



## 2018-2019 South Carolina Bobwhite Quail Hunter Survey



The South Carolina Department of Natural Resources Small Game Project conducts an annual survey of the state's bobwhite quail (*Colinus virginianus*) hunters. This survey was initiated during the 1987-88 hunting season and was conducted for the 32<sup>nd</sup> consecutive year during the 2018-19 season. The purpose of the Quail Hunter Survey is to collect quantitative information on hunting success, which aids biologists in tracking quail population trends.

### Methods

As in previous years, a mailing list was generated from individuals who had participated in the Quail Hunter Survey in previous years and individuals who responded to news releases or otherwise heard about the survey.

Immediately prior to the opening of the 2018-19 quail hunting season cooperators were provided with materials necessary to participate in the survey. The materials included a pocket-size hunting diary, a data sheet, a postage-paid return envelope, and instructions for the survey. Potential cooperators were also provided with a larger return envelope with tags and asked to collect 10 wings from harvested quail. The wings were used to estimate sex and age ratios for the state's quail population. Funds for printing of the hunting diary booklets were generously provided by the South Carolina State Committee of Quail Unlimited.

In addition, hunters were provided the opportunity to sign-up to participate online and given the option of downloading a hunt report form or reporting their hunts directly using their computer or mobile device. Hunters can now sign up to participate at [www.dnr.sc.gov/surveys/smallgame](http://www.dnr.sc.gov/surveys/smallgame).

Cooperators were instructed to keep accurate records while quail hunting by recording the following information for each hunt: date, county of hunt, number of quail coveys flushed, number of quail bagged, an estimate of average covey size. We also asked for the number of woodcock (*Scolopax minor*) flushed, number of woodcock bagged, and number of rabbits (*Sylvilagus* spp.) seen while quail hunting.

Information and comments concerning the overall quality of the season, dog performance, quail food habits, weather, habitat conditions and other observations were also requested. Cooperators were asked to collect 1 wing from each quail harvested (up to 10 per cooperator) and affix a tag with the date, county and sex of the bird for each wing. Survey participants were urged to record information for wild, native bobwhite quail hunts only.

Near the close of the quail season, a reminder postcard was mailed (or an email sent) to each potential cooperator encouraging prompt return of the survey forms and wings. Data received were entered into a computer file, proofed, and summarized. Data were then analyzed to determine differences by year, county, region, month, or a combination of these variables.

## Results and Discussion

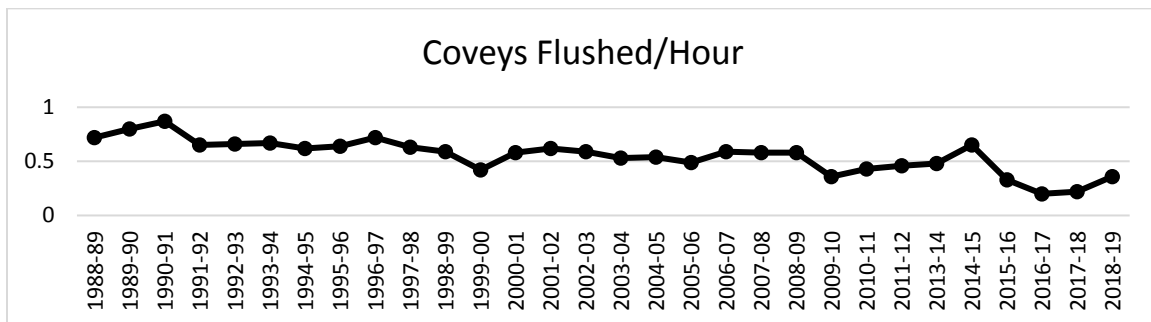
### Statewide

Responses were received from 7 (4 online, 3 mailed) individuals, with all hunters providing usable data. Information was obtained from 81 hunts. Average hunt length was 3.01 hours and average hunter group size was 1.54 (for those reporting group size). The highest frequency of survey quail hunting activity occurred during the months of December and January, closely followed by November (Table 1).

**Table 1. Quail hunting activity by month, 2018-19 South Carolina Quail Hunter Survey**

Month	Number of Hunts	Percentage of Total
November	20	24.39
December	23	28.05
January	26	31.71
February	12	14.63
March	0	0.00
TOTAL	97	100.00

Survey cooperators flushed an average of 0.39 coveys per hour during the 2018-19 season, an increase from the 2017-18 season (Table 2). Quail bagged per hour also decreased slightly from the previous year, however, the reported average covey size was about the same as the previous year. The trend in the coveys per hour index for the past 30 years of the survey is illustrated in Figure 1.

