



2009 Forest Grouse Parts Collection Summary



Female Sooty (Blue) Grouse and Chick
Photo by Brian Wolfer

Upland Game Bird Program
Oregon Department of Fish and Wildlife
3406 Cherry Ave NE
Salem, OR 97303
503-947-6324
Email: david.a.budeau@state.or.us

INTRODUCTION

Since 1980, wings and tails of sooty (*Dendragapus fuliginosus*), dusky (*D. obscurus*) ruffed (*Bonasa umbellus*), and spruce grouse (*Falcapennis canadensis*) have been collected from hunters in Wallowa County. Hunting regulations combine sooty and dusky grouse as one species “blue grouse,” and are referred to as such in this report. In 1984, collections for forest grouse were expanded to other counties in northeastern Oregon and portions of southwestern Oregon. Since that time the effort has increased to nearly statewide participation. During the 2009/10 season, wings and tails were obtained from 28 of the 36 counties in Oregon where forest grouse were hunted (Table 1). Wing-bees for the 2009/10 collection effort were held at Ladd Marsh Wildlife Area on 20 January 2010 and at the SW Region Office in Roseburg on 3 March 2010. A total of 1,409 wings and tails were examined; 86% more than in 2008/09. The following results were arranged by species (blue, ruffed, and spruce grouse). Additionally, long-term results are provided for blue and ruffed grouse collections in Wallowa County.

USE OF INFORMATION

Data from wings can be used by biologists to better understand the distribution and timing of grouse harvest (Figures 1 & 2) in their areas, the relative proportions of harvest among species, the sex and age structure of the population, and the chronology of breeding activity (Figures 3 - 5). Distribution and timing of harvest have relevance to obtaining information about grouse populations, season structure, and to hunter participation for coordination of law enforcement activities. Sex and age data reveal the reproductive performance in a population (productivity), and in conjunction with abundance information, provide insight into population trends. Estimated hatch dates can be used to understand spatial variation in timing of reproduction and to assist in

developing appropriate census techniques. For example, if hatching times vary substantially among regions, the timing of summer censuses could be adjusted to maximize the probability of observing birds of various age classes. Harvest vulnerability may vary by age and gender, and if so, harvest statistics on grouse may not be representative of sex and age ratios of a population. Presumably, the aforementioned biases would be constant for hunter-harvested birds among years, thus providing an index of the various parameters for the population.

METHODS

Wildlife districts collect grouse wings and tails from hunters by placing “wing barrels” in locations where grouse hunters are likely to encounter them. Paper bags, printed with instructions, are placed at the barrels which instruct hunters to remove one wing and the tail from each grouse they kill and place it in a single bag. Participants are asked to record the date, county and general location of the kill. Barrels are checked periodically throughout the season and any bags not dated or labeled by hunters are labeled with the barrel location and date of collection. During the 2009 season 46 barrels were maintained by the following districts; The Dalles (10), John Day (10), Wallowa (8), Union (8), Baker (4), Roseburg (4), and Springfield (2). The Wildlife Division also maintains a list of hunters ($n = 57$) who have volunteered to collect parts from grouse they harvest. Prior to the start of the season, the Division mails each participant on the list a project summary, six wing bags, and a postage paid return envelope. Additionally, collection materials are distributed by field biologists opportunistically during contact with hunters in the field and request for participation in the program is placed in the annual game bird regulations and on the Department’s website. Finally, further

opportunities to solicit participation such as magazine articles and news paper interviews are utilized when available.

Each year wing bees are conducted to collect biological and harvest information from the wing and tail feathers. Currently, wing bees are held at Ladd Marsh Wildlife Area and at the Southwest Regional Office. The data collected from each set of feathers is: species, location of kill, date of kill, sex, age, and the stage of primary wing feather molt for immatures. Age is recorded as adult or immature and in addition, the adult class is further subdivided to adult or yearling (if discernable) for blue grouse. After the wing bees, data is entered into spreadsheets which contain formulas for estimating the age, in days, of immatures based on the sequential replacement of primary wing feathers. Hatch dates are then back calculated for birds of known harvest date.

BLUE GROUSE RESULTS

The 2009/10 hunting season allowed a daily bag limit of 3 birds with 6 in possession. The season started 1 September statewide and ended 29 November in eastern Oregon and 31 January 2010 in western Oregon. For forest grouse regulation purposes and for the duration of this report western Oregon refers to all counties west of the crest of the Cascade Mountains, in addition to Hood River and Wasco Counties, and eastern Oregon refers to all other counties. During the 2009/10 season there were 642 wings and tails from blue grouse collected in Oregon, a 47% increase from 2008/09 and a 25% increase from the long-term (29-year) average (Table 1 and Appendix A). Thirty-five percent of the grouse were harvested during the first week of the season and 70% by the end of September (Figure 1). Similar to most previous seasons, an evident second peak

of submissions occurred during late September and early October which coincides with the opening of buck deer season.

For eastern Oregon, 36% of wings and tails submitted were from Wallowa County. Nine other eastern Oregon counties were represented with Baker (18%), Union (17%) and Grant (16%) having substantial contributions (Table 1 and Appendix A). For Western Oregon, 29% were submitted from Douglas County and fourteen other counties were represented with Lane (20%) and Hood River (16%) having substantial contributions (Table 1 and Appendix A).

Age and Sex Ratios

Immature grouse comprised 77% and 76% of the sample from eastern and western Oregon, respectively (Table 2). These proportions indicate increased productivity statewide compared to 2008 (Table 3). For Eastern Oregon, the proportion of immatures in 2009 was the highest ever recorded and the annual proportion of immatures has now been above the long-term average for 8 of the last 10 years (Figure 3). For Western Oregon, the proportion of immatures was the fourth highest estimate recorded and the first year of above the long-term average in the last four years, however, wing collections have not occurred in all years in this region (Table 2; Appendix A). Males composed 52% of the statewide sample, 58% of the adults, and 50% of immatures in 2009. The long-term average is 49% male for immatures and 63% male for adults.

Hatching Chronology

Hatch dates for grouse harvested during the 2009 hunting season ranged from 9 May to 16 July (mean = 31 May) in eastern Oregon and 17 May to 19 July in western Oregon (mean = 14 June). Compared to the previous year, mean hatch was 7 and 10 days

earlier in eastern and western Oregon, respectively. The mean hatch date was one day later than the long-term median hatch day for both eastern and western Oregon (Figure 5). In eastern Oregon, 76% of the grouse in the sample hatched during the month long period from 15 May – 14 June and in Western Oregon 71% of the grouse in the sample hatched during the month long period from May 29 – June 28 (Figure 4).

Wallowa County – 1980 to 2009

From 1980 through 2009 hunters in Wallowa County submitted 8,589 blue grouse wings and tails (Table 3 and Appendix A). In 2009, 173 wings were collected, 66% more than last season. Males comprised 58% of the sample, similar to the long-term average for the 30-year collection period (48 to 66%, $\bar{x} = 57\%$). Female blue grouse outnumbered males only in 1995, when they were 52% of the sample.

The immature proportion (71%) of the harvest was down slightly compared to 2008 (76%) but still represents another year of above average productivity. The proportion of immatures in Wallowa County ranged from a low of 38% in 1982 to a high of 80% in 2002 (1982–2009, $\bar{x} = 62\%$). Over the past 30 years, blue grouse populations in Wallowa County appeared to have four years of poor production as measured by a proportion of immatures <50% (1982, 1991, 1995, and 2006) and ten years of good production as measured by a proportion of immatures >65% (1980, 1983, 1985, 1986, 1989, 1996, 1998, 2007, 2008 and 2009; Table 3 and Figure 7).

From 1985 to 2009, the proportion of yearling females accounted for 17–47% ($\bar{x} = 27\%$) of the adult female sample; and yearling males from 9–34% ($\bar{x} = 22\%$) of the adult male sample. In 2009, the proportion of female yearlings to adult females (22%)

was lower than the previous year and below the long-term average, however male yearlings to adult males (34%) was highest ever recorded.

Mean hatch dates have ranged from 25 May (1986 and 2004) to 6 June (1995) with the preponderance of young hatched during a 3-week interval between late May and early June (Table 4). In 2009, the mean hatch date was 30 May and ranged from 9 May to 12 July.

Douglas County – 1984 to 2009

From 1984 through 2009 hunters in Douglas County submitted 936 blue grouse wings and tails with 48 collected in 2009 (Appendix A). This represents a 60% increase over the 30 collected last year and is similar to the long-term average of 47 which excludes years when no collection efforts were made. Males comprised 45% of the sample, the same as the average for the 20 years collections have been made (27 to 67%, $\bar{x} = 45\%$). In contrast to results from Wallowa County, female blue grouse regularly outnumber males in the Douglas County sample (13 of 20 years). Over the long-term the proportion of males making up the adult and immature samples (47% and 44%) is lower than the statewide averages noted above.

Immatures comprised 81% of the sample, indicating exceptional production during 2009. The proportion of immatures in the harvest has only reached this level twice previously, exceeding it in 1993 and equaling it in 2003. Overall, the long-term average for Douglas County is 67%. The median hatch date was 17 June.

RUFFED GROUSE RESULTS

The 2009 ruffed grouse hunting season allowed a daily bag limit of 3 birds with 6 in possession. Statewide the season began 1 September and extended through 29

November in eastern Oregon and 31 January 2010 in western Oregon. In 2009, 766 ruffed grouse wings and tails were collected from eastern and western Oregon, a 93% increase from 2008 and a 66% increase from the previous 5-year average (Table 1; Appendix B). During the first week of the season, 20% of ruffed grouse were harvested, and by the end September 48% of harvest had occurred (Figure 2). A second peak in harvest occurred during the first week in October and coincided with start of many firearms deer seasons.

In eastern Oregon, 480 samples were collected, a 62% increase from the previous year. Most (92%) of the samples collected in eastern Oregon were from Grant, Union, and Wallowa Counties. In western Oregon, 286 ruffed grouse samples were collected, a 189% increase from the previous year. Wings were collected from 16 of the 20 counties in this region with the majority (53%) coming from the 5 southwest counties (Table 1).

Age and Sex Ratios

Sixty-eight percent of ruffed grouse samples from eastern Oregon and 49% of samples from western Oregon in 2009 were immatures (Table 5), an indication of very good production in eastern Oregon and fair production in western Oregon. An analysis of wings from the previous 25 years in Oregon found that immatures accounted for 33–74% of the sample. Ruffed grouse populations in other states have also displayed highly variable productivity that ranged from 39–80% of immatures in fall populations (Dorney 1963, Davis and Stoll 1973). The differences in production may be related to local variations and naturally occurring population cycles.

Males accounted for 56% of wings from both eastern and western Oregon where sex could be determined from eastern ($n=225$) and western ($n=203$) Oregon,

respectively. Sixty-two percent of adult wings in eastern Oregon were males, compared to 60% in western Oregon. Males accounted for 55–61% of the adult population in several states in the mid-West (Dorney 1963, Davis and Stoll 1973, Major and Olson 1980). In 2009, 52% of immatures in both eastern and western Oregon were male. Sex ratios may lack accuracy because 53% of the eastern Oregon samples and 29% of western Oregon samples lacked diagnostic feathers for gender identification.

