

2019 WILD TURKEY SUMMER OBSERVATION SURVEY REPORT

Christopher D. Kreh

Upland Game Bird Biologist – Grouse, Quail, Turkey

November 6, 2019

Survey Overview

Each summer, the North Carolina Wildlife Resources Commission (NCWRC) coordinates an observation survey to gain insight into wild turkey productivity and carryover of gobblers from the previous spring turkey hunting season. This year survey cards were mailed to 3,100 people. The mailing list included a mix of NCWRC employees, National Wild Turkey Federation members, and other individuals that had participated in the survey previously. Several news releases and social media posts were used to recruit new participants this year. An unknown number of new participants were able to access the online survey using their existing WRC ID number. Additionally, our support staff helped approximately 300 new participants establish their WRC ID number and begin reporting sightings of turkeys.

As in previous years, participants reported wild turkeys they observed during the course of routine daily activities from July 1st through August 31st. Participants recorded observations in all of North Carolina's 100 counties, with only three counties (Dare, Graham, and Washington) having fewer than 10 participants or fewer than 25 observations (Figures 1 and 2). A total of 2,671 individuals participated in the survey in 2019. They recorded a total of 10,075 separate observations and saw a combined total of 64,044 wild turkeys (Table 1). This is the highest level of participation since this survey's inception in 1988 and is a substantial increase from last year's survey when 1,379 participants reported 7,535 observations. Participants this year reported 3,835 observations via the on-line application and 6,240 observations via the traditional survey cards. This was the second year that participants could report turkey sightings on smart phones or other small-screen devices. Most of the increase in participation this year can be attributed to the effectiveness of social media and news releases, as well as the opportunity to enter observations on mobile devices. At current participation levels, the summer observation provides meaningful insight into our wild turkey population and offers a way to gauge hunting pressure and population trends across the state.

Data Analysis

As in previous years, the data were compiled, checked for errors, and analyzed to determine a productivity index from poult per hen ratios and to evaluate carryover of gobblers from gobblers per hen ratios. Estimates of productivity were derived from the ratios of poults and hens in each reported

observation, rather than from the total number of hens and poults observed. This approach recognizes the fact that the reported turkey observations are just a sample of the entire population and that a measurement of error is part of the estimation process. Specifically, this approach provides a way to compute a 95% confidence interval for each estimate. The large number of participants and observations in this survey allows for precise estimates at regional scales, hence the relatively small confidence intervals in Table 2 and Figures 3, 4, and 5. Gobblers per hen ratios were calculated based on the sum of all observations.