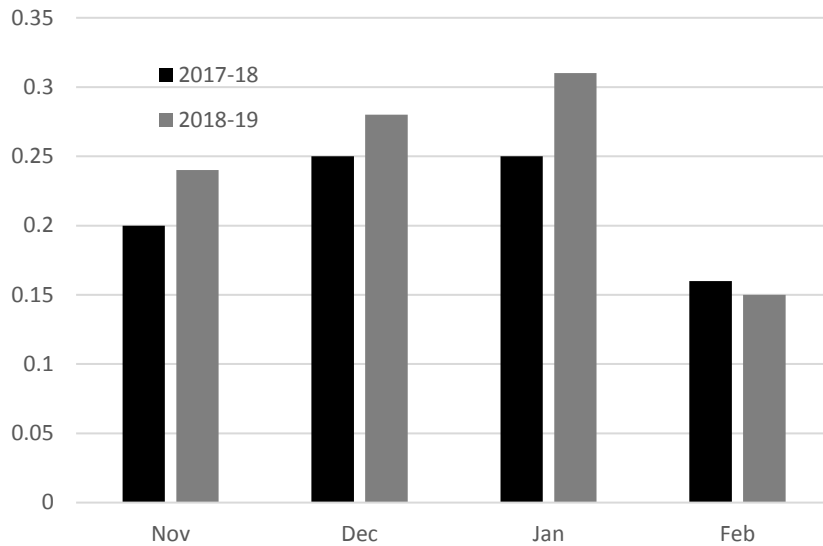


**Figure 1. Coveys per hour index and trend, South Carolina Quail Hunter Survey, 1988-2018.**

**Table 2. Statewide South Carolina Quail Hunter Survey results, 1988-2017.**

<b>Year of Survey</b>	<b>Coveys Flushed per Hour</b>	<b>Quail Bagged Per Hour</b>	<b>Average Covey Size</b>	<b>Rabbits Jumped Per Hour</b>
1987-88	0.76	0.99	12.5	0.21
1988-89	0.72	0.94	12.2	0.19
1989-90	0.80	1.04	12.9	0.16
1990-91	0.87	1.07	12.5	0.19
1991-92	0.65	0.75	12.2	0.15
1992-93	0.66	0.73	12.2	0.15
1993-94	0.67	0.73	11.9	0.22
1994-95	0.62	0.72	11.8	0.17
1995-96	0.64	0.76	11.7	0.16
1996-97	0.72	0.79	12.3	0.18
1997-98	0.63	0.66	11.9	0.14
1998-99	0.59	0.62	11.3	0.16
1999-00	0.42	0.38	10.7	0.14
2000-01	0.58	0.55	11.4	0.13
2001-02	0.62	0.56	11.8	0.17
2002-03	0.59	0.56	11.2	0.16
2003-04	0.53	0.49	11.6	0.13
2004-05	0.54	0.55	11.1	0.14
2005-06	0.49	0.42	10.5	0.13
2006-07	0.59	0.43	11.2	0.14
2007-08	0.58	0.33	12.1	0.15
2008-09	0.58	0.41	10.9	0.18
2009-10	0.36	0.32	11.1	0.10
2010-11	0.43	0.33	10.4	0.15
2011-12	0.46	0.40	10.1	0.20
2013-14	0.48	0.32	10.2	0.19
2014-15	0.65	0.47	8.0	0.08
2015-16	0.33	0.29	8.9	NA
2016-17	0.21	0.19	9.0	0.07
2017-18	0.22	0.15	10.2	0.05
2018-19	0.39	0.20	12.2	0.19

The Quail Hunter Survey also provides information on hunting success by month, region, and county. Hunting success rates as measured by coveys flushed per hour were higher in November, December, and January and lower in February when compared with the previous season (Figure 2).

