unit 67 north and west of State Highway 31.

Description: Hunt Area 67-2 - That portion of Unit 67 south and east of State Highway 31.

BACKGROUND

All of Unit 64 except the Canyon Creek drainage, Unit 65, and Unit 67 north and west of State Highway 31 have been open to moose hunting since 1974. In 1983 this area (old Hunt Area 364) was split along unit boundaries into three separate hunts. Increasing moose populations allowed a steady increase in permit levels until 1987. A new Hunt Area, 67-2, was created in 1983, and allowed the harvest of moose in that portion of Unit 67 previously closed.

Hunting opportunity has increased in these units from one hunt with two permits during the early 1980s to five hunts with 79 permits (64 permits for antlered moose and 15 for antlerless) in 1999 (Table 4). In 1986 Hunt Areas 64 and 65 were opened for either-sex harvest. The elimination of the antlered-only restriction was the result of the 1984 moose census and depredation problems in Teton Basin. Either-sex permits were issued in order to maintain consistency with the Southeast Region which offered either-sex permits. The Department also had concerns that antlerless-only moose permits would not fill, and wanted to experimentally monitor the sex ratio of moose harvested with either-sex permits. In the first five years of either-sex permits, only 13 of the 128 (10.2%) moose harvested were female.

POPULATION SURVEYS

No population surveys were conducted during this reporting period. Historically moose populations appeared to be increasing in these units prior to the winter of 1988-1989. Forage was impacted by two years of drought and moose shifted their distribution to lower elevation agricultural and urban areas. Moose appeared to be in poor condition and significant winter losses likely occurred.

During the winter of 1992-1993, moose were first counted incidental to elk sightability surveys. Totals of 48, 26, and 90 moose were counted in Units 64, the western portion of 65, and 67, respectively. Most animals counted were unclassified. Moose were also counted incidental to elk sightability surveys during the 1995-1996 winter. Totals of 36, 101, and 60 moose were observed in Units 64, 65, and 67, respectively. Again, most animals were not classified. Moose were again counted incidentally during the 1997-1998 winter. Totals of 67, 30, and 88 (largely unclassified) moose were counted in Units 64, western 65, and 67, respectively.

HARVEST CHARACTERISTICS

Hunters harvested 49 antlered moose on 64 permits (77% hunter success rate) and 15 antlerless moose on 15 permits (100% hunter success) in 1999 (Table 5). No telephone survey of 1996-1999 moose permit holders was conducted. Therefore 1996-1999 harvest estimates were derived from mandatory harvest reports and are not directly comparable with previous telephone survey estimates. Telephone survey results for years prior to 1996 are shown in Table 5. Drawing odds ranged from 1.9:1 in Hunt Area 64-2 (antlerless only) to 5.6:1 in Hunt Area 64-1 in 1999 (Table 5). Mean antler spreads were 36.88, 33.89, 36.15, and 37.63 for Hunt Areas 64-1, 65, 67-1, and 67-2, respectively. Table 6 summarizes all known nonhunting moose mortalities in Units 64, 65, and 67 from 1990 to 1999.

CLIMATIC CONDITIONS

After an unusually cool and wet spring in 1999, the summer and fall were warm and dry. Winter precipitation was below normal and temperatures were well above average. The spring of 2000 came early, and warm and dry conditions have persisted into early summer.

HABITAT CONDITIONS

Conifer with interspersed aspen and narrow riparian areas make up the majority of moose habitat in this area. Mountain mahogany on south-facing ridges provides important winter moose habitat in Units 65 and 67. In Unit 64 moose are found wintering primarily in stream bottom willow/aspen/dogwood communities.

DEPREDACTIONS, TRAPPING, AND TRANSPLANTING

Three nuisance complaints involving moose were received from this group of units (one from Unit 64, one from Unit 65, and one from Unit 67) as a result of moose either acting aggressively

around rural residences or getting into towns. All three situations were resolved by darting and relocating the problem animals. Two of the animals were relocated to Unit 60A and one to Unit 64.

One complaint was received from Unit 64 about a moose eating ornamental shrubs. This situation was resolved by hazing the animal out of the area. Another complaint was received from Unit 65 about a moose feeding on a haystack. Panels were provided to the landowner.

MANAGEMENT IMPLICATIONS

A 1989 aerial survey found approximately half of the number of moose censused in 1985. A shift in moose distribution resulting from the drought and severe winter conditions was partially responsible for the low count. Also mortality during the 1988-1989 winter was above normal. Permit levels were maintained for the 1989 and 1990 seasons, but were adjusted in 1991 in response to data analysis. Moose populations appear to have rebounded rapidly to levels at or above those present prior to the 1988-1989 die-off. Consequently permit levels increased in 1993, 1995, 1997, and again in 1999. Additionally an antlerless-only hunt was initiated in Unit 64 in 1993 (Hunt Area 64-2).

UNITS 66, 69 CONTROLLED HUNT AREAS 66-1, 66-2, 69-1, 69-2, 69-3, 69-4

Description: Hunt Area 66-1 - That portion of Unit 66 north of main Bear Creek EXCEPT the Pritchard Creek and Garden Creek drainages.

Description: Hunt Area 66-2 - That portion of Unit 66 south of main Bear Creek.

Description: Hunt Area 66-3 - All of Units 66 and 69.

Description: Hunt Area 69-1 - That portion of Unit 69 west of the Grays Lake-Long Valley-Bone-Iona Road.

Description: Hunt Area 69-2 - That portion of Unit 69 east of the Grays Lake-Long Valley-Bone-Iona Road EXCEPT the Antelope and Granite Creek drainages.

Description: Hunt Area 69-3 - That portion of Unit 69 within the Antelope Creek and Granite Creek drainages, and that portion of Unit 66 within the Pritchard Creek and Garden Creek drainages.

BACKGROUND

Five hunts, with a total of 90 antlered-only permits, were offered in Units 66 and 69 in 1999. The moose population in these units increased at a fairly rapid rate during the late 1970s when populations elsewhere in the Upper Snake Region were decreasing or remaining static. Moose populations have continued to increase, particularly in the west half of Unit 69.

Hunts 366 and 369 were split in 1981 to create four hunts (366-1, 366-2, 369-1, and 369-2). This resulted in a 50% increase in permit levels from 1980 (16 to 24). A new hunt (369-3) was created in 1984 from adjacent portions of Hunts 366-1 and 369-2.

Hunt 369-1 was changed from antlered-only to either-sex in 1986 to address landowner concerns over depredations in grain fields. Either-sex permits were not effective in harvesting antlerless moose. No female moose were harvested. As a result this hunt was changed back to antlered-only in 1991. However beginning in 1993 an antlerless-only hunt (369-4, current Hunt Area 69-4) was initiated. This hunt has 20 permits and includes all of Units 66 and 69. In 1999 Unit 66 was added to this hunt and it was renumbered to Hunt Area 66-3.

Season structure for hunts in these units is presented in Table 7.

POPULATION SURVEYS

No population surveys have been conducted in these units specifically to monitor moose populations. However moose were counted incidentally during deer and elk sightability surveys in 1992, 1994, 1995, 1997, 1999, and 2000 (not all subunits were surveyed).

A total of 60 moose (most unclassified) were counted in Unit 66 in 2000. Other recent totals include 35 in 1999, 62 in 1997, 32 in 1995, 98 in 1994, and 26 in 1992. In Unit 69, 257 moose were tallied in 2000. This total included 6 bulls, 39 cows, 38 calves, and 174 unclassified moose. Other recent totals include 121, 168, 231, and 193 in 1992, 1995, 1997, and 1999, respectively.

HARVEST CHARACTERISTICS

Table 8 summarizes controlled hunt harvest since 1990. However no telephone survey of 1996-1999 moose permit holders was conducted. Harvest estimates for 1996-1999 were derived from mandatory harvest reports and are not directly comparable with previous telephone survey estimates. Six hunts with a total of 105 permits (an increase of 28 from 1998) were offered in these two units in 1999. A total of 78 antlered moose were harvested on 90 permits (87% success). An additional 18 antlerless moose were harvested on the 20 permits offered in Hunt Area 66-3. Drawing odds have improved significantly as a result of regulation changes implemented in 1986 and are shown in Table 8. Mean antler spreads were 34.93, 37.87, 38.78, 36.05, and 34.17 for Hunt Areas 66-1, 66-2, 69-1, 69-2, and 69-3, respectively.

