2015 Forest Grouse Parts Collection Summary

Skyler retrieving a “blue” grouse in Lake County. Photo by Dave Budeau, ODFW.

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INTRODUCTION

Since 1980, wings and tails of forest grouse 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 2005, wing collection was expanded to include mountain quail.

In 2015, wings and tails of blue[1] (*Dendragapus spp*), ruffed (*Bonasa umbellus*), and spruce grouse (*Falcipennis canadensis*) were obtained from 22 of the 36 counties in Oregon (Table 1). A total of 1,894 wings and tails were examined at 2 forest grouse wing bees. The total number of wings and tails obtained in 2015 was up 70% from the previous year and up 112% from the recent 5 year average of 895. Statewide "blue" grouse submissions were up 63% and ruffed grouse wings were up 72% compared to 2014. Spruce grouse wings represent a small proportion of all grouse wing submissions with 6 wings from Wallowa County and 2 wings from Union County in 2015, an increase from the recent 5 year average of 7 wings. There is no open spruce grouse season in Oregon. A small number of wings from mountain quail (*Oreortyx pictus*) have also been collected from hunters. Since 2005, 250 mountain quail wings have been collected, with 60 of those wings collected in 2015.

[1]Dusky and Sooty grouse considered collectively as "blue" grouse.

Table 1. Forest grouse wings submitted to the 2015 Oregon forest grouse wing bees at Ladd Marsh Wildlife Area on January 26, 2016 and the Umpqua Watershed District Office (Roseburg) on February 9, 2016. Wing bee counts from 2014 are provided for comparison.

County	"Blue" Grouse		Ruffed Grouse		Spruce Grouse		Total Wings		% change from 2014
	2015	2014	2015	2014	2015	2014	2015	2014	
Baker	16	34	26	17			42	51	-18
Deschutes				1			0	1	-100
Grant	54	47	206	122			260	169	54
Harney	3	1					3	1	200
Klamath		2	5				5	2	150
Lake	44	40					44	40	10
Morrow	29	14	132	15			161	29	455
Umatilla	2	3	19				21	3	600
Union	35	37	206	121	2		243	158	54
Wallowa	228	59	236	157	6	3	470	219	115
Wheeler		1		1			0	2	-100
Clackamas	5		7				12	0	
Clatsop		2		2			0	4	-100
Coos		4	2	11			2	15	-87
Curry	9	6	16	7			25	13	92
Douglas	122	75	300	233			422	308	37
Hood River		6		12			0	18	-100
Jackson	14		60	3			74	3	2,367
Josephine	1						1	0	
Lane	18	14	21	13			39	27	44
Lincoln				2			0	2	-100
Linn	3	6	7	2			10	8	25
Marion	7	7	8	3			15	10	50
Multnomah	1						1	0	
Tillamook	1	5	5	1			6	6	0
Wasco	13	8	21	18			34	26	31
Washington			1				1	0	
Yamhill				2			0	2	-100
Unknown			3				3	0	
Total	**605**	371	**1,281**	743	**8**	3	**1,894**	1,117	**70**

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). In comparison to other methods for tracking trends in population size and productivity, such as brood route and hunter harvest telephone surveys, data gathered from wings is an effective and low cost method for monitoring trends (Hansen et al. 2015).

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 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. Last year, the Umpqua Watershed District Office (Roseburg) increased collection effort by placing out 7 new forest grouse wing collection barrels. This year (2015) the Heppner Office installed two 2 new barrels, the Central Point Office installed 10 new barrels, and the North Willamette Watershed installed 2 new barrels.

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 to 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 2015-16, wing bees were held at Ladd Marsh Wildlife Area and the Umpqua Watershed District Office (Figure 1). 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 immature birds. 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. Roseburg wing bee participants receiving an overview of how to determine the age and sex of grouse parts, 9 February 2016 (photo by Tim Akimoff, ODFW).

