



# 2018 Forest Grouse and Mountain Quail Parts Collection Summary



Westside forest grouse wing bee at the Umpqua Watershed District Office in Roseburg  
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## INTRODUCTION

Oregon is home to four species of forest grouse, including sooty grouse (*Dendragapus fuliginosus*), dusky grouse (*Dendragapus obscurus*), ruffed grouse (*Bonasa umbellus*), and spruce grouse (*Falci pennis Canadensis*). Examination of wings and tails of hunter-harvested birds can yield important information on grouse population demographics. ODFW began collecting wings and tails of forest grouse from hunters in Wallowa County in 1980. In 1984, the Department expanded collections for forest grouse parts to other counties in northeastern Oregon and portions of southwestern Oregon. Since that time the effort has increased to nearly statewide participation within forest grouse range. In 2005, wing collection was expanded to include mountain quail (*Oreortyx pictus*).

In 2018, wings and tails of blue<sup>1</sup> (*Dendragapus spp*), ruffed, and spruce grouse were obtained from 25 of the 36 counties in Oregon (Table 1). Biologists and volunteers examined a total of 1,358 wings and tails at 2 forest grouse wing bees. The total number of wings and tails obtained in 2018 was up 11% from the previous year and up 11% from the recent 5-year average of 1,122 (Figure 1). Statewide “blue” grouse submissions were up 17% and ruffed grouse wings were up 7% compared to 2018. Spruce grouse wings represent a small proportion of all grouse wing submissions with 3 wings from Union County and 2 wings from Wallowa County in 2018, similar to the recent 5-year average of 4 wings. There is no open spruce grouse season in Oregon. Since 2005, 336 mountain quail wings have been collected from hunters. Thirty-two of those wings were collected in 2018. The number of mountain quail wings collected has been highly variable, with a high of 65 wings in 2015 and only 7 in 2016.

<sup>1</sup>Dusky and Sooty grouse considered collectively as “blue” grouse in this report.

Table 1. Forest grouse wings submitted to the 2018 Oregon forest grouse wing bees at the Umpqua Watershed District Office (Roseburg) on January 30, 2019 and at Ladd Marsh Wildlife Area on March 21, 2019. Wing bee counts from 2017 are provided for comparison.

County	"Blue" Grouse		Ruffed Grouse		Spruce Grouse		Total Wings		% change from 2017
	2018	2017	2018	2017	2018	2017	2018	2017	
Baker	25	43	22	41			47	84	-44%
Grant	55	50	104	104			159	154	3%
Harney	7	4	1				8	4	100%
Klamath		2	1	2			1	4	-75%
Lake	26	5	1				27	5	440%
Morrow	25	18	32	30			57	48	19%
Umatilla	1	1	6	1			7	2	250%
Union	50	76	90	114	3	1	143	191	-25%
Wallowa	95	186	83	118	2	1	180	305	-41%
Wasco	2	3		1			2	4	-50%
Wheeler			1				1	0	#DIV/0!
Clackamas	48	36	39	21			87	57	53%
Columbia	3	1	18	5			21	6	250%
Coos	2	4	11	15			13	19	-32%
Curry	3	2	2	4			5	6	-17%
Douglas	164	74	209	184			373	258	45%
Hood	11	3	2	5			13	8	63%
Jackson	15		31	5			46	5	820%
Josephine	7		11				18	0	#DIV/0!
Lane	27	8	32	10			59	18	228%
Lincoln			9	4			9	4	125%
Linn	7		4	2			11	2	450%
Marion	20		4				24	0	#DIV/0!
Tillamook	1	1	6	1			7	2	250%
Washington	3		1				4	0	#DIV/0!
Yamhill				5			0	5	0%
Unknown	15	7	21	20			36	27	33%
<b>Total</b>	<b>612</b>	524	<b>741</b>	692	<b>5</b>	2	<b>1,358</b>	1,218	11%

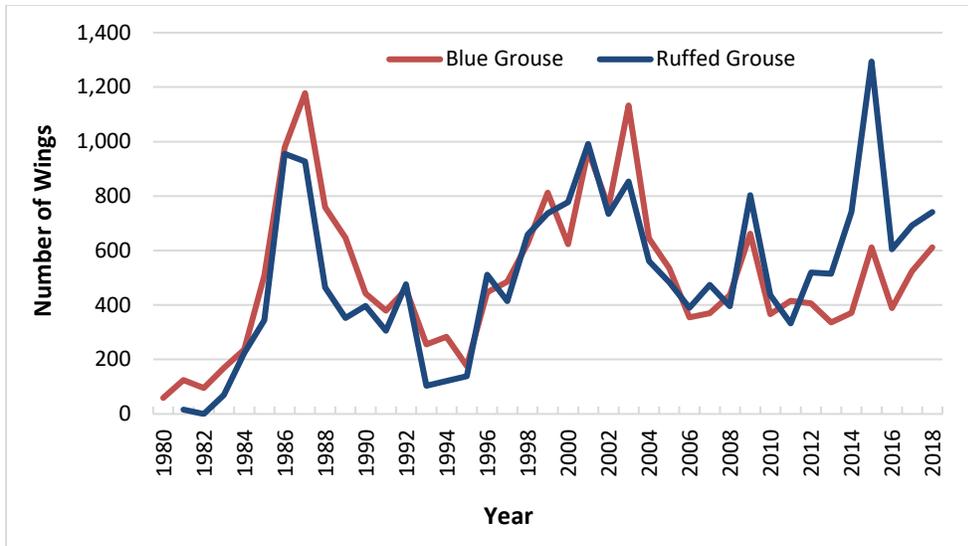


Figure 1. Number of forest grouse wings submitted to wing bees in Oregon, 1980-2018.

