



# 2021 Forest Grouse and Mountain Quail Parts Collection Summary



Ruffed grouse drawing (from Pelren 1997).

Upland Game Bird Program  
Oregon Department of Fish and Wildlife  
4034 Fairview Industrial Dr SE.  
Salem, OR 97302  
Ph: 503-947-6322

Email: [kelly.m.walton@odfw.oregon.gov](mailto:kelly.m.walton@odfw.oregon.gov) and [mikal.l.cline@odfw.oregon.gov](mailto:mikal.l.cline@odfw.oregon.gov)

## INTRODUCTION

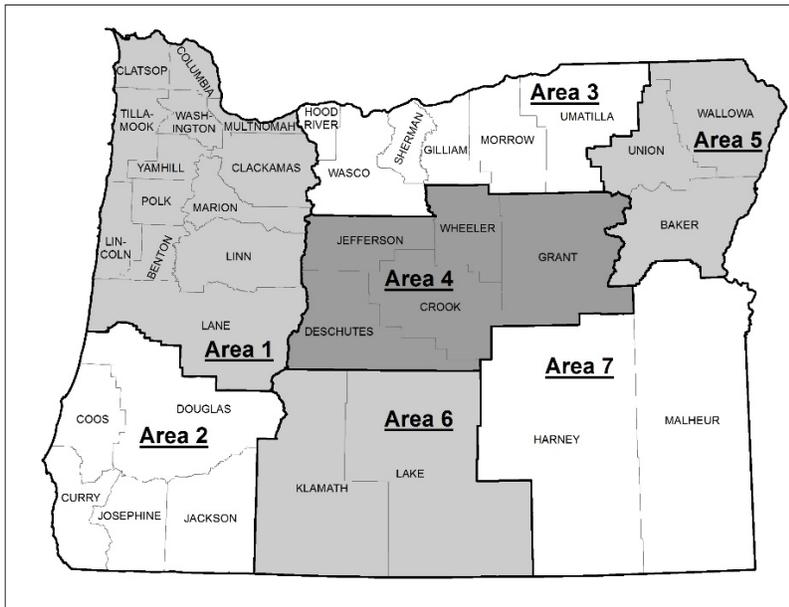
Oregon is home to four species of forest grouse, including sooty grouse (*Dendragapus fuliginosus*), dusky grouse (*Dendragapus obscurus*), ruffed grouse (*Bonasa umbellus*), and spruce grouse (*Falci pennis canadensis*). Examination of parts (i.e., wings and tails) of hunter-harvested birds can yield important information on grouse population demographics. Oregon Department of Fish and Wildlife (ODFW) began collecting parts from hunter-harvested forest grouse 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*). Tails do not contribute to classification of mountain quail.

In 2021, 1,176 parts from hunter harvested blue<sup>1</sup> (*Dendragapus spp*), ruffed, and spruce grouse were obtained from across Oregon (Table 1). Typically, wings are examined at 2 forest grouse wing-bees, which are work parties to identify and classify forest grouse and mountain quail wings and tails. Wing-bees were held at the Umpqua Watershed District Office on March 8, 2022, and at Ladd Marsh Wildlife Area near La Grande on April 13, 2022. The total number of forest grouse parts obtained in 2021 was down 10% from the previous year and down 4% from the recent 5-year average of 1,222 (Figure 1). Statewide blue grouse submissions were down 27% and ruffed grouse submissions were up 2% compared to 2020. Incidental spruce grouse parts represent a small proportion of all grouse parts collected since there is no open spruce grouse season in Oregon. One spruce grouse wing was submitted from Wallowa County, down from the recent 5-year average of 4 wings. Since 2005, hunters have submitted 512 mountain quail wings. Fifty-one of those wings were collected in 2021. The number of mountain quail wings collected each year has been highly variable, ranging from 5 to 64 wings.

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

Table 1. Forest grouse and mountain quail parts submitted from the 2021-22 season by Harvest Zone (see map below). Wing-bees were held at the Umpqua Watershed District Office (Roseburg) on March 8, 2022 and Ladd Marsh Wildlife Area on April 13, 2022. Wing-bee counts from 2020 are provided for comparison.

Zone	Blue Grouse		Ruffed Grouse		Spruce Grouse		Mtn Quail		Total Parts		% change from 2020
	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	
Zone 1 (Northwest)	49	27	102	47			15	14	166	88	89%
Zone 2 (Southwest)	103	125	205	283			36	42	344	450	-24%
Zone 3 (Columbia Basin)	35	35	100	73				1	135	109	24%
Zone 4 (Central)	35	71	121	128					156	199	-22%
Zone 5 (Northeast)	122	198	257	219	1	6			380	423	-10%
Zone 6 (Southcentral)	18	24	2	1					20	25	-20%
Zone 7 (Southeast)	5	10	1	4					6	14	-57%
Unknown	5	21	15	35					20	56	-64%
<b>Total</b>	<b>372</b>	<b>511</b>	<b>803</b>	<b>790</b>	<b>1</b>	<b>6</b>	<b>51</b>	<b>57</b>	<b>1,227</b>	<b>1,364</b>	<b>-10%</b>