A summary of all known nonhunting mortalities is presented in Table 9.

CLIMATIC CONDITIONS

After an unusually cool and wet spring in 1999, the summer and fall were warm and dry. Winter precipitation was below normal and temperatures were well above average. The spring of 2000 came early, and warm and dry conditions have persisted into early summer.

HABITAT CONDITIONS

Hunt Area 66 is characterized by conifer/aspen habitats with narrow canyon bottom riparian areas which support moderate willow/dogwood communities. Hunt Area 69 is primarily aspen/sagebrush and private agricultural land. Moose may be migrating from adjacent areas to winter on the Tex Creek Management Area.

DEPREDACTIONS, TRAPPING, AND TRANSPLANTING

One nuisance complaint was received on an aggressive moose in a rural yard in Unit 67. This animal was darted and moved to Unit 60A.

One complaint was fielded from Unit 69 concerning a moose eating stored hay. This animal was successfully hazed from the area.

MANAGEMENT IMPLICATIONS

Past either-sex permits were not successful in harvesting female moose. Therefore no either-sex permits have been offered in these units since 1990. Steadily increasing moose populations in these units resulted in an increase in permit levels in all of these hunts in 1993, 1995, 1997, and 1999. Additionally an antlerless-only hunt has been offered since 1993.

UNITS 60, 60A, 61, 62, 62A CONTROLLED HUNT AREAS 60, 60A-1, 60A-2, 61-1, 61-2 61-3, 62-1, 62-2, 62A-1, 62A-2

Description: Hunt Area 60 - All of Unit 60.

Description: Hunt Areas 60A-1 and 60A-2 - That portion of Unit 60A south and east of the North Fork (Henry's Fork) Snake River and that portion within one mile north and west of the North Fork Snake River.

Description: Hunt Area 61-1 - That portion of Unit 61 west of East Dry Creek and the Yale-Kilgore Road.

Description: Hunt Area 61-2 - That portion of Unit 61 east of East Dry Creek and the Yale-Kilgore Road and west of U.S. Highway 191-20 and south and west of State Highway 87.

Description: Hunt Area 61-3 - That portion of Unit 61 north and east of State Highway 87 and north and west of U.S. Highway 191-20.

Description: Hunt Area 62 - All of Unit 62.

Description: Hunt Area 62A - All of Unit 62A.

BACKGROUND

Eight hunts (Table 10) with a total of 126 antlered-only and 10 antlerless-only permits were offered in 1999.

During the 1970s the moose population in Fremont County was thought to be declining and experiencing high levels of illegal mortality and Indian harvest. As a result in 1977 all moose hunts in Fremont County were closed. After a boundary change to include only Clark County, Hunt 361-1 was the only hunt open from 1977 to 1982.

The population had increased by 1983. A winter aerial survey conducted in 1983 counted moose in numbers slightly below the highs of the early 1950s. The Island Park area is the only area where counts were clearly lower than those in the 1952-1956 period. In response to the population recovery, eight controlled hunts were opened in 1983 in Fremont County.

A new hunt was established in Unit 60A in 1986. The hunt area consists of agricultural land and the riparian zone along the Henry's Fork of the Snake River. Many residences and farms occur in the area. The moose population within this corridor has been increasing. Annual depredation complaints of moose in agriculture fields and near towns and residences have been received, resulting in expanded antlerless-only hunting opportunity. Permits were reduced by approximately 50% on the Island Park caldera portion of the region in 1991 as a result of significant winter mortality during the 1988-1989 winter, but have been steadily increasing since as populations continue to grow.

POPULATION SURVEYS

Most of the area was surveyed by airplane from November 1989 through February 1990. Survey results indicated that moose populations had decreased substantially since the previous winter. Moose appeared to be in poor condition prior to the 1988-1989 winter following two years of drought, and significant winter losses probably occurred. Survey results from the North Leigh Creek to Cave Falls Road portion of Unit 62 are shown in Table 11. The results from the remainder of Unit 62, Unit 62A, and the eastern portion of Unit 61 are included in Table 12. Survey results from the western portion of Unit 61 (from Monida Pass to East Camas Creek), Big Bend Ridge, and the desert east of the Red Road are shown in Tables 13 and 14, respectively.

A helicopter survey was conducted along the North Fork Snake River corridor between St. Anthony and the Highway 33 bridge in Hunt Area 60A-1 and 60A-2 in December 1991. Only the riparian corridor was searched, so this should be considered a minimum count. A total of 37 moose were observed, including 2 bulls, 21 cows, and 14 calves.

Moose have been counted incidental to deer and elk sightability surveys in Unit 60A on a fairly regular basis. However moose distribution varies greatly from year to year and, since not all search units are surveyed, the usefulness of this information is questionable.

In 2000 a total of 473 moose were counted incidental to an elk sightability survey. This total includes 119 bulls, 192 cows, 102 calves, and 52 unclassified animals for a bull:cow:calf ratio of 62:100:53. Other recent totals for Unit 60A include 585 in 1998, 340 in 1997, 219 in 1996, 272 in 1995, 360 in 1994, 187 in 1993, and 312 in 1991.

HARVEST CHARACTERISTICS

Table 15 summarizes controlled hunt harvest and drawing odds for these units. However no telephone survey of 1996-1999 moose permit holders was conducted. Therefore 1996-1999 harvest estimates were derived from mandatory harvest reports and are not directly comparable with previous telephone survey estimates. One hundred twenty-six (increase of 35 from 1998) antlered-only moose permits were issued in 1999, resulting in the harvest of 114 animals (90% success) based on mandatory harvest reports. In addition three moose were harvested on the ten antlerless-only permits in Hunt Area 60A-2. Mean antler spreads for these hunts were 36.85, 35.58, 31.61, 35.50, 37.53, 37.69, and 35.85 for Hunt Areas 60, 60A-1, 61-1, 61-2, 61-3, 62, and 62A, respectively.

Beginning in 1984 all known nonhunting moose mortalities were categorized by mortality agent and unit. Table 16 summarizes these records for Units 60, 60A, 61, 62, and 62A from 1990 through 1999.

CLIMATIC CONDITIONS

After an unusually cool and wet spring in 1999, the summer and fall were warm and dry. Winter precipitation was below normal and temperatures were well above average. The spring of 2000 came early, and warm and dry conditions have persisted into early summer.

DEPREDATIONS, TRAPPING, AND TRANSPLANTING

Three complaints were received regarding moose eating ornamental trees/shrubs (one each from Units 60A, 61, and 62) during this reporting period. These situations were resolved by hazing the offending animals to new locations. Additionally two complaints were received from Unit 62 involving moose eating stored hay. Panels were furnished to the affected landowners.

MANAGEMENT IMPLICATIONS

The increase in desert-wintering moose could lead to increased depredations during unusually severe winters. Mortality during the 1988-1989 winter resulted in significant population declines. However moose populations have rebounded rapidly to levels above those present prior to the 1988-1989 die-off. Consequently permit levels have been increasing accordingly.

**UNITS 50, 51, 58, 63, 63A
CONTROLLED HUNT AREAS 50, 63A-1, 63A-2**

Description: Hunt Area 50 - All of Unit 50.

Description: Hunt Area 51 - All of Unit 51.

Description: Hunt Areas 63A-1 and 63A-2 - All of Unit 63A.

BACKGROUND

In early 1980, six moose were released near the North Fork of the Big Lost River (Unit 50). Most initially remained close to their release site, but there has been egress to other areas. Reproduction has occurred, and additional transplants have augmented this population. An antlered-only hunt (50) was initiated in 1993.

A moose hunt was opened in Unit 51 in 1999 as a result of an increasing number of moose being sighted incidentally during deer and elk sightability surveys and ground observations.

