2013 Forest Grouse Parts Collection Summary

Ruffed grouse enjoying a float trip down the Molalla River, Clackamas County, March 2014.
Fortunately for this grouse, no parts collection was involved.
Photo by Henry Carlile

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INTRODUCTION

Since 1980, wings and tails of blue[1] (*Dendragapus spp*), ruffed (*Bonasa umbellus*), and spruce grouse (*Falcipennis 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 2013, wings and tails were obtained from 23 of the 36 counties in Oregon (Table 1). A total of 854 wings and tails were examined at 2 forest grouse wing bees. The total number of wings and tails obtained in 2013 was down 9% from the previous year and down 11% from the recent 5 year average of 956. Statewide blue grouse submissions were down 17% and ruffed grouse wings were similar to 2012. Spruce grouse wings represent a small proportion of all grouse wing submissions with only 3 wings from Wallowa County in 2013, a decrease from the recent 5 year average of 8 wings. There is no open spruce grouse season in Oregon.

[1]Dusky 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 in their areas (Figures 2 & 4), 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. 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

Table 1. Forest grouse wings submitted to the 2013 Oregon forest grouse wing bees at Ladd Marsh Wildlife Area on January 23, 2014 and the Umpqua Watershed District Office (Roseburg) on March 4, 2014. Wing bee counts from 2012 are provided for comparison.

County	"Blue" Grouse		Ruffed Grouse		Spruce Grouse		Total Wings		% change from 2012
	2013	2012	2013	2012	2013	2012	2013	2012	
Unknown Co		2		2			0	4	-100.0
Baker	21	68	12	32			33	100	-67.0
Crook				2			0	2	-100.0
Deschutes	1						1	0	
Grant	38	87	124	163			162	250	-35.2
Harney	14	4	6				20	4	400.0
Jefferson	2						2	0	
Klamath	5	13	2	5			7	18	-61.1
Lake	26	25					26	25	4.0
Morrow	2	10	1	2			3	12	-75.0
Umatilla	2		4				6	0	
Union	53	29	71	101		10	124	140	-11.4
Wallowa	93	121	174	144	3	2	270	267	1.1
Wheeler		9					0	9	-100.0
Clackamas		1		2			0	3	-100.0
Clatsop			5				5	0	
Columbia				1			0	1	-100.0
Coos		2		13			0	15	-100.0
Curry	3	3	9	2			12	5	140.0
Douglas	25	14	64	25			89	39	128.2
Hood River	14	1	8	5			22	6	266.7
Jackson			2	1			2	1	100.0
Lane	10	3	7	15			17	18	-5.6
Linn	1	4	1				2	4	-50.0
Marion	11	3	5	1			16	4	300.0
Tillamook	7	3	1				8	3	166.7
Wasco	8	4	16	3			24	7	242.9
Washington			1				1	0	
Yamhill			2				2	0	
Total	**336**	**406**	**515**	**519**	**3**	**12**	**854**	**937**	**-8.9**

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. Samples obtained through hunter harvest may not adequately reflect sex and age

ratios of a population and may change through the course of the season**.** Age ratios during the first two weeks of the season provide the best index to reproduction, while there is no significant change in sex ratios during the course of the season (Hansen et al. 2012). This report provides age ratios for the first two weeks of the season and for the entire season. The age ratios for the entire season will allow comparison to data collected in previous years.

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 newspaper interviews are utilized when available.

Each winter biologists gather at wing bees to collect information from the parts. In 2013-14, wing bees were held at Ladd Marsh Wildlife Area (Figure 1) and the Umpqua Watershed District Office. Data collected from each set of parts are: 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). 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 on or prior to 10 October (immature molt of primaries 1 through 8 is usually complete by 10 October).

Figure 1. Determining the age and sex of grouse parts received at the eastside wing bee at Ladd Marsh Wildlife Area, 23 January 2014.

BLUE GROUSE RESULTS

During 2013, 336 wings and tails from "blue" grouse were collected in Oregon, a decrease of about 17% from the previous year and a 26% decline from the recent 5-year average of 456 wings. The 2013 hunting season allowed a daily bag limit of 3 birds with 9 in possession. The season started 1 September statewide and ended 31 December in eastern Oregon and ended 31 January in western Oregon, which includes Hood River and Wasco counties. Thirty-three percent of the wings and tails were harvested during the first week of the season and 74% were harvested by the end of September. 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 (Figure 2).