BLUE GROUSE RESULTS

During 2015, 605 wings and tails from "blue" grouse were collected in Oregon, an increase of about 63% from the previous year and a 61% increase from the recent 5-year average of 379 wings. The 2015 hunting season allowed a daily bag limit of 3 birds with 9 in possession. In 2015, the western and eastern Oregon season dates were aligned into one statewide season to simplify the regulations. The new statewide season started 1 September and ended 31 January. In previous years, the season in eastern Oregon ended on December 31. Thirty-four percent of the wings and tails were harvested during the first week of the season and 63% 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).

Sixty-eight percent (411) of the wings and tails were obtained from eastern Oregon. The majority of submissions from eastern Oregon were from Wallowa (55%), Grant (13%), and Lake (11%) counties. The remainder of the eastern Oregon submissions came from 5 other counties. One hundred ninety four wings and tails were obtained from 11 counties in western Oregon, a 52% increase from the number received in the previous year. The majority of the submissions were from Douglas County (63%).

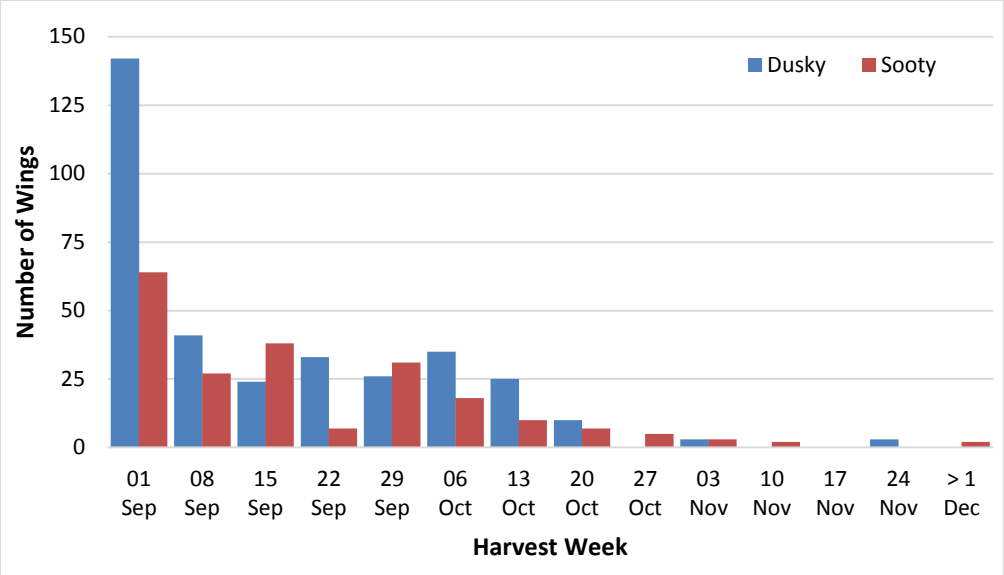

Figure 2. The number of sooty and dusky grouse wing/ tail collections, by week of reported harvest during the 2015-16 Oregon hunting season.

Age and Sex Ratios

Immature grouse comprised 67% of the wings for "blue" grouse during the first two weeks of the season and 66% of the sample from 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, 60% of adult sample, and 51% of immatures in 2015.

Hatching Chronology

Statewide, hatch dates for dusky and sooty grouse harvested during the 2015 hunting season ranged from 5 May to 15 July, which is similar to previous years. Dusky grouse hatch dates ranged from 5 May to 4 July ($\bar{x}$ = 27 May) and sooty grouse hatch dates ranged from 6 May to 15 July ($\bar{x}$ = 6 June). For dusky grouse, 75% hatched between 13 May and 10 June, while 75% of sooty grouse hatched between 22 May and 21 June. Typical of most years, the peak sooty grouse hatch was later than the peak dusky grouse hatch. Mean hatch dates were average (Figure 4) and were earlier than hatch dates in 2010 and 2011, which were among the latest recorded during this study (1980 – 2015).