A significant population of moose exists in Unit 63A. Moose utilize the riparian habitat along the North and South Forks of the Snake River and associated sloughs, and depredation complaints occur on a fairly regular basis.

Hunt Area 50 was initiated in 1993 and had two permits until 1997 when it was increased to four. Hunt Area 51 was opened in 1999 with two antlered-only permits. Hunt 63A was initiated in 1987 with three antlered-only permits. Permit levels were increased to five in 1989 and eight in 1990. In 1991 permit levels were increased to 10 and split into two hunts, 63A-1 antlered only, and 63A-2 antlerless only, with five permits each. Permit levels have continued to increase in Hunt Area 63A-1 and 63A-2.

Season structure for Hunt Areas 50, 51, 63A-1, and 63A-2 are summarized in Table 17.

POPULATION SURVEYS

No population surveys were conducted during this reporting period. However moose were counted incidentally during elk sightability surveys in Unit 50 in 2000 and 1999. A total of 11 moose were counted in Unit 50, including two bulls, two cows, three calves, and three unclassified animals in 2000. Six moose were observed in Unit 50 in 1999. Eighteen moose were observed in Unit 51 in 1999, including 7 bulls, 2 cows, 2 calves, and 7 unclassified animals.

HARVEST CHARACTERISTICS

Controlled hunt harvest and drawing odds are summarized in Table 18. A total of 20 antlered-only permits were issued in these units in 1999, resulting in the harvest of 17 animals (85%

success) based on mandatory harvest reports. No telephone harvest survey has been conducted on moose permit holders since 1995. Therefore caution should be exercised when comparing 1996-1999 mandatory harvest report results with earlier telephone survey data. In addition 10 moose were harvested on 14 antlerless-only permits in Hunt Area 63A-2.

Mean antler spreads for these hunts were 35.33, 47 (n = 1), and 39.60 for Hunt Areas 50, 51, and 63A-1, respectively in 1999.

All known nonhunting mortalities for these units since 1990 are summarized in Table 19.

CLIMATIC CONDITIONS

After an unusually cool and wet spring in 1999, the summer and fall were warm and dry. Winter precipitation was below normal and temperatures were well above average. The spring of 2000 came early, and warm and dry conditions have persisted into early summer.

HABITAT CONDITIONS

Habitats within Area 5 are quite varied. In Unit 50 extensive willow bottoms provide good summer and winter habitat, and the moose population appears to be increasing and ranging throughout the coniferous zone in summer.

Habitat in Units 51 and 58 are limited to discontinuous willow riparian areas. Habitat in Unit 63 is almost entirely desert and is unsuitable for moose. Habitat in Unit 63A consists primarily of the Snake River riparian zone adjacent to private residential and agricultural lands.

DEPREDACTIONS, TRAPPING, AND TRANSPLANTING

During this reporting period, six moose-related complaints were received, all from Units 63 and 63A. Complaints involved concerns for public safety or damage to haystacks, standing crops, and ornamentals. Two moose were darted as a result of these complaints in Idaho Falls and were subsequently released in Unit 60 and Unit 60A. Two complaints involved moose eating ornamental trees/shrubs. These situations were resolved by hazing the offending animals out of the area. One haystack was paneled in Unit 63 to prevent a moose from eating stored hay. The final complaint involved a moose eating standing alfalfa in Unit 63A. A hunter was directed to this locale to address the situation.

MANAGEMENT IMPLICATIONS

A new hunt was initiated in Unit 50 in 1993 and in Unit 51 in 1999. The river bottom population in Unit 63A appears to be increasing and is causing depredation problems. Permit increases were implemented beginning in 1993, and the antlerless hunt will be continued.

Table 1. 1999 Season Structure for Controlled Moose Hunt Area 59 in the Upper Snake Region.

Hunt Area	Season		Open For
	Dates	Length	
59	8/30–11/23	86 days	Antlered only

Table 2. Summary of Moose Harvest and Drawing Odds by Hunt Area (Hunt Area 59^a), 1990-1999.

Hunt Area	Year	No. Permits	Harvest		Hunter Success	Days/Hunter	Total 1st Choice Applicants	Drawing Odds
			M	F				
59	1990	8	8	0	100	1.6	108	13.5:1
	1991	8	8	0	100	3.6	97	12.1:1
	1992	8	8	0	100	2.4	94	11.8:1
	1993	15	13	0	87	8.5	136	9.1:1
	1994	15	14	0	93	4.7	161	10.7:1
	1995	16	16	0	100	4.4	155	9.7:1
	1996 ^b	16	15	0	94	ND	117	7.3:1
	1997 ^b	16	14	0	88	ND	132	8.3:1
	1998 ^b	16	15	0	94	ND	152	9.5:1
1999 ^b	20	20	0	100	ND	172	8.6:1	
59A	1990	4	4	0	100	3.0	13	3.3:1
	1991	4	4	0	100	2.8	43	10.8:1
	1992	4	4	0	100	3.0	23	5.8:1

^a Hunt Areas 59 and 59A combined and renamed Hunt Area 59 in 1993.

^b Harvest estimates derived from telephone survey through 1995 and from mandatory harvest reports from 1996-1999.

Table 3. Summary of All Known Nonhunting Moose Mortalities in Units 59 and 59A.

Year	Unit	Mortality Agent					Total
		Indian Harvest	Illegal Kill	Road Kill	Natural	Unknown and Other	
1990	59	2	1	0	0	1	4
	59A	0	0	0	0	0	0
1991	59	1	0	0	0	0	1
	59A	0	0	0	1	1	2
1992	59	1	0	3	0	1	5
	59A	0	0	0	0	0	0
1993	59	0	0	0	0	1	1
	59A	0	1	0	0	0	1
1994	59	0	0	1	0	1	2
	59A	0	0	0	0	0	0
1995	59	1	0	0	0	0	1
	59A	0	0	0	0	0	0
1996	59	0	0	0	0	0	0
	59A	0	0	0	0	0	0
1997	59	0	0	0	0	0	0
	59A	0	0	0	0	0	0
1998	59	0	0	2	0	0	2
	59A	0	0	0	0	0	0
1999	59	0	0	0	0	0	0
	59A	0	0	0	0	0	0
		0	0	0	0	0	0

Table 4. 1999 Season Structure for Controlled Moose Hunt Areas 64-1, 64-2, 65, 67-1, and 67-2 in the Upper Snake Region.

Hunt Area	Season		
	Dates	Length	Open For
64-1	8/30–11/23	86 days	Antlered only
64-2	10/15–11/23	40 days	Antlerless only
65	8/30–11/23	86 days	Antlered only
67-1	8/30–11/23	86 days	Antlered only
67-2	8/30–11/23	86 days	Antlered only

Table 5. Summary of Moose Harvest and Drawing Odds by Hunt Area (Hunt Areas 64-1, 64-2, 65, 67-1, 67-2), 1990-1999.