Three-fourths (257) of the wings and tails were obtained from eastern Oregon. The majority of submissions from eastern Oregon were from Wallowa (47%), Union (21%), and Grant (17%) counties. The remainder of the eastern Oregon submissions came from 8 other counties. Seventy-nine wings and tails were obtained from 8 counties in western Oregon, a

108% increase from the number received in the previous year. The majority of the submissions were from Douglas (32%) and Hood River (18%) counties.

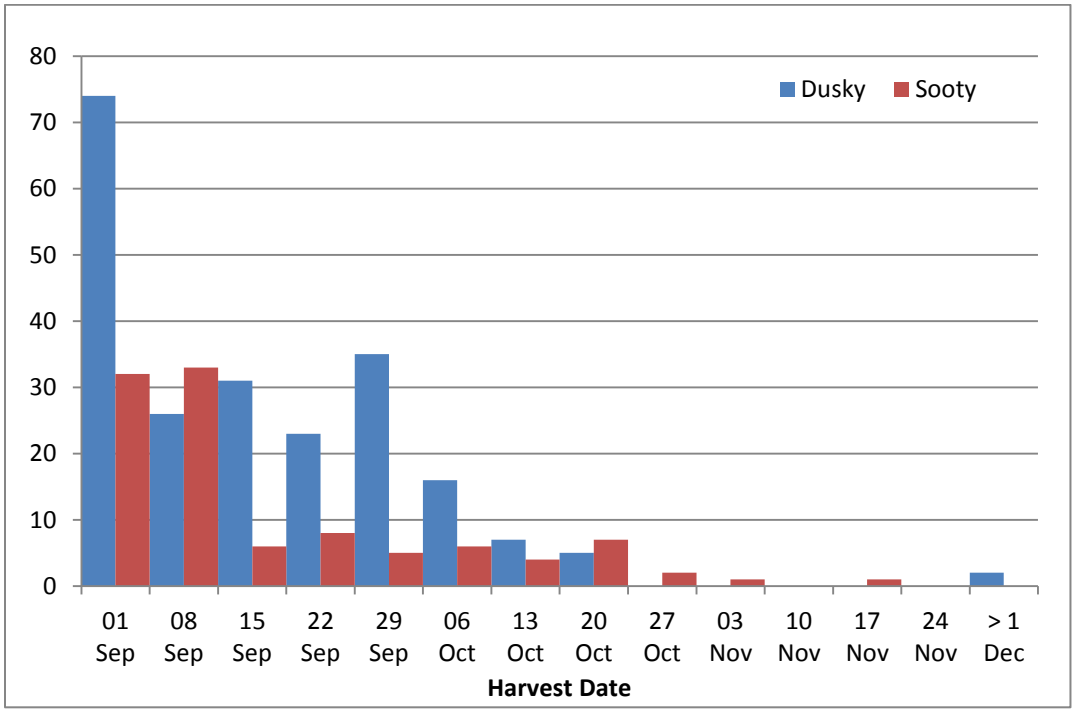

Figure 2. The number of sooty and dusky grouse wing/ tail collections, by week of reported harvest during 2013-14 Oregon hunting season.

Age and Sex Ratios

Immature grouse comprised 66% of the sample for "blue" grouse during the first two weeks of the season and the entire season (Table 2). The proportion of immatures in the harvest indicates above average (~65% immature) production. Males represented 53% of the statewide sample, 55% of adult sample, and 52% of immatures in 2013.

Hatching Chronology

Statewide, hatch dates for dusky and sooty grouse harvested during the 2013 hunting season ranged from 5 May to 7 July, which is similar to previous years. Dusky grouse hatch dates ranged from 5 May to 2 July ($\bar{x}$ = 31 May) and sooty grouse hatch dates ranged from 9 May to 7 July ($\bar{x}$ = 5 June). For dusky grouse, 75% hatched between 17 May and 12 June, while

75% of sooty grouse hatched between 22 May and 17 June. Typical of most years, the peak sooty grouse hatch was later than the peak dusky grouse hatch. Mean hatch dates were average (Figure 3) and were earlier than hatch dates in 2010 and 2011, which were among the latest recorded during this study (1980 – 2013).