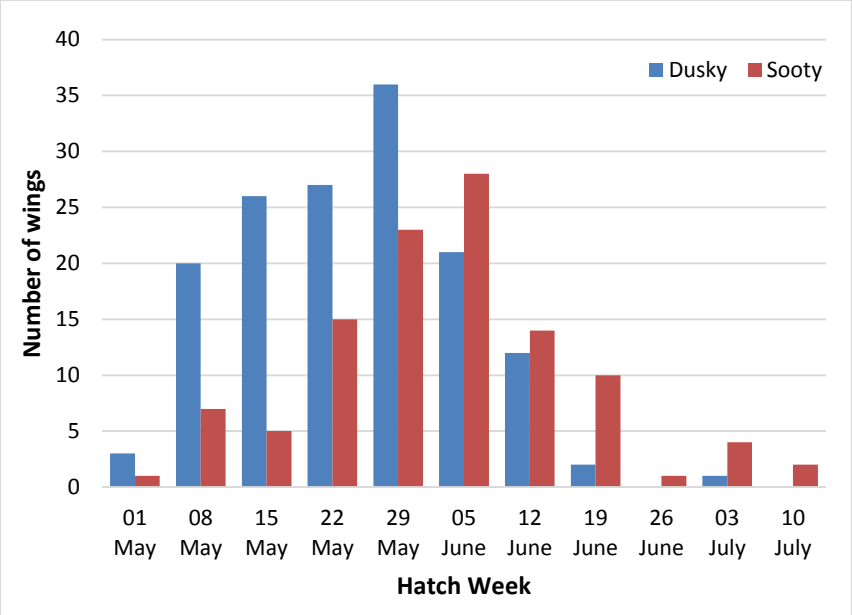

Figure 3. Week of hatch for dusky and sooty grouse in Oregon as estimated from primary feathers from hunter-harvested wings during 2015. Hatch dates were only estimated for birds that were harvested on or before October 10.

Table 2. "Blue" grouse sex ratios, age ratios and hatch dates by species in 2015 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	181	65:35	73:27	61:39	183	65:35	88:12	--	--
Total	363	61:39	71:29	56:44	367	64:36	86:14	147	May 27, May 5 - July 4
Sooty									
1st 2 wks	83	29:71	28:72	29:71	90	70:30	78:22	--	--
Total	228	41:59	39:61	43:57	234	69:31	79:21	110	June 6, May 6 - July 15
All									
1st 2 wks	264	54:46	61:39	50:50	273	67:33	84:16	--	--
All Total	591	53:47	60:40	51:49	601	66:34	83:17	257	May 31, May 5 - July 15

Wallowa County – 1980 to 2015

From 1980 - 2015 hunters in Wallowa County submitted parts representing 9,393 dusky grouse. In 2015, 228 wings were collected, which is down 13% from the average since the wing bee began in 1980, but up 107% from the recent 5 year average. Males comprised 80% of the adult sample, which is higher than the long-term average of 66% (Table 3).

The immature proportion of the harvest was above average and suggests good production as the proportion of immatures was at 65% (Table 3). Production was above 65% in 2013 and 2014 after a period of lower production (2010-2012). The proportion of immatures in Wallowa County has ranged from a low of 38% in 1982 to a high of 76% in 2008 (1980–2015, $\bar{x}$ = 61%). Over the past 36 years, dusky grouse populations in Wallowa County appeared to have had 4 years of poor production as measured by a proportion of immatures <50% (1982, 1991, 1995, and 2006) and 13 years of good production as measured by a proportion of immatures >65% (1980, 1983, 1985, 1986, 1989, 1996, 1998, 2000, 2007, 2008, 2009, 2013, 2014; 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 2015, the mean hatch date was on the early side, 26 May, and ranged from 5 May to 4 July.

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 2015.

