



2010 Forest Grouse Parts Collection Summary



Harney County Ruffed Grouse
Photo by Rod Klus

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INTRODUCTION

Since 1980, wings and tails of blue¹ (*Dendragapus spp*), ruffed (*Bonasa umbellus*), and spruce grouse (*Falci pennis canadensis*) have been collected from hunters in Wallowa County. 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. In 2010, wings and tails were obtained from 24 of the 36 counties in Oregon (Table 1, Appendices A & B). A total of 812 wings and tails were examined at the two forest grouse wing bees; about 43% fewer than 2009, but only 17% fewer than the most recent 5-year average. Statewide blue grouse submissions were down 23% and ruffed grouse wings were down 13% from the recent 5-year average.

¹Dusky and Sooty grouse considered collectively as “blue” grouse.

USE OF INFORMATION

Data from wings can be used by biologists to better understand the distribution and timing of grouse harvest (Figures 1 & 3) 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 2 & 4). Distribution and timing of kill have relevance to obtaining information about grouse populations, season structure, and to hunter participation for coordination of law enforcement activities.

Mike Hansen has taken the lead in drafting three publications from the wing data collected over the last ~30 years. Two of the manuscripts have been submitted to the Journal of Wildlife Management and are currently in the review process.

Table 1. Forest Grouse wings submitted to the 2010 Oregon forest grouse wing-bees at Ladd Marsh Wildlife Area, 26 January 2011 and SW Region Office, 3 March 2011. Previous 5-year average presented for comparison.

County	"Blue"		Ruffed		Spruce	Total All Species		
	2010	Previous 5-Year Average	2010	Previous 5-Year Average	2010	2010	Previous 5-Year Average	2010 % Change From Previous 5-Year Average
Baker	50	60	14	18		64	79	-19%
Crook			3	0		3		100%
Grant	55	54	72	80		127	134	-5%
Harney		4	2	0		2	4	-50%
Malheur	2	6				2	2	-9%
Morrow	11	8	3	5		14	10	37%
Umatilla	2	3	1	6		3	7	-56%
Union	48	55	47	95	1	96	153	-37%
Wallowa	128	164	167	169	8	303	335	-10%
Wheeler		1					0	-100%
Northeast Total	296	348	309	371	9	614	723	-15%
Deschutes		2		2			1	-100%
Hood River	10	13	5	13		15	26	-43%
Jefferson		1		2			1	-100%
Klamath	2	7	1	1		3	7	-55%
Lake	17	20		1		17	21	-17%
Wasco	4	11	7	10		11	20	-46%
Other East Total	33	51	13	25		46	76	-39%
Benton								
Clackamas		6	2	8		2	10	-80%
Clatsop		1		1			1	-100%
Columbia			1	4		1	2	-58%
Coos		3	13	9		13	11	16%
Curry	5	5	3	7		8	7	14%
Douglas	12	30	60	48		72	78	-8%
Jackson	8	9	9	10		17	17	1%
Josephine		1		1			1	-100%
Lane	3	13	4	12		7	25	-72%
Lincoln				1			0	-100%
Linn	3	6	7	5		10	9	14%
Marion	4	4	12	6		16	8	100%
Polk		1		1			0	-100%
Tillamook	1	5	3	7		4	6	-31%
Washington		4		2			2	-100%
Yamhill			1	5		1	1	
Unknown	1	1		3		1	1	-29%
Western Total	37	75	115	106		152	180	-16%
Grand Total	366	473	437	502	9	812	979	-17%

Sex and age data reveal the reproductive performance in a population (productivity), and in conjunction with abundance information, provide insight into population trends. Hatching data may be used to understand the timing of reproduction in specific areas and provide information to develop appropriate census procedures. For example, if hatching times differed substantially among regions of the state, the timing of summer censuses could be adjusted because the probability of observing a bird is a function of bird age and habitat conditions. Harvest statistics on grouse may not adequately reflect sex and age ratios of a population. Immature grouse may be more vulnerable to harvest than adults, especially early in the season. 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

District wildlife biologists collect grouse parts from hunters by placing “wing barrels” in locations where grouse hunters are likely to encounter them. Bags 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. They are also 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. Field staff also distributed wing bags to known grouse hunters. Additionally, wing bags are mailed to a list of cooperating hunters by wildlife division staff prior the hunting season and an advertisement requesting 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 winter biologists gather at wing bees to collect information from the parts. Currently, wing bees are held at Ladd Marsh Wildlife Area and at the Southwest Region Office. The data collected from each set of parts 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 a spreadsheet which contains 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, provided they were harvested prior to 10 October (immature molt, primaries 1 to 8, is usually complete by 10 October).

BLUE GROUSE RESULTS

During 2010, 366 wings and tails from blue grouse were collected in Oregon, a decrease of 43% from the previous year and decrease of 23% from the recent 5-year average. The 2010 hunting season allowed a daily bag limit of 3 birds with 6 in possession. The season started 1 September statewide and ended 30 November in eastern Oregon and 31 January in western Oregon (includes Hood River and Wasco Cos). Wings from birds harvested during the first week of the season represented 32% of sample, and 61% after 4 weeks of the season (Figure 1). Similar to most previous seasons, there was a second peak of submissions during late September and early October, the beginning of many firearm deer and elk seasons.

For eastern Oregon, (and statewide) the majority of wings were collected from just 4 counties. Wallowa County accounted for 35% of wings and tails submitted, while Grant County contributed 15%, Baker 14%, and Union 13%. Few wings were collected in Western Oregon, with majority coming from Douglas (32%) and Jackson (22%) counties. The remainder of wings from western Oregon were submitted from six other counties (Table 1).