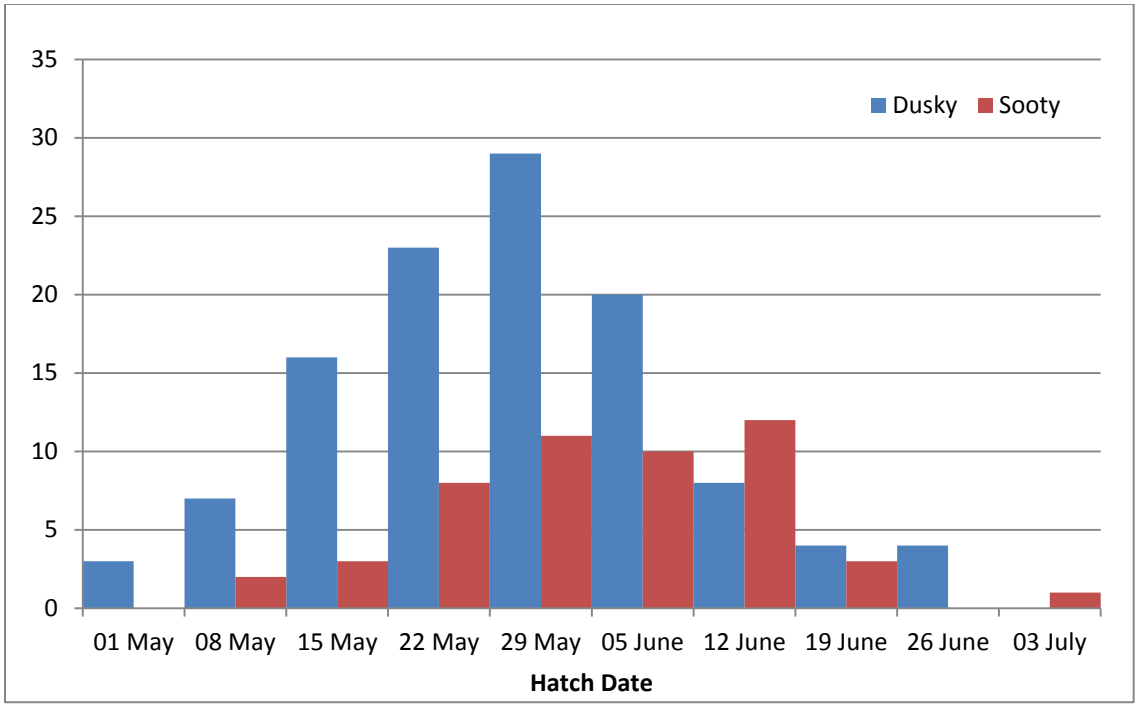

Figure 3. Week of hatch for dusky and sooty grouse in Oregon as estimated from primary feathers from hunter-harvested wings during 2013. Hatch dates were only estimated for birds that were harvested on or before October 10.

Table 2. "Blue" grouse sex ratios, age ratios and hatch dates by species in 2013 from hunter submitted wings. Ratios are presented for the first two weeks of season and for the entire season. Wings and tails harvested during the first two weeks are the best indicator for age ratios (Hansen et al. 2012). Hatch date is only estimated for grouse harvested on or before October 10.

	Gender Ratios				Age Ratios			Hatch Dates	
	n	M:F	AM:AF	IM:IF	n	I:A	I:AF	n	Mean, Range
Dusky									
1st 2 wks	99	59:41	60:40	58:42	99	70:30	85:15	--	--
Total	221	57:43	58:42	56:44	220	67:33	83:17	114	May 31, May 5- July 2
Sooty									
1st 2 wks	65	49:51	52:48	48:52	65	62:48	80:20	--	--
Total	113	46:54	51:49	43:57	111	65:35	79:21	50	June 5, May 9 - July 7
All									
1st 2 wks	164	55:45	56:44	54:46	164	66:34	82:18	--	--
All Total	334	53:47	55:45	52:48	331	66:34	81:19	164	June 1, May 5 - July 7

Wallowa County – 1980 to 2013

From 1980 through 2013 hunters in Wallowa County submitted parts representing 9,106 dusky grouse. In 2013, 93 wings were collected, which is down 66% from the average since the wing bee began in 1980. Males comprised 61% of the sample, which is higher than the long-term average of 56% (Table 3)

The immature proportion (66%) of the harvest was above average and suggests good production as the proportion of immatures was just above 65% (Table 3). The last time production was above 65% was back in 2009. The proportion of immatures in Wallowa County has ranged from a low of 38% in 1982 to a high of 76% in 2008 (1980–2013, $\bar{x}$ = 61%). Over the past 33 years, dusky grouse populations in Wallowa County appeared to have 4 years of poor production as measured by a proportion of immatures <50% (1982, 1991, 1995, and 2006) and 12 years of good production as measured by a proportion of immatures >65% (1980, 1983, 1985, 1986, 1989, 1996, 1998, 2000, 2007, 2008, 2009, 2013; Table 3).