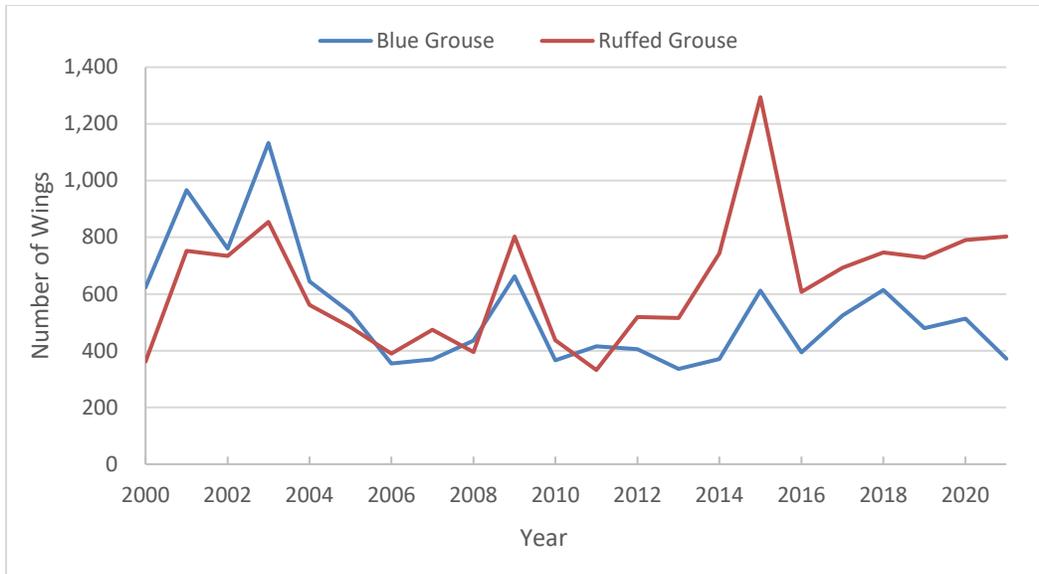


Figure 1. Number of blue and ruffed grouse parts submitted to ODFW, 2000-2021.

### USE OF INFORMATION

Data from forest grouse parts are used by biologists to better understand the distribution and timing of grouse harvest in their area, the relative proportions of harvest among species, the sex and age structure of the population, and the chronology of breeding activity. Compared to other methods of tracking trends in population size and productivity, such as brood routes and randomized hunter-harvest surveys, data gathered from wings and tails 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 when considered 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 (when there is a large enough sample size) and for the entire season.

## **METHODS**

Staff collect grouse and mountain quail parts from hunters by placing collection receptacles, or “wing barrels” in locations where hunters are likely to encounter them (Figure 2). Paper 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 (see Appendix A). They are also asked to record the date, Wildlife Management Unit (WMU) or 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 traditional wing barrel locations that are used annually.

In addition to wing barrels, field staff distribute wing bags to known grouse hunters, and Upland Game Bird program 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. The weekly recreation report and social media are used to make hunters aware of the program and location of wing barrels.

Each winter, biologists and volunteers gather at wing-bees to collect information from the submitted parts. Data collected from each set of parts included: species, location and WMU or county of harvest, date of harvest, sex, age, and the stage of primary wing feather molt. 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 (molt) of primary wing feathers. Hatch dates are then back calculated for birds of known harvest date; provided they were harvested no later than the 10<sup>th</sup> of October (immature molt of primaries 1 through 8 is usually complete by 10 October).



Figure 2. Typical grouse wing barrel constructed from a plastic barrel and mounted on a cross-buck. Wing collection bags and writing utensils are stored inside. Photo courtesy of Tod Lum.

## BLUE GROUSE RESULTS

During 2021, hunters submitted 372 parts from blue grouse in Oregon, a decrease of 27% from the previous year and a 26% decrease from the recent 5-year average ( $\bar{x} = 505$ ). The 2021 hunting season allowed a daily bag limit of 3 birds with 9 in possession from 1 September through 31 January, similar to recent years. Oregon's blue grouse can be speciated based on range and plumage characteristics. For sooty grouse, hunters harvested 22% of the wings and tails during the first week of the season and 57% by the end of September. There is a small peak in submissions the first two weeks of the season and a second peak of submissions during late September and early October, the beginning of many firearm deer and elk seasons (Figure 3). For dusky grouse, hunters harvested 44% of the wings and tails during the first week of the season and 72% by the end of September.