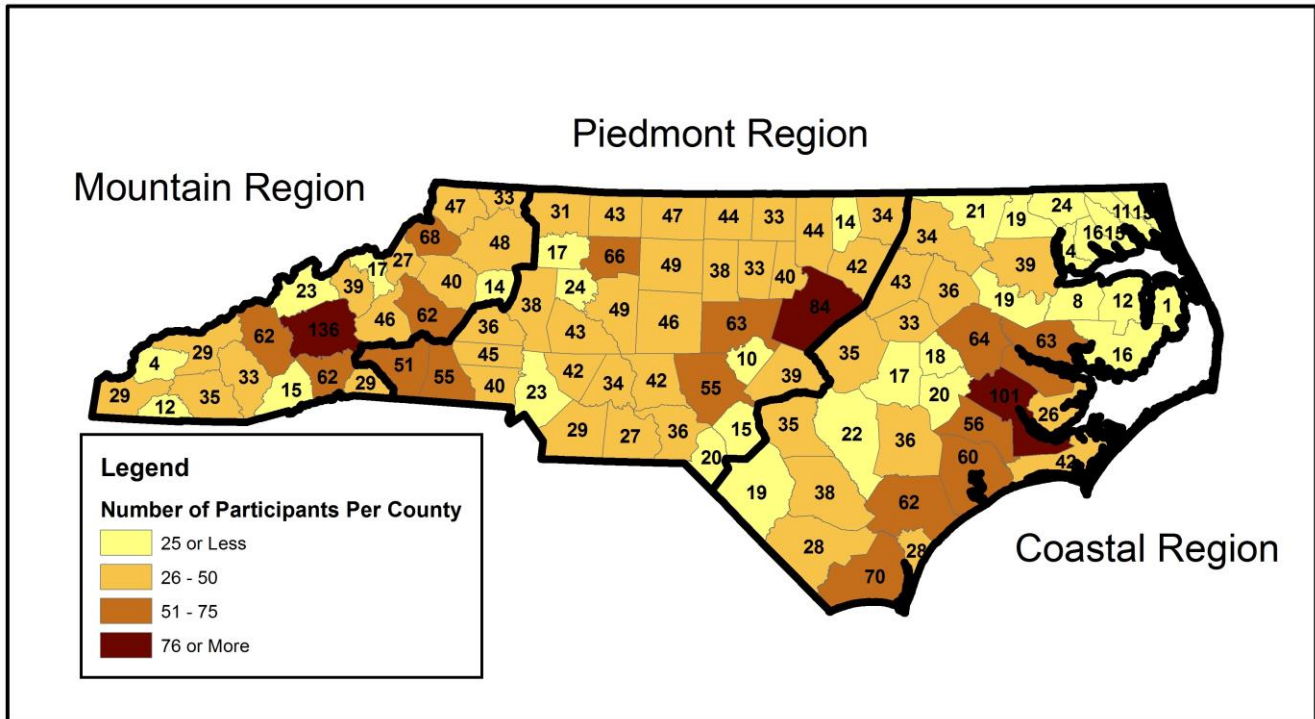


Figure 1. Number of participants reporting turkeys in each county in the 2019 Wild Turkey Summer Observation Survey. Some participants reported turkeys from more than one county.

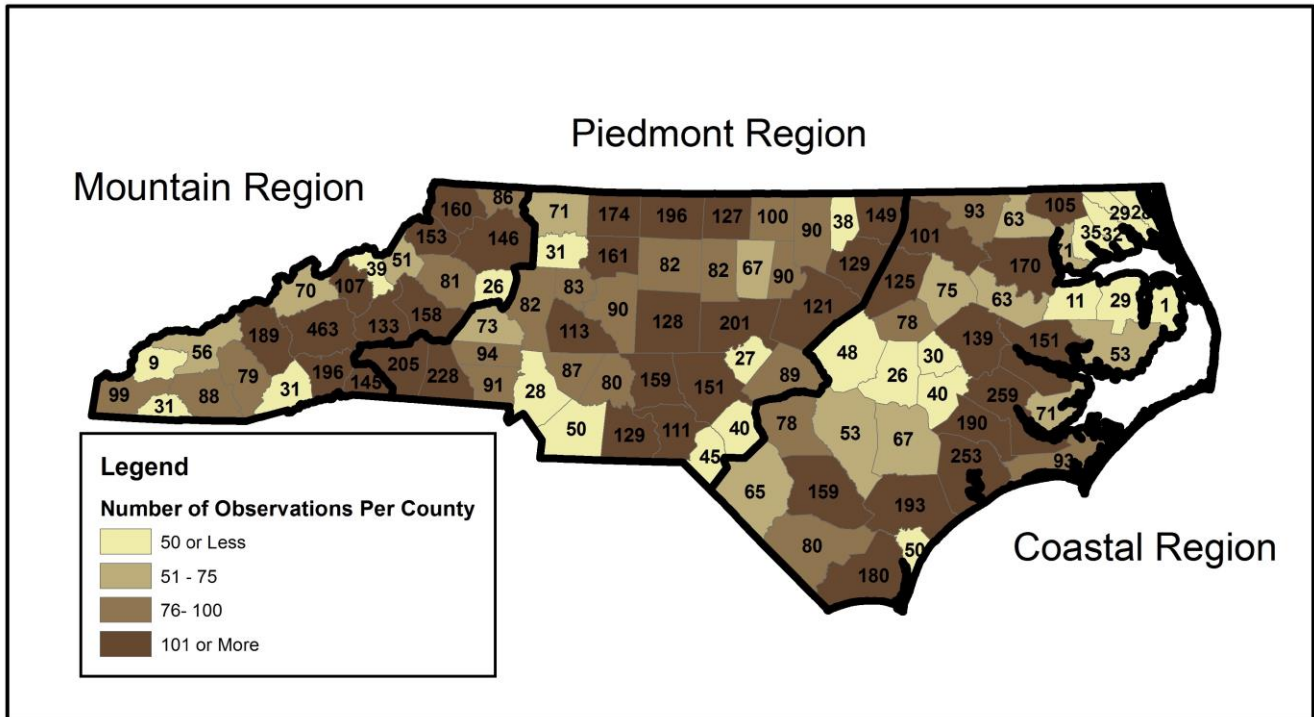


Figure 2. Number of observations reported in each county in the 2019 Wild Turkey Summer Observation Survey.