Hatching Chronology

Hatch dates for grouse harvested during the 2009 hunting season ranged from 6 May to 10 July (mean = 3 June) in eastern Oregon and 5 May to 25 June in western Oregon (mean = 30 May; Table 5). Compared to the previous year, mean hatch was 4 and 13 days earlier in eastern and western Oregon, respectively. In eastern Oregon, 85% of the grouse in the sample hatched during the month long period from 15 May – 14 June and in Western Oregon 91% of the grouse in the sample hatched during this same period (Figure 6).

Wallowa County - 1981 to 2009

From 1981 through 2009, hunters submitted 5,840 ruffed grouse wings and tails from Wallowa County. Percent immatures in the samples ranged from 49% (2004) to 83% (1983). Productivity (percent immatures [69 %]) in the 2009 wing sample increased 6% from the previous year. Information collected since 1983 in Wallowa County indicate relatively high age ratios during the early years of the study (1983-1991), generally low age ratios from 1992-2007 with a few exceptions and increasing age ratios during the last two years (Figure 8). The ratio of males (66%) in the 2009 sample was higher than last year and well above the previous long-term average of 58%. The mean

hatch date of 30 May was 5 days earlier than during 2008 and the same as the previous long-term average (1984-2008) hatch date. In 2009, as in previous years, a large proportion of the sample (58%) did not include diagnostic rump feathers for gender identification and may confound results for sex ratios (Table 6).

Douglas County – 1985 to 2009

Since 1985, 1,278 ruffed grouse wing and tail samples have been examined from Douglas County in southwestern Oregon, with 106 collected in 2009. Samples were up 179% from last year and 81% from the previous long-term average. Males comprised 63% of the sample while immatures comprised 27% of the sample, indicating poor production during 2009. The decline in production does not fit with the increased harvest documented by sample submission and harvest surveys, which generally are related to good production. The mean hatch date was 23 May, however it was only possible to estimate hatching dates for 7 immature grouse in 2009.

SPRUCE GROUSE Wing Collections – 1985 to 2009

In Oregon there is no open hunting season for Spruce grouse, but harvest occurs incidental to the harvest of blue and ruffed grouse in Baker, Wallowa and Union counties, where 158 spruce grouse wings and tails were collected from wing barrels from 1985–2009. During 2009, 1 spruce grouse wing was collected from Union County. Wallowa County typically has the highest incidental harvest of spruce grouse, and likely harbors the largest amount of spruce grouse habitat as evidenced by observations (Figure 9) and wing collections (Appendix C). The 1988 wing bee recorded the highest number of spruce grouse wings (27). During 1997, wings were obtained from Baker County for the first time, likely related to an increased effort in wing collection rather than range

expansion. During the past 23 years, immatures and adults composed nearly equal proportions of the sample. Spruce grouse are currently listed as *vulnerable status* on Oregon's Sensitive Species List.

CONCLUSIONS

The number of hunter harvested forest grouse wing and tail samples submitted to ODFW was up substantially from the previous year. This was likely do to increased numbers of forest grouse present on the landscape from previous years. Mean hatch dates for both grouse species were earlier in 2009 than in 2008 and near their long-term averages. The proportion of immature grouse increased compared to 2008, and above the long term average, an indication of increased productivity in 2009.

Samples for western Oregon were up in 2009 and continue to be relatively small in nearly all counties. In 2009, blue and ruffed grouse in western Oregon made up 54% and 74% of the estimated statewide harvest, yet they only composed 20% and 34% of the parts collected statewide. There is a need for improved collection efforts to provide adequate samples from different regions particularly in areas of northwestern Oregon. Statewide, there is a need to continue education efforts to increase hunter awareness and participation in returning wings and tails. These efforts should emphasize the need for hunters to include both a wing and a tail fan from blue grouse and a wing and a tail fan with attached rump feathers for ruffed grouse gender identification. Continuing hunter education efforts are critical for the success of future wing-bees.

Data collected from eastern Oregon blue grouse wings and tails for 2009 suggested the number of immatures in the harvest was higher than average suggesting higher than average production for blue grouse in most areas of the state.

Ruffed grouse harvest estimates in 2009 indicated more grouse were available to hunters compared to 2008, and the number of wings and tails collected statewide supports this. Productivity, as measured by the proportion of immatures in the sample, was greater in NE Oregon compared to 2008. The age ratio in Wallowa County in 2009 was at its highest level since 1990. Collections of grouse wings from hunters provide a valuable and reasonably low cost method of obtaining demographic profiles of grouse populations in Oregon. Consistency in wing collections is important to compare harvest and hatch dates, and age and sex ratios between areas and years. Wing collections were up 51% from the previous 5-year average statewide for all species of grouse collectively.

ACKNOWLEDGEMENTS

Simply, these data would not be available without the exceptional cooperation from all of the hunters who provided wings and tails! The wildlife districts who spend a considerable amount of time placing wing barrels and collecting grouse wings also deserve much of the credit for making this summary possible. Lastly, thanks to all those who participated at the Wing-Bees.

LITERATURE CITED

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Table 1. Forest Grouse wings submitted to the 2009 Oregon forest grouse wing-bees compared to the previous 5-year average (2004-2008).

County	Blue			Ruffed			Spruce		Totals		
	2009	5-Year Average	% Change From Previous 5-Year Average	2009	5-Year Average	% Change From Previous 5-Year Average	2009	5-Year Average	2009	5-Year Average	% Change From Previous 5-Year Average
Baker	87	58	50%	18	17	5%		2	105	76	38%
Crook					2	-100%			0	0	-100%
Grant	77	52	49%	123	74	66%			200	126	59%
Harney	2	4	-50%		4	-100%			2	5	-58%
Malheur	6	5	20%		3	-100%			6	2	275%
Morrow	12	8	60%	12	3	300%			24	8	186%
Umatilla	5	3	54%	7	8	-7%			12	9	40%
Union	79	53	48%	98	92	6%	1	3	178	148	20%
Wallowa	173	180	-4%	222	145	53%		3	395	327	21%
Wheeler		1	-100%						0	0	
Northeast Total	441	357	24%	480	338	42%	1	4	922	701	32%
Deschutes		2	-100%		2	-100%			0	1	-100%
Jefferson		1	-100%	2					2	0	
Klamath	10	9	8%		3	-100%			10	10	4%
Lake	27	23	19%		1	-100%			27	23	18%
East Slope Cascades Total	37	35	19%	2	6	-29%	0	0	39	34	15%
Benton					1	-100%			0	0	-100%
Clackamas	15	3	400%	22	2	1000%			37	3	1133%
Clatsop	1	1	0%	1	1	0%			2	1	100%
Columbia		2	-100%	9	5	80%			9	3	165%
Coos	3	3	0%	34	5	530%			37	7	414%
Curry	2	6	-65%	5	9	-42%			7	10	-29%
Douglas	48	28	71%	106	48	122%			154	76	103%
Hood River	26	9	177%	15	16	-4%			41	25	64%
Jackson	2	7	-71%	7	9	-20%			9	14	-35%
Josephine	1	1	0%	1	2	-33%			2	1	150%
Lane	33	9	251%	32	11	191%			65	20	219%
Lincoln				1	2	-33%			1	1	67%
Linn	5	6	-17%	10	4	186%			15	6	134%
Marion	12	2	500%	11	4	214%			23	4	423%
Polk	1	1	0%		2	-100%			1	1	25%
Tillamook	7	2	250%	15	2	650%			22	2	1275%
Wasco	7	11	-38%	10	10	-2%			17	21	-21%
Washington		1	-100%		6	-100%			0	2	-100%
Yamhill	1	0		5	1	400%			6	0	2900%
Unknown		1	-100%		2	-100%			0	1	-100%
Western Total	164	80	104%	284	119	138%	0	0	448	200	124%
Grand Total	642	468	37%	766	461	66%	1	1	1409	934	51%

Table 2. Sex ratios, age ratios and hatching dates of blue grouse determined from parts submitted by hunters from Oregon harvest during the 2009/10 hunting season.

County	n	Sex Ratios				Age Ratios						Mean Hatch	Hatch Range		
		M:F	AM:AF	IM:IF	YM:YF	I:A	I:AF	IM:AM	IF:AF	YM:AM	YF:AF				
Baker	87	51:49	70:30	49:51	100:0	89:11	96:4	84:16	93:7	29:71	0:100	28 May	9 May	to	28 Jun
Grant	77	51:49	59:41	46:54	33:67	65:35	82:18	59:41	71:29	6:94	18:98	3 Jun	10 May	to	7 Jul
Harney	2	50:50		50:50		100:0	100:0	100:0	100:0			3 Jun			
Malheur	6	50:50		50:50		100:0	100:0	100:0	100:0			21 May	15 May	to	28 May
Morrow	12	83:17	100:0	75:25		67:33	100:0	60:40	100:0	0:100		26 May	10 May	to	2 Jun
Umatilla	5	100:0		100:0		100:0	100:0	100:0				27 May	11 May	to	13 Jun
Union	79	47:53	88:12	37:63		80:20	97:3	61:39	95:5	7:93	0:100	4 Jun	10 May	to	16 Jul
Wallowa	173	58:42	64:36	55:45	73:27	68:32	87:13	67:33	75:25	34:66	22:78	30 May	9 May	to	12 Jul
NE Total	441	54:46	68:32	50:50	75:25	76:24	91:9	69:31	83:17	21:79	18:82	31 May	9 May	to	16 Jul
Klamath	10	20:80	25:75	17:83		60:40	67:33	50:50	63:37	0:100	0:100	3 Jun	14 May	to	18 Jun
Lake	27	41:59	100:0	38:62		96:4	72:28	91:9	100:0	100:0		8 Jun	17 May	to	2 Jul
SE Total	37	35:65	40:60	34:66		86:14	71:29	85:15	88:12	50:50	0:100	7 Jun	14 May	to	2 Jul
Clackamas	15	53:47	0:100	67:33	0:100	80:20	80:20	100:0	57:43		33:67	19 Jun	8 Jun	to	16 Jul
Clatsop	1	100:0		100:0		100:0	100:0	100:0							
Coos	3	100:0	100:0	100:0		67:33	100:0	67:33		0:100		31 May	31 May	to	31 May
Curry	2	100:0	100:0	100:0		50:50	100:0	50:50		0:100		29 Jun			
Douglas	48	45:55	33:67	47:53	25:75	81:19	87:13	86:14	77:23	33:67	50:50	17 Jun	20 May	to	19 Jun
Hood River	26	35:65	25:75	37:63	0:100	69:31	75:25	78:22	65:35	0:100	17:83	17 Jun	17 May	to	14 Jul
Jackson	2	0:100		0:100		100:0	100:0		100:0						
Josephine	1	100:0	100:0			0:100		0:100		0:100					
Lane	33	52:48	33:67	58:42	25:75	73:27	80:20	82:18	63:37	33:67	50:50	15 Jun	21 May	to	12 Jul
Linn	5	40:60	0:100	50:50		80:20	80:20	100:0	67:33		0:100	21 Jun	15 Jun	to	29 Jun
Marion	12	42:58	0:100	50:50	0:100	83:17	83:17	100:0	71:29		50:50	12 Jun	1 Jun	to	2 Jul
Polk	1	100:0	100:0			0:100		0:100		0:100					
Tillamook	7	71:29	0:100	83:17		86:14	86:14	100:0	50:50		0:100	9 Jun	2 Jun	to	14 Jun
Wasco	7	57:43	50:50	60:40	50:50	71:29	83:17	75:25	67:33	100:0	100:0	7 Jun	25 May	to	16 Jun
Yamhill	1	100:0		100:0		100:0		100:0				10 Jun			
West Total	164	49:51	33:67	54:46	23:77	76:24	83:17	84:16	69:31	23:77	38:62	15 Jun	17 May	to	16 Jul
Grand Total	642	52:48	58:42	50:50	54:46	76:24	89:11	73:27	79:21	22:78	25:75	4 Jun	9 May	to	16 Jul

Table 3. Sex ratios, age ratios and hatching dates of blue grouse determined from parts submitted by hunters from harvest in Wallowa County, Oregon. 1980 to 2009.