Hunt Area	Year	No. Permits	Harvest		Hunter Success	Days/Hunter	Total 1st Choice Applicants	Drawing Odds
			M	F				
64 ^a	1990	15	13	2	100	4.3	121	8.1:1
	1991	8	8	0	100	3.3	124	15.5:1
	1992	8	8	0	100	3.6	81	10.1:1
64-1	1993	12	12	0	100	5.8	72	6.0:1
	1994	12	12	0	100	6.0	100	8.3:1
	1995	13	13	0	100	12.0	95	7.3:1
	1996 ^c	13	10	0	77	ND	101	7.8:1
	1997 ^c	14	11	0	79	ND	73	5.2:1
	1998 ^c	14	12	0	86	ND	84	6.0:1
	1999 ^c	18	15	0	83	ND	100	5.6:1
64-2 ^b	1993	5	1	4	100	2.0	2	1.0:1
	1994	5	0	5	100	2.5	15	3.0:1
	1995	5	0	5	100	3.3	10	2.0:1
	1996 ^c	5	0	4	80	ND	4	1.0:1
	1997 ^c	10	0	7	70	ND	11	1.1:1
	1998 ^c	10	0	5	50	ND	14	1.4:1
	1999 ^c	15	0	15	100	ND	28	1.9:1
65	1990	12	12	0	100	5.1	50	4.2:1
	1991	5	5	0	100	5.4	62	12.4:1
	1992	5	5	0	100	3.6	37	7.4:1
	1993	8	7	0	88	8.6	39	7.8:1
	1994	8	8	0	100	9.1	73	9.1:1
	1995	9	9	0	100	7.6	45	5.0:1
	1996 ^c	9	6	0	67	ND	51	5.7:1
	1997 ^c	12	10	0	83	ND	63	5.3:1
	1998 ^c	12	10	0	83	ND	38	3.2:1
	1999 ^c	16	10	0	63	ND	75	4.7:1
67-1	1990	4	4	0	100	5.3	11	2.8:1
	1991	4	3	1	100	1.7	69	17.3:1
	1992	4	4	0	100	1.0	25	6.3:1
	1993	6	6	0	100	1.7	46	7.7:1
	1994	6	5	0	83	5.2	34	5.7:1
	1995	7	7	0	100	2.0	32	4.6:1
	1996 ^c	7	5	0	71	ND	50	7.1:1
	1997 ^c	10	8	0	80	ND	47	4.7:1
	1998 ^c	10	8	0	80	ND	56	5.6:1
	1999 ^c	15	14	0	93	ND	30	2.0:1

Table 5. Summary of Moose Harvest and Drawing Odds by Hunt Area (Hunt Areas 64-1, 64-2, 65, 67-1, 67-2), 1990-1999 (Continued).

Hunt Area	Year	No. Permits	Harvest		Hunter Success	Days/Hunter	Total 1st Choice Applicants	Drawing Odds
			M	F				
67-2	1990	6	6	0	100	10.2	36	6.0:1
	1991	4	3	0	75	3.5	33	8.3:1
	1992	4	3	0	75	3.5	33	8.3:1
	1993	6	4	0	67	4.5	27	4.5:1
	1994	6	5	0	83	19.0	27	4.5:1
	1995	6	4	0	67	11.2	36	6.0:1
	1996 ^c	6	3	0	50	ND	48	8.0:1
	1997 ^c	10	6	0	60	ND	34	3.4:1
	1998 ^c	10	6	0	60	ND	37	3.7:1
	1999 ^c	15	10	0	67	ND	46	3.1:1

^a Hunt 64 was split into Hunt Areas 64, 65, and 67-1 in 1983.

^b Open for antlerless moose only.

^c Harvest estimates derived from telephone surveys through 1995 and from mandatory harvest reports from 1996-1999.

Table 6. Summary of All Known Nonhunting Moose Mortalities in Units 64, 65, and 67, 1990-1999.

Year	Unit	Mortality Agent					Total
		Indian Harvest	Illegal Kill	Road Kill	Natural	Unknown and Other	
1990	64	0	0	1	0	0	1
	65	0	0	0	0	0	0
	67	0	0	1	0	0	1
		0	0	2	0	0	2
1991	64	0	1	0	0	0	1
	65	0	0	0	0	0	0
	67	0	0	3	1	1	5
		0	1	3	1	1	6
1992	64	0	2	0	0	1	3
	65	0	1	3	0	0	4
	67	0	3	2	0	1	6
		0	6	5	0	2	13
1993	64	0	1	0	0	0	1
	65	0	2	0	0	0	2
	67	0	0	0	0	0	0
		0	3	0	0	0	3
1994	64	0	6	1	0	2	9
	65	0	0	0	0	0	0
	67	0	1	2	1	0	4
		0	7	3	1	2	13
1995	64	0	0	0	0	2	2
	65	0	0	0	0	0	0
	67	0	0	2	0	0	2
		0	0	2	0	2	4
1996	64	0	0	4	0	0	4
	65	0	0	0	0	1	1
	67	0	0	3	0	0	3
		0	0	7	0	1	8
1997	64	0	0	1	1	1	3
	65	0	0	3	0	0	3
	67	0	0	2	0	1	3
		0	0	6	1	2	9
1998	64	0	0	2	0	0	2
	65	0	0	4	0	1	5
	67	0	0	3	0	2	5
		0	0	9	0	3	12

Table 6. Summary of All Known Nonhunting Moose Mortalities in Units 64, 65, and 67, 1990-1999 (Continued).

Year	Unit	Mortality Agent					Total
		Indian Harvest	Illegal Kill	Road Kill	Natural	Unknown and Other	
1999	64	0	0	0	0	1	1
	65	0	0	1	0	0	1
	67	0	1	0	0	0	1
		<u>0</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>1</u>	<u>3</u>

Table 7. 1999 Season Structure for Controlled Moose Hunt Areas 66-1, 66-2, 66-3, 69-1, 69-2, and 69-3 in the Upper Snake Region.

Hunt Area	Season		
	Dates	Length	Open For
66-1	8/30–11/23	86 days	Antlered only
66-2	8/30–11/23	86 days	Antlered only
66-3	10/15–11/23	40 days	Antlerless only
69-1	8/30–11/23	86 days	Antlered only
69-2	8/30–11/23	86 days	Antlered only
69-3	8/30–11/23	86 days	Antlered only

Table 8. Summary of Moose Harvest and Drawing Odds by Hunt Area (Hunt Areas 66-1, 66-2, 66-3, 69-1, 69-2, 69-3, 69-4), 1990-1999.

Hunt Area	Year	No. Permits	Harvest		Hunter Success	Days/Hunter	Total 1st Choice Applicants	Drawing Odds
			M	F				
66-1	1990	6	6	0	100	3.5	36	6.0:1
	1991	6	6	0	100	7.2	68	11.3:1
	1992	6	6	0	100	3.4	44	7.3:1
	1993	10	9	0	90	3.3	56	5.6:1
	1994	10	10	0	100	5.7	61	6.1:1
	1995	12	9	0	75	7.6	89	7.4:1
	1996 ^b	12	10	0	83	ND	58	4.8:1
	1997 ^b	14	12	0	86	ND	79	5.6:1
	1998 ^b	14	13	0	93	ND	64	4.6:1
	1999 ^b	20	17	0	85	ND	110	5.5:1
66-2	1990	6	6	0	100	4.2	62	10.3:1
	1991	6	6	0	100	5.8	93	15.5:1
	1992	6	6	0	100	7.6	68	11.3:1
	1993	10	9	0	90	14.1	78	7.8:1
	1994	10	8	0	80	4.9	72	7.2:1
	1995	12	12	0	100	4.6	92	7.7:1
	1996 ^b	12	10	0	83	ND	84	7.0:1
	1997 ^b	14	13	0	93	ND	67	4.8:1
	1998 ^b	14	13	0	93	ND	72	5.1:1
	1999 ^b	20	17	0	85	ND	102	5.1:1
66-3 ^c	1999 ^b	20	0	18	90	ND	43	2.2:1
69-1	1990	10	9	0	90	3.8	118	11.8:1
	1991	10	9	0	90	4.2	108	10.8:1
	1992	10	10	0	100	2.9	106	10.6:1
	1993	10	10	0	100	8.9	90	9.0:1
	1994	10	9	0	90	4.3	73	7.3:1
	1995	11	11	0	100	5.8	108	9.8:1
	1996 ^b	11	11	0	100	ND	117	10.6:1
	1997 ^b	13	13	0	100	ND	155	11.9:1
	1998 ^b	13	13	0	100	ND	139	10.7:1
	1999 ^b	20	17	0	85	ND	223	11.2:1
69-2	1990	6	6	0	100	7.5	51	8.5:1
	1991	6	6	0	100	8.8	82	13.7:1
	1992	6	6	0	100	4.8	48	8.0:1
	1993	10	10	0	100	8.6	71	7.1:1
	1994	10	10	0	100	4.5	93	9.3:1
	1995	11	11	0	100	2.8	90	8.2:1

Table 8. Summary of Moose Harvest and Drawing Odds by Hunt Area (Hunt Areas 66-1, 66-2, 66-3, 69-1, 69-2, 69-3, 69-4), 1990-1999 (Continued).