Mean hatch dates have ranged from 25 May (1992, 1998, and 2004) to 6 June (1995 and 1999) with the preponderance of young hatched during a 3-week interval between late May and early June (Table 3). In 2013, the mean hatch date was 2 June and ranged from 5 May to 30 June.

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 2013.

		Sex Ratios			Age Ratios		Hatch Dates			
Season	***n***	**M:F**	**AM:AF**	**IM:IF**	**I:A**	**I:AF**	**Mean**	**Range**		
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
2011	150	57:43	61:39	46:54	57:43	83:17	5-Jun	8-May	to	15-Jul
2012	126	46:54	66:34	29:71	52:48	76:24	1-Jun	15-May	to	26-Jun
2013	**93**	**61:39**	**65:35**	**59:41**	**66:34**	**85:15**	**2-Jun**	**5-May**	**to**	**30-Jun**

RUFFED GROUSE RESULTS

In 2013, a total of 515 ruffed grouse wings and tails were collected in Oregon, a similar number as from the previous year and just above the recent 5-year average of 492 wings. The 2013 ruffed grouse hunting season allowed a daily bag limit of 3 birds with 9 in possession. Statewide the season began 1 September and extended through 31 December in eastern Oregon and through 31 January 2014 in western Oregon, which includes Hood River and Wasco counties. Typically the highest number of ruffed grouse wings is submitted during the first week of season, with a second peak in harvest occurring during the start of many firearm big game seasons, usually the first week in October. In 2013, the peak of ruffed grouse wing returns occurred during the second week of the grouse season and again during the start of the big game rifle seasons (Figure 4). Fifteen percent of the ruffed grouse parts were submitted during the first week of the season and 55% were reported harvested during the first 4 weeks of the season (Figure 4).

In eastern Oregon, 394 samples were collected, a 12% decrease from 2012, but still above the recent 5-year average of 360. Most of the samples collected in eastern Oregon were from Grant, Union, and Wallowa Counties. In western Oregon, 121 ruffed grouse samples were collected, an 81% increase over last year. Douglas County accounted for a large portion of the samples (64 wings), with the remainder from 11 other counties.

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% of the submissions. Age was determined for 99% of the samples obtained from eastern and western Oregon.

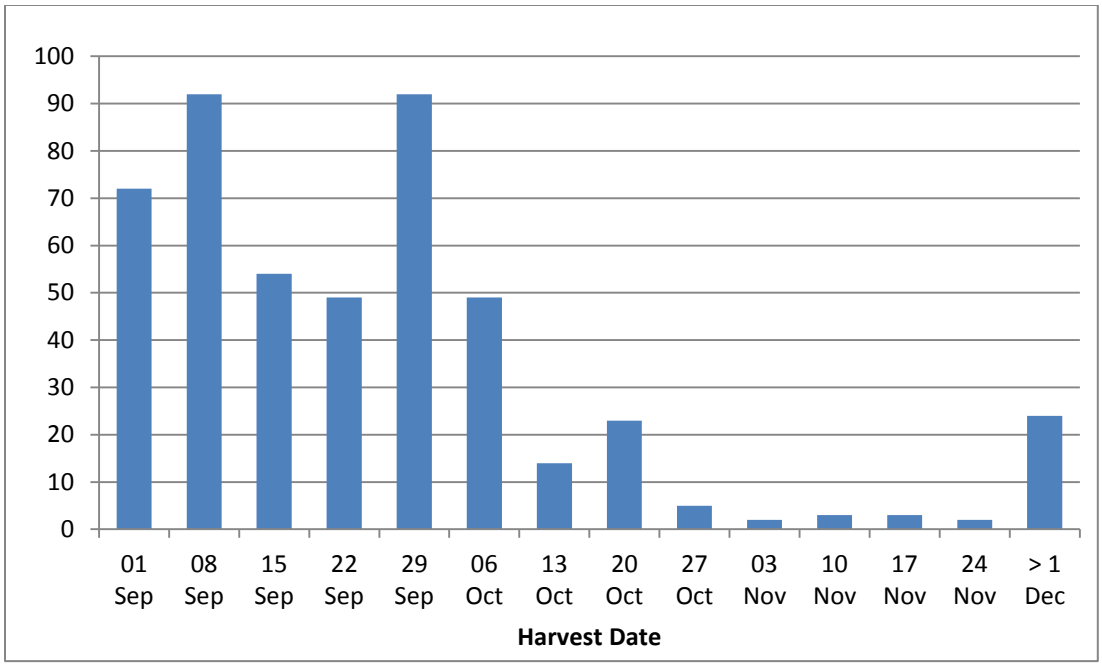

Figure 4. Timing of Oregon's 2013 ruffed grouse harvest as estimated from 484 ruffed grouse wings with harvest dates.