Season	n	Sex Ratios				Age Ratios							Mean Hatch	Hatch Range			
		M:F	AM:AF	YM:YF	IM:IF	I:A	I:AF	IM:AM	IF:AF	Y:A	YM:AM	YF:AF					
1980	59	54:46	83:17		41:59	69:31	93:7	53:47	89:11								
1981	125	57:43	60:40		55:45	62:38	80:20	61:39	65:35				29-May	7-May	to	29-Jun	
1982	95	53:47	53:47		53:47	38:62	56:44	38:62	38:62				31-May	16-May	to	16-Jun	
1983	165	53:47	57:43		51:49	72:28	86:14	69:31	74:26				30-May	8-May	to	25-Jun	
1984	155	57:43	63:37		53:47	52:48	74:26	47:53	58:42				4-Jun	13-May	to	8-Jul	
1985	258	53:47	63:37	50:50	49:51	72:28	88:12	67:33	79:21	17:83	13:87	23:77	1-Jun	4-May	to	4-Jul	
1986	598	58:42	74:26	76:24	52:48	70:30	90:10	62:38	81:19	23:77	24:76	22:78	26-May	3-May	to	15-Jul	
1987	736	58:42	72:28	65:35	51:49	65:35	87:13	56:44	76:24	31:69	28:72	38:62	26-May	2-May	to	14-Jul	
1988	471	54:46	60:40	48:52	47:53	53:47	75:25	46:54	60:40	28:72	23:77	37:63	2-Jun	28-Apr	to	19-Jul	
1989	371	53:47	59:41	58:42	51:49	70:30	85:15	66:34	73:27	22:78	22:78	22:78	30-May	29-Apr	to	10-Jul	
1990	286	58:42	65:35	72:28	55:45	54:46	77:23	49:51	59:41	25:75	28:72	20:80	27-May	5-May	to	1-Jul	
1991	260	60:40	68:32	61:39	50:50	43:57	70:30	35:65	53:47	28:72	25:75	34:66	1-Jun	9-May	to	13-Jul	
1992	284	54:46	61:39	52:48	47:53	57:43	78:22	50:50	64:36	22:78	19:81	28:72	25-May	2-May	to	26-Jun	
1993	200	58:42	61:39	67:33	57:43	65:35	83:17	63:37	67:33	21:79	23:77	19:81	2-Jun	10-May	to	28-Jun	
1994	249	59:41	66:34	42:58	52:48	58:42	80:20	52:48	66:34	18:82	12:88	31:69	28-May	10-May	to	21-Jun	
1995	140	47:53	61:39	52:48	30:70	43:57	66:34	27:73	58:42	26:74	22:78	32:68	6-Jun	14-May	to	10-Jul	
1996	261	61:39	75:25	60:40	54:46	67:33	89:11	58:42	79:21	12:88	9:91	19:81	30-May	10-May	to	8-Jul	
1997	205	54:46	78:22	68:32	41:59	61:39	88:12	45:55	81:19	32:68	27:73	47:53	30-May	10-May	to	24-Jun	
1998	361	59:41	73:27	68:32	53:47	66:34	88:12	59:41	78:22	26:74	24:76	31:69	25-May	8-May	to	30-Jun	
1999	453	59:41	69:31	58:42	51:49	59:41	82:18	51:49	69:31	34:66	29:71	47:53	6-Jun	11-May	to	5-Jul	
2000	379	60:40	82:18	72:28	51:49	68:32	92:8	56:44	84:16	26:74	23:77	41:59	27-May	3-May	to	3-Jul	
2001	570	52:48	62:38	66:34	47:53	65:35	83:17	58:42	72:28	19:81	20:80	18:82	31-May	3-May	to	7-Jul	
2002	376	59:41	64:36	57:43	56:44	63:37	83:17	59:41	67:33	27:73	24:76	32:68	5-Jun	5-May	to	29-Jul	
2003	460	64:36	74:26	65:35	58:42	65:35	88:12	59:41	74:26	24:76	21:79	32:68	3-Jun	6-May	to	17-Jul	
2004	251	50:50	56:44	59:41	47:53	51:49	70:30	46:54	55:45	30:70	32:68	27:73	25-May	5-May	to	30-Jun	
2005	209	64:36	80:20	82:18	56:44	59:41	88:12	50:50	76:24	20:80	21:79	18:82	1-Jun	9-May	to	14-Jul	
2006	163	61:39	70:30	72:28	54:46	48:52	76:24	41:59	58:42	23:77	22:78	20:80	1-Jun	10-May	to	8-Jul	
2007	172	55:45	55:45	56:44	56:44	70:30	84:16	71:29	70:30	31:69	32:68	30:70	27-May	6-May	to	4-Jul	
2008	104	53:47	56:44	53:47	53:47	76:24	88:12	75:25	77:23	24:76	14:86	36:64	5-Jun	10-May	to	22-Jul	
2009	173	58:42	64:36	73:27	55:45	68:32	87:13	67:33	75:25	30:70	34:66	22:78	30-May	9-May	to	12Jul	
LTA	286	57:43	67:33	62:38	51:49	62:38	83:17	55:45	70:30	23:77	22:78	27:73	2-Jun	28-Apr	to	29-Jul	

Table 4. The proportion of immature blue grouse harvested by hunters in Wallowa County, Oregon hatched during individual weekly periods. 1981-2009.

Sample Size	Year															
	1981 n=47	1982 n=34	1983 n=97	1984 n=80	1985 n=158	1986 n=339	1987 n=373	1988 n=219	1989 n=216	1990 n=129	1991 n=99	1992 n=119	1993 n=95	1994 n=92	1995 n=45	1996 n=127
24 April-30 April								1								
1 May-7 May	2				1	5	5	1	1	5		1				
8 May-14 May	4		6	3	5	19	8	4	4	17	7	15	2	9	2	7
15 May-21 May	23	9	7	6	13	18	22	7	13	12	9	26	6	20	11	20
22 May-28 May	19	26	36	24	22	17	20	22	29	19	25	15	21	17	13	28
29 May-4 June	30	41	24	24	27	17	31	30	28	22	23	24	34	33	16	17
5 June-11 June	13	12	12	23	13	12	8	17	11	12	17	14	31	16	27	9
12 June-18 June	2	12	7	14	13	5	3	8	6	7	9	3	4	4	20	7
19 June-25 June	1		7	5	4	4	2	5	4	2	4	1	1	1	7	7
26 June-2 July	2			4	1	2	1	3	2	3	2	1	1		4	2
3 July-9 July				1	1		1				2					3
10 July-16 July						1		1			1				2	

Table 4. Continued

Sample Size	Year												
	1997 n=109	1998 n=207	1999 n=211	2000 n=213	2001 n=288	2002 n=209	2003 n=231	2004 n=99	2005 n=86	2006 n=68	2007 n=95	2008 n=69	2009 n=94
24 April-30 April													
1 May-7 May				3	1			4				3	
8 May-14 May	7	14	3	15	4	3	4	14	12	7	4	6	10
15 May-21 May	11	27	4	18	10	10	10	22	14	16	26	14	11
22 May-28 May	26	27	18	17	17	17	20	23	20	16	22	10	21
29 May-4 June	30	15	21	19	38	20	25	19	19	25	26	14	22
5 June-11 June	19	10	19	16	18	21	16	12	17	13	8	30	18
12 June-18 June	4	3	21	7	6	20	15	2	8	10	6	14	6
19 June-25 June	3	2	9	3	4	3	8	2	5	4	1	3	3
26 June-2 July		1	3			1	1	1	3	4	1	3	2
3 July-9 July			1		1	1			1	3	1	1	
10 July-16 July						1			1				1
17 July-23 July						1						3	

Table 6. Sex ratios, age ratios and hatching dates of ruffed grouse as determined from parts submitted by hunters from grouse harvested in Wallowa County, Oregon. 1983 to 2009.

Season	<i>n</i>	Sex			Age				Mean Hatch	Hatch Range		
		M:F	AM:AF	IM:IF	I:A	I:AF	IM:AM	IF:AF				
1983	70				83:17							
1984	47	50:50	0:100		66:34	97:3	100:0	0:100	5-Jun	22-May	to	20-Jun
1985	193	56:44	64:36	52:48	75:25	92:8	61:39	72:28	28-May	3-May	to	7-Jul
1986	395	61:39	69:31	56:44	72:28	93:7	62:38	73:27	29-May	5-May	to	14-Jul
1987	372	59:41	51:49	64:36	70:30	88:12	66:34	54:46	27-May	4-May	to	28-Jun
1988	212	69:31	78:22	64:36	68:32	95:5	60:40	75:25	1-Jun	13-May	to	1-Jul
1989	139	55:45	50:50	57:43	74:26	90:10	71:29	65:35	2-Jun	2-May	to	29-Jun
1990	189	61:39	71:29	56:44	67:33	93:7	63:37	76:24	28-May	11-May	to	20-Jun
1991	155	64:36	62:38	65:35	63:37	88:12	65:35	62:38	3-Jun	7-May	to	6-Jul
1992	220	65:35	64:36	66:34	61:39	87:13	55:45	53:47	27-May	30-Apr	to	5-Jul
1993	55	65:35	71:29	60:40	62:38	86:14	50:50	62:38	1-Jun	15-May	to	2-Jul
1994	112	53:47	52:48	54:46	55:45	76:24	53:47	51:49	25-May	12-May	to	26-Jun
1995	84	61:39	68:32	52:48	57:43	89:11	50:50	67:33	30-May	12-May	to	26-Jun
1996	180	62:38	70:30	54:46	57:43	85:15	43:57	60:40	29-May	3-May	to	20-Jun
1997	169	61:39	84:16	34:66	58:42	92:8	27:73	79:21	31-May	3-May	to	18-Jun
1998	279	53:47	59:41	48:52	55:45	81:19	47:53	58:42	25-May	7-May	to	26-Jun
1999	370	44:56	48:52	41:59	64:36	89:11	60:40	66:34	2-Jun	8-May	to	6-Jul
2000	339	61:39	67:33	55:45	58:42	89:11	45:55	58:42	26-May	3-May	to	21-Jul
2001	434	61:39	75:25	50:50	62:38	92:8	47:53	72:28	31-May	7-May	to	14-Jul
2002	165	51:49	60:40	42:58	56:44	83:17	37:63	55:45	5-Jun	11-May	to	7-Jul
2003	284	65:35	66:34	64:36	54:46	87:13	45:55	48:52	1-Jun	8-May	to	3-Jul
2004	98	48:52	57:43	35:65	49:51	76:24	35:65	57:43	28-May	7-May	to	18-Jun
2005	180	53:47	68:32	41:59	58:42	89:11	42:58	69:31	1-Jun	6-May	to	1-Jul
2006	152	56:44	62:38	48:52	59:41	87:13	40:60	54:46	26-May	5-May	to	10-Jul
2007	198	49:51	55:45	41:59	58:42	83:17	38:62	51:49	25-May	2-May	to	15-Jun
2008	94	56:44	61:39	52:48	63:37	87:13	52:48	61:39	4-Jun	7-May	to	27-Jun
2009	222	66:44	75:25	58:42	69:31	94:6	51:49	69:31	30 May	6-May	to	6-Jul
LTA	390	58:42	64:36	53:47	63:37	89:11	52:48	62:38	30 May	7-May	to	30-Jun

Table 5. Sex ratios, age ratios and hatching dates of ruffed grouse as determined from parts submitted by hunters from Oregon harvest during the 2009/10 hunting season.

