

2016 South Carolina TURKEY HARVEST REPORT



SOUTH CAROLINA DEPARTMENT
OF NATURAL RESOURCES
TURKEY RESEARCH & MANAGEMENT PROJECT



DNR

Submitted by
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INTRODUCTION

Ranking only behind the white-tailed deer in popularity among hunters, the Eastern wild turkey is an important natural resource in South Carolina. The 2016 Turkey Hunter Survey represents the South Carolina Department of Natural Resources (DNR), Wildlife Section's ongoing commitment to conduct pertinent research related to the state's wild turkey population. The primary objectives of this survey research were to obtain valid estimates of; (1) the statewide spring gobbler harvest in 2016, (2) the harvest of gobblers in the constituent counties of the state, and (3) hunting effort related to turkeys. Information on hunter's opinions of the turkey resource and other aspects of turkey hunting are also presented.

Due to the importance of turkeys as a state resource, DNR believes that accurately assessing the harvest of turkeys, as well as hunter participation in turkey hunting, is key to the management of this species. Proposed changes in turkey-related laws and regulations should have foundations in biology, therefore, the population dynamics associated with annual hunting mortality cannot be ignored. Similarly, when issues arise that do not involve biological parameters, it is important to have information related to turkey hunter activities afield because they too form an important basis for managing wild turkeys.

Since the inception of the Statewide Turkey Restoration and Research Project (Turkey Project) the methods used to document the turkey harvest have changed. Historically, turkey harvest figures were developed using a system of mandatory turkey check stations across the state. This system yielded an actual count of harvested turkey and was, therefore, an absolute minimum harvest figure. Shortcomings in this system included deterioration of check station compliance, complaints from hunters regarding the inconvenience of check stations, and costs associated with the check station system. The requirement to check harvested turkeys in South Carolina was eliminated following the 2005 season. Prior to eliminating the check-in requirement, DNR conducted surveys in order to document the rate of noncompliance, as well as, to determine the relationship between harvest figures obtained from check stations and those obtained from surveys. As would be expected, harvest figures obtained from surveys are higher than those from check stations due to lack of compliance with the check-in requirement.

Survey Methodology

The 2016 Turkey Hunter Survey represented a random mail survey that involved a single mail-out. The questionnaire for the 2016 Turkey Hunter Survey was developed by Wildlife Section personnel (Figure 1). The mailing list database was constructed by randomly selecting 27,000 individuals who received a set of 2016 Turkey Transportation Tags which are required in order to hunt turkeys in South Carolina. Data entry was completed by Priority Data, Inc., Omaha, Nebraska.

Results from the mail survey were corrected for nonresponse bias using data collected during 2007-2013 by Responsive Management of Harrisonburg, Virginia using a Computer Assisted Telephone Interview program (CATI).

Statistical analysis was conducted using Statistix 7 (Analytical Software, Tallahassee, FL).

RESULTS AND DISCUSSION

Turkey Harvest

During the 2016 spring season it is estimated that a total of 14,856 adult gobblers and 1,927 jakes were harvested for a statewide total of 16,783 turkeys (Table 1). This figure represents a 10 percent increase in harvest from 2015 (15,237). Just as the reduced harvest in 2015 was explained by the all-time low reproduction in 2013, the increase in harvest seen in 2016 was likely a result of slightly better reproduction in both 2014 and 2015 which lead to an increase in turkey numbers in many parts of the state. However, in spite of the increase in 2016 harvest levels remains 34 percent below the record harvest established in 2002. The association between changes in reproduction and its effects on harvest are rather remarkable in South Carolina's turkey harvest and reproductive data sets.

The overall reduction in harvest seen since 2002 can likely be attributable to one primary factor, poor reproduction. Reproduction in wild turkeys has generally been low over the last decade (Figure 2) leading to this long-term declining harvest trend (Figure 3). Unlike deer, wild turkeys are much more susceptible to significant fluctuations in recruitment. Lack of reproductive success is often associated with bad weather (cold and wet) during nesting and brood rearing season.

