



2021-2022 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 35th consecutive year during the 2021-22 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 2021-22 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.

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.

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, and 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 19 (5 online, 14 mailed) individuals, with usable data. Information was obtained from 163 hunts. Average hunt length was 2.54 hours and average hunter group size was 1.71 (for those reporting group size). The highest frequency of survey quail hunting activity occurred during the months of January and December, followed by February (Table 1).

Table 1. Quail hunting activity by month, 2021-22 South Carolina Quail Hunter Survey

Month	Number of Hunts	Percentage of Total
November	20	12.27%
December	44	26.99%
January	68	41.72%
February	29	17.79%
March	<u>2</u>	1.23%
TOTAL	163	100.00

Survey cooperators flushed an average of 0.20 coveys per hour during the 2021-22 season (Figure 1), an increase from the 2020-21 season (Table 2). Quail bagged per hour increased slightly from the previous year and the reported average covey size decreased compared to the previous year. The trend in the coveys per hour index for the past 35 years of the survey is illustrated in Figure 1.

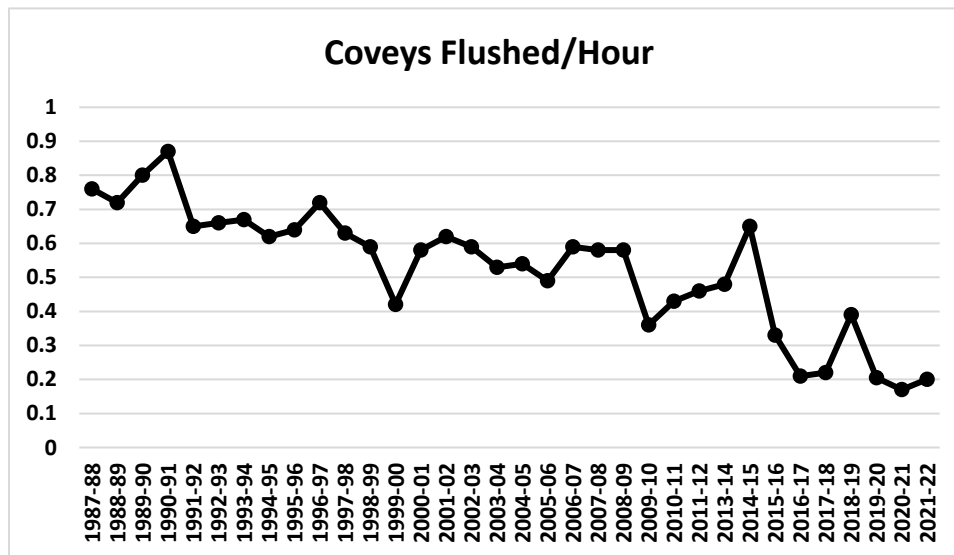


Figure 1. Coveys per hour index and trend, South Carolina Quail Hunter Survey, 1987-2022.

Table 2. Statewide South Carolina Quail Hunter Survey results, 1987-2022.

Year of Survey	Coveys Flushed per Hour	Quail Bagged Per Hour	Average Covey Size	Rabbits Jumped Per Hour
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
2012-13	0.48	0.32	10.2	0.19
2013-14	NA	NA	NA	NA
2014-15	0.65	0.47	8.0	0.08
2015-16	0.33	0.29	8.9	NA
2016-17	0.25	0.28	8.9	0.10
2017-18	0.22	0.15	10.2	0.05
2018-19	0.39	0.20	12.2	0.19
2019-20	0.21	0.07	11.1	0.29
2020-21	0.17	0.10	10.5	0.09
2021-22	0.20	0.11	9.34	0.11

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 February and lower for the remaining months when compared with the previous season (Figure 2).