Region	Observations	Hens W/O Poults	Hens W/ Poults	Total Hens	Total Poults	Total Gobblers	Total Unk.
Coastal	3,387	2,349	3,042	5,391	11,497	3,114	4,940
Piedmont	4,092	3,336	2,955	6,291	10,334	2,910	3,877
Mountains	2,596	2,381	2,162	4,543	6,994	2,099	2,054
State	10,075	8,066	8,159	16,225	28,825	8,123	10,871

Productivity

Wild turkey productivity can be evaluated by examining the observations of hens and poults in the survey. This information is best considered in a relative fashion, comparing the data among the three regions and also evaluating the trends through time. There are three primary ways to evaluate productivity:

- Poults Per Hen – this ratio gives an indication of overall productivity
- Poults Per Brood – this ratio gives an indication of poult survival
- Percentage of Hens Observed With Poults – indicates nesting success

Productivity statewide was estimated to be 2.2 poults per hen, but was higher in the coastal region than in the piedmont or mountains (Table 2). Productivity was 2.5 poults per hen in the coastal region and 2.0 poults per hen in both the piedmont and mountain regions. From a biological standpoint, these differences are meaningful. Poult survival statewide was 4.0 poults per brood, but varied across the regions, with poult survival highest in the coastal region and lowest in the mountains. The percentage of hens observed with poults was highest in the coastal region as well.

Our estimates of turkey reproduction this year are much higher than what we've observed over the course of much of the last decade. Statewide estimates of productivity and poult survival are the highest since 2011 (Figures 4 and 5). Though productivity in the piedmont and mountains was lower than the coastal region, it was still higher than the average statewide productivity estimates since 2013. The statewide percentage of hens observed with poults was higher than any year since 2015. The turkey population has increased in recent years and is relatively large (estimated at 265,000 turkeys statewide in 2015), so it is capable of producing (i.e. hatching and rearing) large numbers of turkey annually. It is likely that this year's reproduction will add considerably to the overall turkey population and hunter harvest in the next few years.

Table 2. Summary of turkey observations (hens with poults and gobblers per hen) and estimates of productivity and poult survival from the 2019 Wild Turkey Summer Observation Survey. Values in parentheses represent 95% confidence intervals.

Region*	% Hens with Poults	Poults Per Brood	Poults Per Hen	Gobblers/Hen Ratio
Coastal	56%	4.2 (4.1 – 4.3)	2.5 (2.4 – 2.6)	0.58
Piedmont	47%	3.9 (3.8 – 4.0)	2.0 (1.9 – 2.1)	0.46
Mountain	48%	3.7 (3.5 – 3.9)	2.0 (1.9 – 2.1)	0.46
State	50%	4.0 (3.9 – 4.1)	2.2 (2.1 – 2.3)	0.50