On the other hand, habitats are continually changing in South Carolina. Turkey populations expanded rapidly in the 1980's and 1990's as a result of significant nesting and brood rearing habitat created by timber management activities. However, considerable acreage statewide is currently in even-aged stands that are greater than 15 years old. According to forest inventory data, during the last 20 years the states' timberlands in the 0 to 15 year age class decreased 34 percent while timberlands in the 16 to 30 year age class increased 104 percent. This situation is simply not as productive for turkeys because it does not provide understory nesting and brood rearing cover in the same way that younger forest stands do.

Harvest Per Unit Area County Rankings

Comparisons can be made between turkey harvests from the various counties in South Carolina if a harvest per unit area is established. Harvest per unit area standardizes the harvest among counties regardless of the size of individual counties. One measure of harvest rate is the number of turkeys taken per square mile (640ac. = 1 mile²). When considering the estimated turkey habitat that is available in South Carolina, the turkey harvest rate in 2016 was 0.8 gobblers per square mile statewide (Table 2). Although this harvest rate is not as high as it once was, it should be considered good and is similar to other Southeastern states. The top 5 counties for harvest per unit area were Spartanburg (1.9 turkeys/mile²), Laurens (1.6 turkeys/mile²), Union (1.5 turkeys/mile²), Cherokee (1.5 turkeys/mile²), and Anderson (1.2 turkeys/mile²) (Table 2).

Turkey Harvest Rankings by County

Total turkey harvest is not comparable among counties because there is no standard unit of comparison, i.e. counties vary in size and are, therefore, not directly comparable. However, some readers may be interested in this type of ranking. The top 5 counties during 2016 were Williamsburg, Spartanburg, Berkeley, Laurens, and Colleton (Table 3).

Turkey Harvest by Week of Season

South Carolina historically had two spring turkey season frameworks. Throughout most of the state (Game Zones 1, 2, and 4) the season was April 1-May 1. This season was based on a recommendation from DNR following gobbling and nesting studies that were conducted in the 1970's. The other season framework was March 15-May 1 and was only in effect in 12 counties in Game Zone 3 which comprised the lower coastal plain. This early opening season was socio-politically based.

Due to legislation passed in 2015, the spring 2016 season was the first with a single statewide season of March 20-May 5. In past years it was customary to compare the harvest trends between the two season frameworks. With the single statewide season now in place, this comparison is no longer available. Nonetheless, Figure 4 depicts the harvest trends over the course of the season.

Number of Turkey Hunters

Even though all individuals receiving a set of Turkey Transportation Tags were licensed to hunt turkeys, only 63 percent indicated that they actually hunted turkeys. Based on this figure, approximately 51,867 hunters participated in the 2016 spring turkey season, a 15 percent increase from 2015 (44,205). Counties with the highest estimates for individual hunters include Laurens, Fairfield, Newberry, Union, and Chester (Table 4) and these counties were all in the top 5 in 2015.

Hunter Effort

For the purposes of this survey hunter effort was measured in days with one day being defined as any portion of the day spent afield. Turkey hunters averaged approximately 5.9 days afield during the 2016 season (Table 4). Successful hunters averaged significantly more days afield (7.3 days) than unsuccessful hunters (4.9 days). Extrapolating to the entire population of turkey hunters yields a figure of 271,302 total days of spring gobbler hunting, up 20 percent from 2015 (218,258 days).

The number of days devoted to turkey hunting in South Carolina is significant and points not only to the availability and popularity of turkeys as a game species, but to the obvious economic benefits related to this important natural resource. Figures generated by a 2003 Survey by the National Wild Turkey Federation estimate that approximately 35 million dollars are added to South Carolina's economy annually from turkey hunting. The top 5 South Carolina counties for overall days of turkey hunting during 2016 were Laurens, Newberry, Union, Fairfield, and Spartanburg counties (Table 4).