County	n	Sex Ratios			Age Ratios				Mean Hatch	Hatch Range		
		M:F	AM:AF	IM:IF	I:A	I:AF	IM:AM	IF:AF				
Baker	18	44:56	33:67	50:50	83:17	75:25	75:25	60:40	29 May	15 May	to	19 June
Grant	123	50:50	55:45	46:54	55:45	73:27	50:50	59:41	6 June	8 May	to	26 June
Morrow	12	42:58	40:60	43:57	58:42	88:12	60:40	57:43	28 May	20 May	to	2 June
Umatilla	7	50:50	100:0	0:100	86:14	100:0	0:0	100:0	3 June	31 May	to	6 June
Union	98	51:49	33:67	54:46	81:19	91:9	91:9	82:18	4 June	9 May	to	10 July
Wallowa	222	66:34	75:25	58:42	69:31	84:16	51:49	69:31	30 May	6 May	to	6 July
NE Total	480	56:44	62:38	52:48	68:32	82:18	59:41	68:32	2 June	6 May	to	10 July
Jefferson	2	100:0	100:0	0:0	0:100	0:0	0:0	0:0	-	-	-	-
SE&C Total	2	100:0	100:0	0:0	0:100	0:0	0:0	0:0	-	-	-	-
Clackamas	22	50:50	0:100	54:46	95:5	93:7	100:0	86:14	2 June	22 May	to	20 June
Clatsop	1	100:0	100:0	0:0	0:100	0:0	0:0	0:0				
Columbia	9	50:50	100:0	0:100	67:33	100:0	0:0	100:0				
Coos	34	53:47	63:37	38:62	44:56	65:35	14:86	53:47	23 May	15 May	to	27 May
Curry	5	67:33	100:0	0:100	60:40	100:0	0:0	100:0	14 June	29 May	to	25 June
Douglas	106	63:37	62:38	67:33	27:73	45:55	25:75	21:79	23 May	5 May	to	4 June
Hood River	15	40:60	57:43	0:100	33:67	50:50	0:0	50:50	6 June	4 June	to	9 June
Jackson	7	50:50	33:67	100:0	43:57	33:67	50:50	0:0	26 May	26 May	to	27 May
Josephine	1	0:100	0:100	0:0	0:100	0:0	0:0	0:0				
Lane	32	71:29	70:30	71:29	69:31	82:18	59:41	57:43	3 June	15 May	to	12 June
Lincoln	1	0:100	0:0	0:0	100:0	100:0	0:0	100:0				
Linn	10	38:62	100:0	29:71	80:20	100:0	67:33	100:0	2 June	2 June	to	2 June
Marion	11	17:83	0:100	20:80	91:9	83:17	100:0	80:20	29 May	20 May	to	5 June
Tillamook	15	67:33	50:50	100:0	43:57	50:50	50:50	0:0	31 May	19 May	to	17 June
Wasco	10	66:34	0:100	0:100	70:30	33:67	0:0	33:67	2 June	21 May	to	8 June
Yamhill	5	60:40	50:50	67:33	60:40	75:25	67:33	50:50	29 May	22 May	to	7 June
W Oregon	284	56:44	60:40	52:48	49:51	65:35	37:63	57:43	30 May	5 May	to	25 June
Grand Total	766	56:44	61:39	52:48	61:39	74:26	65:35		1 June	5 May	to	10 July

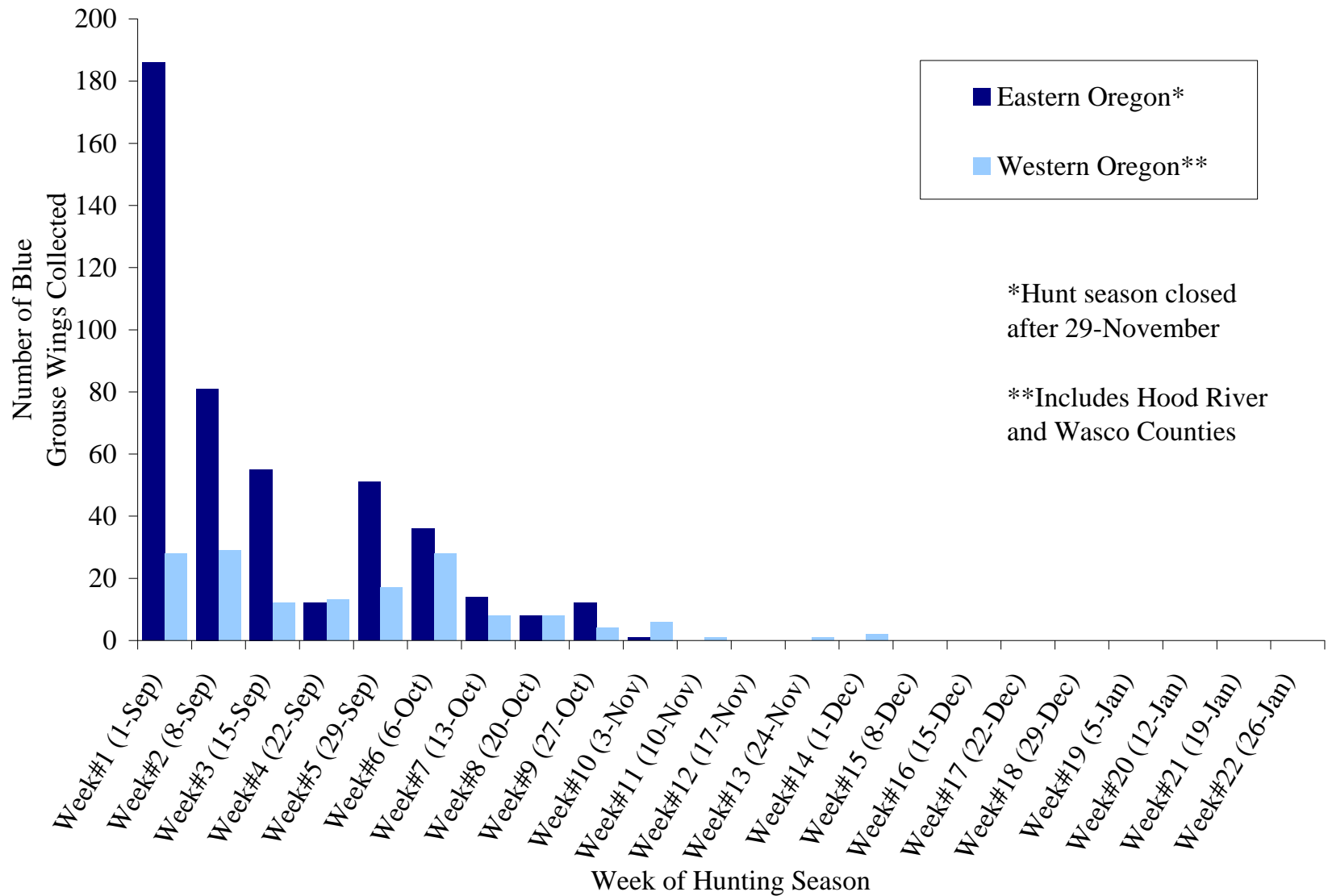


Figure 1. The number of blue grouse represented by parts collected in Oregon by the hunting season week they were reported shot, 2009/10.

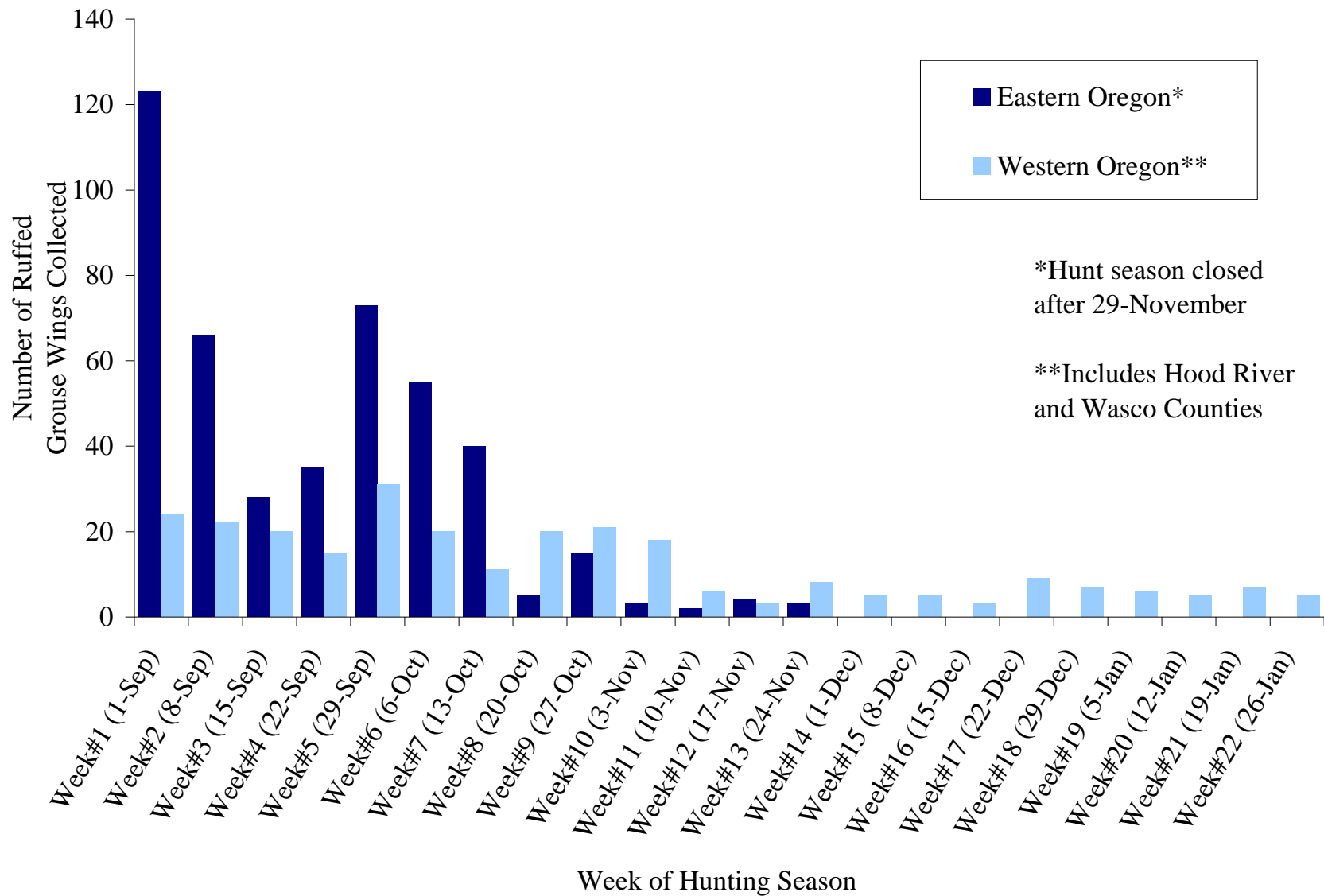


Figure 2. The number of ruffed grouse represented by wing and tails collected in Oregon by the hunting season week they were reported shot, 2009/10.