## USE OF INFORMATION

Data from wings and tails are used by biologists to better understand the distribution and timing of grouse harvest in their area (Figures 3 & 6), the relative proportions of harvest among species, the sex and age structure of the population, and the chronology of breeding activity (Figures 5 & 7). Compared to other methods of 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 population demographics, season structure, hunter participation, and 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. 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 with instructions for hunters to remove one wing and the tail from each grouse they harvest and place it in a single bag. They are also asked to record the date, county, and general location of the harvest. 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. Many districts have established wing barrel locations that are used year after year and several districts are adding more wing barrels to increase the sample size of wings in under-represented areas of the state.

In addition to wing barrels, field staff distribute wing bags to known grouse hunters, and Wildlife Division staff mail wing bags to a list of cooperating hunters prior to the hunting season. An advertisement requesting participation in the grouse parts collection 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, social media, and newspaper interviews were utilized when available.

Each winter, biologists gather at wing bees to collect information from the submitted parts. In 2018-19, wing bees were held at Ladd Marsh Wildlife Area and the ODFW Umpqua Watershed District Office. Data collected from each set of parts include: species, location and county of kill, date of kill, sex, age, and the stage of primary wing feather molt (for immature birds only). Age class is recorded as adult or immature and if discernible, the adult class is further subdivided to adult or yearling. After the wing bees, data is analyzed using formulas for estimating the age (in days) of immature grouse 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 no later than 10 October (immature molt of primaries 1 through 8 is usually complete by 10 October).

## BLUE GROUSE RESULTS

During 2018, hunters submitted 612 wings and tails from “blue” grouse in Oregon, an increase of 17% from the previous year and a 39% increase from the recent 5-year average ( $\bar{x} = 441$ ). The 2018 hunting season allowed a daily bag limit of 3 birds with 9 in possession from 1 September through 31 January. Hunters harvested 24% of the wings and tails during the first week of the season and 63% by the end of September. There was a second smaller peak of submissions during late September and early October, the beginning of many firearm deer and elk seasons (Figure 2).

Eastern Oregon hunters provided 47% ( $n = 286$ ) of the wings and tails, a 26% decrease from the number received in 2017 ( $n = 388$ ). The majority of submissions from eastern Oregon were from Wallowa (33%), Grant (19%), Union (17%), Lake (9%), Baker (9%), and Morrow (9%) counties. The remainder of the eastern Oregon submissions came from 4 other counties (Harney, Umatilla, and Wasco). Western Oregon contributed 311 wings and tails from 13 counties, a 141% increase from the previous year ( $n = 129$ ). The majority of the submissions were from Douglas (53%), Clackamas (15%), and Lane (9%) counties.

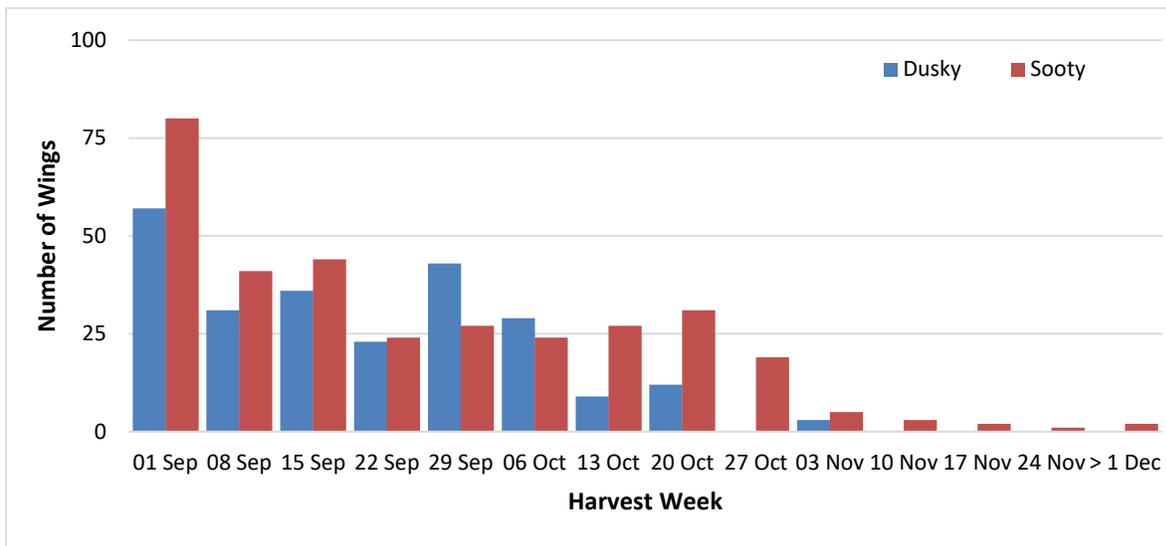


Figure 2. The number of sooty and dusky grouse wing/ tail collections, by week of reported harvest during the 2018-19 Oregon hunting season.

## Age and Sex Ratios

Immature grouse comprised 73% of the “blue” grouse wings collected 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 was above the long-term average of 64%. Males represented 48% of the statewide sample, 50% of adult sample, and 47% of immatures in 2018.

Table 2. “Blue” grouse sex ratios, age ratios, and hatch dates by species in 2018 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.