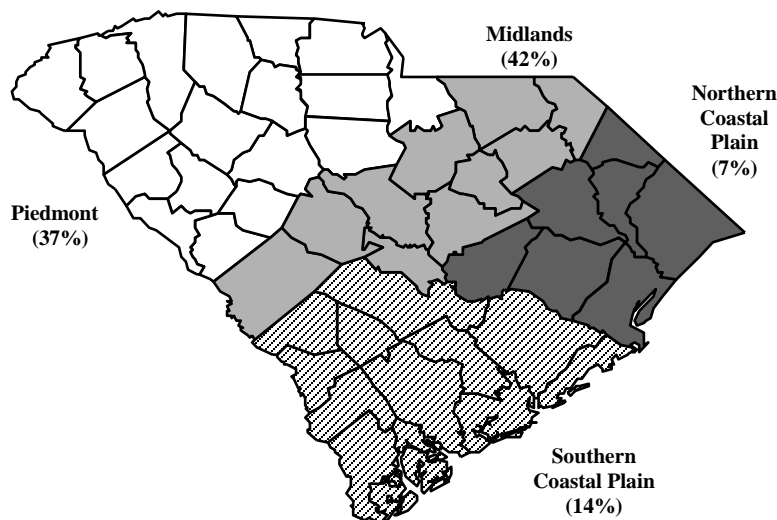


**Figure 2. Coveys flushed per hour index by month for the 2017-18 and 2018-19 seasons, South Carolina Quail Hunter Survey.**

### Regional Comparisons

South Carolina can be divided into 4 broad geographical regions based on habitat type similarities. The Piedmont, which includes the mountain and foothills areas, encompasses about 1/3 of the state. The Midlands extends in a broad band of mostly sandhills habitat on a northeast - southwest axis across the middle of South Carolina. The Northern Coastal Plain or "Pee Dee" and the Southern Coastal Plain or "Lowcountry" are the other 2 regions.

Hunting effort expended in the 2018-19 Quail Hunter Survey was greatest in the Piedmont, accounting for 37% of all hunts (Figure 3). The coveys per hour index was highest in the Midlands followed by the Piedmont and Southern Coastal Plain, respectively (Table 3) with quail harvest rate following the same pattern. The reported average size of quail coveys ranged from 7.2 birds per covey in the Northern Coastal Plain to 12.4 birds per covey in the Midlands.



**Figure 3. Percentage of total hunts occurring in each region, South Carolina Quail Hunter Survey, 2018-19.**

**Table 3. Results by region, South Carolina Quail Hunter Survey, 2018-19.**

<b>Region</b>	<b>Coveys Flushed Per hour</b>	<b>Quail Bagged Per hour</b>	<b>Average Covey Size</b>
Midlands	0.47	0.27	11.1
N. Coastal Plain	0.38	0.13	14.7
Piedmont	0.37	0.19	11.1
S. Coastal Plain	0.13	0.03	10.5

### **County Results**

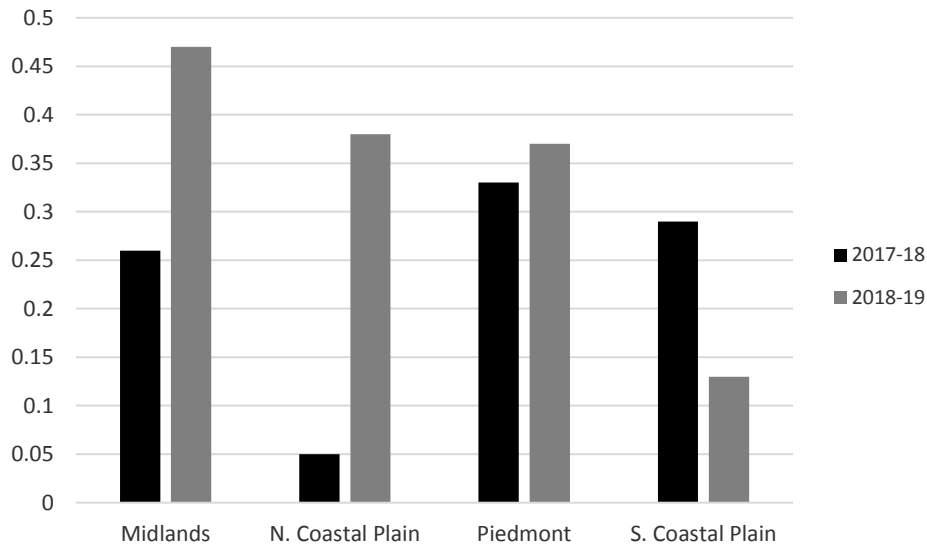
The top 3 counties for each of 4 indices are listed in Table 4. A minimum of 10 hunts had to occur in a particular county to be included in this ranking. Lee County claimed the top spot in the coveys per hour index at 0.58, followed by Chesterfield (0.46) and Newberry (0.19) counties. Lee County led the state in quail harvested per hour at 0.31, followed by Chesterfield (0.29) and Newberry (0.04).

**Table 4. Ranking of the top counties for indices measured in the South Carolina Quail Hunter Survey, 2018-19.**

<b>Rank*</b>	<b>Coveys Found per Hour</b>	<b>Quail Harvested per Hour</b>	<b>Average Covey Size</b>
1	Lee (0.58)	Lee (0.31)	Lee (10.35)
2	Chesterfield (0.46)	Chesterfield (0.29)	Chesterfield (12.80)
3	Newberry (0.19)	Newberry (0.04)	Newberry (12.00)

\*Counties with a sample size of less than 10 hunts not included.