Age and Sex Ratios

Immature grouse comprised 55% of the sample for both Sooty and Dusky grouse (Table 2). This indicates decreased production, or at least recruitment into the fall population, compared to 2009. Statewide, the proportion of immatures in 2010 was below the previous 10 year average. Males were 48% of the statewide sample, 61% of the adults, and 37% of immatures in 2010.

Hatching Chronology

Statewide, hatch dates for grouse harvested during the 2010 hunting season ranged from 7 May to 22 July (\bar{x} = 7 June). Dusky grouse hatch dates ranged from 7 May to 9 July (\bar{x} = 4 June) and Sooty grouse hatch dates ranged from 24 May to 22 July (\bar{x} = 20 June). For Dusky grouse, 75% hatched between 14 May and 15 June, while 75% of Sooty grouse hatched between 4 June and 9 July. Typical of most years, the peak Sooty grouse hatch was later than the Dusky grouse hatch. Overall, mean hatch dates were about a week later than in 2009, and among the latest mean hatch dates recorded since 1980.

Wallowa County – 1980 to 2010

From 1980 through 2010 hunters in Wallowa County submitted parts representing 8,717 blue grouse (Table 3). In 2010, 128 wings were collected, one of the fewest number collected since the wing bee began in 1980. Males comprised 47% of the sample, which is unusual because in most years the proportion of males in the harvest exceeds that of females.

The immature proportion (57%) of the harvest was among the lowest recorded since 1980 and suggests a year of relatively poor production, especially as compared to the past 3 years (Table 3). The proportion of immatures in Wallowa County ranged from a low of 38% in 1982 to a high of 80% in 2002 (1982–2008, \bar{x} = 62%). Over the past 31 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 10 years of good production as measured by a proportion of immatures >65% (1980, 1983, 1985, 1986, 1989, 1996, 1998, 2007, 2008, 2009; Table 3).

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 3). In 2010, the mean hatch date was 5 June and ranged from 9 May to 6 July.

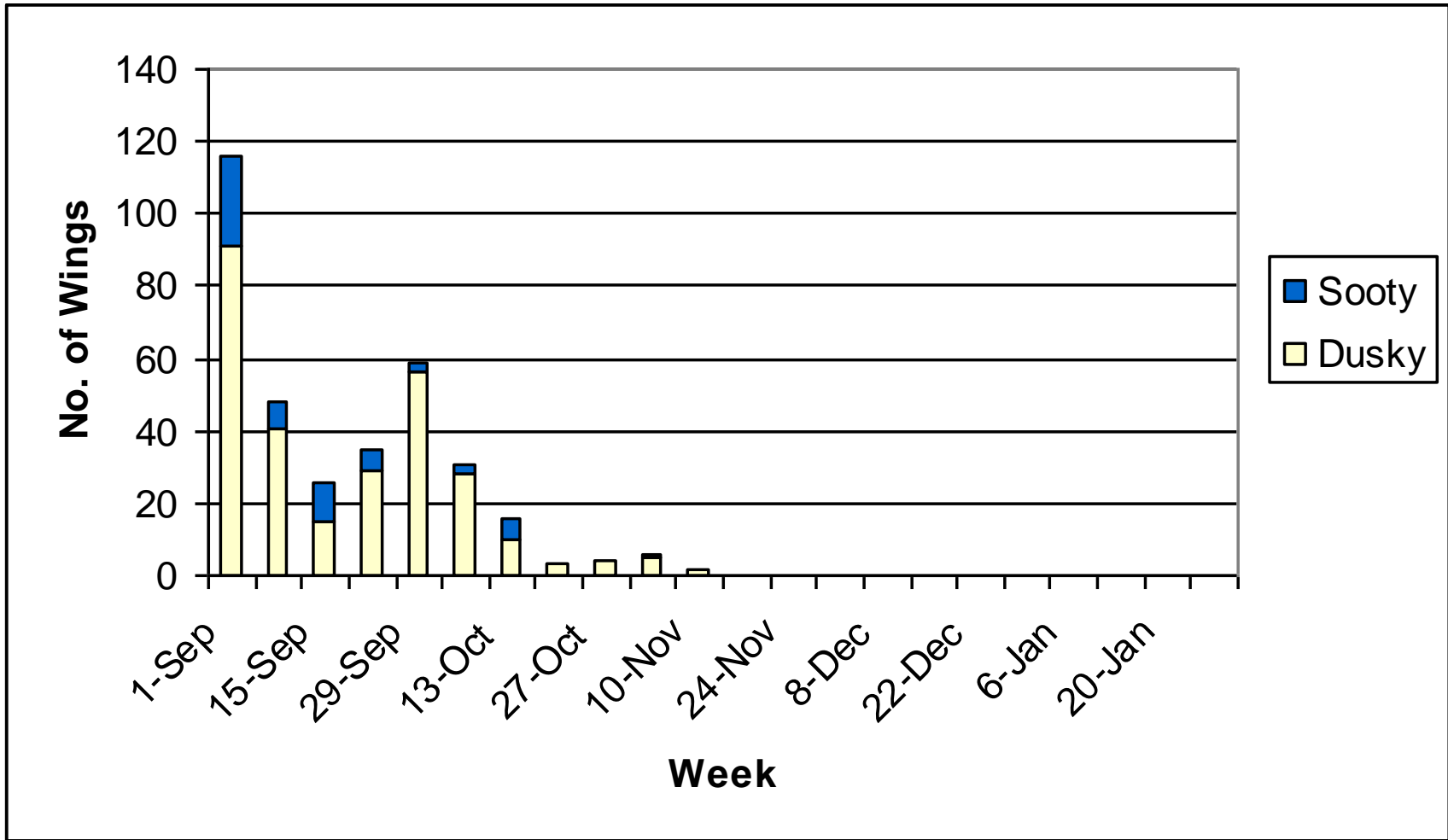


Figure 1. The number of Sooty and Dusky grouse, as represented by wing/tail collections, by week of reported harvest during 2010-11 Oregon hunting season.