Hunt Area	Year	No. Permits	Harvest		Hunter Success	Days/ Hunter	Total 1st Choice Applicants	Drawing Odds
			M	F				
	1996 ^b	11	10	0	91	ND	106	9.6:1
	1997 ^b	14	14	0	100	ND	129	9.2:1
	1998 ^b	14	11	0	79	ND	148	10.6:1
	1999 ^b	20	20	0	100	ND	159	8.0:1
69-3	1990	6	6	0	100	5.2	30	5.0:1
	1991	6	6	0	100	13.2	32	5.3:1
	1992	6	5	0	83	4.0	41	6.8:1
	1993	6	6	0	100	8.4	19	3.2:1
	1994	6	6	0	100	2.7	58	9.7:1
	1995	7	7	0	100	9.7	39	5.6:1
	1996 ^b	7	7	0	100	ND	31	4.4:1
	1997 ^b	7	6	0	86	ND	43	6.1:1
	1998 ^b	7	7	0	100	ND	21	3.0:1
	1999 ^b	10	7	0	70	ND	58	5.8:1
69-4 ^a	1993	10	0	10	100	4.0	18	1.8:1
	1994	10	0	9	90	1.9	38	3.8:1
	1995	10	0	10	100	6.3	32	3.2:1
	1996 ^b	10	0	8	80	ND	35	3.5:1
	1997 ^b	15	0	13	87	ND	45	3.0:1
	1998 ^b	15	0	13	87	ND	41	2.7:1

^a Open for antlerless moose only.

^b Harvest estimates derived from telephone survey through 1995 and from mandatory harvest reports from 1996-1999.

^c Unit 66 added to old Hunt Area 69-4 and renamed 66-3 in 1999.

Table 9. Summary of All Known Nonhunting Moose Mortalities in Units 66 and 69.

Year	Unit	Mortality Agent					Total
		Indian Harvest	Illegal Kill	Road Kill	Natural	Unknown and Other	
1990	66	0	2	0	0	0	2
	69	0	0	0	0	3	3
		0	2	0	0	3	5
1991	66	0	0	0	0	0	0
	69	0	3	0	0	4	7
		0	3	0	0	4	7
1992	66	0	1	0	0	1	2
	69	0	0	0	0	0	0
		0	1	0	0	1	2
1993	66	0	1	0	0	0	1
	69	0	1	0	0	0	1
		0	2	0	0	0	2
1994	66	0	0	0	0	0	0
	69	0	1	2	0	0	3
		0	1	2	0	0	3
1995	66	0	2	1	0	0	3
	69	0	1	1	1	0	3
		0	3	2	1	0	6
1996	66	0	1	0	0	0	1
	69	0	0	0	0	1	1
		0	1	0	0	1	2
1997	66	0	3	0	0	0	3
	69	0	1	0	2	0	3
		0	4	0	2	0	6
1998	66	0	0	0	0	0	0
	69	0	1	0	0	0	1
		0	1	0	0	0	1
1999	66	2	1	1	1	0	5
	69	0	0	3	1	0	4
		2	1	4	2	0	9

Table 10. 1999 Season Structure for Controlled Moose Hunt Areas 60, 60A-1, 60A-2, 61-1, 61-2, 61-3, 62, 62A in the Upper Snake Region.

Hunt Area	Season		Open For
	Dates	Length	
60	8/30–11/23	86 days	Antlered only
60A-1	8/30–11/23	86 days	Antlered only
60A-2	10/15–11/23	40 days	Antlerless only
61-1	8/30–11/23	86 days	Antlered only
61-2	8/30–11/23	86 days	Antlered only
61-3	8/30–11/23	86 days	Antlered only
62	8/30–11/23	86 days	Antlered only
62A	8/30–11/23	86 days	Antlered only

Table 11. Aerial Survey of Moose in Hunt Area 62.

Inclusive Location	1990 to 1991		1991 to 1992	
	Bulls:Cows:Calves	Total	Bulls:Cows:Calves	Total
Middle to North Leigh Cr	67:100:83	15	---	0
Wiggleton Hollow to Johns Creek	56:100:56	19	---	7
North Fork Badger Creek to Bitch Creek	72:100:56	41	---	6
Bitch Creek to Conant Cr	7:100:68	49	56:100:67	20
Conant Creek to Fall River	---	14	27:100:55	20
Fall River Ridge to Cave Falls Road	36:100:43	80	---	28
Total		218		81

Table 12. Aerial Survey of Moose in Hunt Areas 61 (Eastern portion), 62, and 62A.

Inclusive Location	1990 to 1991		1991 to 1992	
	Bulls:Cows:Calves	Total	Bulls:Cows:Calves	Total
Humphrey to Spencer	73:100:55	25	---	14
Spencer to Rattlesnake Cr	25:100:75	24	---	23
Corral Creek to Spring Cr	5:100:47	29	---	7
West Camas Drainage	---	14	---	29
East Camas Drainage	---	9	---	4
Total		101		77

Table 13. Aerial Survey of Moose in Hunt Area 61 (Western portion).

Inclusive Location	1990 to 1991		1991 to 1992	
	Bulls:Cows:Calves	Total	Bulls:Cows:Calves	Total
Cave Falls Road to Fish Creek Road	---	10	56:100:22	16
Fish Creek to Moose Creek	---	24	---	19
Warm River Hatchery to Survey Draw	17:100:67	11	---	5
Buffalo River	---	2	---	2
Macks Inn / Big Springs Henry's Lake Flat	42:100:52	59	---	19
Henry's Lake	22:100:56	16	---	19
Henry's Fork to Hatchery Butte west of Warm River	32:100:60	102	---	14
Total		224		94

Table 14. Aerial Survey of Moose in Hunt Areas 60 and 60A.

Inclusive Location	1990 to 1991		1991 to 1992	
	Bulls:Cows:Calves	Total	Bulls:Cows:Calves	Total
Big Bend Ridge	14:100:105	88	22:100:122	68
Desert, east of Sand Creek	---	6	---	8
Desert, Red Road to Sand Creek Road	100:100:100	85 ^a	65:100:41	50
Junipers and Hook of Sands	118:100:44	103 ^a	33:100:67	18
Chokecherry Ridge and Second Sands	69:100:45	63 ^a	72:100:36	48
Total		345 ^a		192

^a Moose counted in conjunction with helicopter deer survey, December 18, 1988.

Table 15. Summary of Moose Harvest and Drawing Odds by Hunt Area (Hunt Areas 60, 60A-1, 60A-2, 61-1, 61-2, 61-3, 62, 62A), 1990-1999.

Hunt Area	Year	No. Permits	Harvest		Hunter Success	Days/Hunter	Total 1st Choice Applicants	Drawing Odds
			M	F				
60	1990	15	15	0	100	6.1	134	8.9:1
	1991	10	10	0	100	6.1	182	18.2:1
	1992	10	9	1	100	2.3	160	16.0:1
	1993	15	14	0	93	3.8	82	5.5:1
	1994	15	15	0	100	3.3	138	9.2:1
	1995	16	16	0	100	5.4	131	8.2:1
	1996 ^e	16	14	0	88	ND	143	8.9:1
	1997 ^e	16	13	0	81	ND	163	10.2:1
	1998 ^e	16	15	0	94	ND	178	11.1:1
	1999 ^e	24	22	0	92	ND	223	9.3:1
60A-1	1991	6	5	0	83	36.0	29	4.8:1
	1992	6	6	0	100	3.4	17	2.8:1
	1993	6	6	0	100	6.8	37	6.2:1
	1994	6	6	0	100	3.8	29	4.8:1
	1995	6	6	0	100	1.5	29	4.8:1
	1996 ^e	6	6	0	100	ND	28	4.7:1
	1997 ^e	6	5	0	83	ND	28	4.7:1
	1998 ^e	6	6	0	100	ND	35	5.8:1
	1999 ^e	6	6	0	100	ND	31	5.2:1
	60A-2	1991	10	1	9	100	2.4	30
1992		10	0	9	90	1.9	27	2.7:1
1993		10	0	8	80	2.6	7	1.0:1
1994		10	0	10	100	2.6	18	1.8:1
1995		10	0	8	80	2.5	6	1.0:1
1996 ^e		10	0	7	70	ND	17	1.7:1
1997 ^e		10	0	6	60	ND	10	1.0:1
1998 ^e		10	0	2	20	ND	11	1.1:1
1999 ^e		10	0	3	30	ND	2	1.0:1
61-1		1990	12	12	0	100	5.2	148
	1991	8	8	0	100	9.6	162	20.3:1
	1992	8	7	1	100	2.7	117	14.6:1
	1993	15	15	0	100	5.6	102	6.8:1
	1994	15	15	0	100	3.1	141	9.4:1
	1995	16	15	0	100	5.5	150	9.4:1
	1996 ^e	16	14	0	88	ND	132	8.3:1
	1997 ^e	20	20	0	100	ND	155	7.8:1
	1998 ^e	20	18	0	90	ND	130	6.5:1
	1999 ^e	25	21	0	84	ND	199	8.0:1

Table 15. Summary of Moose Harvest and Drawing Odds by Hunt Area (Hunt Areas 60, 60A-1, 60A-2, 61-1, 61-2, 61-3, 62, 62A), 1989-1998 (Continued).