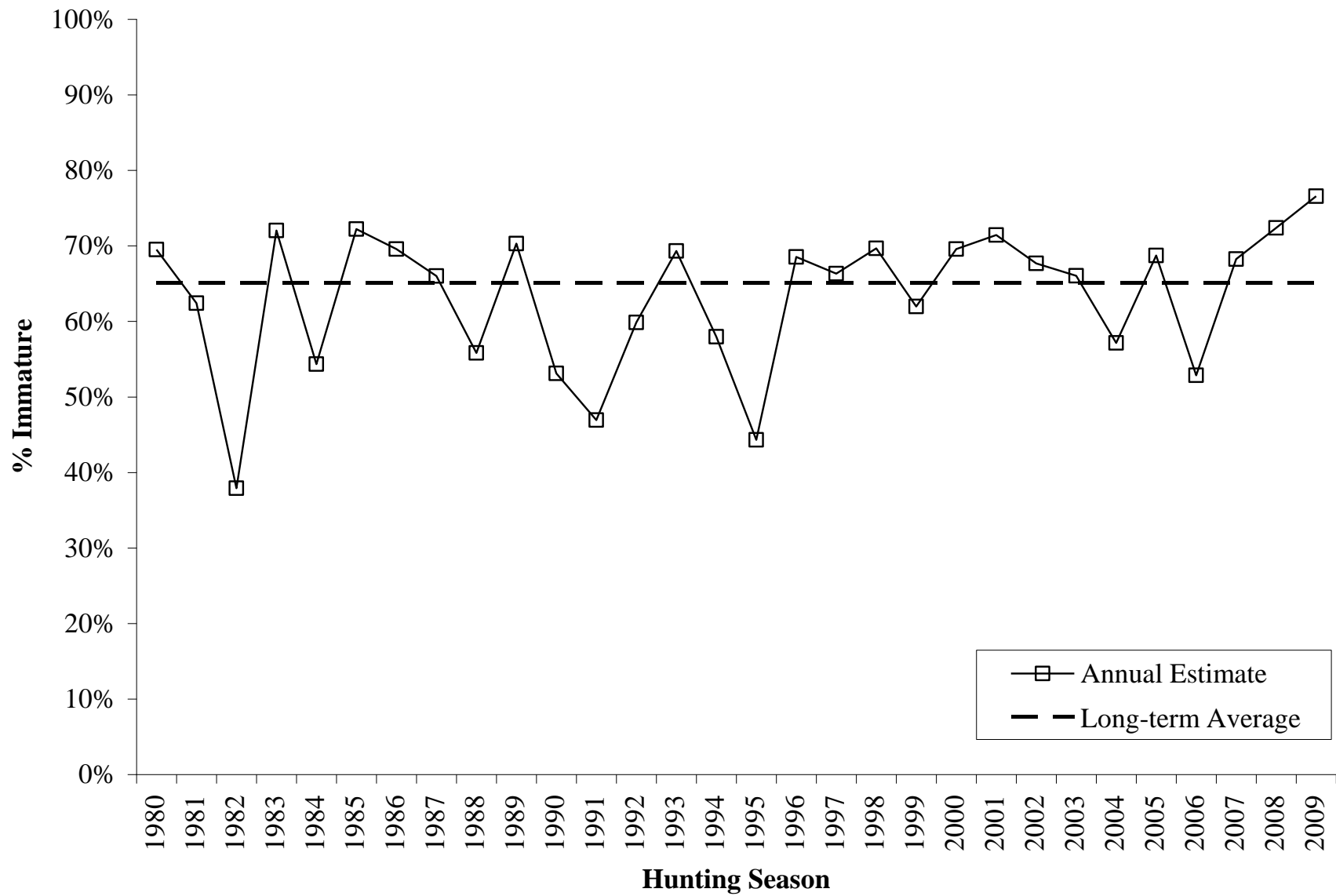


Figure 3. Proportion of the blue grouse wing and tail sample from Eastern Oregon composed of immature blue grouse. 1980-2009.

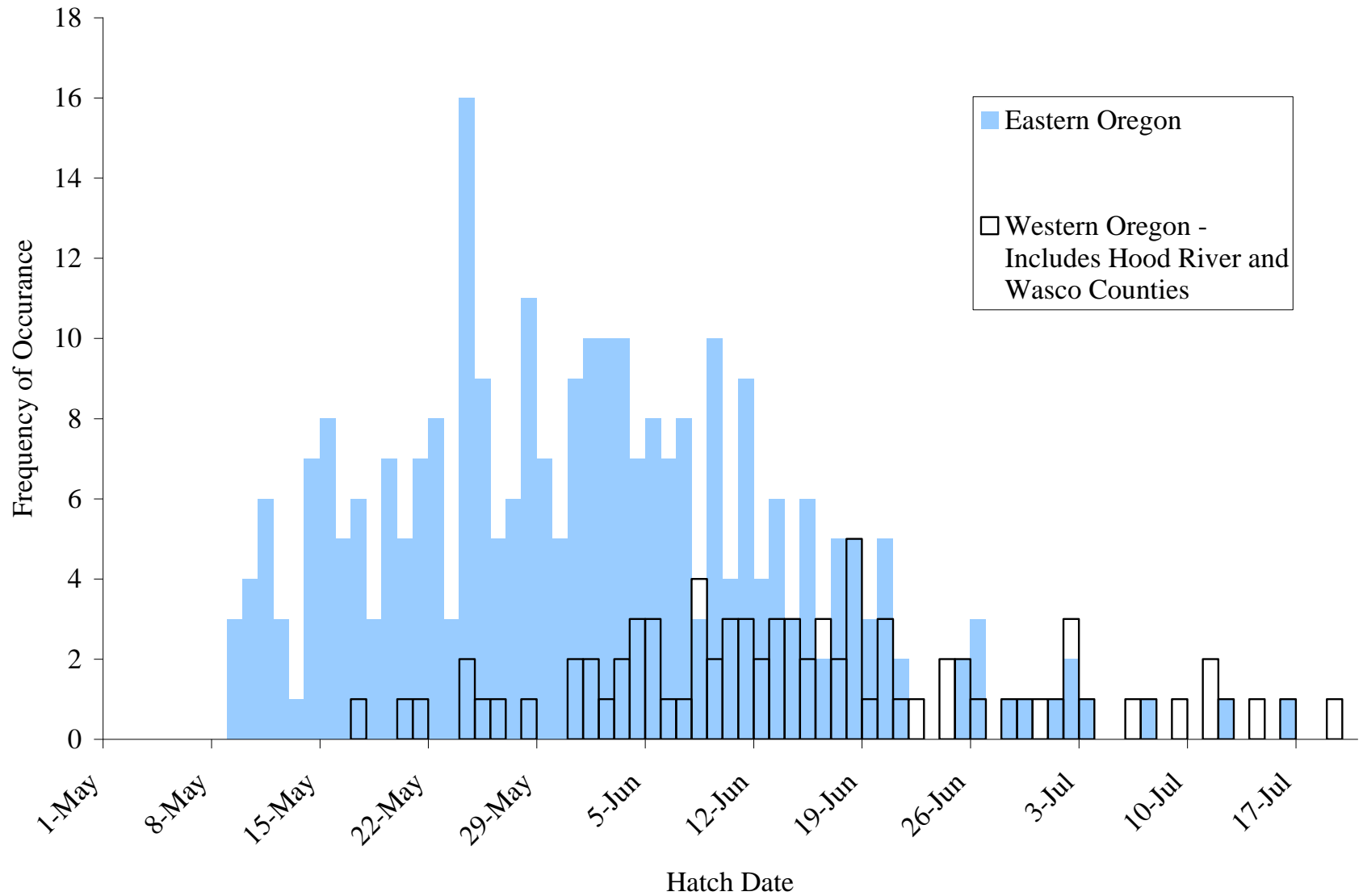


Figure 4. Hatching dates of immature blue grouse as determined by the progression of primary feather molt from wings submitted by hunters from grouse shot during the 2009/10 Oregon hunting season.

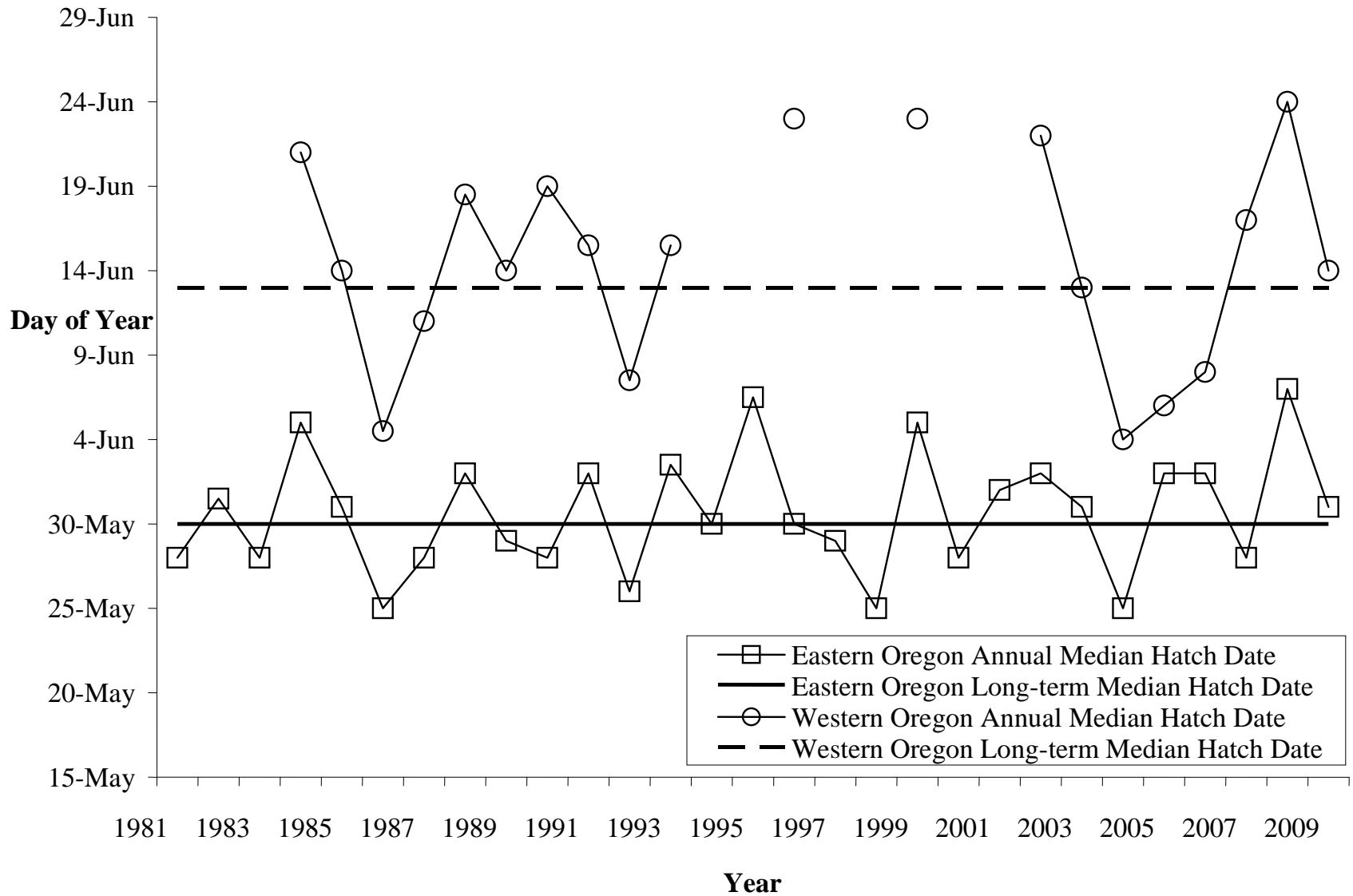


Figure 5. Median estimated hatching dates as determined by the progression of primary feather molt of immature blue grouse shot by hunters and examined at wing bees by the Oregon Department of Fish and Wildlife, 1981-2009.