	<u>Gender Ratios</u>				<u>Age Ratios</u>			<u>Hatch Dates</u>	
	n	M:F	AM:AF	IM:IF	n	I:A	I:AF	n	Mean, Range
<b>Dusky</b>									
1st 2 wks	87	58:42	67:33	53:47	118	77:23	91:9	--	--
Total	256	52:48	60:40	48:52	256	61:39	79:21	107	June 3, May 5 - July 1
<b>Sooty</b>									
1st 2 wks	120	39:61	24:76	46:54	121	69:31	75:25	--	--
Total	352	45:55	42:58	46:54	355	69:31	80:20	155	June 7, May 12 - July 7
<b>All</b>									
1st 2 wks	207	47:53	42:58	49:51	239	73:27	83:17	--	--
All Total	608	48:52	50:50	47:53	611	66:34	79:21	262	June 5, May 5 - July 7

## Hatching Chronology

Statewide, hatch dates for dusky and sooty grouse harvested during the 2018 hunting season ranged from 5 May - 7 July, which is similar to previous years (Table 2 & Figure 3). Dusky grouse hatch dates ranged from 5 May - 1 July with a mean hatch date of 3 June. Sooty grouse hatch dates ranged from 12 May - 7 July with a mean of 7 June. For dusky grouse, 75% hatched between 21 May - 15 June, while 75% of sooty grouse hatched between 23 May - 21 June. Typical of most years, the peak sooty grouse hatch was later than the peak dusky grouse hatch.

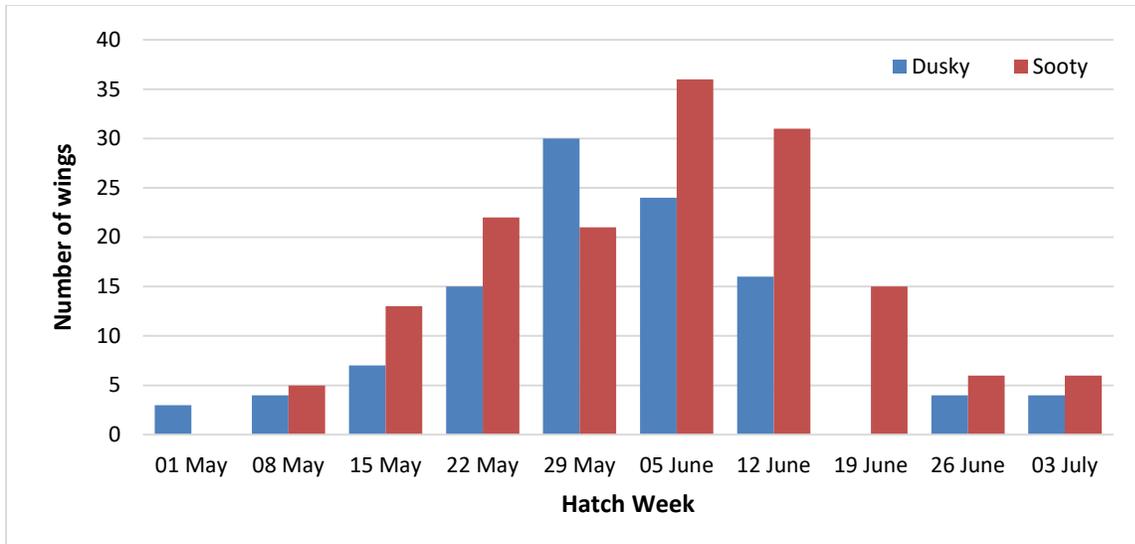


Figure 3. Week of hatch for dusky and sooty grouse in Oregon as estimated from primary feathers from hunter-harvested wings during 2018. Hatch dates were only estimated for birds that were harvested on or before October 10.

### Wallowa County – 1980 to 2018

From 1980 - 2018 hunters in Wallowa County submitted parts representing 9,752 dusky grouse. In 2018, hunters submitted 95 wings, down 63% from the average since the wing bee began in 1980 ( $\bar{x}$  =254) and down 29% from the recent 5-year average ( $\bar{x}$  =133). Males comprised 70% of the adult sample, which is higher than the long-term average of 67% (Table 3).

The immature proportion of the harvest (49%) was below the long-term average of 61%, suggesting poor production (Table 3). Production had been much higher the last 5 years. (65-77% immatures). The proportion of immatures in Wallowa County has ranged from a low of 38% in 1982 to a high of 77% in 2016 (1980–2017,  $\bar{x}$  = 61%, Figure 4).

The mean hatch date was the latest on record. Mean hatch dates range from 25 May (1992, 1998, and 2004) to 9 June (2018) with the preponderance of young hatched during a 3-week interval between late May and early June (Table 3). In 2018, the mean hatch date was 9 June and ranged from 20 May to 2 July.

Table 3. Total number of wings, sex ratios, age ratios and hatching dates of dusky grouse determined from parts submitted by hunters from harvest in Wallowa County, Oregon, 1980 to 2018.