Immature grouse comprised 49% of the statewide sample during the first two weeks of the season. Age ratios during the first two weeks of the season provide the best index to reproduction because age ratios in the harvest can change over the course of the season (Hansen et al. 2012). For the entire season, immatures comprised 57% of the statewide harvest of ruffed grouse. In eastern Oregon, 60% of ruffed grouse samples were from immatures and 47% of submissions from western Oregon were immatures (Table 4). The proportion of immatures in western Oregon indicates below average production. An analysis of wings from the previous 26 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 50% of the wings collected. The proportion of adult wings that were male was 50% and 48% for eastern 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 2013, males were 47% of the immature birds submitted from eastern Oregon. Confidence in the sex ratios would be improved if gender could be determined for a higher proportion of the samples. In 2013, 56% of the ruffed grouse samples included diagnostic feathers for gender identification.

Hatching Chronology

The mean hatch date for ruffed grouse collected during the 2013 hunting season was 1 June. Hatch dates were estimated from 207 wings, of which 22 were from western Oregon. Given the small sample from the west side, wings from both sides of the state were pooled for analysis (Table 4). Similar to "blue" grouse, peak hatch dates for ruffed grouse were close to average. Hatching dates ranged from 4 May to 7 July ($\bar{x}$ = 1 June), with 75% ruffed grouse in the harvest hatching between 19 May and 13 June (Figure 5).

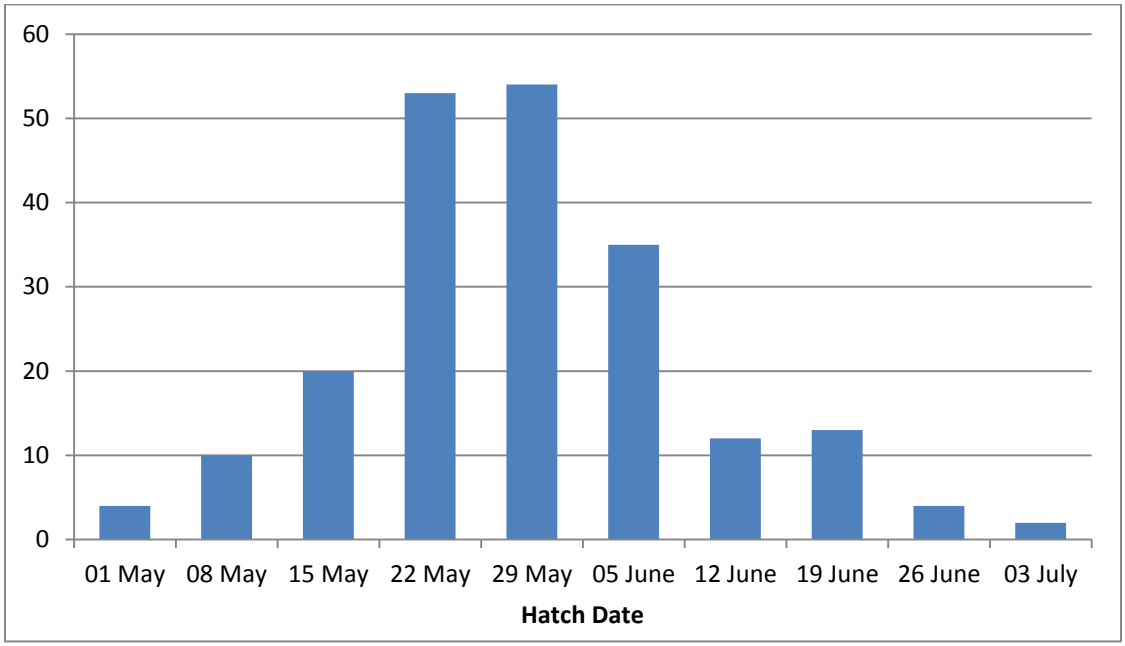

Figure 5. Timing of Oregon's 2013 ruffed grouse hatch as estimated from 207 wings harvested on or before 10 October.