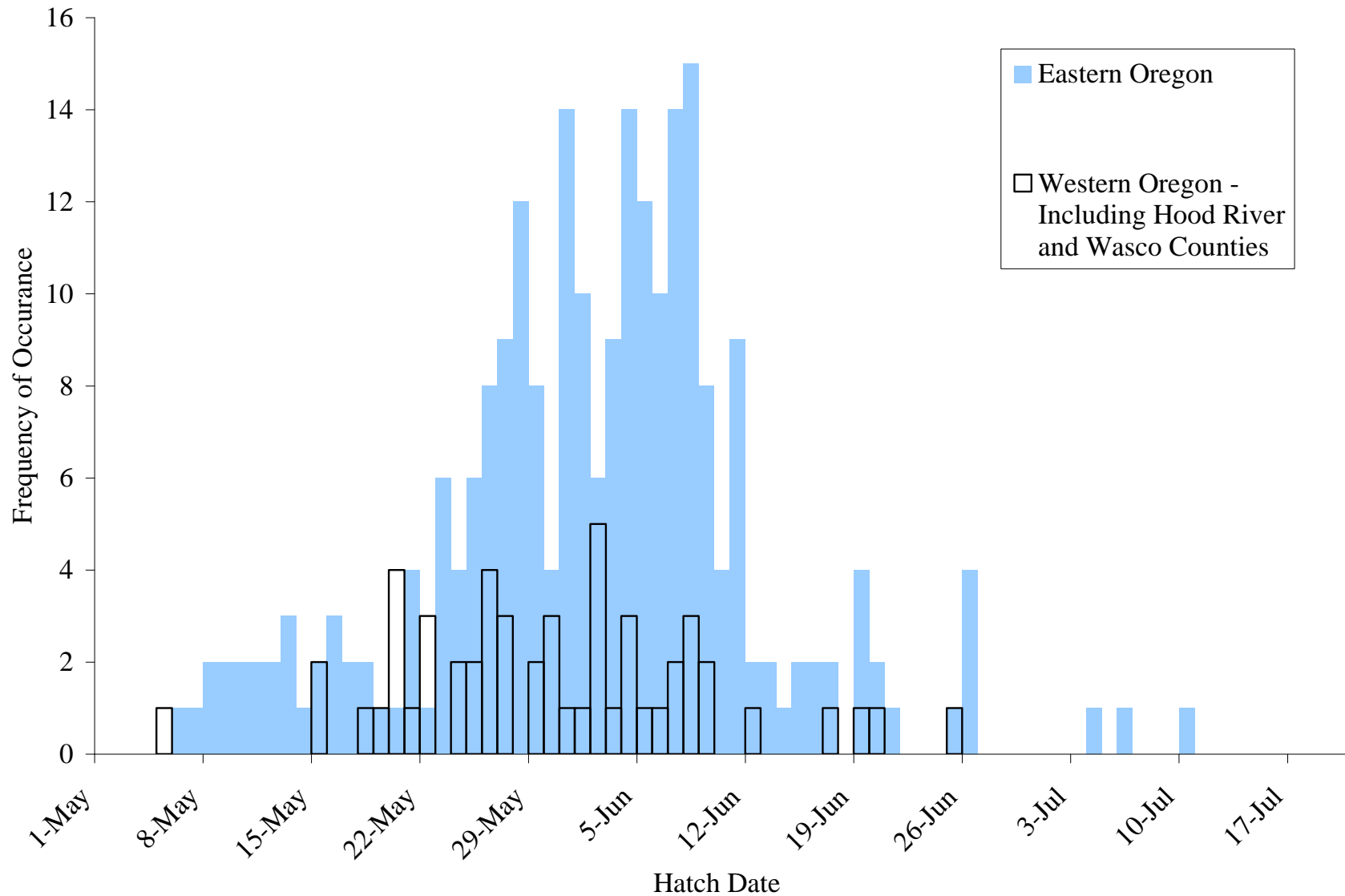


Figure 6. Hatching dates of immature ruffed grouse as determined by the progression of primary feather molt from wings submitted by hunters from grouse shot during the 2009/10 Oregon hunting season.

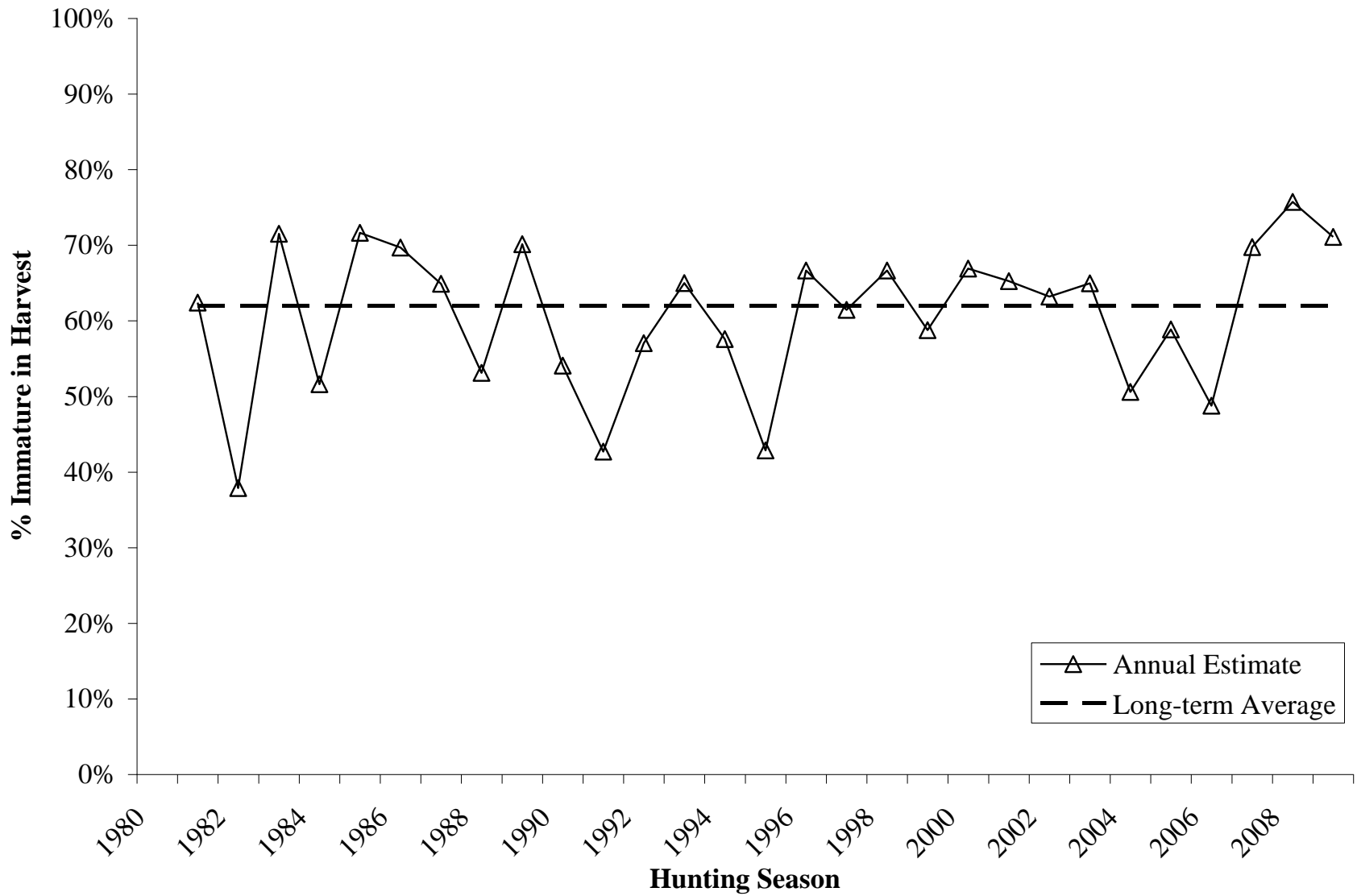


Figure 7. Proportion of blue grouse parts sample collected from Wallowa County, Oregon composed of immature blue grouse, 1980-2009.