Season	n	Sex Ratios			Age Ratios		Hatch Information			
		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
2016	99	51:49	65:35	47:53	77:23	90:10	27-May	2-May	to	29-Jun
2017	185	57:43	72:28	49:51	66:34	88:12	31-May	7-May	to	1-Jul
<b>2018</b>	<b>95</b>	<b>60:40</b>	<b>70:30</b>	<b>51:49</b>	<b>49:51</b>	<b>77:23</b>	<b>9-Jun</b>	<b>20-May</b>	<b>to</b>	<b>2-Jul</b>

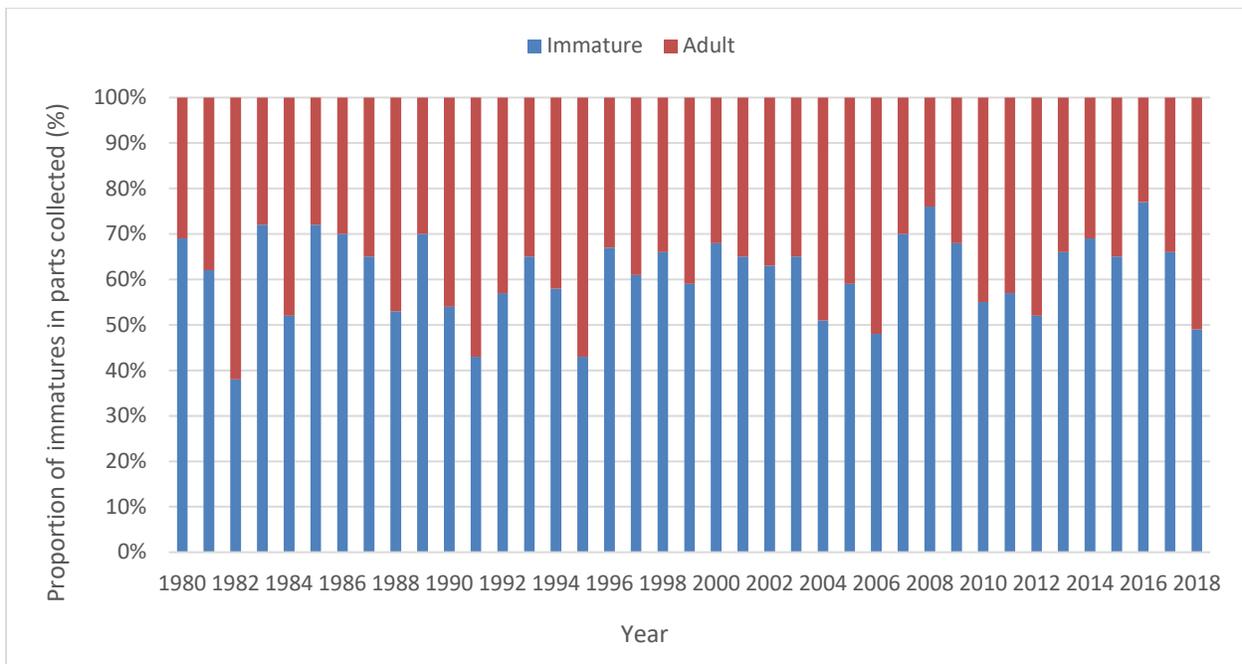


Figure 4. Proportion of immature to adult dusky grouse in harvest from parts submitted by hunters in Wallowa County Oregon, 1980 to 2018 (long-term average = 61%).

### RUFFED GROUSE RESULTS

In 2018, hunters submitted a total of 741 ruffed grouse wings and tails in Oregon, a 7% increase from 2017 ( $n = 692$ ) and a 4% decrease from the recent 5-year average ( $n = 770$ ). The 2018 ruffed grouse hunting season allowed a daily bag limit of 3 birds with 9 in possession. The statewide season began 1 September and extended through 31 January. Typically hunters submit a large portion of the ruffed grouse wings during the first couple weeks of the season, with a second peak in harvest occurring during the start of modern firearms big game seasons the beginning of October. This trend was repeated in 2018; 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 5). Hunters submitted 14% ( $n = 95$ ) of the ruffed grouse parts (with a harvest date included) during the first week of the season. Similar to previous years, the number of grouse wings returned dropped considerably after the first two weeks of big game rifle seasons. In 2018, 48% ( $n = 326$ ) of wings were from birds harvested in September and 42% in October ( $n = 287$ ).

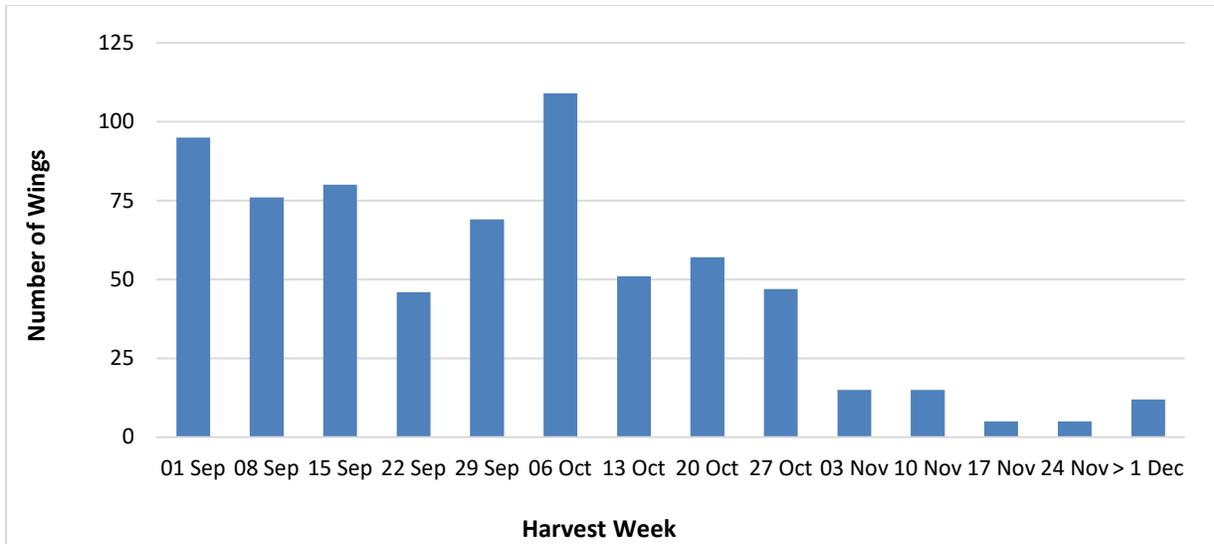


Figure 5. Timing of Oregon’s 2018 ruffed grouse harvest as estimated from ruffed grouse wings with harvest dates.