Hunting Success

For determination of hunting success only those individuals that actually hunted turkeys were included in the analysis and similarly, success was defined as harvesting at least one turkey. Overall hunting success in 2016 was 23 percent (Figure 5). Unlike deer hunting which typically has high success, turkey hunting can be an inherently unsuccessful endeavor, relatively speaking. As would be expected, the majority of successful hunters take one gobbler (Figure 5). However,

the percentage of successful hunters who take two birds is quite high as well. This indicates that successful hunters essentially the same chance of taking two birds as they did one bird.

The statewide bag limit in South Carolina is 3 gobblers. Obviously, most successful hunters harvest only one or two birds. However, it is interesting to note the relative contribution to the total harvest of turkeys by the few hunters that harvest 3 birds. Ironically, the percentage of hunters taking 3 birds was only 3.5 percent, however, this small percentage of hunters harvested 27 percent of the total birds taken in the state (Figure 6).

Hunter Opinion Regarding Turkey Numbers

The 2016 Turkey Hunter Survey asked participants to compare the number of turkeys in the area they hunt most often with the number of turkeys in past years. Participants were given 3 choices; increasing, about the same, or decreasing. Approximately 43 percent of hunters indicated that the number of turkeys in the area they hunted most often was about the same as in past years. A higher percentage of hunters (45%) believed that the turkey population was decreasing than increasing (12%). On a scale of 1 to 3 with 1 being increasing, 2 being the same, and 3 being decreasing, the overall mean rating of 2.3 suggests that hunters viewed the turkey population as decreasing. The opinion among hunters that the turkey population is decreasing is consistent with recent harvest trends and reproductive data.

Turkeys Shot but not Recovered

Harvesting game signals the end of a successful hunt and although most hunters do a good job of preparing their equipment and mental state, it goes without saying that a certain percentage of game is shot or shot at and not killed or recovered. This point is no different when turkey hunting.

In order to estimate the prevalence of errant shots at turkeys, the 2016 Turkey Hunter Survey asked hunters to indicate the number of turkeys that they “shot but did not kill or recover during the 2016 season in South Carolina”. Approximately 9.8 percent of hunters indicated that they shot but did not kill or recover at least one turkey in 2016 (9.9% in 2015). There were approximately 51,867 turkey hunters in 2016 meaning that approximately 5,108 turkeys were shot or shot at and not killed or recovered. Therefore, approximately 23 percent of the total

number of turkeys shot at were not killed or recovered. These results have been consistent since this type of data has been available.

This data is certainly not indicative of “dead and unrecovered turkeys”, however, it is clear that some percentage of the 5,108 turkeys that were shot at did eventually die. Although shot shells for turkeys have become increasingly sophisticated, accurate, and lethal it is a fact that the pattern of a shotgun is relatively broad and contains between 200 and 400 pellets. Therefore, a “clean miss” is not as clear-cut for turkeys compared to other big game like deer where there is typically a single projectile. Additional research is needed on this topic.

Turkey Harvest in the Morning VS. Afternoon

The typical spring turkey hunt is characterized by attempting to locate a gobbling bird prior to or just after sunrise. Once a gobbler is located most hunters position themselves as close as they can to the gobbler without scaring it away. Various types of callers that mimic the sounds of wild turkeys are then used to attempt to call the gobbler into gun range. This technique of locating a gobbling bird, setting-up, and calling is repeated as necessary.

Traditionally, spring turkey hunting was primarily carried out during the first few hours of the day. As the popularity of turkey hunting has increased, many hunters now hunt in the afternoon as well. Gobblers are generally not as vocal in the afternoon but they can be stimulated to gobble using the various turkey calls, particularly late in the afternoon near areas where turkeys frequently roost.