Hunt Area	Year	No. Permits	Harvest		Hunter Success	Days/ Hunter	Total 1st Choice Applicants	Drawing Odds
			M	F				
61-2	1990	8	6	0	75	6.6	46	5.8:1
	1991	4	4	0	100	2.7	77	19.3:1
	1992	4	4	0	100	3.0	47	11.8:1
	1993	8	8	0	100	9.8	29	3.6:1
	1994	8	7	0	88	4.9	65	8.1:1
	1995	9	8	0	89	5.1	68	7.6:1
	1996 ^c	9	9	0	100	ND	60	6.6:1
	1997 ^c	10	8	0	80	ND	61	6.1:1
	1998 ^c	10	7	0	70	ND	64	6.4:1
	1999 ^c	15	14	0	93	ND	79	5.3:1
61-3 ^a	1990	2	2	0	100	20.5	16	8.0:1
	1991	4	4	0	100	6.8	35	8.8:1
	1992	4	4	0	100	4.0	44	11.0:1
	1993	10	10	0	100	4.2	62	6.2:1
	1994	10	10	0	100	4.6	91	9.1:1
	1995	11	11	0	100	6.0	105	9.5:1
	1996 ^c	11	11	0	100	ND	90	8.2:1
	1997 ^c	15	13	0	87	ND	111	7.4:1
	1998 ^c	15	15	0	100	ND	96	6.4:1
	1999 ^c	20	20	0	100	ND	120	6.0:1
62-1	1990	5	5	0	100	2.8	34	6.8:1
	1991	2	2	0	100	3.0	40	20.0:1
	1992	2	2	0	100	1.5	20	10.1:1
62-2	1990	5	5	0	100	6.6	43	8.6:1
	1991	2	2	0	100	7.5	32	16.0:1
	1992	2	2	0	100	3.0	16	8.0:1
62 ^c	1993	10	10	0	100	9.5	83	8.3:1
	1994	10	10	0	100	8.2	89	8.9:1
	1995	11	10	0	91	4.9	123	11.2:1
	1996 ^c	11	7	0	64	ND	79	7.2:1
	1997 ^c	12	10	0	83	ND	103	8.6:1
	1998 ^c	12	10	0	83	ND	74	6.2:1
	1999 ^c	18	16	0	89	ND	115	6.4:1
62A-1 ^b	1990	5	5	0	100	4.4	45	9.0:1
	1991	2	2	0	100	1.0	19	9.5:1
	1992	2	2	0	100	1.5	15	7.5:1

Table 15. Summary of Moose Harvest and Drawing Odds by Hunt Area (Hunt Areas 60, 60A-1, 60A-2, 61-1, 61-2, 61-3, 62, 62A), 1989-1998 (Continued).

Hunt Area	Year	No. Permits	Harvest		Hunter Success	Days/Hunter	Total 1st Choice Applicants	Drawing Odds
			M	F				
62A-2 ^b	1990	5	5	0	100	5.4	58	11.6:1
	1991	3	3	0	100	0.0	73	24.3:1
	1992	3	3	0	100	1.7	38	12.7:1
62A ^d	1993	10	9	0	90	9.5	106	10.6:1
	1994	10	10	0	100	1.7	114	11.4:1
	1995	11	11	0	100	5.0	119	10.8:1
	1996 ^e	11	9	0	82	ND	129	11.7:1
	1997 ^e	12	12	0	100	ND	142	11.8:1
	1998 ^e	12	11	0	92	ND	104	8.7:1
	1999 ^e	18	15	0	83	ND	160	8.9:1

^a Hunt 61-3 was created from a portion of Area 61-2.

^b Follows 1983 number designation. No boundary changes occurred, but hunt numbers were reversed after season closures.

^c 62-1 and 62-2 combined and renamed 62.

^d 62A-1 and 62A-2 combined and renamed 62A.

^e Harvest estimates derived from telephone survey through 1995 and from mandatory harvest reports from 1996-1999.

Table 16. Summary of All Known Nonhunting Moose Mortalities in Units 60, 60A, 61, 62, and 62A.

Year	Unit	Mortality Agent					Total
		Indian Harvest	Illegal Kill	Road Kill	Natural	Unknown and Other	
1990	60	0	0	2	0	2	4
	60A	0	0	1	3	4	8
	61	1	1	7	0	2	11
	62	0	0	2	0	0	2
	62A	0	0	1	0	0	1
		<u>1</u>	<u>1</u>	<u>13</u>	<u>3</u>	<u>8</u>	<u>26</u>
1991	60	0	0	1	0	3	4
	60A	0	0	2	3	4	9
	61	0	2	6	0	4	12
	62	0	1	3	0	0	4
	62A	0	0	1	0	0	1
		<u>0</u>	<u>3</u>	<u>13</u>	<u>3</u>	<u>11</u>	<u>30</u>
1992	60	0	2	8	0	1	11
	60A	0	1	4	0	5	10
	61	1	0	14	0	1	16
	62	0	0	0	0	3	3
	62A	1	0	3	0	0	4
		<u>2</u>	<u>3</u>	<u>29</u>	<u>0</u>	<u>10</u>	<u>44</u>
1993	60	0	0	0	0	1	1
	60A	0	0	0	0	0	0
	61	1	1	3	0	0	5
	62	0	0	0	0	0	0
	62A	0	0	1	0	0	1
		<u>1</u>	<u>1</u>	<u>4</u>	<u>0</u>	<u>1</u>	<u>7</u>
1994	60	0	0	5	0	4	9
	60A	0	1	2	0	0	3
	61	0	0	19	1	1	21
	62	0	0	2	0	0	2
	62A	0	0	2	0	2	4
		<u>0</u>	<u>1</u>	<u>30</u>	<u>1</u>	<u>7</u>	<u>39</u>
1995	60	0	0	2	0	0	2
	60A	0	0	1	0	2	3
	61	0	0	6	1	2	9
	62	0	0	2	0	0	2
	62A	0	0	0	0	1	1
		<u>0</u>	<u>0</u>	<u>11</u>	<u>1</u>	<u>5</u>	<u>17</u>

Table 16. Summary of All Known Nonhunting Moose Mortalities in Units 60, 60A, 61, 62, and 62A.