Eastern Oregon hunters provided 57% ( $n = 211$ ) of the wings and tails submitted, a 37% decrease from the number received in 2020 ( $n = 334$ ). The majority of submissions from eastern Oregon were from Wallowa (33%), Grant (17%), Baker (13%), and Union (11%) counties. The remainder of the eastern Oregon submissions came from 5 other counties (Harney, Lake, Morrow, Umatilla, Wasco). Western Oregon contributed 156 wings and tails from 13 counties, an 11% decrease from the previous year ( $n = 176$ ). The majority of the

submissions were from Douglas (45%), Clackamas (11%), Jackson (10%), and Linn (10%) counties.

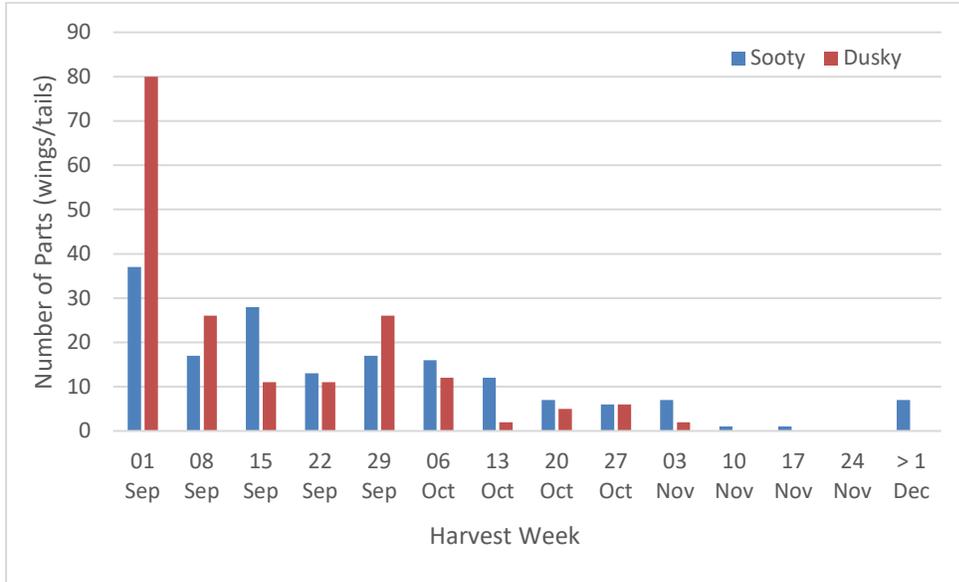


Figure 3. The number of sooty and dusky grouse parts collected by week of reported harvest during the 2021-22 Oregon hunting season.

### Age and Sex Ratios

Immature grouse comprised 69% of the blue grouse parts collected during the first two weeks of the season and 62% of the sample from the entire season (Table 2). The proportion of immatures was higher for sooty grouse than dusky grouse. The proportion of all immature blue grouse in the first two weeks of the harvest was above the long-term average of 64%. A high proportion of immatures indicates good productivity. Males represented 43% of the statewide sample, 51% of adult sample, and 39% of immatures in 2021 (from parts collected during the first two weeks).

Table 2. Blue grouse sex ratios, age ratios, and hatch dates by species in 2021 from hunter submitted parts. Ratios are presented for the first two weeks of season and for the entire season. 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 weeks	105	49:51	56:44	44:56	106	62:38	80:20	--	--
Total	182	49:51	59:41	42:58	187	55:45	76:24	62	June 6, May 20 - July 15
<b>Sooty</b>									
1st 2 weeks	53	34:66	30:70	33:67	51	80:20	85:15	--	--
Total	174	42:58	46:54	40:60	178	70:30	82:18	77	June 8, May 8 - July 15
<b>All</b>									
1st 2 weeks	159	43:57	51:49	39:61	160	69:31	82:18	--	--
All Total	360	45:55	53:47	40:60	369	62:38	78:22	139	June 7, May 8 - July 15

### Hatching Chronology

Statewide, hatch dates for dusky and sooty grouse harvested during the 2021 hunting season ranged from 8 May - 15 July, which is similar to previous years. Dusky grouse hatch dates ranged from 20 May - 15 July, with a mean hatch date of 6 June. Sooty grouse hatch dates ranged from 8 May – 15 July, with a mean of 8 June (Table 2 & Figure 4). For dusky grouse, 75% hatched between 23 May - 27 June, while 75% of sooty grouse hatched between 22 May - 26 June. In most years, the peak sooty grouse hatch date is later than the peak dusky grouse hatch. However, the peak hatch date for sooty and dusky grouse were similar this year.