In order to gain a better understanding of the distribution of harvest with respect to time of day, the 2016 Turkey Hunter Survey asked hunters to identify the number of birds harvested in the morning compared to the afternoon. Results indicate that approximately 76 percent of gobblers were harvested in the morning compared to 24 percent in the afternoon. This data may be useful if discussions arise concerning the relative importance of morning compared to afternoon harvest of gobblers in the spring. These results have been consistent since this type of data has been available.

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Table 1. Estimated statewide turkey harvest in South Carolina in 2016.

County	Acres*	Square Miles	Gobbler Harvest	Jake Harvest	Total Harvest	Percent Jakes	Harvest	Rates
							Ac/Turkey	Turkey/Mi. ²
Abbeville	223,113	349	153	28	181	15.5	1,233	0.5
Aiken	500,546	782	365	50	415	12.0	1,206	0.5
Allendale	216,455	338	178	28	206	13.6	1,051	0.6
Anderson	219,068	342	340	64	404	15.8	542	1.2
Bamberg	196,573	307	204	7	211	3.3	932	0.7
Barnwell	281,764	440	161	7	168	4.2	1,677	0.4
Beaufort	147,441	230	59	9	68	13.2	2,168	0.3
Berkeley	567,530	887	739	43	782	5.5	726	0.9
Calhoun	190,584	298	170	21	191	11.0	998	0.6
Charleston	288,732	451	221	21	242	8.7	1,193	0.5
Cherokee	156,664	245	323	50	373	13.4	420	1.5
Chester	300,589	470	238	71	309	23.0	973	0.7
Chesterfield	372,478	582	221	57	278	20.5	1,340	0.5
Clarendon	298,087	466	391	35	426	8.2	700	0.9
Colleton	502,666	785	629	21	650	3.2	773	0.8
Darlington	286,228	447	204	28	232	12.1	1,234	0.5
Dillon	214,069	334	59	5	64	7.8	3,345	0.2
Dorchester	302,717	473	314	35	349	10.0	867	0.7
Edgefield	246,543	385	238	28	266	10.5	927	0.7
Fairfield	384,607	601	493	35	528	6.6	728	0.9
Florence	397,888	622	374	42	416	10.1	956	0.7
Georgetown	399,638	624	212	28	240	11.7	1,665	0.4
Greenville	294,257	460	314	57	371	15.4	793	0.8
Greenwood	204,400	319	255	42	297	14.1	688	0.9
Hampton	324,840	508	501	35	536	6.5	606	1.1
Horry	533,336	833	467	100	567	17.6	941	0.7
Jasper	309,889	484	306	21	327	6.4	948	0.7
Kershaw	360,485	563	280	35	315	11.1	1,144	0.6
Lancaster	266,382	416	221	71	292	24.3	912	0.7
Laurens	317,916	497	637	136	773	17.6	411	1.6
Lee	220,106	344	187	7	194	3.6	1,135	0.6
Lexington	280,742	439	59	16	75	21.3	3,743	0.2
McCormick	212,021	331	178	28	206	13.6	1,029	0.6
Marion	216,907	339	229	14	243	5.8	893	0.7
Marlboro	281,271	439	170	21	191	11.0	1,473	0.4
Newberry	317,761	497	442	42	484	8.7	657	1.0
Oconee	284,348	444	297	57	354	16.1	803	0.8
Orangeburg	504,516	788	535	42	577	7.3	874	0.7
Pickens	219,926	344	314	71	385	18.4	571	1.1
Richland	340,121	531	195	35	230	15.2	1,479	0.4
Saluda	192,173	300	153	50	203	24.6	947	0.7
Spartanburg	265,939	416	646	136	782	17.4	340	1.9
Sumter	338,968	530	340	35	375	9.3	904	0.7
Union	258,111	403	552	71	623	11.4	414	1.5
Williamsburg	513,851	803	901	35	936	3.7	549	1.2
York	276,650	432	391	57	448	12.7	618	1.0
Total	14,028,896	21,920	14,856	1,927	16,783	11.5	836	0.8

95% Conf. Interval for harvest

(+-) 1,628 (+-) 591 (+-) 1,753

* Acreage shown represents the acreage of forested land and acreage of row crops considered to be significant turkey habitat within each county.