**Geographical regions, not NCWRC regions.*

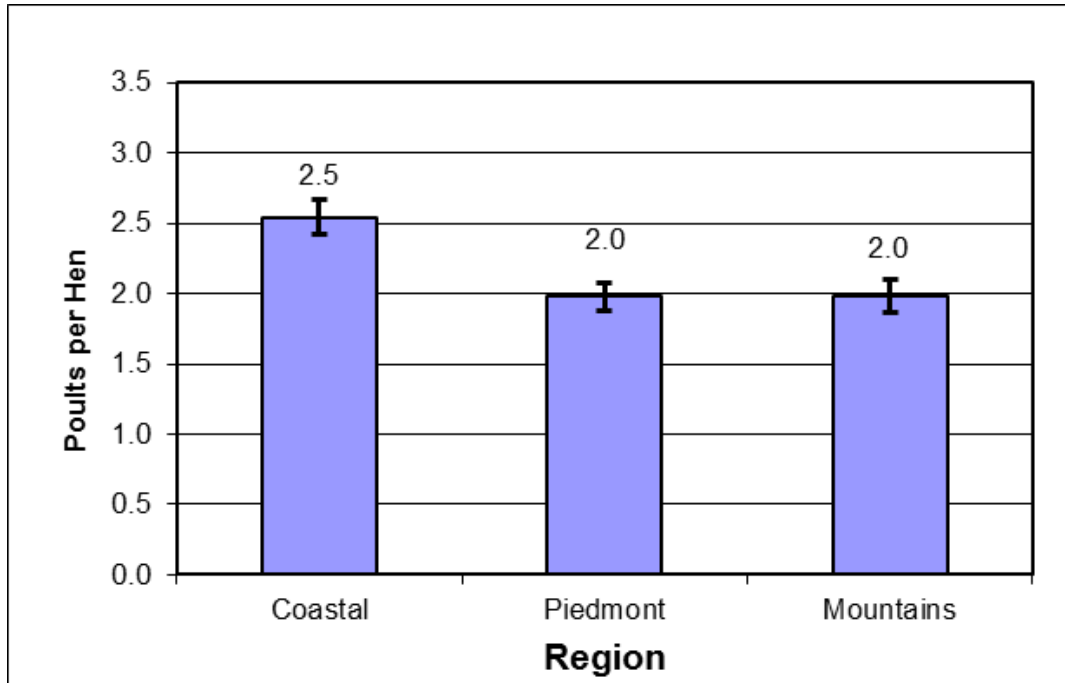


Figure 3. Regional productivity estimates from the 2019 Wild Turkey Summer Observation Survey. Error bars represent 95% confidence intervals.

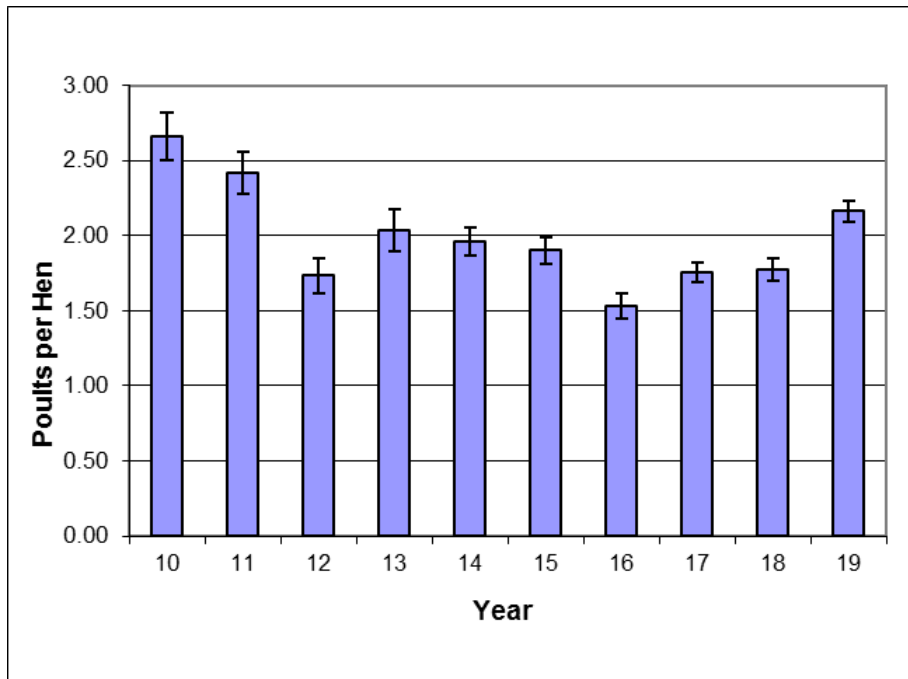


Figure 4. Statewide productivity estimates from Wild Turkey Summer Observation Surveys, 2010-2019. Error bars represent 95% confidence intervals.