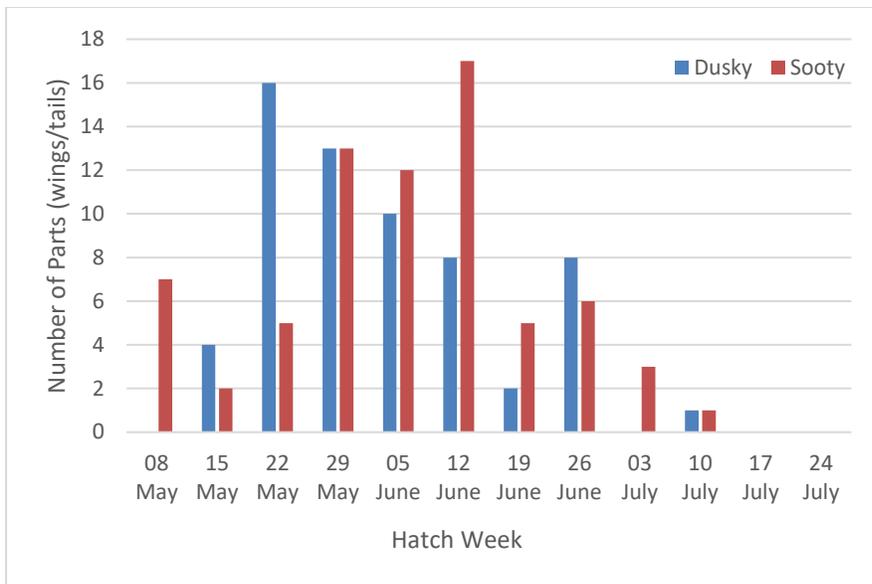


Figure 4. Week of hatch for dusky and sooty grouse in Oregon as estimated from primary feathers from hunter-harvested wings during 2021. Hatch dates were only estimated for birds that were harvested on or before October 10.

### Region Specific Ratios and Hatching Chronology

For many regions of the state, age and sex ratios as well as hatching dates can be calculated if enough wings are collected. Wing collection efforts were sufficient in the Northwest (Area 1), Southwest (Area 2), Central (Area 4), and Northeast (Area 5) regions (see map of regions on page 3) to make region specific calculations (Table 3). In the Northeast region, 54% of wings were from males, as compared to the Southwest (45%), Northwest (35%), and Central (33%). An uneven sex ratio can be an indication that one sex is more vulnerable to harvest than the other. For example, adult females with broods may be more vulnerable to harvest early in the season than adult males. In the Southwest 74%, Central 71%, and Northwest 69% of the samples were from immatures, indicating good production. Production was lower in Northeast with 52% immatures. Mean hatch date varied by region, with the earliest average date for Central (30 May) and Northeast (31 May) and the latest for Northwest (4 June) and Southwest (9 June) Oregon.

Table 3. Blue grouse sex ratios, age ratios, and hatch dates by region from hunter submitted parts. Hatch date is only estimated for grouse harvested on or before October 10.

Region	Gender Ratios			Age Ratios			Hatch Dates		
	n	M:F	AM:AF	IM:IF	n	I:A	I:AF	n	Mean, Range
Northwest	48	35:65	29:71	38:62	49	69:31	77:23	18	June 4, May 10 – June 27
Southwest	99	45:55	52:48	54:46	102	74:26	85:15	49	June 9, May 8 – July 15
Central	33	33:67	44:56	30:70	34	71:29	83:17	20	May 30, May 5 – June 29
Northeast	119	54:46	65:35	44:56	121	52:48	77:23	53	May 31, May 8 – July 15
<b>Statewide</b>	<b>360</b>	<b>45:55</b>	<b>53:47</b>	<b>40:60</b>	<b>369</b>	<b>62:38</b>	<b>78:22</b>	<b>139</b>	<b>June 7, May 8 – July 15</b>

In addition to reporting ratios and hatching dates by region, traditionally calculations have also been made for Wallowa County as part of their long-term dataset dating back to 1980. From 1980 - 2021, hunters in Wallowa County submitted parts representing 9,975 dusky grouse. In 2021, hunters submitted 71 wings, down 71% from the average since the wing-bee began in 1980 ( $\bar{x}$  =242) and down 33% from the recent 5-year average ( $\bar{x}$  =106). The immature proportion of the harvest (49%) was below the long-term average of 61%, suggesting poor production in 2021 (Figure 5 and Appendix B).

The mean hatch date was 29 May and ranged from 5 May to 2 July. 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 (Appendix B).