		Sex Ratios			Age Ratios		Hatch Information			
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
2014	59	44:56	78:22	46:54	69:31	91:9	3-Jun	13-May	to	24-Jun
2015	**228**	**66:34**	**80:20**	**59:41**	**65:35**	**90:10**	**26-May**	**5-May**	**To**	**4-Jul**

RUFFED GROUSE RESULTS

In 2015, a total of 1,281 ruffed grouse wings and tails were collected in Oregon, a 72% increase from 743 wings last year and a 152% increase from the recent 5-year average of 509 wings. The 2015 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 January 2016. Typically a large portion of the ruffed grouse wings are submitted during the first couple weeks of season, with a second peak in harvest occurring during the start of many firearm big game seasons, usually the first week in October. This trend was repeated in 2015; the peak of ruffed grouse wing returns occurred during the first week of the grouse season and again during the start of the big game rifle seasons (Figure 4). Nineteen percent of the ruffed grouse parts (with a harvest date included) were submitted during the first week of the season. In prior years, the number of grouse wings returned dropped considerably after the first week of big game rifle seasons. In 2015, a large percentage of the wings were collected in the first two weeks of October (coincides with the first two weeks of general deer season in western Oregon), with 49% of wings harvested in September and 44% in October (Figure 5).

In eastern Oregon, 830 wings were collected, a 91% increase from 2014 and above the recent 5-year average of 373. Most of the samples collected in eastern Oregon were from Grant, Union, and Wallowa counties. In addition, the 2 new wing barrels in the Heppner district resulted in a substantial increase in the number of wings collected in Morrow County (132 wings in 2015 vs 15 wings in 2014). In western Oregon, 448 ruffed grouse samples were collected, a 47% increase over last year. Wing collection efforts in Douglas County accounted for the majority of the wings, followed by Jackson County. Both districts have recently increased their wing collection efforts. In 2015, 300 ruffed grouse wings were collected in Douglas County compared to the recent 5-year average of 80 wings. Wings were collected from a total of 11 counties in western Oregon.

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 ruffed grouse submissions. Age was determined for 98% of the samples obtained from eastern and western Oregon.

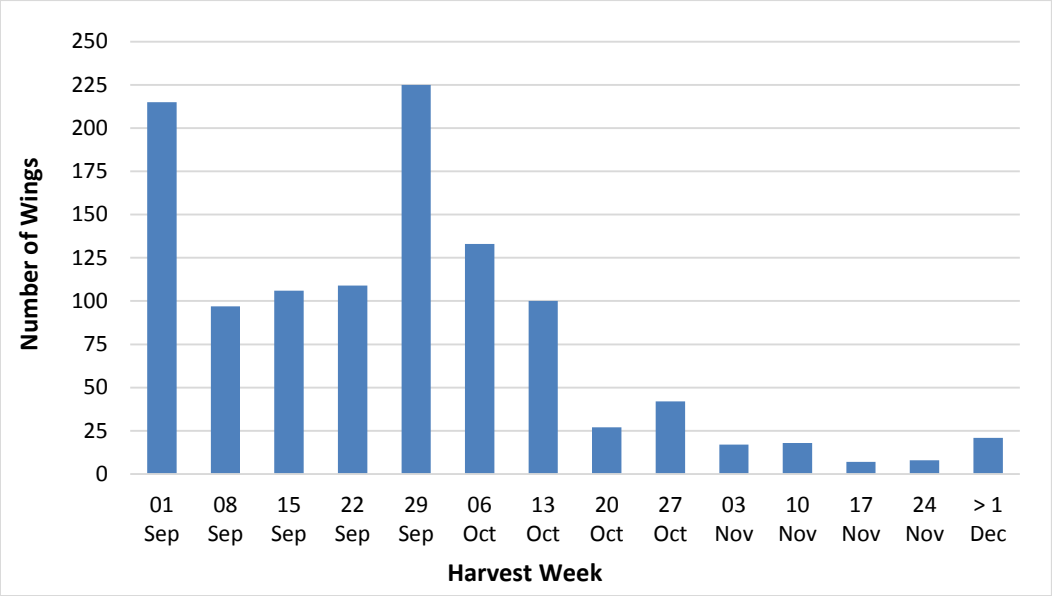

Figure 4. Timing of Oregon's 2015 ruffed grouse harvest as estimated from 1,125 ruffed grouse wings with harvest dates.