In eastern Oregon, hunters submitted 341 wings, a 17% decrease from 2017 ( $n = 411$ ) and below the recent 5-year average ( $\bar{x} = 487$ ). Most of the samples collected in eastern Oregon were from Wallowa, Grant, Union, Morrow, and Baker counties. In western Oregon, hunters submitted 379 ruffed grouse samples, a 41% increase from 2017 ( $n = 261$ ). Wing collection efforts in Douglas County accounted for the majority of the wings, followed by Clackamas, Lane, and Jackson counties. Wings were collected from a total of 14 counties in western Oregon.

### Age and Sex Ratios

Due to lack of tails or rump feathers attached to the tail, gender could not be determined for 50% of the ruffed grouse submissions. Age was determined for 99% of the samples obtained statewide. Immature grouse comprised 60% of the eastern Oregon sample during the first two weeks of the season indicating fair production. Due to the small sample size of early harvested ruffed grouse in western Oregon, ratios are calculated for the entire 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 54% of the statewide harvest of ruffed grouse, including 56% in eastern Oregon, and 52% in western Oregon (Table 4). An

analysis of wings from about 30 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. A study of ruffed grouse survival in Maine showed that adult ruffed grouse were less vulnerable to harvest than juveniles (Davis et al. 2018). This cautions that ruffed grouse production estimates based on harvest age ratios may be overestimated.

Ruffed grouse males of all ages accounted for 48% of the samples with sufficient material to determine sex. The proportion of adult males was 45% and 51% for eastern and western Oregon, respectively. Males accounted for 55–61% of the adult population in several states in the Midwest (Dorney 1963, Davis and Stoll 1973, Major and Olson 1980. In 2018, males comprised 39% 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.

Table 4. Sex ratios, age ratios and hatching dates of ruffed grouse as determined from parts submitted by hunters from Oregon harvest during the 2018-19 hunting season.

	<u>Gender Ratios</u>				<u>Age Ratios</u>			<u>Hatch Dates</u>	
	<b>n</b>	<b>M:F</b>	<b>AM:AF</b>	<b>IM:IF</b>	<b>n</b>	<b>I:A</b>	<b>I:AF</b>	<b>n</b>	<b>Mean, Range</b>
East	176	45:55	52:48	39:61	341	56:44	83:17	136	May 31, May 3 - June 29
East, 1st 2 wks	61	36:64	47:53	31:69	102	60:40	86:14	---	---
West	192	51:49	60:40	42:58	393	52:48	83:27	73	May 29, May 5 - June 30
Statewide	368	48:52	56:44	40:60	734	54:46	83:17	209	May 30, May 3 - June 30

### Hatching Chronology

The mean hatch date for ruffed grouse collected no later than 10 October 2018 was 30 May. Hatch dates were estimated from 418 wings, of which 73 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). Peak hatch dates for ruffed grouse were similar to average and a little earlier than in 2017. Hatch dates ranged from 3 May to 30 June, with 75% of ruffed grouse in the harvest hatching between 12 May and 11 June (Figure 6).

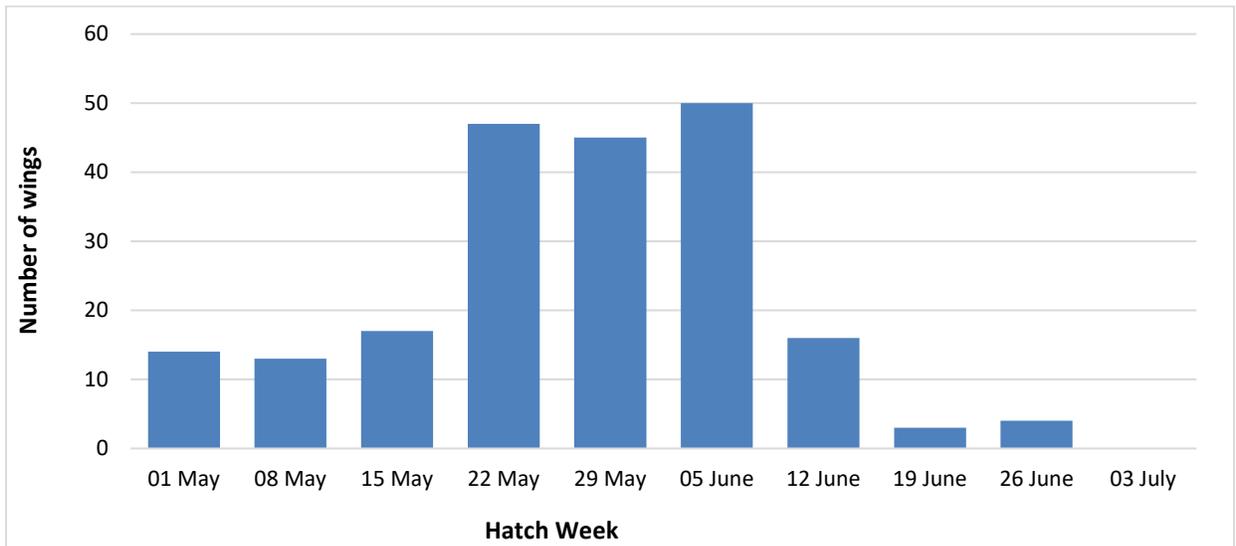


Figure 6. Timing of Oregon’s 2018 ruffed grouse hatch as estimated from wings harvested on or before 10 October.