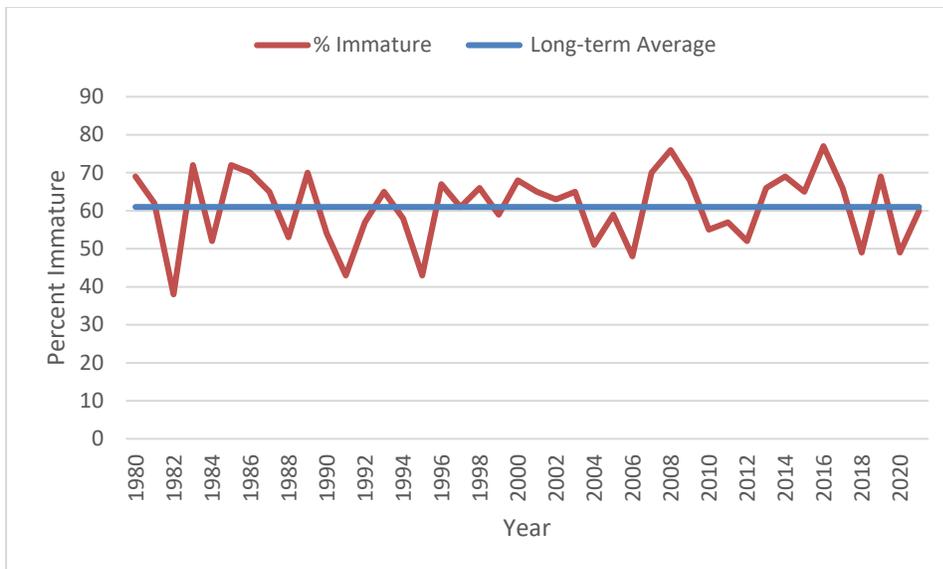


Figure 5. Proportion of immature (to adult) dusky grouse in harvest from parts submitted by hunters in Wallowa County Oregon, 1980 to 2021 (long-term average = 61%).

## RUFFED GROUSE RESULTS

In 2021, hunters submitted 803 ruffed grouse parts, a 2% increase from 2020 ( $n = 790$ ) and a 13% increase from the recent 5-year average ( $n = 713$ ). The 2021 ruffed grouse hunting season allowed a daily bag limit of 3 birds with 9 in possession, similar to recent years. 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 2021; 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 6). In western Oregon, hunters submitted 10% ( $n = 28$ ) of the ruffed grouse parts during the first week of the season. In 2021, 36% ( $n = 105$ ) of parts were from birds harvested in September and 47% from birds harvested in October ( $n = 127$ ). In eastern Oregon, hunters submitted 22% ( $n = 97$ ) of the ruffed grouse parts during the first week of the season. Similar to previous years, the number of grouse parts returned dropped after big game rifle seasons. In 2021, 57% ( $n = 257$ ) of parts were from birds harvested in September and 35% from birds harvested in October ( $n = 157$ ).

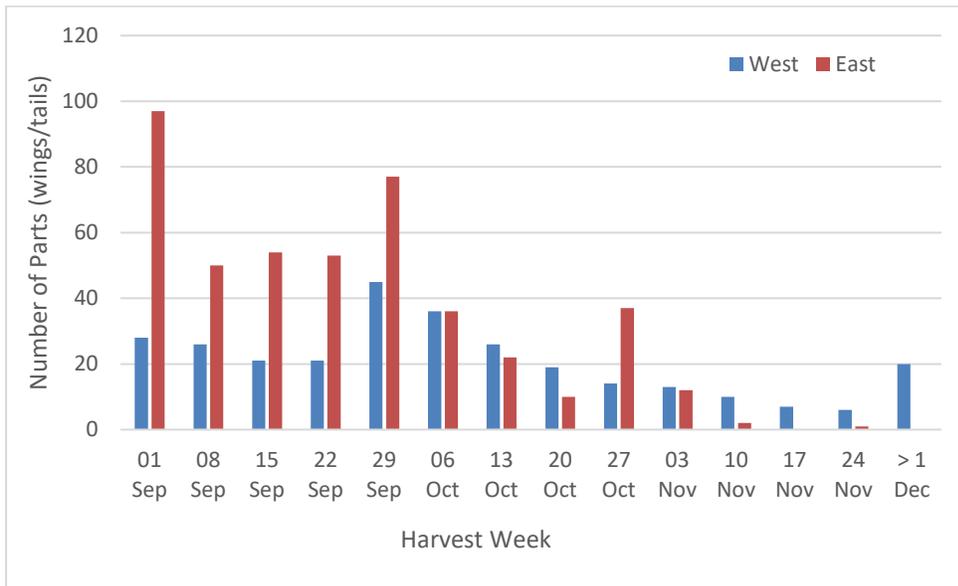


Figure 6. Timing of 2021 ruffed grouse harvest in western and eastern Oregon as estimated from ruffed grouse parts with harvest dates.

In eastern Oregon, hunters submitted 488 parts, a 16% increase from 2020 ( $n = 421$ ) and 34% above the recent 5-year average ( $\bar{x} = 363$ ). Most of the samples collected in eastern Oregon were from Grant (25%), Union (22%), Wallowa (22%), Morrow (10%), Umatilla (8%), and Baker (5%) counties. In western Oregon, hunters submitted 311 ruffed grouse samples, a 15% decrease from 2020 ( $n = 365$ ) and 7% above the recent 5-year average ( $\bar{x} = 342$ ). Collection efforts in Douglas County accounted for the majority of the parts (39%), followed by Jackson (14%), Coos (9%), Clackamas (9%), Linn (6%), and Columbia (5%) counties. Parts were collected from a total of 16 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 49% of the ruffed grouse submissions. Age was determined for 99% of the samples obtained statewide. Immature grouse comprised 66% of the eastern Oregon and 58% of the western Oregon sample during the first two weeks of the season indicating moderate production compared to average. 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 44% of the statewide harvest of ruffed grouse, including 50% in eastern Oregon, and 33% in western Oregon (Table 4). An analysis of ruffed grouse wings from about 30 years in Oregon found that immatures ranged from 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 44% of the samples harvested during the first two weeks of the season with sufficient material to determine sex. The proportion of adult males was 44% for eastern and 45% for western Oregon. 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). 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 2021-22 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>
<b>East</b>									
1st 2 wks	71	44:56	48:52	40:60	145	66:34	86:14	--	--
Total	249	45:55	47:53	44:56	482	50:50	77:23	168	May 30, May 3 - June 28
<b>West</b>									
1st 2 wks	22	45:55	60:40	36:64	53	58:42	89:11	--	--
Total	162	57:43	58:42	59:41	308	33:67	69:31	46	May 28, May 10 - July 5
<b>All</b>									
1st 2 wks	93	44:56	51:49	39:61	198	64:36	87:13	--	--
All Total	412	50:50	52:48	48:52	794	44:56	75:25	214	May 30, May 3 - July 5