Table 2. County rankings based on turkey harvest per unit area in South Carolina in 2016.

County	Acres*	Square Miles	Gobbler Harvest	Jake Harvest	Total Harvest	Percent Jakes	Harvest	Rates
							Ac/Turkey	Turkey/Mi. ²
Spartanburg	265,939	416	646	136	782	17.4	340	1.9
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Dillon	214,069	334	59	5	64	7.8	3,345	0.2
Lexington	280,742	439	59	16	75	21.3	3,743	0.2
Total	14,028,896	21,920	14,856	1,927	16,783	11.5	836	0.8

Table 3. County rankings based on total turkeys in South Carolina in 2016.

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Total	14,028,896	21,920	14,856	1,927	16,783	11.5	836	0.8

Table 4. Estimated number of turkey hunter, average days hunted, and total hunting effort in South Carolina in 2016.

County	Total Harvest	Number Hunters	Avg. Days Hunted	Total Man/Days
Abbeville	181	1,243	4.5	5,585
Aiken	415	1,220	5.9	7,140
Allendale	206	634	6.0	3,829
Anderson	404	1,518	5.6	8,430
Bamberg	211	658	4.3	2,814
Barnwell	168	478	5.3	2,539
Beaufort	68	263	2.9	762
Berkeley	782	1,554	5.4	8,388
Calhoun	191	598	4.2	2,486
Charleston	242	933	4.2	3,914
Cherokee	373	1,016	6.1	6,177
Chester	309	1,925	5.4	10,324
Chesterfield	278	1,028	5.2	5,342
Clarendon	426	968	4.6	4,421
Colleton	650	1,590	5.5	8,705
Darlington	232	646	4.7	3,004
Dillon	64	167	4.5	762
Dorchester	349	729	6.2	4,538
Edgefield	266	1,411	4.9	6,981
Fairfield	528	2,116	5.0	10,503
Florence	416	1,172	5.4	6,378
Georgetown	240	741	4.4	3,247
Greenville	371	1,220	5.0	6,050
Greenwood	297	1,088	5.4	5,871
Hampton	536	1,327	5.8	7,679
Horry	567	1,124	6.5	7,277
Jasper	327	693	6.0	4,178
Kershaw	315	1,112	5.3	5,849
Lancaster	292	1,100	5.7	6,251
Laurens	773	2,164	5.2	11,180
Lee	194	813	4.3	3,469
Lexington	75	454	4.1	1,862
McCormick	206	1,136	5.0	5,701
Marion	243	598	4.7	2,835
Marlboro	191	478	5.2	2,465
Newberry	484	2,068	5.4	11,096
Oconee	354	1,100	7.9	8,726
Orangeburg	577	1,542	4.8	7,362
Pickens	385	1,363	5.2	7,087
Richland	230	849	4.0	3,364
Saluda	203	992	4.7	4,675
Spartanburg	782	1,805	5.8	10,398
Sumter	375	1,088	4.7	5,120
Union	623	1,949	5.6	10,821
Williamsburg	936	1,566	4.8	7,457
York	448	1,626	5.1	8,261
Total	16,783	51,867	5.1	271,302

Figure 1. South Carolina Department of Natural Resources 2016 Turkey Hunter Survey.

2016 South Carolina Turkey Hunter Survey

1. Did you turkey hunt in SC this past season (2016)? **1. Yes 2. No**
If you answered **No** to this question please **go to question # 8.**
2. Did you harvest any turkeys in SC this past season? **1. Yes 2. No**
3. Even if you did not harvest a turkey, please record the SC counties you turkey hunted and the number of days hunted in each county this past season (2016). If you harvested turkeys please record the number of adult gobblers and jakes taken in each county. A day of hunting is defined as any portion of the day spent afield. Please do not give ranges (i.e. 5-10), rather provide absolute numbers (i.e. 5). Provide information only for yourself - not friends, relatives, or other people you may have called or guided for. See the diagram below if you are unsure how to determine an adult gobbler or "longbeard" from a juvenile gobbler or "jake".