Year	Unit	Mortality Agent					Total
		Indian Harvest	Illegal Kill	Road Kill	Natural	Unknown and Other	
1996	60	0	0	4	0	3	7
	60A	1	0	0	0	1	2
	61	1	0	7	0	5	13
	62	0	0	4	0	2	6
	62A	0	0	4	0	2	6
		<u>2</u>	<u>0</u>	<u>19</u>	<u>0</u>	<u>13</u>	<u>34</u>
1997	60	0	0	8	0	0	8
	60A	0	0	0	1	0	1
	61	0	1	7	3	2	13
	62	0	0	4	0	1	5
	62A	1	1	2	2	0	6
		<u>1</u>	<u>2</u>	<u>21</u>	<u>6</u>	<u>3</u>	<u>33</u>
1998	60	0	0	1	0	0	1
	60A	0	1	1	0	0	2
	61	0	0	5	0	4	9
	62	0	0	3	1	0	4
	62A	0	0	1	0	0	1
		<u>0</u>	<u>1</u>	<u>11</u>	<u>1</u>	<u>4</u>	<u>17</u>
1999	60	0	0	6	0	0	6
	60A	0	0	1	0	0	1
	61	0	0	7	1	1	9
	62	0	1	2	0	0	3
	62A	0	1	1	1	1	4
		<u>0</u>	<u>2</u>	<u>17</u>	<u>2</u>	<u>2</u>	<u>23</u>

Table 17. 1998 Season Structure for controlled Moose Hunt Areas 50, 51, 63A-1, and 63A-2 in the Upper Snake Region.

Hunt Area	Season		
	Dates	Length	Open For
50	8/30–11/23	86 days	Antlered only
51	8/30–11/23	86 days	Antlered only
63A-1	8/30–11/23	86 days	Antlered only
63A-2	10/15–11/23	40 days	Antlerless only

Table 18. Summary of Moose Harvest and Drawing Odds by Hunt Area (Hunt Areas 50, 63A-1, and 63A-2), 1990-1999.

Hunt Area	Year	No. Permits	Harvest		Hunter Success	Days/Hunter	Total 1st Choice Applicants	Drawing Odds
			M	F				
50	1993	2	2	0	100	10.5	13	6.5:1
	1994	2	2	0	100	3.0	20	10.0:1
	1995	2	2	0	100	5.5	26	13.0:1
	1996 ^b	2	2	0	100	ND	20	10.0:1
	1997 ^b	4	3	0	75	ND	38	9.5:1
	1998 ^b	4	3	0	75	ND	41	10.3:1
	1999 ^b	6	4	0	67	ND	60	10.0:1
51	1999 ^b	2	1	0	50	ND	22	11.0:1
63A	1990	8	8	0	100	4.8	44	5.5:1
63A-1	1991	5	5	0	100	6.5	43	8.6:1
	1992	5	5	0	100	5.7	47	9.4:1
	1993	10	9	0	90	13.4	42	4.2:1
	1994	10	9	0	90	4.5	45	4.5:1
	1995	10	9	0	90	4.8	68	6.8:1
	1996 ^b	10	8	0	80	ND	36	3.6:1
	1997 ^b	10	10	0	100	ND	66	6.6:1
	1998 ^b	10	6	0	60	ND	49	4.9:1
	1999 ^b	12	12	0	100	ND	68	5.7:1
63A-2 ^a	1991	5	1	4	100	2.7	21	4.2:1
	1992	5	0	5	100	2.6	14	2.8:1
	1993	10	0	8	80	6.5	8	1.0:1
	1994	10	0	9	90	5.9	9	1.0:1
	1995	10	0	8	80	1.6	20	2.0:1
	1996 ^b	10	0	9	90	ND	15	1.5:1
	1997 ^b	12	0	9	75	ND	12	1.0:1
	1998 ^b	12	0	8	67	ND	6	1.0:1
	1999 ^b	14	0	10	71	ND	10	1.0:1

^a Open for antlerless moose only.

^b Harvest estimates derived from telephone survey through 1995 and from mandatory harvest reports from 1996-1999.

Table 19. Summary of All Known Nonhunting Moose Mortalities in Units 50 and 63A.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Unknown and Other	
1990	2	1	1	0	1	5
1991	0	1	0	0	1	2
1992	0	0	1	0	1	2
1993	0	2	2	0	1	5
1994	0	1	1	3	0	5
1995	1	0	0	0	0	1
1996	0	0	0	0	0	0
1997	0	0	1	0	0	1
1998	0	0	4	0	0	4
1999	0	0	2	0	0	2

**PROGRESS REPORT
SURVEYS AND INVENTORY**

STATE:	<u>Idaho</u>	JOB TITLE:	<u>Moose Surveys and Inventories</u>
PROJECT:	<u>W-170-R-24</u>		
SUBPROJECT:	<u>7</u>	STUDY NAME:	<u>Big Game Population Status, Trends, Utilization, and Associated Habitat</u>
STUDY:	<u>I</u>		
JOB:	<u>6</u>		<u>Studies</u>
PERIOD COVERED:	<u>July 1, 1999 to June 30, 2000</u>		

MOOSE - SALMON REGION

ABSTRACT

Because of increasing reports of moose sightings and extensive signs of moose activity, controlled Hunt 21 was initiated in 1990, Hunt 29 in 1991, and Hunt 30 in 1993. Three additional permits were offered in Hunts 21 and 29 in 1995 and two additional permits in 1999. Hunt 30 was incorporated into Hunt 29 in 1999. During 1999, 13 of 14 permittees were successful in harvesting a moose.

UNITS 21, 21A, 29, 30, 30A, AND 37A

CONTROLLED HUNT AREAS 21, 29

BACKGROUND

Habitats in these units range from riparian river bottoms to sagebrush grasslands on rolling foothills up through ponderosa pine and Douglas-fir forests to lodgepole pine and spruce-fir forests at higher elevations. Willow shrub communities usually associated with moose habitat are not common. Portions of these units contain extensive cliff and rock talus areas at both low and high elevations. Topography is moderately to very rugged. Units 21 and 21A are in one of the higher precipitation zones in the Salmon Region, creating productive commercial forest lands. As a consequence timber harvest is a dominant activity in at least the North Fork Salmon River drainage. Logging roads are common.

Units 21, 21A, 30, and 30A border areas in Montana where moose are common. Migrants from Montana may well have formed the initial nucleus for the Idaho population. Cross-border movements are no doubt common in this area. No information exists on historical moose numbers other than a rise in moose sightings in recent years, primarily in the North Fork Salmon River drainage. As a result Hunt 21 was initiated in 1990 with three permits (Table 61). A similar increase in moose sightings resulted in the initiation of Hunt 29 in 1991 and Hunt 30 in 1993.

POPULATION SURVEYS

Because of the dense cover, low moose densities, and solitary habits of moose, formal population surveys are ineffective in this area.

HARVEST CHARACTERISTICS

Telephone Survey

Of 95 permits offered since 1990, 88 hunters (93%) have taken a moose (Table 2).

Mandatory Check

All successful moose hunters are required to check their antlers with the Department of Fish and Game. The beam spread on moose taken from these hunts during 1998 ranged from 24 to 43 inches with an average spread of 37 inches.

Check Stations

No check stations are operated specifically to check moose hunters.

Nonhunting Mortalities

One yearling bull died of unknown causes and one yearling bull was killed by a vehicle (Tables 62-64).

CLIMATIC CONDITIONS

Summer 1999 was dry. The vegetation cured out early in the growing season. However, the total snowpack was above average, keeping the streamflows high throughout the summer. Winter temperatures were mild, seldom dropping below zero Fahrenheit. Animals therefore entered the winter in average body condition, then encountered a mild winter, which should have produced excellent overwinter survival.

HABITAT CONDITIONS

The intensive logging operations in the primary moose range of Units 21 and 21A have generally enhanced moose habitat by encouraging forb and shrub production in cutover areas. However, this could eventually be counterbalanced by the negative effects of increased road access and loss of mature, densely-canopied forest stands used by moose for winter cover.

TRAPPING AND TRANSPLANTING

No moose trapping or transplanting operations were conducted in the Salmon Region during 1999 (Table 6).

MANAGEMENT IMPLICATIONS

Intensive population or habitat data will not be available for this area in the foreseeable future. Management will have to be based on moose sighting reports, field observations of moose activity, and data from moose harvest and miscellaneous mortalities.

Opportunities exist to expand moose populations in Units 36 and 36B via further trapping and transplanting.

Table 1. 1999 Season Structure for controlled Moose Hunts in the Salmon Region.

Hunt No.(s)	Season		Open For
	Dates	Length	
21	8/30-11/23	86 days	Antlered only
29	8/30-11/23	86 days	Antlered only

Table 2. Summary of Moose Harvest and Drawing Odds by Hunt Area.