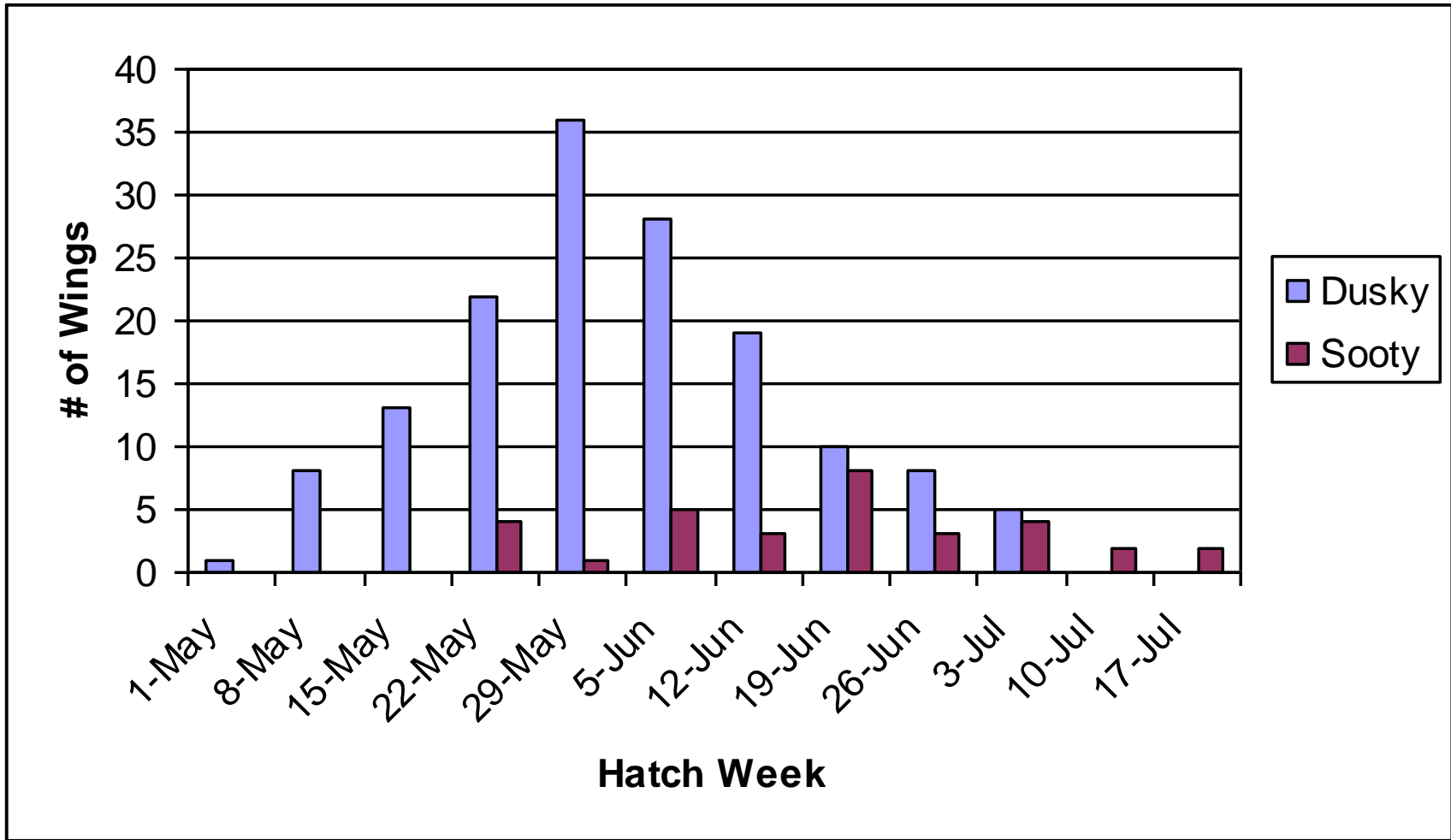


Figure 2. Hatching weeks of immature Dusky and Sooty grouse as determined by the progression of primary feather molt of wings submitted by hunters from grouse shot during the 2010-11 hunting season in Oregon.

Table 2. Blue grouse sex ratios, age ratios and hatch dates by species and location in 2010. Individual counties with sample sizes >20 wings are also listed.

Location	Sex Ratio						Age Ratio				Mean Hatch	Hatch Range		
	n	M : F	AM : AF	IM : IF	n	I : A	I : AF	n						
Baker Co.	50	57 : 43	78 : 22	38 : 62	50	54 : 46	84 : 16	23	5/30/2010	5/7/2010	to	7/9/2010		
Grant Co.	55	51 : 49	64 : 36	35 : 65	54	48 : 52	72 : 28	25	6/10/2010	5/10/2010	to	7/4/2010		
Union Co.	48	47 : 53	61 : 39	33 : 67	48	52 : 48	74 : 26	26	6/5/2010	5/19/2010	to	6/26/2010		
Wallowa Co.	128	47 : 53	58 : 42	38 : 62	128	57 : 43	76 : 24	65	6/5/2010	5/9/2010	to	7/6/2010		
Dusky All Cos	294	49 : 51	64 : 36	38 : 62	295	55 : 45	77 : 23	150	6/4/2010	5/7/2010	to	7/9/2010		
Sooty All Cos	64	42 : 58	48 : 52	36 : 64	69	55 : 45	63 : 37	32	6/20/2010	5/24/2010	to	7/22/2010		
Unk	8				1									
Statewide	366	48 : 52	61 : 39	37 : 63	365	55 : 45	76 : 24	182	6/7/2010	5/7/2010	to	7/22/2010		

Table 3. Sex ratios, age ratios and hatching dates of dusky grouse determined from parts submitted by hunters from harvest in Wallowa County, Oregon, 1980 to 2010.