## Hatching Chronology

The mean hatch date for ruffed grouse collected no later than October 10th was May 30th. Hatch dates were estimated from 214 parts, of which 46 were from western Oregon and 164 in eastern Oregon (Table 4). Peak hatch dates for ruffed grouse were similar to the previous year and the long-term average. Hatch dates ranged from May 3 to July 5, with 75% of ruffed grouse in the harvest hatching between May 17 and June 11 (Figure 7).

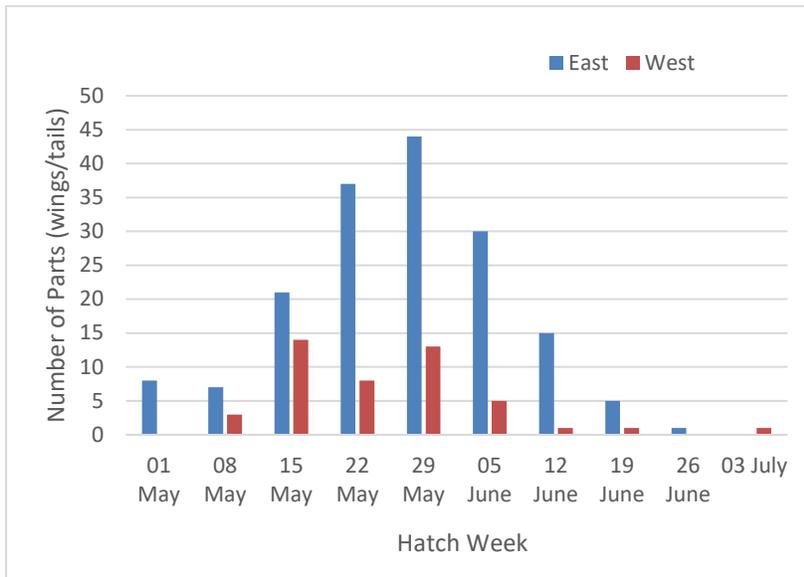


Figure 7. Timing of Oregon's 2021 ruffed grouse hatch as estimated from grouse harvested on or before 10 October.

## Region Specific Ratios and Hatching Chronology

Wing collection efforts were sufficient in the Northwest, Southwest, Central, and Northeast regions (see page 3 for map of regions) to make region-specific calculations (Table 5). Males comprised the lowest percentage of the sample in the Central (36%), as compared to the Northeast (52%), Northwest (55%), and Southwest (58%). The proportion of immatures to adults was higher in Central (60%), whereas the ratio was lower in Northeast (48%), Southwest (34%) and Northwest (31%). A higher proportion of immatures indicates higher production of young. Mean hatch dates were similar across regions. There were very few samples in the

Northwest region that were from immatures harvested on or before October 10, so the caution should be used interpreting the mean hatch date.

Table 5. Ruffed grouse sex ratios, age ratios, and hatch dates by region from hunter submitted parts. Hatch date is only estimated for grouse harvested on or before October 10.

Region	Gender Ratios			Age Ratios			Hatch Dates		
	n	M:F	AM:AF	IM:IF	n	I:A	I:AF	N	Mean, Range
Northwest	58	55:45	57:43	52:48	102	31:69	67:23	12	May 24, May 10 – July 5
Southwest	101	58:42	58:42	67:33	202	34:66	70:30	34	May 29, May 10 – June 19
Central	58	36:64	43:57	32:68	120	60:40	85:15	58	June 1, May 5 – June 22
Northeast	128	52:48	47:53	57:43	254	48:52	76:24	78	May 29, May 3 – June 28
<b>Statewide</b>	<b>412</b>	<b>50:50</b>	<b>52:48</b>	<b>48:52</b>	<b>794</b>	<b>44:56</b>	<b>75:25</b>	<b>214</b>	<b>May 30, May 3 – July 5</b>

In addition to reporting ratios and hatching dates by region, traditionally calculations have also been made for Wallowa County as part of their long-term dataset dating back to 1983 (Appendix C). From 1983-2021, hunters submitted 6,967 ruffed grouse parts from Wallowa County. One hundred and five ruffed grouse parts were submitted in 2021. 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. Since 2001, age ratios have been variable, averaging at 60% immatures (Figure 8 & Appendix C).