Area	Year	No. Permits	Harvest		Hunter Success	Days/Hunter	First Choice Applicants	Total Drawing Odds
			M	F				
21	1990	3	2	0	67	11.5	12	1: 4.0
	1991	3	3	0	100	9.3	11	1: 3.7
	1992	3	3	0	100	5.3	16	1: 5.3
	1993	3	3	0	100	12.5	26	1: 8.7
	1994	3	2	0	67	7.0	10	1: 3.3
	1995	4	3	0	75	18.0	30	1: 7.5
	1996	4	4	0	100	8.5	22	1: 5.5
	1997	4	4	0	100	6.0	17	1: 4.2
	1998	4	4	0	100	4.5	18	1: 4.5
	1999	4	4	0	100	17.0	21	1: 5.3
29	1991	3	3	0	100	0.0	27	1: 9.0
	1992	3	3	0	100	9.7	16	1: 5.3
	1993	3	3	0	100	21.3	18	1: 6.0
	1994	3	3	0	100	2.0	30	1:10.0
	1995	5	4	0	80	4.5	62	1:12.4
	1996	5	5	0	100	7.4	41	1: 8.2
	1997	5	5	0	100	6.6	45	1: 9.0
	1998	5	4	0	80	--	44	1: 8.8
	1999	10	9	0	90	4.0	103	1: 10.3
	30	1993	3	3	0	100	6.0	10
1994		3	3	0	100	6.0	14	1: 4.7
1995		3	3	0	100	2.0	31	1:10.3
1996		3	2	0	67	--	19	1: 6.3
1997		3	3	0	100	3.0	27	1: 9.0
1998		3	3	0	100	8.3	30	1: 10
1999 (combined with Hunt 29 in 1999)						0.0	0	0

Table 3. Summary of All Known Moose Mortalities in Units 21 and 21A.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1981-90	No recorded mortalities					
1990-91	2	0	0	0	0	2
1991-92	3	0	0	0	0	3
1992-93	3	0	1	0	0	4
1993-94	0	1	0	0	0	1
1994-95	0	0	1	0	0	1
1995-96	0	0	0	1	0	1
1996-97	0	0	0	0	0	0
1997-98	0	0	0	1	0	1
1998-99	0	0	0	0	0	0
1999-00	0	0	0	0	0	0

Table 4. Summary of All Known Moose Mortalities in Units 29 and 37A.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1981-90	0	0	0	1	1	2
1990-91	0	0	0	1	0	1
1991-92	3	0	0	0	0	3
1992-93	3	0	0	0	0	3
1993-94	0	0	0	1	0	1
1994-95	0	1	0	0	0	1
1995-96	0	0	0	0	0	0
1996-97	0	0	0	0	0	0
1997-98	0	1	0	0	0	1
1998-99	0	0	0	0	0	0
1999-00	0	0	0	0	0	0

Table 5. Summary of all known moose mortalities in Units 30 and 30A.

Year	Mortality Agent					Total
	Indian Harvest	Illegal Kill	Road Kill	Natural	Other	
1990-91	0	0	1	0	0	1
1991-92	0	0	0	0	0	0
1992-93	0	1	0	0	0	1
1993-94	0	0	0	0	0	0
1994-95	0	0	0	1	0	1
1995-96	0	0	0	1	0	1
1996-97	0	0	0	0	2	2
1997-98	0	0	1	0	0	1
1998-99	0	1	0	0	2	3
1999-00	0	0	1	0	1	2

Table 6. Summary of Moose Transplants in the Salmon Region.

Date	Capture Site	Release Site	Adults		Calves		Total
			M	F	M	F	
02/93	Units 60, 60A, 62	36-Valley Creek	1	2	0	0	3
	Misc. Locations	36-Decker Flat	0	2	1	0	3
		36-Gold Creek	0	2	0	0	2

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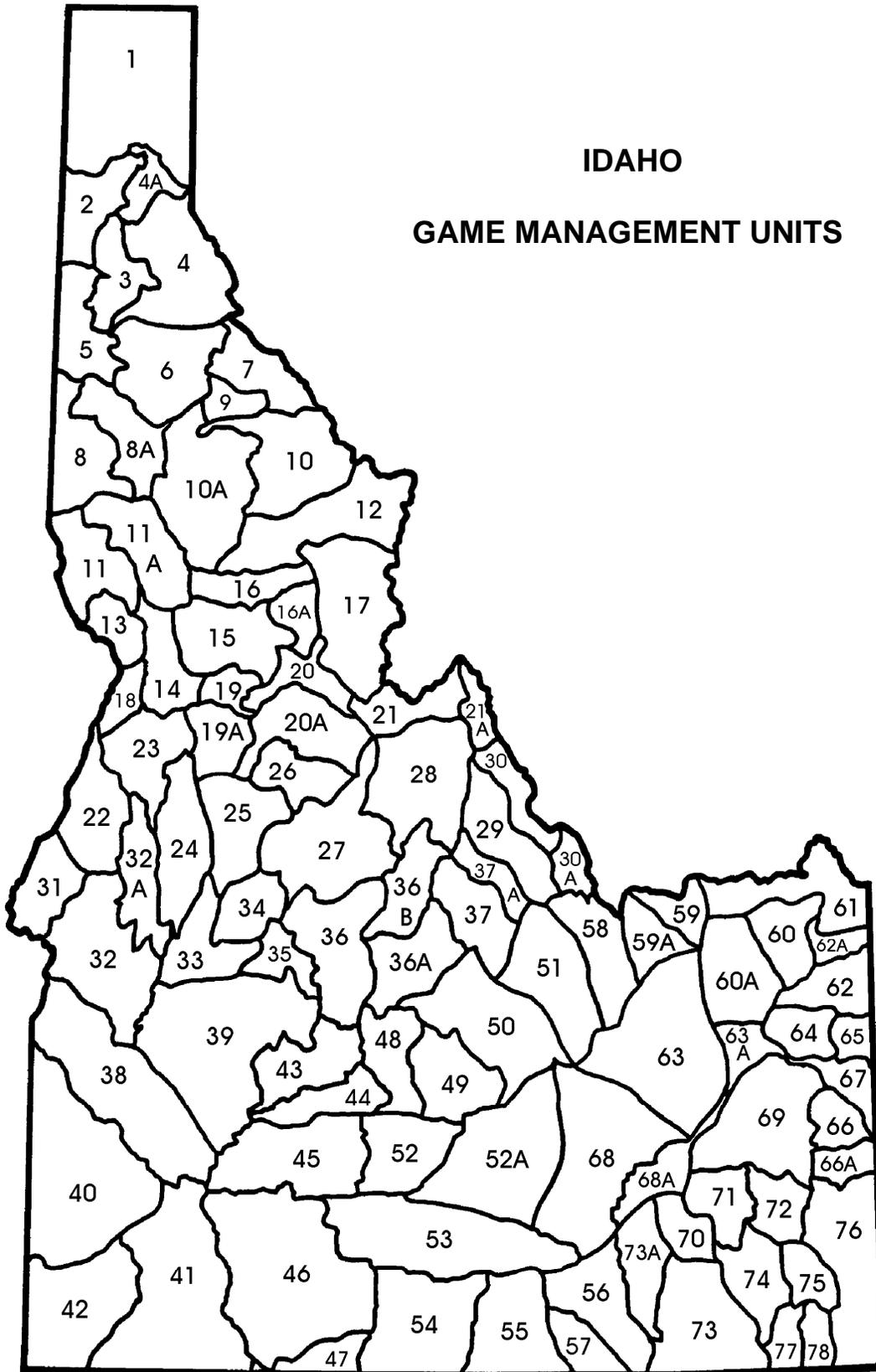
Approved by: IDAHO DEPARTMENT OF FISH AND GAME

Wayne Melquist
Wayne Melquist
State Nongame Wildlife Manager
Federal Aid Coordinator

Tom Parker
Tom Parker, Acting Chief
Bureau of Wildlife

IDAHO

GAME MANAGEMENT UNITS



FEDERAL AID IN WILDLIFE RESTORATION

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