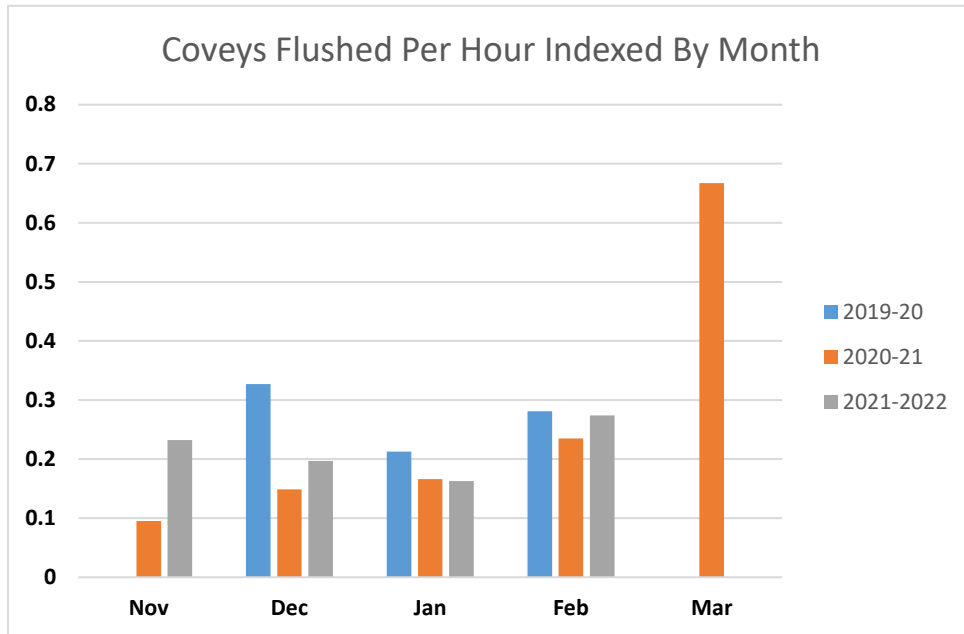


Figure 2. Coveys flushed per hour index by month for the 2019-20, 2020-21, and 2021-22 seasons, South Carolina Quail Hunter Survey.

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 2021-22 Quail Hunter Survey was greatest in the Piedmont, accounting for 46.6%, followed by the Southern Coastal Plain (21.5%) and Midlands (20.9%) of all hunts (Figure 3). The coveys per hour index was highest in the Midlands followed by the Piedmont and Northern Coastal Plain, respectively (Table 3) with quail harvest rate greatest in the Midlands followed by the Piedmont and Northern Coastal Plain. The reported average size of quail coveys ranged from 2.0 birds per covey in the Northern Coastal Plain to 11.14 birds per covey in the Piedmont.

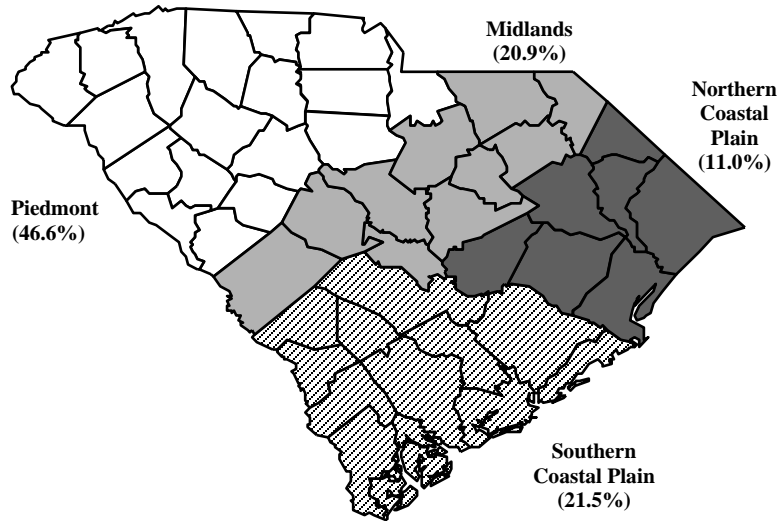


Figure 3. Percentage of total hunts occurring in each region, South Carolina Quail Hunter Survey, 2021-22.

Table 3. Results by region, South Carolina Quail Hunter Survey, 2021-22.

Region	Coveys Flushed Per hour	Quail Bagged Per hour	Average Covey Size
Midlands	0.27	0.12	11.1
N. Coastal Plain	0.02	0.00	2.0
Piedmont	0.25	0.15	8.9
S. Coastal Plain	0.03	0.00	8.0

County Results

The top counties (with a minimum of 10 hunts) for each of 3 indices are listed in Table 4. Edgefield County claimed the top spot in the coveys per hour index at 0.78, followed by McCormick County (0.29). Edgefield County led the state in quail harvested per hour at 0.52, followed by McCormick (0.17).

Table 4. Ranking of the top counties for indices measured in the South Carolina Quail Hunter Survey, 2021-22.

Rank	Coveys Found per Hour	Quail Harvested per Hour	Average Covey Size
1	Edgefield (0.78)	Edgefield (0.52)	Union (13.3)
2	McCormick (0.29)	McCormick (0.17)	Chesterfield (12.8)

Piedmont counties led in quail harvested per hour, but Midlands counties led in coveys flushed per hour index (Figure 4) and average covey size. Historically, Northern Coastal Plain counties have proven better for quail hunting in South Carolina. However, the Northern Coastal Plain counties have been declining in recent years and success has shifted Westward to the Midlands and Piedmont counties.