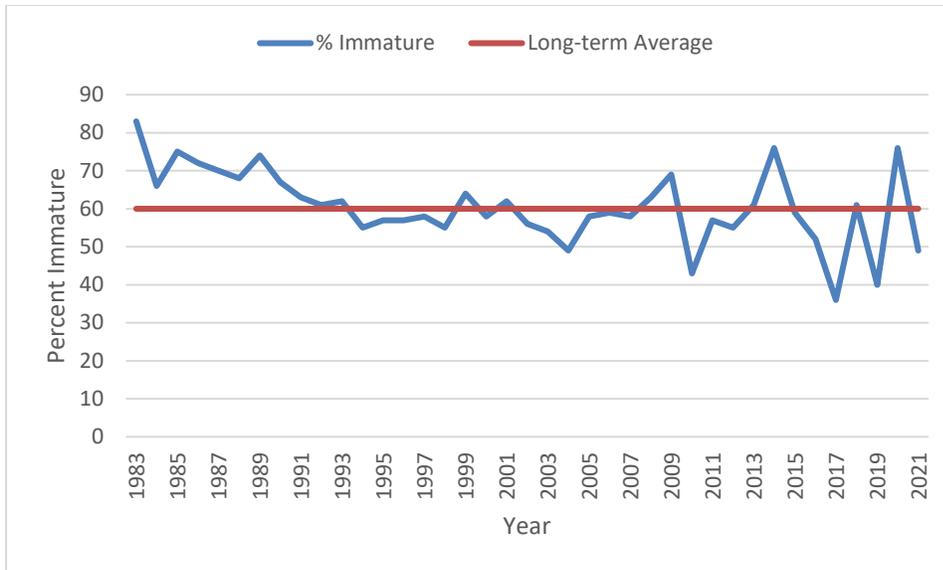


Figure 8. Proportion of immature (to adult) ruffed grouse in harvest from parts submitted by hunters in Wallowa County Oregon, 1983 to 2021 (long-term average = 60%).

## SPRUCE GROUSE

### Wing Collections – 1985 to 2021

Incidental to the harvest of dusky and ruffed grouse in Baker, Wallowa and Union counties, hunters deposited 220 spruce grouse parts in wing barrels from 1985 - 2021. To educate and remind hunters that there is no open season for spruce grouse, signs are posted in Northeast Oregon and the current game bird regulations have a call-out box reminding hunters not to shoot spruce grouse. In 2021, 1 spruce grouse wing was collected in Wallowa County, compared to 6 spruce grouse wings collected the previous year. 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. The wing submitted in 2021 was an immature female. Oregon is on the southwest periphery of the natural range of spruce grouse.

## MOUNTAIN QUAIL

### Wing Collections – 2005 to 2021

The 2021 mountain quail season in western Oregon began 1 September and extended through 31 January with a daily bag limit of 10 quail and a possession limit of 30. In eastern Oregon, the season began 9 October and extended through 31 January with a daily bag limit of

2 and a possession limit of 6 mountain quail. Although overall wing collection efforts focus on forest grouse, wing collection bags also instruct hunters to submit mountain quail wings. Since 2005, ODFW collected 512 mountain quail wings, averaging 30 wings per year. Wing collection efforts were above average with 51 wings collected from 11 western counties. Of the wings collected in 2021, 34 were from immatures (67%) and 17 from adults (33%).

## **HARVEST AND PRODUCTION INFORMATION FROM OTHER SURVEYS**

Each year the Department conducts surveys of upland game bird validation holders to estimate hunter effort and harvest. In the past, surveys have been conducted by phone, in 2021 surveys were transitioned to email-based questionnaires to more efficiently reach a large number of hunters. The email survey contained an online link to a survey form for hunters to fill out. Biologists 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 email surveys of 2021-22 upland game bird validation holders showed a 13% increase (statewide) in blue grouse harvest from last year, but harvest was still 15% below the 5-year average. Estimates for ruffed grouse were up 53% from last year and 15% above the 5-year average. By region, harvest was down for blue grouse in the Northwest (-6%) and Columbia Basin (-41%) compared to last year. Increases were seen in the Southwest (78%), Central (61%), Northeast (27%), and Southcentral (113%) regions compared to last year. Harvest surveys showed that ruffed grouse harvest decreased compared to last year in the Southwest (-14%) and Southcentral (-34%) and increased in the Northwest (75%), Columbia Basin (45%), Central (56%), and Northeast (136%) regions compared to last year (Table 6).

Table 6. Estimated harvest of blue and ruffed grouse in 2021-22 calculated from email surveys of Oregon upland game bird validation holders (n = 11,589 survey responses). The state is divided into 7 harvest regions, a general description is included in parentheses and see page 3 for a map.