Immature grouse comprised 57% of the statewide sample during the first two weeks of the season indicating fair production. Most (75%) of the early season ruffed grouse wings were collected in eastern Oregon. 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, 55% of ruffed grouse samples were from immatures and 52% of submissions from western Oregon were immatures (entire season; Table 4). Very good production is indicated by a proportion of immatures to adults that is greater than 65%. An analysis of wings from the previous 28 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 samples with sufficient material to determine sex. The proportion of adult wings that were male was 47% and 56% 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 2015, males were 42% of the immature birds submitted from eastern Oregon. Confidence in the sex ratios would be improved if sex could be determined for a higher proportion of the samples. In 2015, 56% of the ruffed grouse samples included diagnostic feathers for sex identification.

Hatching Chronology

The mean hatch date for ruffed grouse collected during the 2015 hunting season was 31 May. Hatch dates were estimated from 370 wings, of which 87 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 3 May to 26 July ($\bar{x}$ = 31 May), with 75% ruffed grouse in the harvest hatching between 19 May and 11 June (Figure 5).

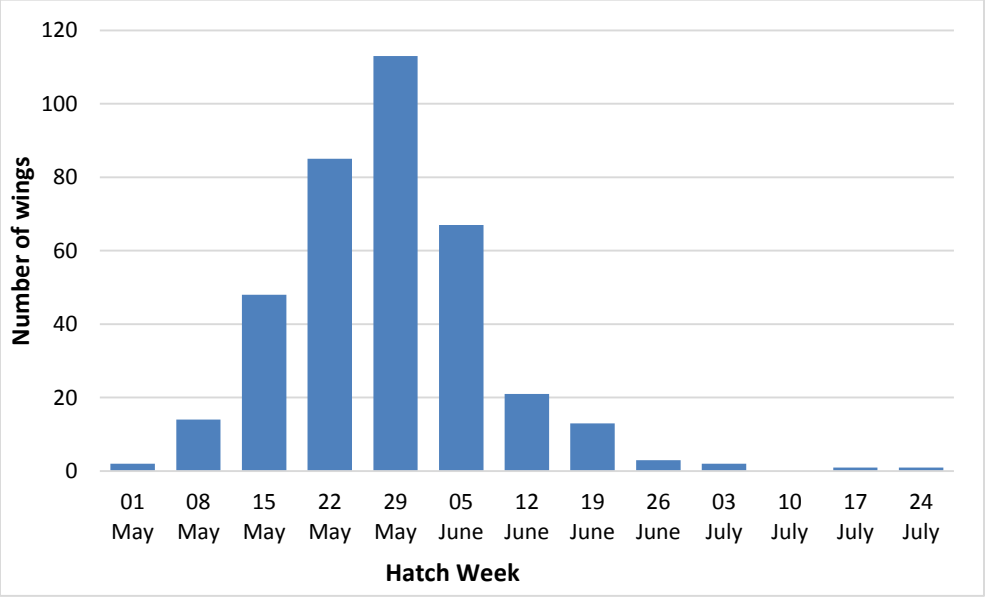

Figure 5. Timing of Oregon's 2015 ruffed grouse hatch as estimated from 370 wings harvested on or before 10 October.

Table 4. Sex ratios, age ratios and hatching dates of ruffed grouse as determined from parts submitted by hunters from Oregon harvest during the 2015-16 hunting season.

	Gender Ratios				Age Ratios		Hatch Dates	
	n	M:F	AM:AF	IM:IF	I:A	I:AF	n	Mean, Range
East	458	47:53	53:47	42:58	55:45	82:18	280	May 31, May 3 - July 26
East, 1st 2 wks	135	44:56	56:44	38:62	65:35	90:10	---	---
West	259	56:44	59:41	52:48	59:41	85:15	87	June 1, May 11 - July 5
Statewide	720	50:50	55:45	46:54	57:43	83:17	370	May 31, May 3 - July 26

Wallowa County - 1983 to 2015

From 1983 through 2015, hunters have submitted 6,434 ruffed grouse wings and tails from Wallowa County. The proportion of immatures (59%) in the 2015 wing sample was down from last year (76%), which was a particularly high year. 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 age ratio in 2014 indicated exceptional production. The ratio of males (44%) in the sample was lower than last year (62%) and below the long-term average (~57%), however only half the 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 1 June was similar to 2014 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 2015.