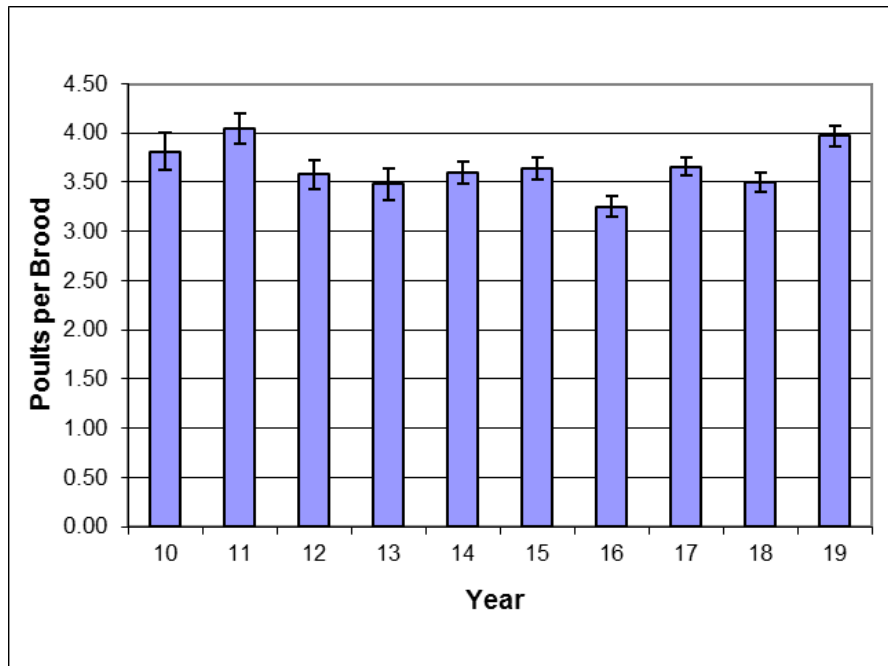


Figure 5. Statewide poult survival estimates from Wild Turkey Summer Observation Surveys, 2010-2019. Error bars represent 95% confidence intervals.

Gobbler Carryover

The observed ratio of gobblers per hen indicates the level of carryover of gobblers from the previous spring turkey hunting season. Higher levels of gobbler harvest by hunters will typically result in lower gobblers per hen ratios. A ratio of less than 0.50 gobblers per hen may be an indication of over-harvest of the male segment of the turkey population if quality spring gobbler hunting is the management goal.

Over the past 10 years, gobblers per hen ratios in the summer observation survey have been between 0.50 and 0.62 gobblers per hen (Figure 6). The ratio for the 2019 summer observation survey was 0.50 gobblers per hen. These data indicate that, if quality spring gobbler hunting is to be maintained, additional pressure should not be placed on the male segment of the wild turkey population by increasing the season length, opening the spring season earlier, or increasing the bag limit.

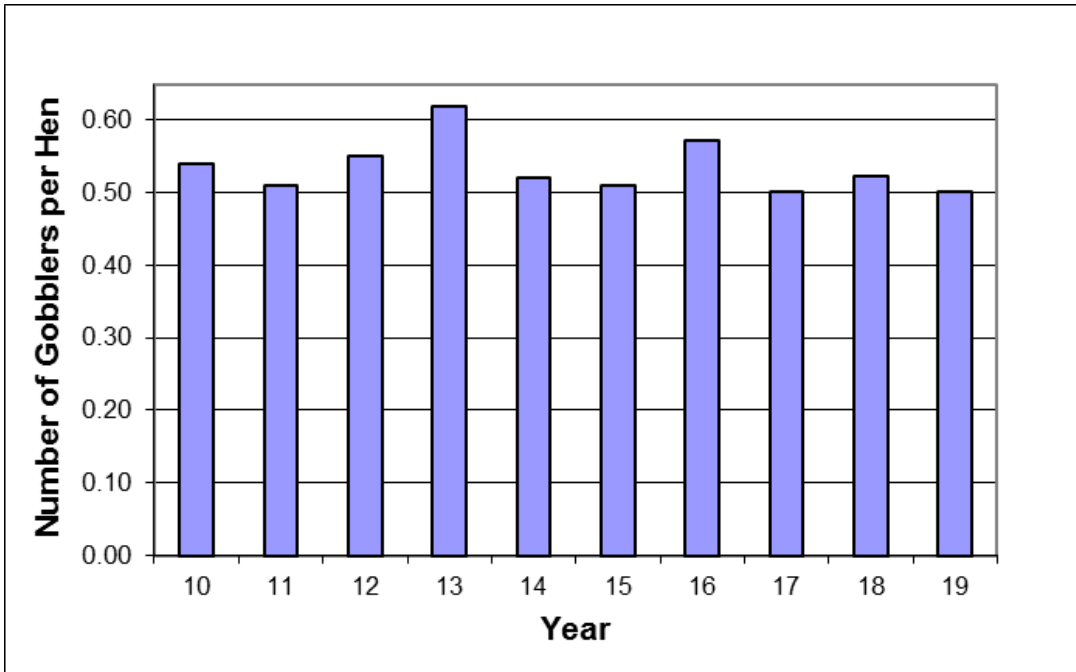


Figure 6. Ratio of gobblers per hen observed in Wild Turkey Summer Observation Surveys, 2010-2019.