Harvest Region	Estimated Harvest	
	"Blue" Grouse	Ruffed Grouse
Area 1 (Northwest)	2,184	11,900
Area 2 (Southwest)	1,907	5,058
Area 3 (Columbia Basin)	992	4,545
Area 4 (Central)	1,701	5,623
Area 5 (Northeast)	2,331	6,983
Area 6 (Southcentral)	239	228
Area 7 (Southeast)	0	699
Total	<b>9,354</b>	<b>35,036</b>
<i>Change from '20-21</i>	<i>+13%</i>	<i>+53%</i>
<i>Change from 5-year avg. ('16-20)</i>	<i>-15%</i>	<i>+15%</i>

In addition to harvest surveys, the Department also conducts spring hooting surveys for blue (sooty) grouse in western Oregon. Results from 2022 spring surveys show that the blue grouse population declined slightly after peaking in 2020/21 in the Coast Range and Cascades (Walton and Cline 2022). In comparison, results from hunter-harvested parts in 2021 showed relatively high productivity as measured by the proportion of immatures for blue grouse in western Oregon. While there is likely a lag between years of high productivity and when an increase in hooting males is heard due to the age males start hooting, both are indicators of sooty grouse population cycles.

Lastly, some ODFW wildlife districts conduct summer production surveys for upland game birds; however, very few routes record forest grouse so the sample size is too low to assess trends.

## SUMMARY

Statewide blue grouse submissions were down 26% compared to the 5-year average and down 27% from 2020. Ruffed grouse submissions were up 10% from the 5-year average and up 2% from 2020. In general, ruffed, sooty, and dusky grouse mean hatch dates in 2021 were average. Production and hatch dates varied by region; overall production for blue grouse

was relatively high in western Oregon. This is the second year that the proportion of immature blue grouse has been down slightly in eastern Oregon, which may be a contributing factor in the decrease in blue grouse parts collected. Production for ruffed grouse was down compared to the last 10 years in western Oregon and was down slightly in eastern Oregon. The proportion of immature ruffed grouse is more variable from year-to-year and is often lower than for blue grouse. Despite lower production of ruffed grouse, especially in western Oregon, the number of wings collected still remained relatively high and email harvest surveys indicated an overall increase in ruffed grouse harvest compared to 2020.

Increased effort to install new barrels in under-surveyed areas has continued to 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 despite the amount of hunter effort on the west side; 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 parts 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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Appendix A: ODFW wing collection bag.

**ATTENTION:  
FOREST GROUSE AND MOUNTAIN QUAIL HUNTERS:**

ODFW is collecting wings and tails from hunter-harvested forest grouse and mountain quail. These parts provide important information on the status of these populations.

**PLEASE COMPLETE:**

Area Harvested:

• Location \_\_\_\_\_

• WMU \_\_\_\_\_

Date Harvested: \_\_\_\_\_

**IF YOU HARVEST A GROUSE OR MOUNTAIN QUAIL, PLEASE:**

1. Remove one entire WING and remove the TAIL with the rump feathers by skinning out the lower 2 or 3 inches of the back (see illustrations).
2. Place in paper collection bag. Use one bag per bird.
3. Mark the bag with the **LOCATION, Wildlife Management Unit (WMU), and DATE** harvested.
4. Drop bag off at designated collection sites located around the state or at nearest ODFW office.
5. If there will be a delay in dropping off your bag, please freeze it.

For more information, contact the ODFW office in your area.  
Thank you for contributing to game bird management in Oregon.



Oregon Department of Fish and Wildlife



Appendix B: Total number of parts (n), sex ratios, age ratios and hatching dates of dusky grouse from parts submitted by hunters from harvest in Wallowa County, Oregon, 1980 to 2021.

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
2018	95	60:40	70:30	51:49	49:51	77:23	9-Jun	20-May	to 2-Jul
2019	73	62:38	73:27	56:44	69:31	89:11	1-Jun	11-May	to 1-Jul

Season	<i>n</i>	Sex Ratios			Age Ratios		Hatch Information		
		M:F	AM:AF	IM:IF	I:A	I:AF	Mean	Range	
2020	79	60:40	67:33	53:47	49:51	75:25	1-Jun	4-May to	30-Jun
2021	71	54:46	72:28	45:55	60:40	86:14	29-May	5-May to	2-Jul

Appendix C: Total number of parts (n), 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 2021.

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
2018	83	49:51	48:52	50:50	61:39	82:18	2-Jun	3-May	to	1-Jul
2019	40	73:27	67:33	100:0	40:60	84:16	24-May	7-May	to	22-Jun
2020	69	38:62	44:56	36:64	76:24	91:9	31-May	3-May	to	30-Jun
<b>2021</b>	<b>105</b>	<b>47:53</b>	<b>39:61</b>	<b>55:45</b>	<b>49:51</b>	<b>69:31</b>	<b>26-May</b>	<b>7-May</b>	<b>To</b>	<b>18-Jun</b>