**Wallowa County - 1983 to 2018**

From 1983-2018, hunters submitted 6,753 ruffed grouse wings and tails from Wallowa County. In 2018, the proportion of immatures was 61%, indicating fair production. 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 (Table 5 & Figure 7). The ratio of males (49%) in the sample was similar to 2017 (47%); however, only 57% of 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 2 June was later than the long term mean of 30 May.

Table 5. Total number of wings, 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 2018.

Season	n	Sex Ratios			Age Ratios		Hatch Dates		
		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-Jun	12-May	to 26-Jul
2016	118	57:43	68:32	42:58	52:48	85:15	26-May	9-May	to 16-Jun
2017	118	47:53	51:49	41:59	36:64	72:28	5-Jun	9-May	to 20-Jun
<b>2018</b>	<b>83</b>	<b>49:51</b>	<b>48:52</b>	<b>50:50</b>	<b>61:39</b>	<b>82:18</b>	<b>2-Jun</b>	<b>3-May</b>	<b>to 1-Jul</b>

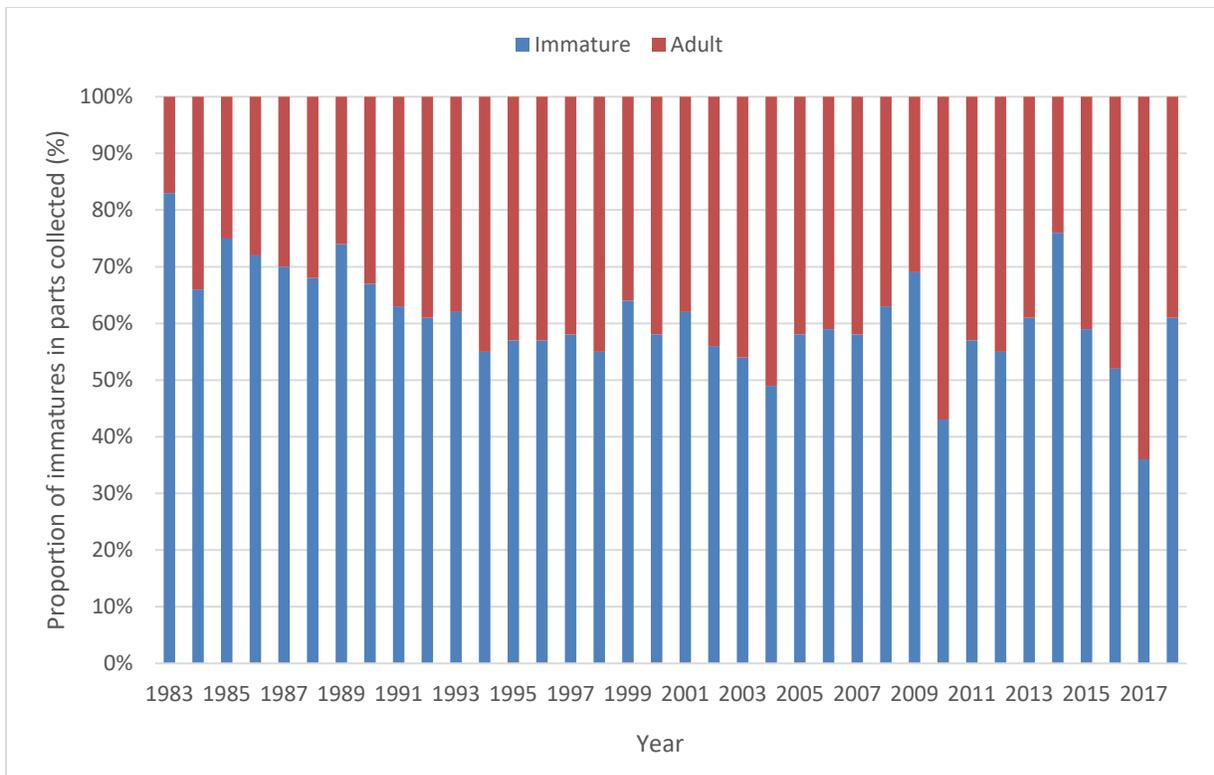


Figure 7. Proportion of immature to adult ruffed grouse in harvest from parts submitted by hunters in Wallowa County Oregon, 1983 to 2018 (long-term average = 61%).

## SPRUCE GROUSE

### Wing Collections – 1985 to 2018

Incidental to the harvest of dusky and ruffed grouse in Baker, Wallowa and Union counties, hunters deposited 212 spruce grouse wings and tails in wing barrels from 1985-2018. To educate and remind hunters that there is no open season for spruce grouse, signs are posted in Northeast Oregon and the 2017-18 game bird regulations featured a one-page article on spruce grouse identification. In 2018, 5 spruce grouse wings were collected from Wallowa and Union counties, compared to 2 wings collected in 2017. 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 efforts rather than range expansion. The 1988 wing bee recorded the highest number of spruce grouse wings ( $n=27$ ). During the past 30 years, immatures and adults comprised nearly equal proportions of the

sample. In 2018, 2 immature and 3 adult wing were received. Oregon is on the southwest periphery of the natural range of spruce grouse.