SC Counties You Turkey Hunted	# Days Hunted	Number Turkeys Harvested
1		Adult gobblers _____ Jakes _____
2		Adult gobblers _____ Jakes _____
3		Adult gobblers _____ Jakes _____
4		Adult gobblers _____ Jakes _____
5		Adult gobblers _____ Jakes _____

If you did not harvest any turkeys in SC this past season please go to question 6.

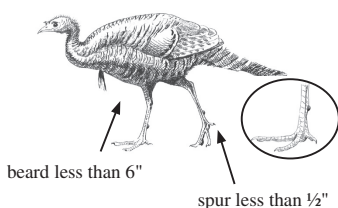
4. If you harvested turkeys in SC this past season, please indicate as best you can the number of turkeys killed by week of season.

Date of Season	# Turkeys Harvested	Date of Season	# Turkeys Harvested
1 March 20-31		4 April 15-21	
2 April 1-7		5 April 22-30	
3 April 8-14		6 May 1-5	

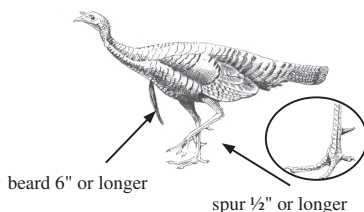
5. How many turkeys did you kill in the morning _____ after 12:00 noon _____?
6. How many turkeys did you shoot but not kill or recover in SC this past season? _____
7. Compared to past years, how would you describe the number of turkeys in the area that you hunted most often this spring? **Circle one**
1. Increasing 2. About the same 3. Decreasing
8. Are you a resident of SC? **1. Yes 2. No**
9. If yes, which county _____

Separate and return this portion of the survey. Postage is prepaid. Please do not staple this form.

Juvenile "Jake"



Adult "Gobbler"



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Figure 1. continued

May, 2016

Dear Sportsman:

Eastern wild turkeys are one of the most important game species in South Carolina. Therefore, it is important that this species be monitored for population status and harvesting activities. Wildlife resource managers require current and accurate information about wild turkey harvests to aid in successfully managing this important natural resource and to optimize future hunting potential. To obtain this needed data, the South Carolina Department of Natural Resources (SCDNR) is conducting a survey of hunters who received a set of turkey tags during spring 2016.

You are one of a group of randomly selected hunters asked to participate in this survey. To draw accurate conclusions it is very important that you complete the survey and return it. Please take time to read each question. Even if you did not hunt wild turkeys this spring please indicate this by answering the appropriate questions and moving on to the next set of questions.

Please note that complete confidentiality will be given to you. There is no number on your survey form, therefore, there is no way to link your responses to you. Keep in mind that the purpose of the survey is to determine the wild turkey harvest in South Carolina and not to determine whether game laws are observed. By accurately answering the survey questions you will enable SCDNR biologists to better manage the Eastern wild turkey resource for you and other citizens of the state. Therefore, it is very important that you take a few minutes to complete this survey and mail it. Return postage is prepaid.

Results of this survey will be posted on the SCDNR web site once completed. The results from the 2015 survey can be found at:
www.dnr.sc.gov/wildlife/turkey/2015TurkeyHarvest.html

Thank you for your assistance.



Charles Ruth
Wildlife Biologist
Deer/Turkey Project Supervisor

PLEASE MAIL YOUR SURVEY AFTER SEPARATING THIS HALF FROM THE SIDE ON WHICH YOUR ANSWERS HAVE BEEN ENTERED. NO POSTAGE IS NECESSARY.

If you have questions regarding this survey, please call 803-734-3886 or write 2016 Turkey Hunter Survey, SCDNR, P.O. Box 167, Columbia, SC 29202.