		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
2014	157	62:38	64:36	61:39	76:24	93:7	30-May	3-May	to	29-Jun
2015	**236**	**44:56**	**43:57**	**45:55**	**59:41**	**81:19**	**1-June**	**12-May**	**to**	**26-Jul**

SPRUCE GROUSE

Wing Collections – 1985 to 2015

Incidental to the harvest of dusky and ruffed grouse in Baker, Wallowa and Union counties, 201 spruce grouse wings and tails were collected from wing barrels from 1985 through 2015. In 2015, 2 spruce grouse wings were collected from Union County and 6 from Wallowa County, compared to 3 wings collected in Wallowa County in 2014. Wallowa County typically has the highest incidental harvest of spruce grouse but Union County has received some 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 30 years, immatures and adults composed nearly equal proportions of the sample. In 2015, 3 immature and 5 adult 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.

MOUNTAIN QUAIL

Wing Collections – 2005 to 2015

The 2015 mountain quail season in western Oregon, Hood River, and Wasco counties began 1 September and extended through 31 January 2016 with a daily bag limit of 10 quail and a possession limit of 30. In Crook, Grant, Wheeler, Gilliam, Klamath, Umatilla, Morrow, and Wallow counties the season began 10 October and extended through 31 January 2016 with a daily bag limit of 2 and a possession limit of 2. The remaining eastern Oregon counties were closed to mountain quail hunting. Although overall wing collection efforts focus on forest grouse, wing collection bags ask hunters to submit mountain quail wings also. This past season additional signs were added to wing collection barrels (in areas with an open mountain quail season) asking for mountain quail wings in order to increase the sample size. Since 2015, 250 mountain quail wings have been collected, averaging 19 wings per year. Wing collection efforts in 2015 increased 107% from the prior year resulting in a total 60 wings collected. Wings were collected from 10 counties with the majority of wings from Douglas (38%), Jackson (28%), Lane

(10%), and Morrow (10%) counties. Eighty percent of the wings collected in 2015 were from immatures.

HARVEST FROM RANDOM PHONE SURVEYS

Estimates of the statewide harvest from random phone surveys of 2015-16 upland game bird validation holders indicates harvest of "blue" grouse decreased 8% from 2014 and ruffed grouse increased in harvest from 2014 by 32%. Just over half of the ruffed grouse wings submitted to the wing bee in 2015 came from NE Oregon, estimated harvest for ruffed grouse for region 5 (Baker, Union, and Wallowa counties) from phone surveys showed a 92% increase from 2014. Estimated dusky grouse harvest from phone surveys for region 5 decreased by 18% compared to harvest the prior year. For western Oregon, estimated harvest calculated from phone surveys was up 35% for ruffed and down 2% for "blue" grouse compared to last year.

SUMMARY

For ruffed, sooty, and dusky grouse, mean hatch dates in 2015 were similar to 2014. Statewide, the proportion of immature "blue" grouse was lower (66%) than in 2014 (72%), but similar to 2013 (66%). The proportion of immature "blue" grouse suggests 2015 was a moderately good year for recruitment. The proportion of immature ruffed grouse was similar (57%) to 2014 (56%) suggesting moderately good production also.

2015 had the highest submission rate for wings in western Oregon since wing collections were initiated in 2000. In 2014, the Umpqua Watershed installed 7 new wing barrels in Douglas County. New barrels were also installed by the Central Point, Heppner, and North Willamette districts in 2015. We expect wing collections in these barrels continues to increase as hunters become more familiar with the collection procedures and barrel locations. Sample submissions in the remainder of western Oregon continue to remain disproportionately low. Even with increased collection efforts in western Oregon, about 34% of the submitted grouse wings came from western Oregon, yet western Oregon accounted for an estimated 55% of the statewide "blue" grouse harvest and 61% of ruffed grouse harvest. This underscores the need to continue

to expand wing collection efforts 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. In addition, without a harvest date written on the wing collection bag, the hatch date cannot be back calculated for immature grouse. 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 as most of the wings are collected from a small number of districts.

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