## **MOUNTAIN QUAIL**

### **Wing Collections – 2005 to 2018**

The 2018 mountain quail season in western Oregon, Hood River, and Wasco counties began 1 September and extended through 31 January with a daily bag limit of 10 quail and a possession limit of 30. In Crook, Grant, Wheeler, Gilliam, Klamath, Umatilla, Morrow, and Wallowa counties the season began 6 October and extended through 31 January with a daily bag limit of 2 and a possession limit of 2. The remaining eastern Oregon counties were closed to mountain quail hunting (Figure 8). Although overall wing collection efforts focus on forest grouse, wing collection bags also instruct hunters to submit mountain quail wings. Since 2005, ODFW collected 336 mountain quail wings, averaging 24 wings per year. Wing collection efforts were above average with 32 wings collected from 8 western counties. Of the wings collected in 2018, 28 were from immatures and 4 from adults.

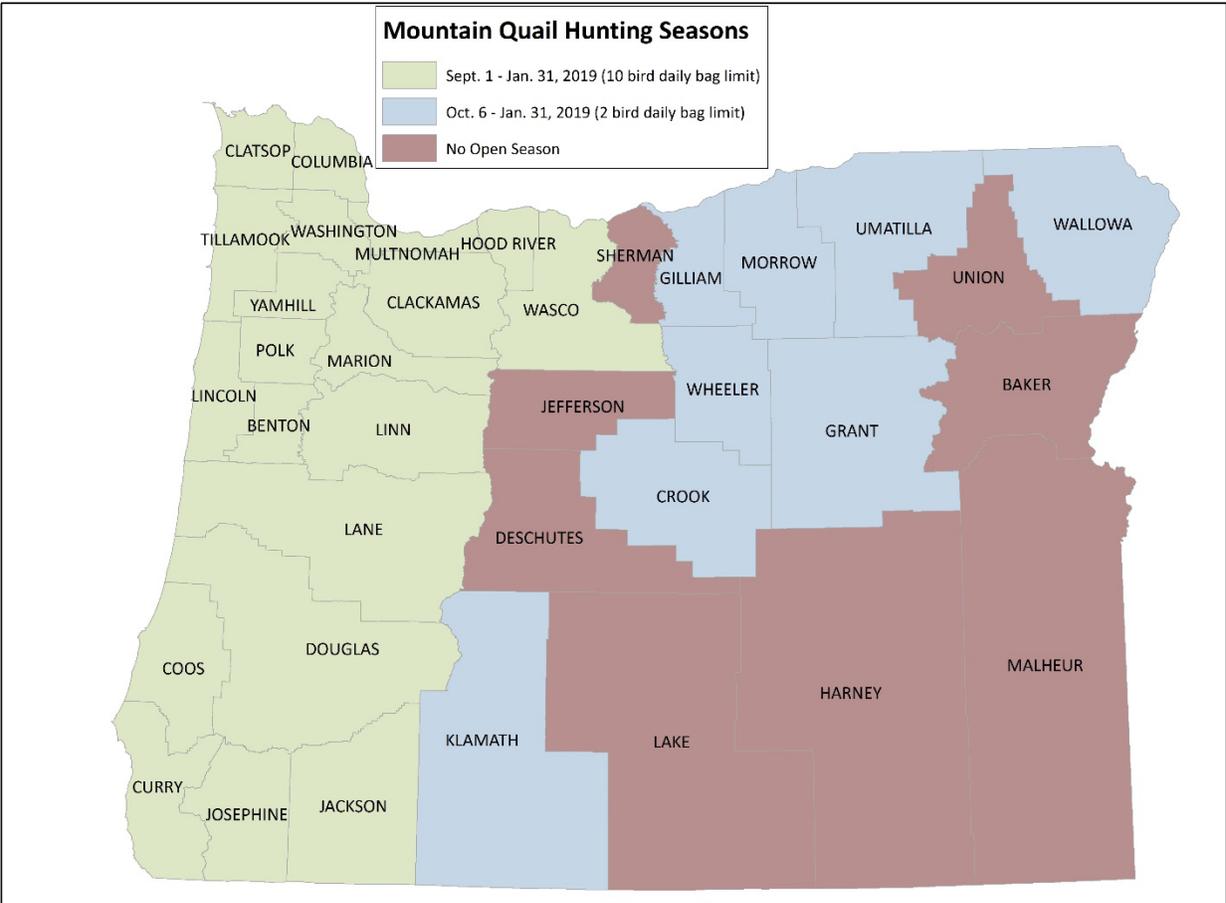


Figure 8. Map of counties open to mountain quail hunting, including season dates and daily bag limits.

**HARVEST INFORMATION FROM RANDOM PHONE SURVEYS**

Each year the Department conducts telephone surveys of upland game bird validation holders to estimate hunter effort and harvest. Managers may use data from these surveys in combination with wing bee data to gain a better understanding of trends in production and harvest. Estimates of the harvest from random phone surveys of 2018-19 upland game bird validation holders showed an increase (statewide) in “blue” grouse harvest by 41% from the 5-year average and ruffed grouse harvest increased by 15% from the 5-year average (Table 6). Compared to last year, harvest (from phone survey data) was up for “blue” grouse in western Oregon (+326%), down for the Columbia Basin (-63%), similar for central (-5%) and up for northeast Oregon (+61%). Phone surveys showed that ruffed grouse harvest increased compared to last year in western (+48%), central (+15%), and southcentral Oregon (+115%),

were similar to last year in the Columbia Basin and southeast Oregon, and decreased in the northeast (-42%).