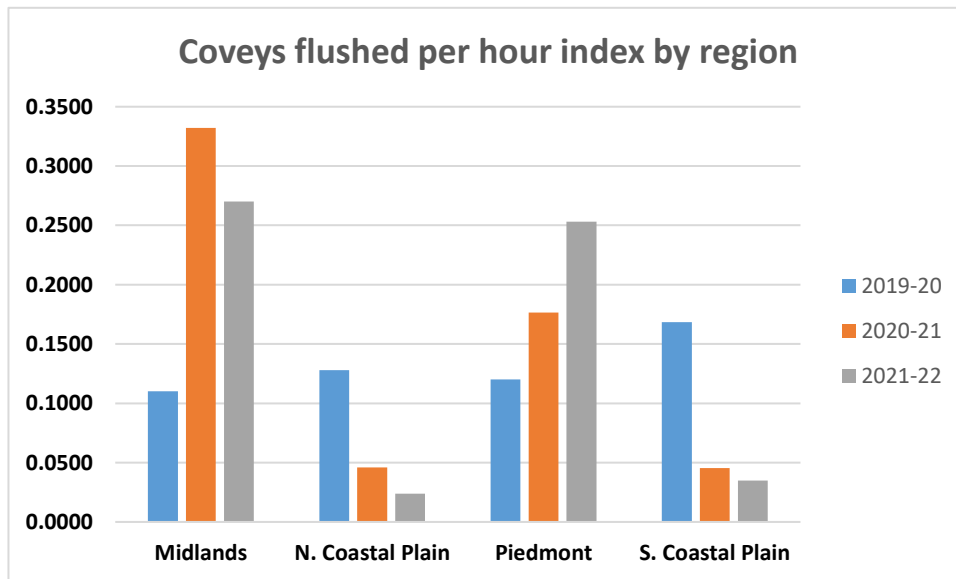


Figure 4. Coveys flushed per hour index by region for the 2019-20, 2020-21, and 2021-22 seasons, South Carolina Quail Hunter Survey.

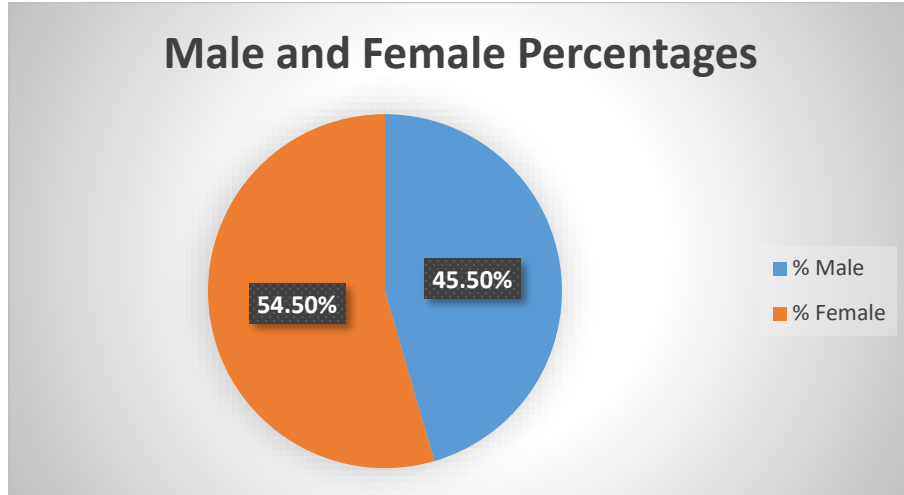
Quail Wing Data

All potential Quail Hunter Survey cooperators were asked to provide wings from harvested birds. Four survey participants provided usable wings, for a response rate of 21% of those providing hunting data. Age information was obtained from wings collected during the 2021-22 season, and cooperators provided the sex of the birds from which 22 wings were collected.

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 2021-22 season was 45.5% males to 54.5% females

(Figure 5). Overall, the percentage of juveniles in the harvest was 68.2%, versus 31.8% adults (Figure 5). The age ratio was 2.1:1 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.

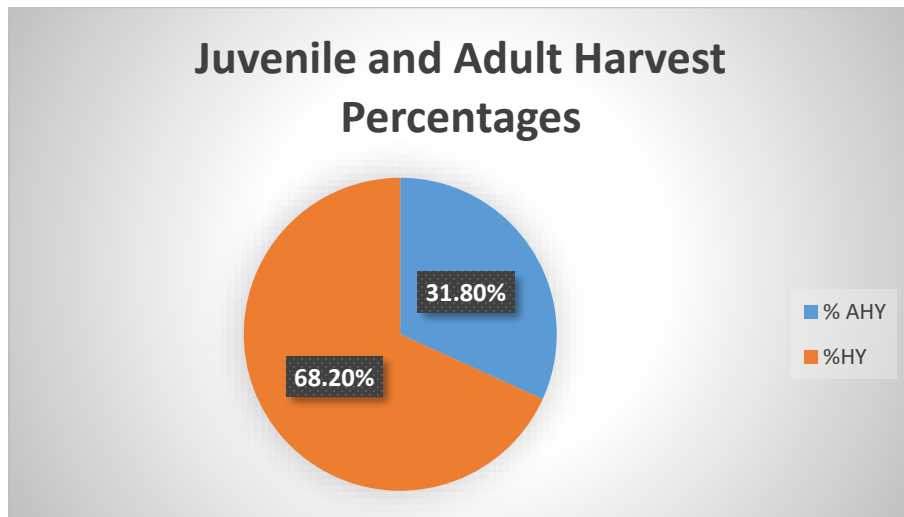


Figure 5. Quail sex (A) and age (B) distribution from sample wings, South Carolina Quail Hunter Survey, 2021-22.