The South Carolina Department of Natural Resources prohibits discrimination on the basis of race, color, sex, national origin, disability, religion or age. Direct all inquiries to the Office of Human Resources, P.O. Box 167, Columbia, SC 29202

16-10948



**TURKEY HUNTER SURVEY
SC DEPARTMENT OF NATURAL RESOURCES
PO BOX 167
COLUMBIA SC 29202-9976**

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Figure 2. Summer wild turkey recruitment ratio in South Carolina 1982-2015. Note declining trend since 1988. Average recruitment prior to 1988 = 3.5. Average recruitment since 1988 = 2.2. This represents a 37 percent decrease.

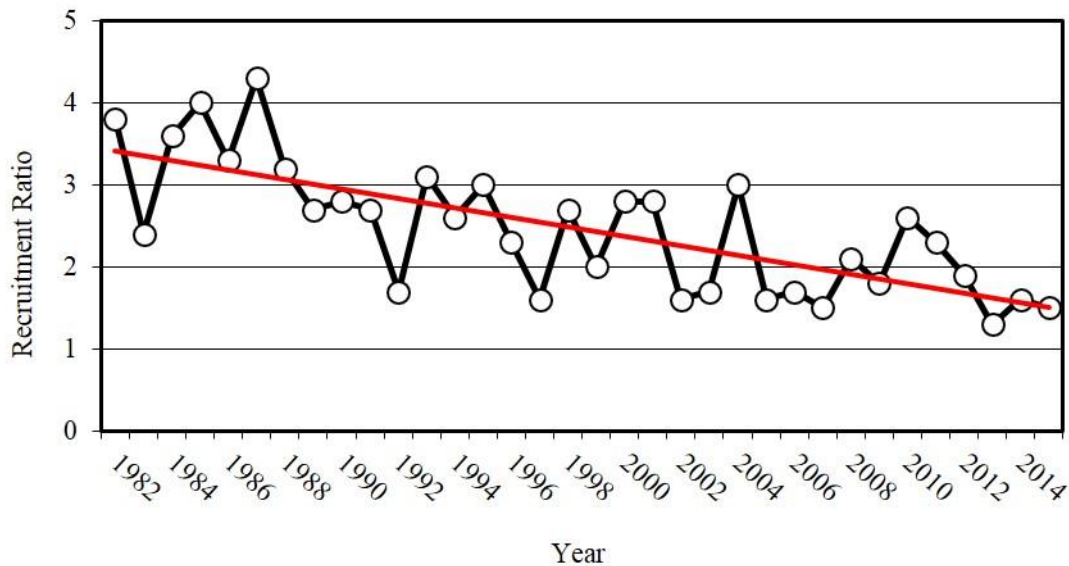


Figure 3. Spring wild turkey harvest in South Carolina 1982-2016. Note that harvest increased between 1982 and 2002 as a result of increasing turkey population following restoration efforts. However, since 2002 harvest has declined 34 percent following years of poor recruitment.