Season	<i>n</i>	Sex Ratios			Age Ratios		Mean Hatch	Hatch Range		
		M:F	AM:AF	IM:IF	I:A	I:AF			to	
1980	59	54:46	83:17	41:59	69:31	93:7				
1981	125	57:43	60:40	55:45	62:38	80:20	29-May	7-May	to	29-Jun
1982	95	53:47	53:47	53:47	38:62	56:44	31-May	16-May	to	16-Jun
1983	165	53:47	57:43	51:49	72:28	86:14	30-May	8-May	to	25-Jun
1984	155	57:43	63:37	53:47	52:48	74:26	4-Jun	13-May	to	8-Jul
1985	258	53:47	63:37	49:51	72:28	88:12	1-Jun	4-May	to	4-Jul
1986	598	58:42	74:26	52:48	70:30	90:10	26-May	3-May	to	15-Jul
1987	736	58:42	72:28	51:49	65:35	87:13	26-May	2-May	to	14-Jul
1988	471	54:46	60:40	47:53	53:47	75:25	2-Jun	28-Apr	to	19-Jul
1989	371	53:47	59:41	51:49	70:30	85:15	30-May	29-Apr	to	10-Jul
1990	286	58:42	65:35	55:45	54:46	77:23	27-May	5-May	to	1-Jul
1991	260	60:40	68:32	50:50	43:57	70:30	1-Jun	9-May	to	13-Jul
1992	284	54:46	61:39	47:53	57:43	78:22	25-May	2-May	to	26-Jun
1993	200	58:42	61:39	57:43	65:35	83:17	2-Jun	10-May	to	28-Jun
1994	249	59:41	66:34	52:48	58:42	80:20	28-May	10-May	to	21-Jun
1995	140	47:53	61:39	30:70	43:57	66:34	6-Jun	14-May	to	10-Jul
1996	261	61:39	75:25	54:46	67:33	89:11	30-May	10-May	to	8-Jul
1997	205	54:46	78:22	41:59	61:39	88:12	30-May	10-May	to	24-Jun
1998	361	59:41	73:27	53:47	66:34	88:12	25-May	8-May	to	30-Jun
1999	453	59:41	69:31	51:49	59:41	82:18	6-Jun	11-May	to	5-Jul
2000	379	60:40	82:18	51:49	68:32	92:8	27-May	3-May	to	3-Jul
2001	570	52:48	62:38	47:53	65:35	83:17	31-May	3-May	to	7-Jul
2002	376	59:41	64:36	56:44	63:37	83:17	5-Jun	5-May	to	29-Jul
2003	460	64:36	74:26	58:42	65:35	88:12	3-Jun	6-May	to	17-Jul
2004	251	50:50	56:44	47:53	51:49	70:30	25-May	5-May	to	30-Jun
2005	209	64:36	80:20	56:44	59:41	88:12	1-Jun	9-May	to	14-Jul
2006	163	61:39	70:30	54:46	48:52	76:24	1-Jun	10-May	to	8-Jul
2007	172	55:45	55:45	56:44	70:30	84:16	27-May	6-May	to	4-Jul
2008	104	53:47	56:44	53:47	76:24	88:12	5-Jun	10-May	to	22-Jul
2009	173	58:42	64:36	55:45	68:32	87:13	30-May	9-May	to	12-Jul
2010	128	47:53	58:42	38:62	55:45	76:24	5-Jun	9-May	to	6-Jul

RUFFED GROUSE RESULTS

In 2010, a total of 437 ruffed grouse wings and tails were collected from eastern and western Oregon, a 13% decrease from the recent 5-year average. The number of wings collected from western Oregon was slightly above the recent 5-year average, but most ruffed grouse wings/tails are submitted from eastern Oregon (Table 1). The 2010 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 30 November in eastern Oregon and 31 January 2011 in western Oregon. Timing of harvest was typical with 20% of the ruffed grouse represented by parts submissions during the first week of the season and 50% were harvested during the first 4 weeks of the season (Figure 3). A second peak in harvest occurred during the first week in October and coincided with start of many firearms deer seasons.

In eastern Oregon, 322 samples were collected, a 19% decrease from the recent 5-year average of 396. Most of the samples collected in eastern Oregon were from Grant, Union, and Wallowa Counties. In western Oregon, 115 ruffed grouse samples were collected, an 8% increase from the recent 5-year average. Most of the ruffed grouse samples (~74%) in western Oregon were from SW Oregon counties, with more than half of the submissions from Douglas County.

Age and Sex Ratios

Because of the lack of tails, or the rump feathers attached to the tail, gender could not be determined for 44% and 25% percent of the submissions from eastern and western Oregon, respectively. Age was determined for 96% and 97% of the samples from eastern and western Oregon, respectively.

In eastern Oregon, 46% of ruffed grouse samples were from immatures and 34% of submissions from western Oregon were immatures (Table 4). The proportion of immatures indicates below average (fair) production in eastern Oregon and poor 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 of all ages accounted for 52% and 45% of wings collected from eastern and western Oregon, respectively. The proportion of adult wings that were male was 54% and 55% for eastern Oregon and western Oregon, respectively. 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 2010, males were 43% of the immature birds submitted. Sex ratios may lack accuracy because 44% of the eastern Oregon samples and 25% of western Oregon samples lacked diagnostic feathers for gender identification and sample sizes in western Oregon were relatively small.