Table 6. Estimated harvest of “blue” and ruffed grouse in 2018-19 calculated from random phone surveys of Oregon upland game bird validation holders (n = ~3,600). The state is divided into 7 harvest regions, a general description is included in parentheses and mapped in the figure below.

Harvest Region	Estimated Harvest	
	“Blue” Grouse	Ruffed Grouse
Area 1 (Northwest)	6,352	13,827
Area 2 (Southwest)	1,916	7,999
Area 3 (Columbia Basin)	424	2,404
Area 4 (Central)	1,231	4,646
Area 5 (Northeast)	5,522	5,619
Area 6 (Southcentral)	501	2,073
Area 7 (Southeast)	0	311
<b>Total</b>	<b>15,945</b>	<b>36,879</b>
<i>Change from '17-18</i>	<i>85.9%</i>	<i>14.5%</i>
<i>Change from 5-year avg. ('13-17)</i>	<i>41.4%</i>	<i>15.2%</i>

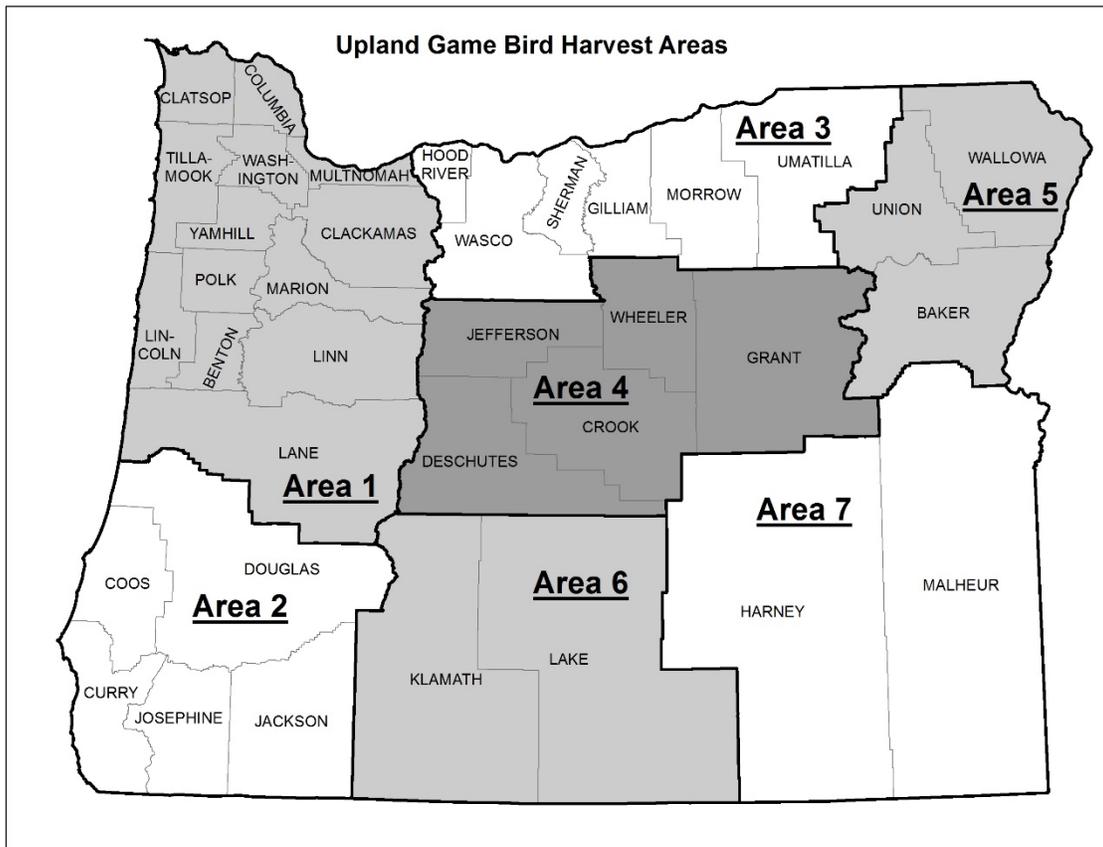


Figure 9. Harvest regions for upland phone surveys. Estimated harvest for each region is shown in the table above.

## SUMMARY

In general, ruffed, sooty, and dusky grouse mean hatch dates in 2018 were close to average. However, dusky grouse in Wallowa County did hatch later than average. Hatch dates and productivity likely vary across the state; however, the sample size of parts collected is not large enough to break down trends by regions (such as was done for Wallowa County). Statewide, the proportion of immature “blue” grouse (66%) was slightly lower than 2017 (71%), suggesting good production, although still not as high as the observed maximum in 2014 (72% immatures). The proportion of immatures was lower for ruffed grouse than “blue” grouse (40%). The proportion of immature ruffed grouse is more variable from year-to-year and is often lower than for “blue” grouse.

The number of forest grouse wings collected in 2018 ( $n= 1,358$ ) was up from 2017 ( $n=1,126$ ). Increased effort to install new barrels in under-surveyed areas should increase the number of wings, and correspondingly, achieve greater confidence in age and sex ratios and hatch dates in areas where grouse populations are poorly understood. Five years ago there was a large disparity between the numbers of wings collected on the east vs west side of the state; that difference has decreased over the last several years with the increase in collection efforts.

Statewide education efforts directed at the need and value of returning wings and tails should continue to increase hunter awareness and participation. The game bird regulations, field offices, and Department social media provide information on wing collection efforts. 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 for gender identification. In addition, without a harvest date written on the wing collection bag, the hatch date cannot be back calculated for immature grouse. Although increased participation from Oregon forest grouse hunters would improve the data set, 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 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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