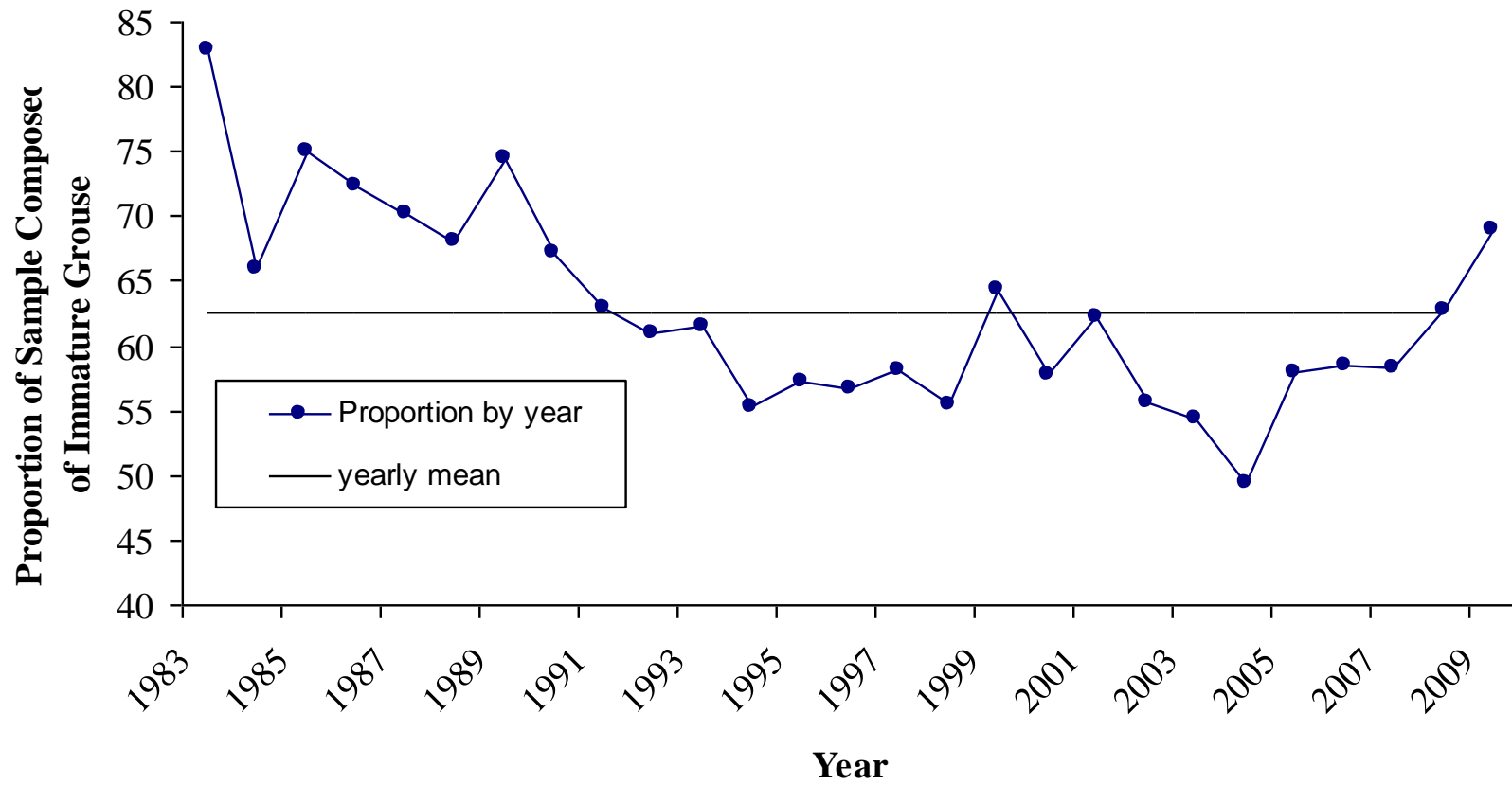


Figure 8. Proportion of immature ruffed grouse in parts sample collected from Wallowa County, Oregon. 1983-2009.

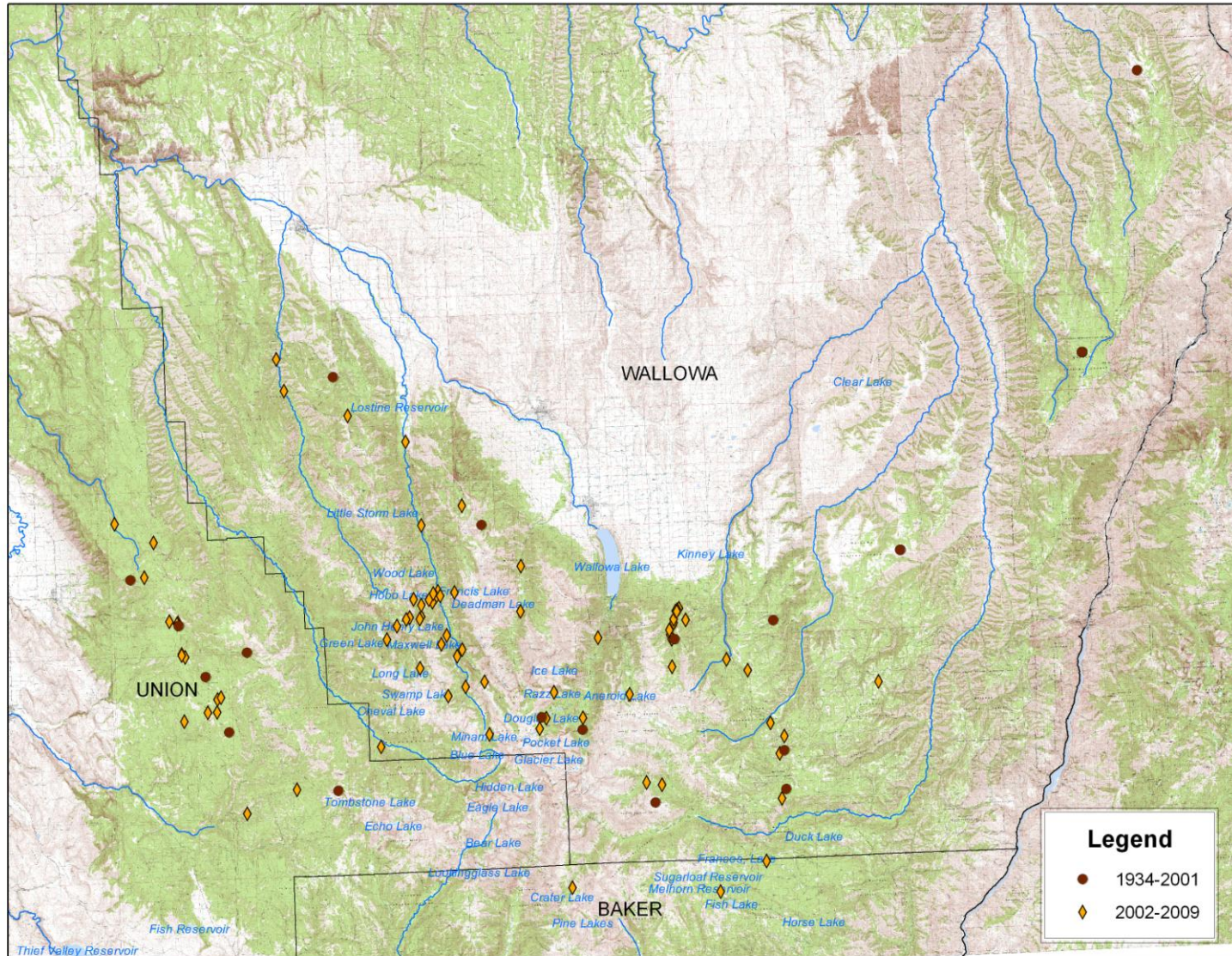


Figure 9. Spruce grouse observation locations in Baker, Union, and Wallowa counties, Oregon. 1934-2009

APPENDICES

Appendix A. Blue grouse wings collected by county in Oregon, 1980-2009.

County	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Baker							2	23		1					16		84	153	100
Grant						27	18	60	24	32	4						13	5	29
Harney									1										
Malheur									1										
Morrow							3												
Umatilla						2	37	41		12	6	18	3	8	2	17	4	4	15
Union						21	192	243	171	81	104	30	53	27		19	79	104	90
Wallowa	59	125	95	166	155	275	596	719	463	372	291	260	286	234	242	140	260	204	364
Wheeler																			
Total NE	59	125	95	166	155	325	848	1086	660	498	405	308	342	269	260	176	440	470	598
Deschutes																			
Jefferson																			
Klamath										17	7								
Lake									27	48	11		38		5			13	18
Total SE	0	0	0	0	0	0	0	0	27	65	18	0	38	0	5	0	0	13	18
Clackamas							1												
Clatsop																			
Columbia																			
Coos													2						
Curry																			
Douglas					24	92	51	67	48	49	32	45	68	17	12				
Hood River										7									
Jackson						6	19	13		5			2						
Josephine																			
Lane					40	82	59	23	16	23	4	1							
Linn						4					1								
Marion													3						
Polk																			
Tillamook																			
Wasco										3									
Washington																			
Yamhill																			
Unknown													8						
Total West	0	0	0	0	64	184	130	103	64	87	37	46	83	17	12	0	0	0	0
Total	59	125	95	166	219	509	978	1189	751	650	460	354	463	286	277	176	440	483	616

Appendix A, continued

County	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Totals
Baker	69	114	178	146	162	54	84	34	17	76	87	1400
Grant	49	28	53	37	51	66	50	18	32	93	77	766
Harney						2	3	3	7	5	2	23
Malheur	1						5				6	13
Morrow						15	1		12	5	12	48
Umatilla	18	9	5	12	8	6	4		1	2	5	239
Union	104	68	165	86	110	69	49	54	32	62	79	2092
Wallowa	451	384	567	376	460	252	209	163	172	104	173	8617
Wheeler								1				1
Total NE	692	603	968	657	791	464	405	273	273	347	441	13199
Deschutes							1	3				4
Jefferson							1					1
Klamath				3		18	10		7	2	10	74
Lake	44			4		38	28	24	16		27	341
Total East Slope	44	0	0	7	0	56	40	27	23	2	37	420
Clackamas					4		2	4		3	15	29
Clatsop					1	1				1	1	4
Columbia						2						2
Coos					3	2	6				3	16
Curry				3	7	9		1	12	1	2	35
Douglas	67	9	36	58	122	38	31	13	28	30	48	985
Hood River					5	7	15	12	8	5	26	85
Jackson				17	11	15	4	3	5	4	2	106
Josephine										1	1	2
Lane	8			19	8	16	6	5	8	9	33	360
Linn								7	4	4	5	25
Marion						3	2	1		2	12	23
Polk						1					1	2
Tillamook								2			7	9
Wasco				1		10	22	6	8	10	7	67
Washington								1				1
Yamhill											1	
Unknown					7				1			16
Total West	75	9	36	98	168	104	88	55	74	70	164	1768
Total	811	612	1004	762	959	624	533	355	370	419	642	15387

Appendix B. Ruffed grouse wings collected by county in Oregon, 1981-2009.

County	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Baker						7	13									56	24	61	24
Grant					69	46	59	59	45	2						34	26	82	83
Harney									1										
Malheur																			
Morrow																			
Umatilla					11	36	56		15	6			5	4	10	26	15	27	31
Union					11	326	345	163	105	158	64	121	18		45	163	163	189	146
Wallowa					183	396	373	213	139	184	165	219	55	117	84	181	178	299	371
Total NE	0	0	0	0	274	811	846	435	305	350	229	340	78	121	139	460	406	658	655
Deschutes																			
Jefferson																			
Klamath																			
Lake												1					5	1	
Total SE	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	5	1	0
Benton												1							
Clackamas					2	14													
Clatsop																			
Columbia																			
Coos									1			4							
Curry																			
Douglas					7	17	47	19	13	40	67	104	24				3		71
Hood River									1										
Jackson					7	12	11		2	2		4							
Josephine																			
Lane					50	95	23	8	28		5	13							
Lincoln					1	6		2		3		3	1						
Linn					3							1							
Marion																			
Tillamook																			
Wasco									2	2									
Washington																			
Yamhill																			
Total West	0	0	0	0	70	144	81	29	47	47	72	130	25	0	0	0	3	0	71
Unknown	16		70	224							5	5				51			11
Total	16	0	70	224	344	955	927	464	352	397	306	476	103	121	139	511	414	659	737

Appendix B, continued.