Hatching Chronology

The mean hatch date for ruffed grouse collected during the 2010 hunting season was 6 June and 13 June for eastern and western Oregon, respectively (Table 4). Peak hatch was generally one to two weeks later than normal for both eastern and western Oregon. Hatching dates ranged from 3 May to 3 July, and 15 May to 2 July for eastern and western portions of the state, respectively. Most (75%) of the ruffed grouse in Oregon hatched from 28 May to 19 June (Figure 4).

Wallowa County - 1983 to 2010

From 1983 through 2010, hunters submitted 5,574 ruffed grouse wings and tails from Wallowa County. Productivity (percent immatures [43 %]) in the 2010 wing sample was lowest recorded since 1983, and surpassed the previous low of 49% in 2004. Wing data collected since 1983 in Wallowa County indicated exceptional production from 1983–1990, then age ratios declined and stabilized until they again increased in 1999 through 2001. Age ratios have since been stable and slightly higher than during the early 90s except for 2004 and 2010. The ratio of males (50%) in the 2010 sample is below the long-term average (~58%). The mean hatch date of 6 June was the latest hatch since 1983; the previous latest mean hatch of 5 June occurred in 1984 and 2002. Hatch in 2010 was about 1 week later than the long-term average for mean hatch of 30 May. A large proportion (39%) of hunter submissions continue to lack the diagnostic rump feathers or other keys to gender identification and may confound results for sex ratios.

Douglas County – 2010

Since 1985, parts representing 1,334 ruffed grouse have been examined from Douglas County in southwestern Oregon, with 60 collected in 2010. Collection numbers were down from last year, but just ahead of the long-term average of 53. Males comprised 39% of the sample while immatures comprised 36% of the sample, indicating poor production during 2010.

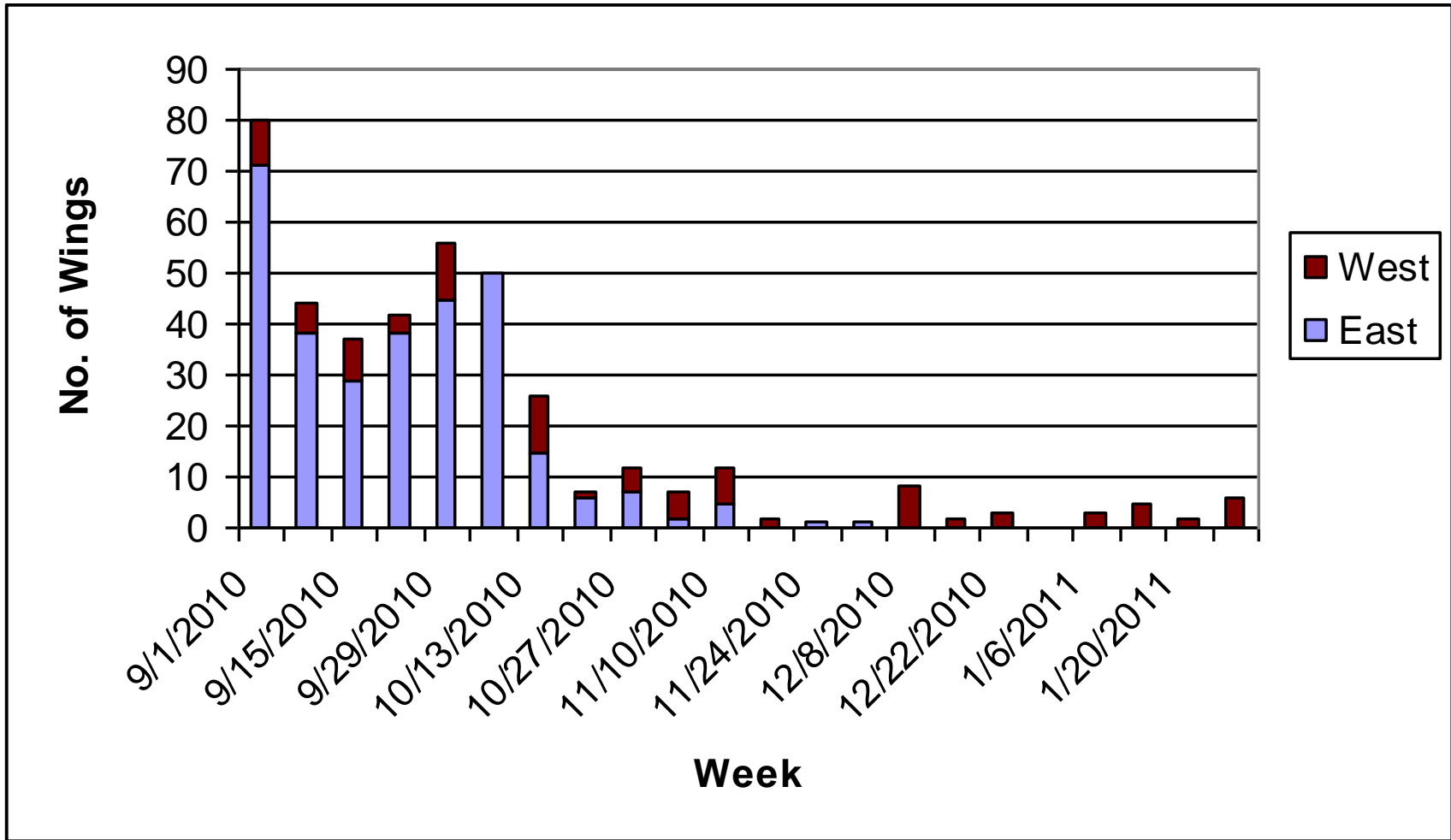


Figure 3. The number of ruffed grouse, as represented by wing/tail collections, by week of reported harvest during 2010-11 Oregon hunting season.