Table 4. Sex ratios, age ratios and hatching dates of ruffed grouse as determined from parts submitted by hunters from Oregon harvest during the 2013-14 hunting season.

	Gender Ratios				Age Ratios		Hatch Dates	
	n	M:F	AM:AF	IM:IF	I:A	I:AF	n	Mean, Range
East	219	50:50	52:48	47:53	60:40	69:31	185	June 1, May 4 - July 7
East, 1st 2 wks	73	51:49	45:55	55:45	65:35	69:31	--	--
West	69	48:52	47:53	55:45	47:53	48:52	22	May 29, May 4 - June 22
Statewide	288	50:50	50:50	48:52	57:43	64:36	207	June 1, May 4 - July 7

Wallowa County - 1983 to 2013

From 1983 through 2013, hunters have submitted 6,041 ruffed grouse wings and tails from Wallowa County. The proportion of immatures (61%) in the 2013 wing sample was up from last year (55%). 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 (48%) in the sample was similar to last year but below the long-term average (~57%), however only 106 submissions contained the diagnostic feathers to determine sex. A large proportion of hunter submissions continue to lack the diagnostic rump feathers or other keys to gender identification. The mean hatch date of 29 May was similar to 2012 and similar to the long term mean.

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 2013.

		Sex Ratios			Age Ratios		Hatch Dates			
Season	***n***	**M:F**	**AM:AF**	**IM:IF**	**I:A**	**I:AF**	**Mean**	**Range**		
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
2011	150	57:43	61:39	46:54	57:43	83:17	5-Jun	8-May	to	15-Jul
2012	143	47:53	51:49	41:59	55:45	68:32	30-May	6-May	to	1-Jul
2013	**174**	**48:52**	**54:46**	**43:57**	**61:39**	**70:30**	**29-May**	**4-May**	**to**	**7-Jul**

SPRUCE GROUSE

Wing Collections – 1985 to 2013

Incidental to the harvest of dusky and ruffed grouse in Baker, Wallowa and Union counties, 190 spruce grouse wings and tails were collected from wing barrels from 1985 through 2013. During 2013, only 3 spruce grouse wings were collected from Wallowa County compared to 12 wings collected in 2012 from Wallowa and Union counties. Wallowa County typically has the highest incidental harvest of spruce grouse but Union County has received more spruce grouse wings in recent years. During 1997, spruce grouse wings were obtained from Baker County for the first time, likely related to an increased effort in wing collection rather than range expansion. The 1988 wing bee recorded the highest number of spruce grouse wings (27). During the past 25 years, immatures and adults composed nearly equal proportions of the sample. In 2013, 2 adult and 1 yearling wings were received. Oregon is on the southwest periphery of the natural range of spruce grouse and they are currently listed as vulnerable on Oregon's Sensitive Species List.

SUMMARY

Estimates of the statewide harvest of "blue" and ruffed grouse indicate increases from the previous year by 15% and 39%, respectively. The majority of the wings submitted in 2013 came from NE Oregon where estimated harvest for ruffed grouse increased from 2012. Estimated dusky grouse harvest for region 5 (Baker, Union, and Wallowa counties) was nearly identical to harvest the prior year and ruffed grouse harvest was up by 42% compared to 2012.

For ruffed and dusky grouse, mean hatch dates in 2013 were similar to 2012. Mean sooty grouse hatch was 10 days earlier than the previous year. Statewide, the proportion of immature "blue" and ruffed grouse in the harvest was higher than in 2012 and the high proportion (>65%) of immature "blue" grouse suggests 2013 was a good year for recruitment.

Sample submissions for western Oregon continue to remain disproportionately low, although in 2013 nearly twice as many wings from western Oregon were submitted compared to the previous year. In 2013, about 24% of the submitted wings came from western Oregon, yet western Oregon accounted for 60% of the statewide "blue" grouse harvest and 61% of

ruffed grouse harvest. For western Oregon, estimated harvest was up by 51% and 38% for "blue" and ruffed grouse, respectively. This underscores the need to explore methods for increasing the submission rates for grouse harvested in western Oregon.

Statewide education efforts should continue to increase hunter awareness and participation for the need and value of 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.

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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 their effort is greatly appreciated. Some wildlife districts have embraced this challenge and the results are self-evident – most of the forest grouse wings collected each year come from four NE Oregon counties – thank you.

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