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Totals
Baker	31	29	25	32	12	9	17	27	21	18	406
Grant	87	98	128	75	90	68	57	87	63	123	1381
Harney					4						5
Malheur					3						3
Morrow					3	1		1	7	12	24
Umatilla	44	14	12	13	15	4		8	3	7	362
Union	200	260	167	160	83	109	102	60	107	98	3363
Wallowa	342	462	165	270	99	181	152	198	94	222	5342
Total NE	704	863	497	550	309	372	328	381	295	480	10886
Deschutes									2		2
Jefferson										2	2
Klamath			5		7	1	1	2			16
Lake						1					8
Total SE	0	0	5	0	7	2	1	2	2	2	28
Benton					1						2
Clackamas			3	13	2	2			1	22	59
Clatsop				1		1			1	1	4
Columbia				18	10	2		1		9	40
Coos			3	12	15	3	2	5	2	34	81
Curry			4	11	10	1		13		5	44
Douglas	74	129	155	163	103	55	10	33	38	106	1278
Hood River			7	14	24	22	18	4	7	15	112
Jackson			19	18	4	2		8	21	7	117
Josephine				3	2	0			1	1	7
Lane			31	5	25	3	9	9	9	32	345
Lincoln			4	3	2	0		1		1	27
Linn							6	1	4	10	25
Marion				3	2	3		6	3	11	28
Tillamook					1	0	4	1		15	21
Wasco					12	11	10	8	10	10	65
Washington			4		30	0	2				36
Yamhill										5	5
Total West	74	129	230	264	243	105	61	90	97	284	2296
Unknown				28	1	3			2		416
Total	778	992	732	842	560	482	390	473	396	766	13626

Appendix C. Spruce grouse wings collected in Oregon, 1985-2009.

Year	County	Location	Age	Sex	Date of Harvest
1985	Union	Lick/Catherine Crs.	A	M	7 September
1985	Union	Point Prominence	I	F	2 October
1985	Wallowa	Little Sheep Cr.	A	F	5 October
1985	Wallowa	Unknown	A	M	Unknown
1985	Wallowa	Memaloose	I	M	12 September
1985	Wallowa	Jaynes Ridge	I	?	2 September
1986	Wallowa	Little Sheep Cr.	A	M	31 August
1986	Wallowa	Little Sheep Cr.	A	M	31 August
1986	Wallowa	Little Sheep Cr.	A	F	31 August
1986	Wallowa	Little Sheep Cr.	A	M	17 September
1986	Wallowa	Little Sheep Cr.	I	M	17 September
1986	Wallowa	Little Sheep Cr.	A	F	17 September
1987	Union	Mt. Harris	A	M	30 August
1987	Union	Mt. Harris	A	M	30 August
1987	Wallowa	Little Sheep Cr.	A	M	9 October
1987	Wallowa	Jaynes Ridge	A	F	8 September
1987	Wallowa	Jaynes Ridge	I	M	8 September
1987	Wallowa	Jaynes Ridge	I	F	8 September
1988	Union	Point Prominence	A	F	27 August
1988	Union	Point Prominence	I	M	27 August
1988	Union	Point Prominence	A	M	1 October
1988	Wallowa	Little Sheep Cr.	A	F	18 September
1988	Wallowa	Little Sheep Cr.	A	F	26 September
1988	Wallowa	Little Sheep Cr.	A	M	13 September
1988	Wallowa	Little Sheep Cr.	I	F	13 September
1988	Wallowa	Little Sheep Cr.	I	M	13 September
1988	Wallowa	Little Sheep Cr.	I	F	13 September
1988	Wallowa	Little Sheep Cr.	A	M	13 October
1988	Wallowa	Little Sheep Cr.	A	F	13 October
1988	Wallowa	Little Sheep Cr.	I	M	13 October
1988	Wallowa	Little Sheep Cr.	I	F	13 October
1988	Wallowa	Little Sheep Cr.	A	M	13 October
1988	Wallowa	Little Sheep Cr.	A	F	13 October
1988	Wallowa	Little Sheep Cr.	I	F	13 September
1988	Wallowa	Little Sheep Cr.	I	F	13 September
1988	Wallowa	Little Sheep Cr.	A	F	13 September
1988	Wallowa	Little Sheep Cr.	A	M	Unknown
1988	Wallowa	Little Sheep Cr.	A	F	Unknown
1988	Wallowa	Little Sheep Cr.	A	F	Unknown
1988	Wallowa	Little Sheep Cr.	I	M	Unknown

Appendix C, continued.

Year	County	Location	Age	Sex	Date of Harvest
1989	Wallowa	Little Sheep Cr.	A	M	4 September
1989	Wallowa	Carrol Cr.	A	F	9 September
1989	Wallowa	Carrol Cr.	I	M	9 September
1989	Wallowa	Jaynes Ridge	I	F	21 September
1989	Wallowa	Jaynes Ridge	I	M	21 September
1989	Union	Ladd Canyon	A	M	3 September
1989	Wallowa	Little Sheep Cr.	A	M	28 August
1989	Wallowa	Little Sheep Cr	A	F	28 August
1989	Wallowa	Little Sheep Cr	I	F	28 August
1989	Wallowa	Little Sheep Cr	I	?	28 August
1989	Wallowa	Little Sheep Cr	A	?	28 August
1989	Wallowa	Little Sheep Cr	I	F	28 August
1989	Wallowa	Cloverdale	I	M	4 September
1989	Wallowa	Cloverdale	I	F	4 September
1989	Wallowa	Cloverdale	I	F	4 September
1989	Wallowa	Cloverdale	I	F	4 September
1989	Wallowa	Cloverdale	I	F	4 September
1989	Wallowa	Unknown	A	F	Unknown
1989	Wallowa	Unknown	I	?	Unknown
1989	Wallowa	Unknown	I	?	Unknown
1990	Wallowa	Little Sheep Cr.	A	F	4 September
1990	Wallowa	Little Sheep Cr.	I	M	4 September
1990	Wallowa	Little Sheep Cr.	I	F	4 September
1990	Wallowa	Little Sheep Cr.	I	M	Unknown
1990	Wallowa	Little Sheep Cr.	A	M	Unknown
1990	Wallowa	Little Sheep Cr.	I	M	Unknown
1991	Wallowa	Lick Cr.	I	M	14 September
1991	Wallowa	Lick Cr.	A	F	14 September
1991	Wallowa	Lick Cr.	I	M	11 October
1991	Wallowa	Lick Cr.	I	M	11 October
1991	Wallowa	Lick Cr.	I	F	11 October
1991	Wallowa	Lick Cr.	I	M	11 October
1991	Wallowa	Sheep Cr.	I	F	4 September
1991	Wallowa	Sheep Cr.	I	M	4 September
1991	Wallowa	Sheep Cr.	I	F	4 September
1992	Wallowa	Little Sheep Cr.	I	F	8 September
1992	Wallowa	Little Sheep Cr.	A	F	8 September
1992	Wallowa	Mt. Harris	A	M	9 September
1992	Wallowa	Mt. Harris	I	M	Unknown
1993	Wallowa	Little Sheep Cr.	A	F	9 September
1993	Wallowa	Little Sheep Cr.	I	M	9 September
1993	Wallowa	Little Sheep Cr.	I	F	9 September
1994	Wallowa	Little Sheep Cr.	A	F	18 October

Appendix C, continued.

Year	County	Location	Age	Sex	Date of Harvest
1994	Wallowa	Little Sheep Cr.	I	M	18 October
1994	Wallowa	Unknown	A	F	Unknown
1995	Wallowa	Little Sheep Cr.	I	F	21 September
1995	Wallowa	Little Sheep Cr.	A	F	21 September
1995	Wallowa	Little Sheep Cr.	I	M	21 September
1996	Union	Catherine Cr.	I	M	4 October
1996	Union	Catherine Cr.	I	M	4 October
1996	Union	Catherine Cr.	A	M	7 September
1996	Union	Catherine Cr.	I	M	3 September
1996	Union	Catherine Cr.	A	F	3 September
1996	Union	Catherine Cr.	I	F	3 September
1996	Union	Mt. Harris	A	F	12 September
1996	Union	Mt. Harris	I	F	12 September
1996	Union	Mt. Harris	I	F	12 September
1996	Wallowa	Jaynes Ridge	A	F	Unknown
1997	Baker	Eagle Fork	A	F	6 September
1997	Baker	Eagle Fork	I	M	6 September
1997	Baker	Eagle Fork	A	M	6 September
1997	Baker	Eagle Fork	I	F	6 September
1997	Baker	Eagle Fork	A	M	4 October
1997	Baker	Eagle Fork	A	M	3 September
1997	Wallowa	Little Sheep Cr.	A	M	20 September
1998	Wallowa	Salt Cr. Summit	A	M	4 October
1999	Union	Hess Cabin Rd.	I	F	6 September
1999	Union	Hess Cabin Rd.	A	F	6 September
1999	Union	Mt. Harris	A	F	11 September
1999	Wallowa	Little Sheep Cr.	A	M	9 October
2000	Wallowa	Little Sheep Cr.	A	?	5 September
2000	Wallowa	Little Sheep Cr.	I	?	5 September
2000	Wallowa	Little Sheep Cr.	A	?	5 September
2000	Wallowa	Little Sheep Cr.	I	?	5 September
2000	Wallowa	Little Sheep Cr.	I	?	5 September
2000	Wallowa	Little Sheep Cr.	I	?	5 September
2001	Union	Catherine Cr.	A	F	22 September
2001	Union	Mt. Harris	A	F	10 September
2001	Union	Mt. Harris	A	F	10 September
2001	Union	Mt. Harris	I	M	24 September
2001	Union	Mt. Harris	I	F	24 September
2001	Union	Mt. Harris	I	F	24 September
2001	Wallowa	Little Sheep Cr.	I	M	2 September
2001	Wallowa	Little Sheep Cr.	I	M	2 September
2001	Wallowa	Little Sheep Cr.	I	F	2 September
2001	Wallowa	Little Sheep Cr.	I	F	2 September

Appendix C, continued.

Year	County	Location	Age	Sex	Date of Harvest
2001	Wallowa	Little Sheep Cr	A	F	2 September
2001	Wallowa	Little Sheep Cr	I	F	6 October
2001	Wallowa	Lick Cr.	A	M	4 September
2002	Union	Prominence Pt	I	U	22 September
2002	Wallowa	Little Sheep Cr.	A	M	13 October
2002	Wallowa	Little Sheep Cr.	A	M	13 October
2003	Wallowa	Door Cr.	A	F	1 September
2003	Union	Catherine Cr.	I	U	12 September
2003	Union	Catherine Cr.	A	U	Unknown
2004	Wallowa	Little Sheep	A	F	2 October
2005	Baker	Pine Cr. Meadows	I	M	25 September
2005	Baker	Pine Cr. Meadows	I	M	25 September
2005	Union	Mt. Harris	A	M	28 September
2005	Union	Buck Cr.	A	F	6 September
2005	Union	Pt. Prominence	A	F	3 September
2005	Union	Pt. Prominence	A	F	3 September
2005	Union	Pt. Prominence	I	M	3 September
2005	Union	Pt. Prominence	I	M	3 September
2006	Wallowa	Little Sheep Cr.	A	M	25 September
2006	Wallowa	Lostine River	I	F	10 October
2007	Union	Mt. Harris	I	M	23 September
2007	Union	Hess Cabin	I	F	9 October
2007	Union	Moss Springs	I	F	10 October
2008	Baker	Pine Creek	A	F	2 October
2008	Wallowa	Big Sheep Cr.	A	U	5 October
2008	Wallowa	230 Rd	J	U	5 October
2008	Wallowa	230 Rd	J	U	5 October
2008	Wallowa	3930-040 Rd	A	U	7 October
2008	Wallowa	3930-040 Rd	A	U	8 October
2008	Wallowa	230 Rd	J	U	8 October
2008	Union	NF Catherine Creek	A	F	19 October
2009	Union	Mt. Harris	A	F	9 September