Comments from Cooperators

As is our practice, we encourage hunters to provide comments on their hunting experience for the season. Comments ranged from warm and dry conditions to food source availability.

Respondents rated their 2021-22 hunts and their dog performance for each hunt. The 2021-22 season was mostly rated poor with good rated second (Figure 6). Dog performance was overwhelmingly considered good with only 9.2% ranking performance fair and 26.8% ranking performance poor (Figure 7).

Figure 6. Season ranking, in percent, by hunt, for the 2021-22 season.

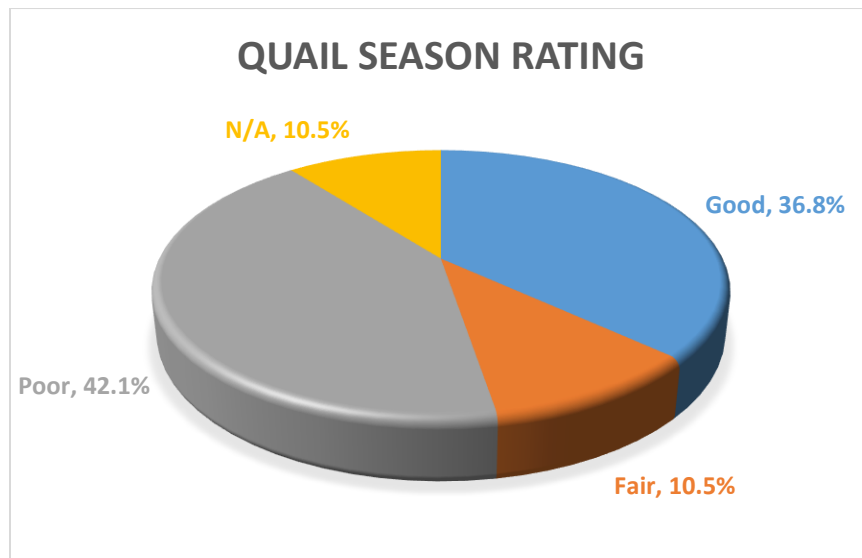
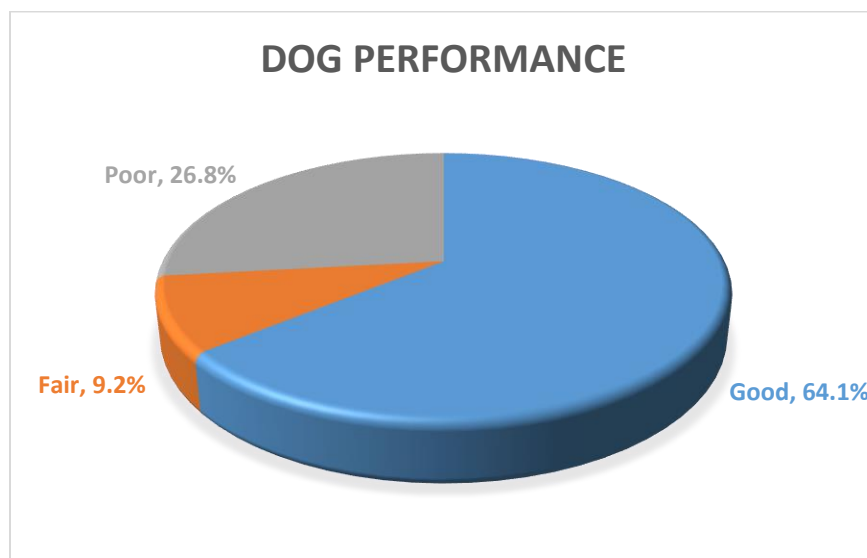


Figure 7. Dog performance ranking, in percent, by hunt for the 2021-22 season.



Plans are underway to continue the Quail Hunter Survey for the 2022-23 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 and sign up online.

If you are interested in improving quail and upland habitat on your property (owned or leased), SCDNR has partnered with other government and non-government organizations to provide landowners and managers with the latest information and improvements to upland management. This collective group of wildlife biologist and quail enthusiast can also guide you through the process of requesting cost share assistance through various government and non-government sources. For more information about assistance and cost share please visit <http://scbobwhites.org/>.