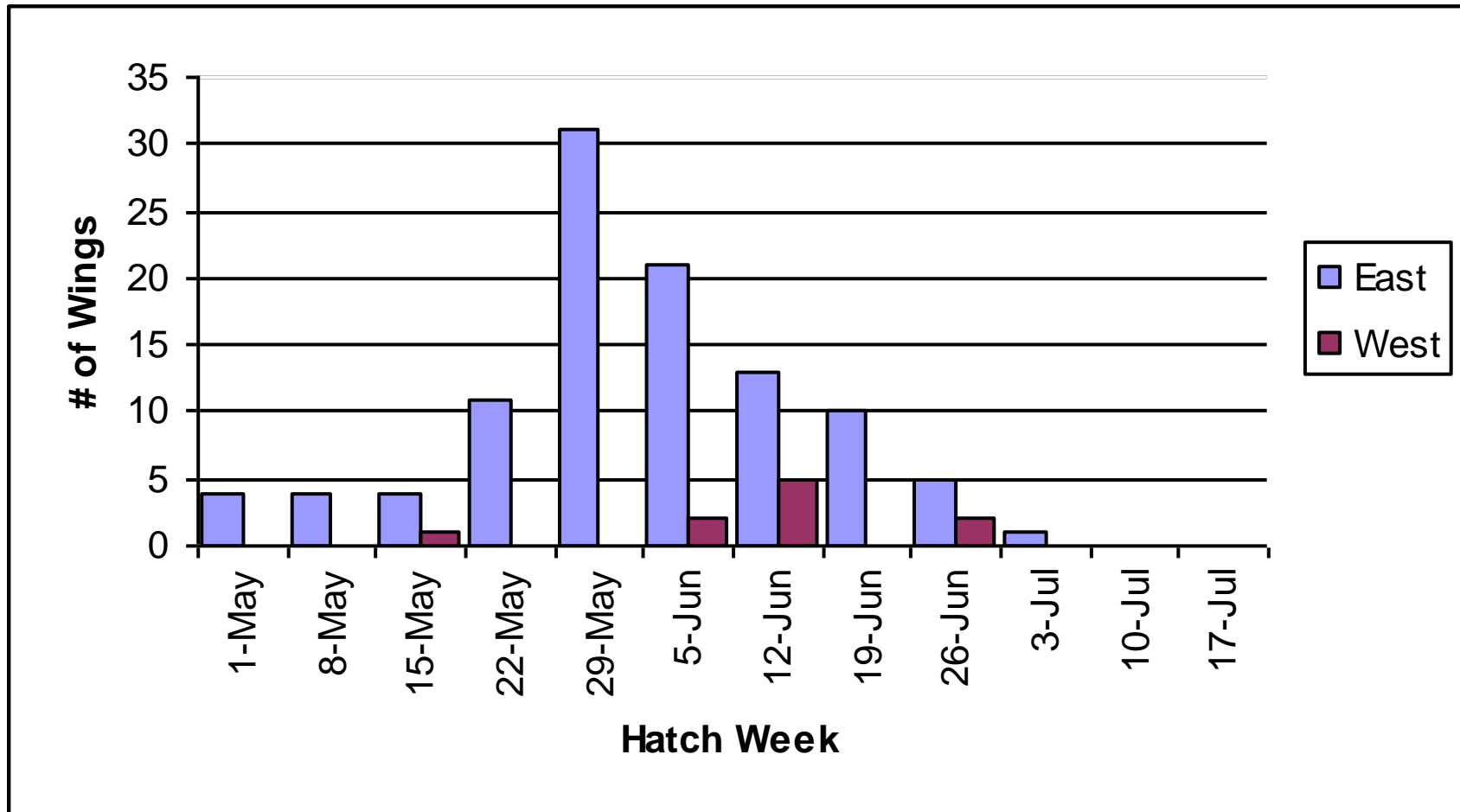


Figure 4. Hatching weeks of immature ruffed grouse as determined by the progression of primary feather molt of wings submitted by hunters from grouse shot during the 2010-11 hunting seasons.

Table 4. Sex ratios, age ratios and hatching dates of ruffed grouse as determined from parts submitted by hunters from Oregon harvest during the 2010-11 hunting season. Individual counties with sample sizes >20 wings are also listed.

Location	n	Sex Ratio				Age Ratio				n	Mean Hatch	Hatch Range	
		M : F	AM : AF	IM : IF	n	I : A	I : AF						
Douglas	46	39 : 61	59 : 41	6 : 94	58	36 : 64	66 : 34	-	-	-	-	-	
West Side	86	45 : 55	55 : 45	23 : 77	112	34 : 66	61 : 39	11	6/13/2010	5/15/2010	to	7/2/2010	
Grant	40	59 : 41	59 : 41	59 : 41	71	42 : 58	79 : 21	27	6/1/2010	5/3/2010	to	6/30/2010	
Union	25	40 : 60	43 : 57	36 : 64	46	61 : 39	78 : 22	29	6/11/2010	5/11/2010	to	7/3/2010	
Wallowa	100	54 : 46	56 : 44	50 : 50	159	43 : 57	73 : 27	50	6/6/2010	5/14/2010	to	6/28/2010	
East Side	183	52 : 48	54 : 46	50 : 50	310	46 : 54	76 : 24	118	6/6/2010	5/3/2010	to	7/3/2010	
Statewide	266	50 : 50	55 : 45	43 : 57	422	43 : 57	72 : 28	129	6/7/2010	5/3/2010	to	7/3/2010	

Table 5. 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 2010.