Midlands counties led in most of the major quail hunting indices, including coveys flushed per hour (Figure 4). Historically, Northern Coastal Plain counties have proven better for quail hunting in South Carolina. County results should be interpreted cautiously due to the relatively low number of hunts upon which they are based.



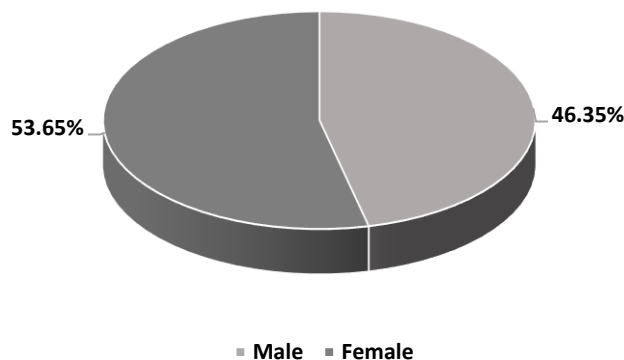
**Figure 4. Coveys flushed per hour index by region for the 2017-18 and 2018-19 seasons, South Carolina Quail Hunter Survey.**

### Quail Wing Data

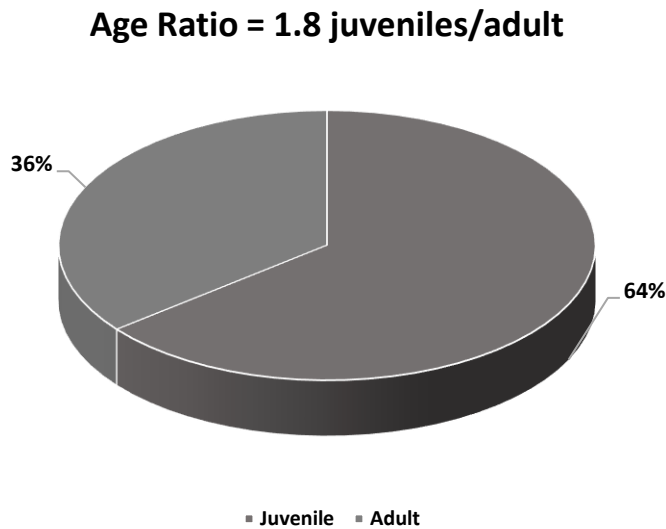
All potential Quail Hunter Survey cooperators were asked to provide wings from harvested birds. Five survey participants provided usable wings, for a response rate of 38% of those providing hunting data. Age information was obtained from 41 wings collected during the 2018-19 season, and cooperators provided the sex of the birds from which 41 wings were taken.

A higher percentage of males is believed to be normal for fall quail populations because of the hen's greater susceptibility to predation and physical stress due to egg laying and incubation during the nesting season. The sex ratio obtained from quail wing samples during the 2018-19 season was 46% males to 54% females (Figure 5). Overall, the percentage of juveniles in the harvest was 64%, versus 36% adults (Figure 5). The age ratio was 1.8 juveniles per adult. Age ratios in quail of 5-6 juveniles per adult are considered good and 7-8 juveniles per adult excellent.

A.



B.