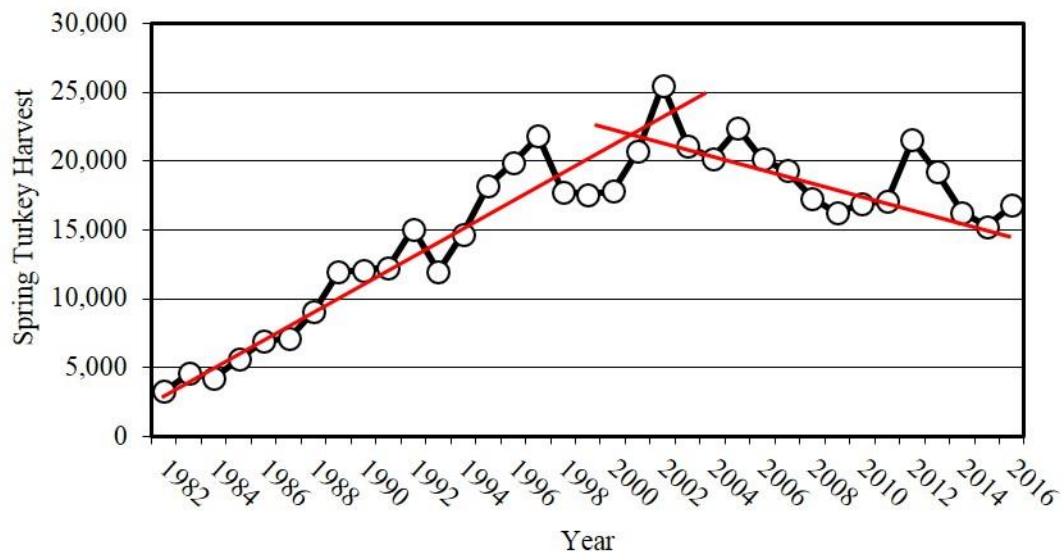


Figure 4. Percentage of gobblers harvested by week of season in South Carolina in 2016.

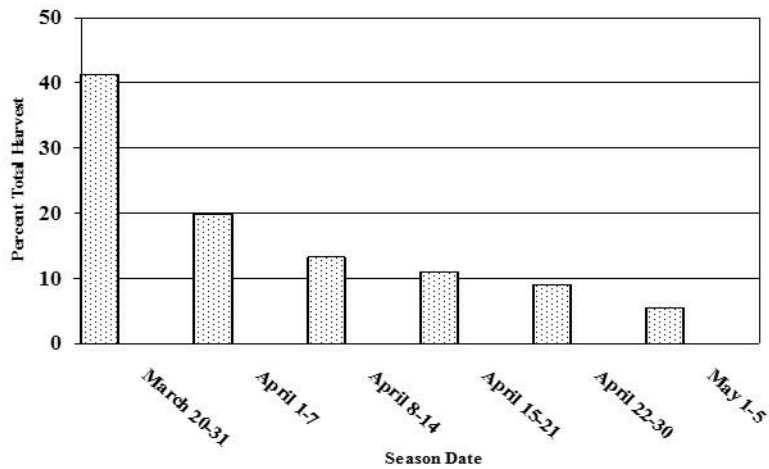


Figure 5. Hunter success during the spring turkey season in South Carolina in 2016. Overall success was 23 percent at harvesting at least one gobbler.

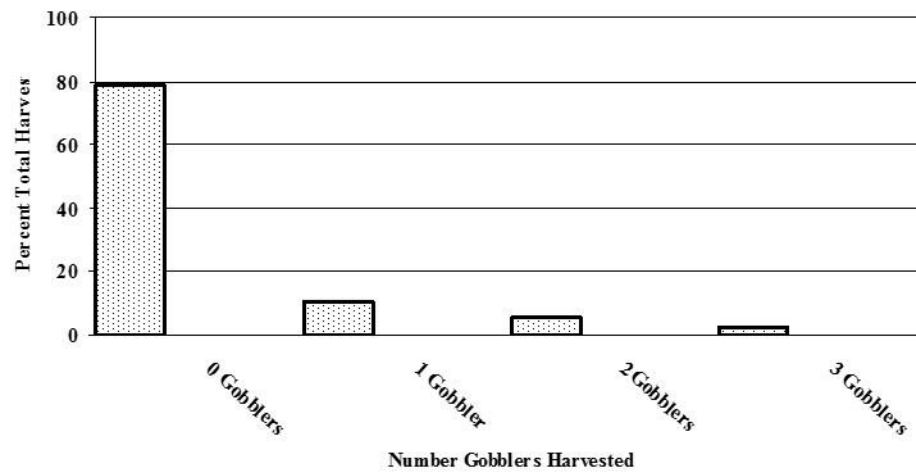


Figure 6. Relative contribution to the total turkey harvest by hunters taking between 1 and 3 gobblers in South Carolina in 2016.