Season	<i>n</i>	Sex			Age		Mean Hatch	Hatch Range		
		M:F	AM:AF	IM:IF	I:A	I:AF			to	
1983	70				83:17					
1984	47	50:50	0:100		66:34	97:3	5-Jun	22-May	to	20-Jun
1985	193	56:44	64:36	52:48	75:25	92:8	28-May	3-May	to	7-Jul
1986	395	61:39	69:31	56:44	72:28	93:7	29-May	5-May	to	14-Jul
1987	372	59:41	51:49	64:36	70:30	88:12	27-May	4-May	to	28-Jun
1988	212	69:31	78:22	64:36	68:32	95:5	1-Jun	13-May	to	1-Jul
1989	139	55:45	50:50	57:43	74:26	90:10	2-Jun	2-May	to	29-Jun
1990	189	61:39	71:29	56:44	67:33	93:7	28-May	11-May	to	20-Jun
1991	155	64:36	62:38	65:35	63:37	88:12	3-Jun	7-May	to	6-Jul
1992	220	65:35	64:36	66:34	61:39	87:13	27-May	30-Apr	to	5-Jul
1993	55	65:35	71:29	60:40	62:38	86:14	1-Jun	15-May	to	2-Jul
1994	112	53:47	52:48	54:46	55:45	76:24	25-May	12-May	to	26-Jun
1995	84	61:39	68:32	52:48	57:43	89:11	30-May	12-May	to	26-Jun
1996	180	62:38	70:30	54:46	57:43	85:15	29-May	3-May	to	20-Jun
1997	169	61:39	84:16	34:66	58:42	92:8	31-May	3-May	to	18-Jun
1998	279	53:47	59:41	48:52	55:45	81:19	25-May	7-May	to	26-Jun
1999	370	44:56	48:52	41:59	64:36	89:11	2-Jun	8-May	to	6-Jul
2000	339	61:39	67:33	55:45	58:42	89:11	26-May	3-May	to	21-Jul
2001	434	61:39	75:25	50:50	62:38	92:8	31-May	7-May	to	14-Jul
2002	165	51:49	60:40	42:58	56:44	83:17	5-Jun	11-May	to	7-Jul
2003	284	65:35	66:34	64:36	54:46	87:13	1-Jun	8-May	to	3-Jul
2004	98	48:52	57:43	35:65	49:51	76:24	28-May	7-May	to	18-Jun
2005	180	53:47	68:32	41:59	58:42	89:11	1-Jun	6-May	to	1-Jul
2006	152	56:44	62:38	48:52	59:41	87:13	26-May	5-May	to	10-Jul
2007	198	49:51	55:45	41:59	58:42	83:17	25-May	2-May	to	15-Jun
2008	94	56:44	61:39	52:48	63:37	87:13	4-Jun	7-May	to	27-Jun
2009	222	66:44	75:25	58:42	69:31	94:6	30 May	6-May	to	6-Jul
2010	167	54:46	56:44	50:50	43:57	73:27	6-Jun	14-May	to	28-Jun

SPRUCE GROUSE

Wing Collections – 1985 to 2008

Incidental to the harvest of dusky and ruffed grouse in Baker, Wallowa and Union counties, 167 spruce grouse wings and tails were collected from wing barrels from 1985 through 2010. During 2010, 8 spruce grouse wings were collected from Wallowa County and one from

Union County. Wallowa County typically had the highest incidental harvest of spruce grouse, and likely harbors the largest amount of spruce grouse habitat. 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 25 years, immatures and adults composed nearly equal proportions of the sample. Oregon is on the SW periphery of the natural range of Spruce grouse and they are currently listed as vulnerable on Oregon's Sensitive Species List.

Mike Baird, under contract to ODFW, and students from Enterprise High School initiated a pilot project in 2005 to collect basic life history information about spruce grouse in Wallowa County, particularly the McCully Basin. This project continued through 2010 and is ongoing. Several birds have been captured and marked over the years and followed into the winter. Mike has also surveyed historic areas for the presence of spruce grouse. Mike and his students continue to solicit spruce grouse observations from the public and to educate hunters. They have also embarked on effort to compare the genetics of Oregon spruce grouse with those from populations in Washington and Idaho.

CONCLUSIONS

The number of hunter harvested forest grouse parts submitted to ODFW was down from the previous year (812 wings in 2010 as compared to 1409 wings in 2009); however, this is likely due to lower forest grouse harvest in 2010-11 (43,000 birds) as compared to 2009-10 (96,000 birds) and not the result of decreased participation. For all species (ruffed, sooty and dusky grouse), mean hatch dates in 2010 were among the latest recorded, if not the latest (as was the case for ruffed grouse). The number of immature grouse was also low, suggesting relatively poor production in most areas of the state.

Sample submissions for western Oregon continue to remain disproportionately low. In 2010, about 46% of the statewide “blue” grouse harvest occurred in western Oregon and yet wings from western Oregon represented only 10% of the submissions. Similarly, about 70% of the statewide ruffed grouse harvest occurred west of the crest of the Cascades, yet western Oregon ruffed grouse wings accounted for only 26% of the sample. This underscores the 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. Despite the desire for additional wings from Oregon forest grouse hunters, these wing collections still provide a valuable and reasonably low cost method of obtaining demographic profiles of grouse populations.