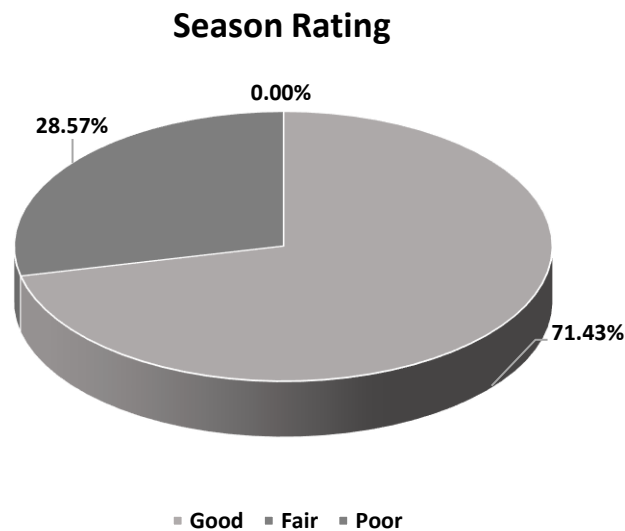


**Figure 5. Quail sex (A) and age (B) distribution from sample wings, South Carolina Quail Hunter Survey, 2018-19.**

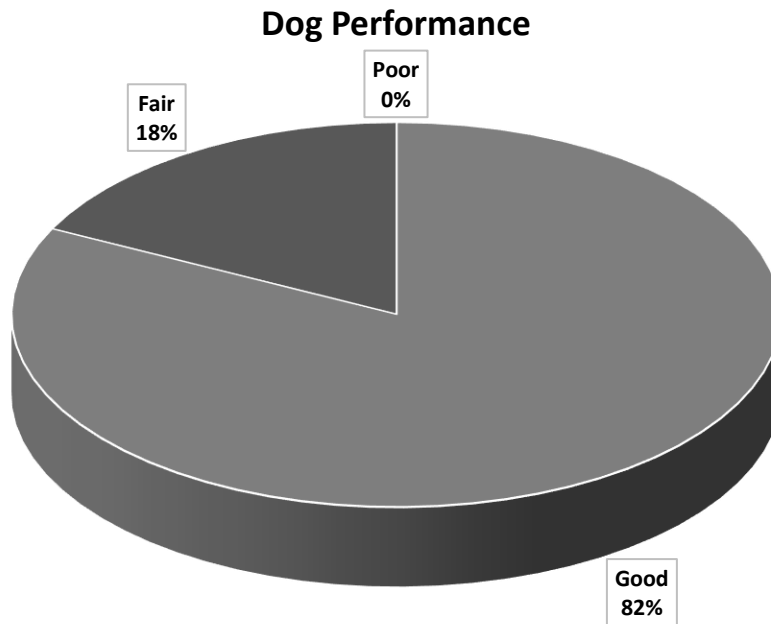
### Comments from Cooperators

As is our practice, we encourage hunters to provide comments on their hunting experience for the season. Of particular concern for the 2018-19 season was the unusually wet weather. The other concern of note was lack of quality habitat.

Seven respondents rated their 2018-19 hunting season and seven rated their dog performance for each hunt. Season rating was mostly rated good with fair rated second. None ranked the season poor (Figure 6). Dog performance was mostly ranked good with only 18% ranking performance fair and 0% ranking performance poor (Figure 7).

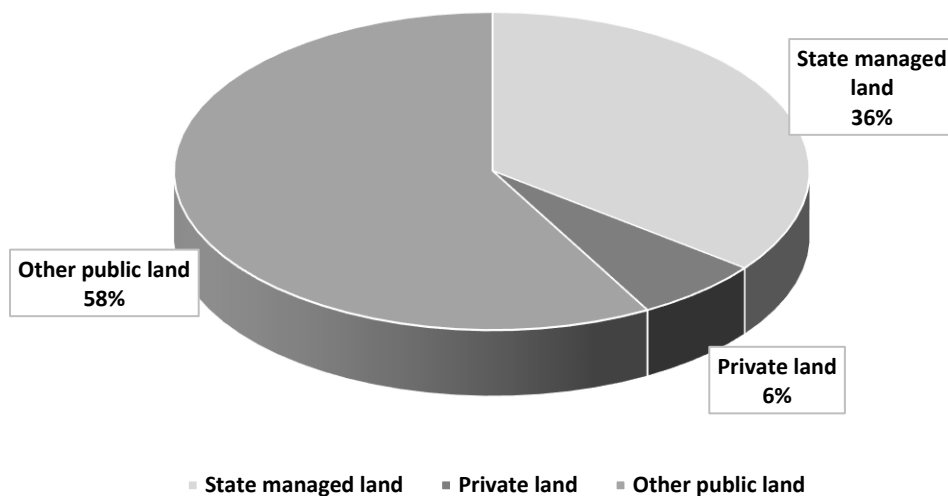


**Figure 6. Season ranking by hunters for the 2018-19 season.**



**Figure 7. Dog performance ranking by hunters for the 2018-19 season.**

Hunters indicated where they hunted for thirty-one hunts. Over half (18) of these were on other public land with 9 on state managed lands and 2 on private land (Figure 8).



**Figure 8. Percent of hunts by land category for the 2018-19 season.**

Plans are underway to continue the Quail Hunter Survey for the 2019-20 season. Efforts are ongoing to increase the number of cooperators and all avid quail hunters are encouraged to participate. Contact the SCDNR Small Game Project, P.O. Box 167, Columbia, SC 29202 (telephone 803-734-3609) to be included in the survey or go to [www.dnr.sc.gov/surveys/smallgame](http://www.dnr.sc.gov/surveys/smallgame) and sign up online.