ACKNOWLEDGEMENTS

These data would simply not be available without the continued support and cooperation of Oregon hunters – for this we thank all the hunters who provided wings and tails! Forest grouse wing collection can also be a large workload for the wildlife districts, and any effort is greatly appreciated, however some districts have embraced this challenge, particularly in NE Oregon, and the results are self-evident – most of the forest grouse wings collected each year come from four NE Oregon counties – thank you. Thanks also to Tom Thornton for reviewing an earlier draft of the report.

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Appendix A. "Blue" grouse wings collected by county, 1980-2010.

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
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	658	498	405	308	342	296	260	176	437	470	598
Deschutes																			
Harney									1										
Jefferson																			
Klamath										17	7								
Lake									27	48	11		38		5			13	18
Malheur									1										
Total C&S	0	0	0	0	0	0	0	0	29	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						
Lane					40	82	59	23	16	23	4	1							
Linn						4					1								
Marion													3						
Polk																			
Tillamook																			
Wasco										3									
Washington																			
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	124	95	166	219	509	978	1189	751	650	460	354	463	286	277	176	437	483	616

Appendix A, continued

County	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Baker	69	114	178	146	162	54	84	34	17	76	87	50
Grant	49	28	53	37	51	66	50	18	32	93	77	55
Morrow						15	1		12	5	12	11
Umatilla	18	9	5	12	8	6	4		1	2	5	2
Union	104	68	165	86	110	69	49	54	32	62	79	48
Wallowa	451	384	567	376	460	252	209	163	172	104	173	128
Wheeler								1				
Total NE	691	603	968	657	791	459	397	270	266	342	433	294
Deschutes							1	3				2
Harney						2	3	3	7	5	2	
Jefferson							1					
Klamath				3		18	10		7	2	10	2
Lake	44			4		38	28	24	16		27	17
Malheur	1						5				6	
Total C&S	45	0	0	7	0	58	48	30	30	7	45	19
Clackamas					4		2	4		3	15	
Clatsop					1	1				1	1	
Columbia						2						
Coos					3	2	6				3	
Curry				3	7	9			12	1	2	5
Douglas	67	9	36	58	122	38	31	13	28	29	48	12
Hood River					5	7	15	12	8	5	26	10
Jackson				17	11	15	4	3	5	4	2	8
Josephine											1	
Lane	8			19	8	16	6	5	8	9	33	3
Linn								6	4	4	5	3
Marion						3	2	1		2	12	4
Polk						1					1	
Tillamook								2			7	1
Wasco				1		10	22	6	8	10	7	4
Washington								1				
Yamhill											1	
Unknown					7				1			1
Total West	75	9	36	98	168	104	88	53	74	68	164	51
Total	811	612	1004	762	959	621	533	353	370	417	597	366

Appendix B. Ruffed grouse wings collected by county. 1981-2010

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
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	16	0	70	72	274	811	846	435	604	350	234	340	78	121	139	460	406	658	655
Deschutes																			
Harney									1										
Klamath																			
Lake												1					5	1	
Malheur																			
Total C&S	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	5	1	4
Benton																			
Clackamas					2	14													
Clatsop																			
Columbia																			
Coos									1			4							
Curry																			
Douglas					7	17	47	19	13	40	67	104	24				3		71
Hood River																			
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																			
Unknown												5							
Total West	0	0	0	52	70	144	81	29	47	47	72	135	25	0	0	51	3	0	82
Total	16	0	70	124	344	955	927	464	352	397	306	476	103	121	139	511	414	659	741

Appendix B, continued.

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Baker	31	29	25	32	12	9	17	27	21	18	14
Grant	87	98	128	75	90	68	57	87	63	123	72
Morrow					3	1		1	7	12	3
Umatilla	44	14	15	13	15	4		8	3	7	1
Union	200	260	167	160	83	109	102	60	107	98	47
Wallowa	342	462	165	270	99	181	152	198	94	222	167
Total NE	704	863	497	566	302	372	328	381	295	480	304
Crook											3
Deschutes									2		
Harney					4						2
Jefferson										2	
Klamath			5		7	1	1	2			1
Lake						1					
Malheur					3						
Total C&S	0	0	5	0	14	2	1	2	2	2	6
Benton					1						
Clackamas			3	13	2	2			1	22	2
Clatsop				1		1			1	1	
Columbia				18	10	2		1		9	1
Coos			3	12	15	3	2	5	2	34	13
Curry			4	11	10	1		13		5	3
Douglas	74	129	155	163	103	55	10	33	38	106	60
Hood River			7	14	24	22	18	4	7	15	5
Jackson			19	18	4	2		8	9	7	9
Josephine				3	2					1	
Lane			31	5	25	3	9	9	5	32	4
Lincoln			4	3	2			1		1	
Linn							6	1	4	10	7
Marion				3	2	3		6	3	11	12
Tillamook					1		4	1		15	3
Wasco					12	11	10	8	10	10	7
Washington			4		30		2				
Yamhill										5	1
Unknown				12	1	3			2		
Total West	74	129	230	276	244	108	61	90	82	284	127
Total	778	992	732	842	560	482	390	473	379	766	437

Appendix C. Spruce grouse wings collected in Oregon, 1985-2010.

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
2010	Wallowa	Little Sheep	A	F	10 October
2010	Wallowa	Little Sheep	J	M	10 October
2010	Wallowa	Little Sheep	A	F	10 October
2010	Wallowa	Little Sheep	A	F	2 October
2010	Wallowa	Salt Creek	J	U	2 October
2010	Wallowa	Little Sheep	A	F	10 October
2010	Wallowa	Lick Creek	J	M	25 September
2010	Wallowa	Lick Creek	J	M	25 September
2010	Union	Hess Cabin Rd.	A	M	30 September