2018 WILD TURKEY SUMMER OBSERVATION SURVEY REPORT

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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 3,068 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 assist with the survey through their existing WRC ID number. Additionally, I helped approximately 100 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 (Figures 1 and 2). Buncombe County had both the highest number of participants (86) and the highest number of observations (458). Dare and Graham were the only counties with fewer than 10 observations. The vast majority of counties had at least 25 reported observations of wild turkeys. A total of 1,379 individuals participated in the survey in 2018. They recorded a total of 7,535 separate observations (Table 1). Participants reported 1,711 observations via the on-line application and 5,824 observations via the traditional survey cards. This was the first year that participants could report turkey sightings on smart phones or other small-screen devices. At current participation levels, the summer observation survey continues to provide 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 actual productivity of the turkey population, which is being estimated, has a 95% chance of falling within the specified range. The large number of participants and observations in this survey allows for precise estimates, 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.

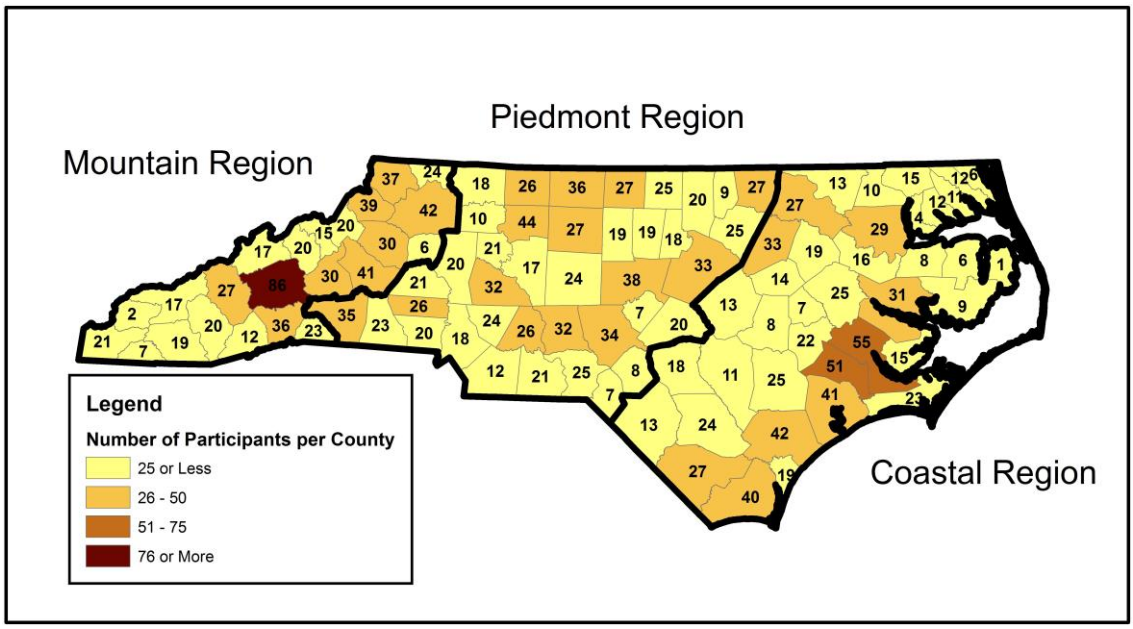

Figure 1. Number of participants reporting turkeys in each county in the 2018 Wild Turkey Summer Observation Survey. Some participants reported turkeys from more than one county.

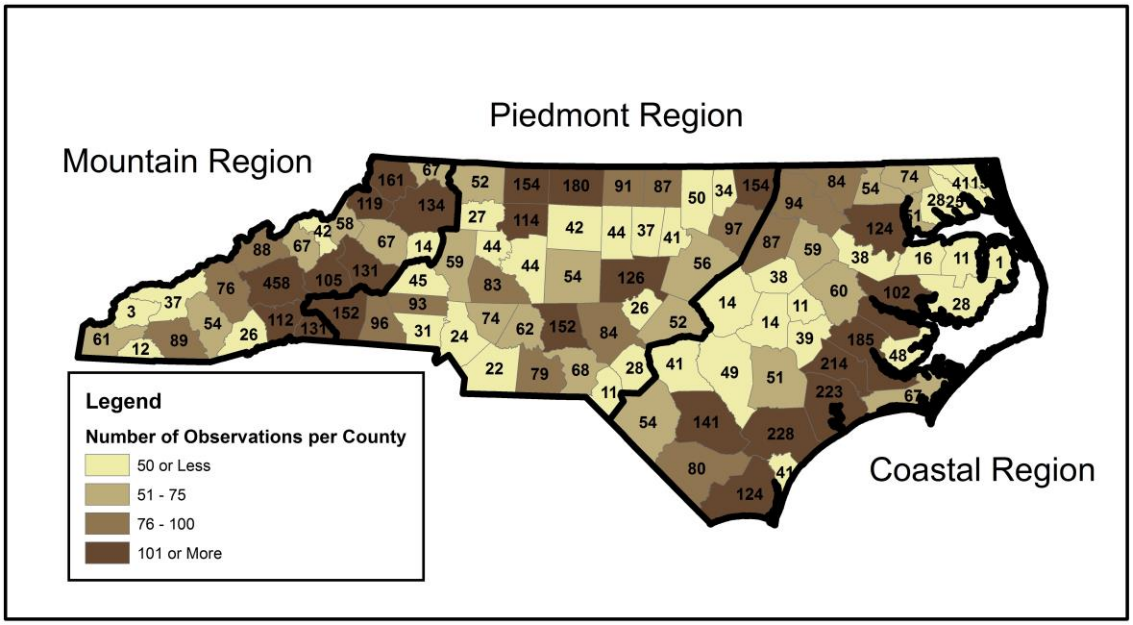

Figure 2. Number of observations reported in each county in the 2018 Wild Turkey Summer Observation Survey.

Table 1. Summary of observations from the 2018 Wild Turkey Summer Observation Survey.

Region	Observations	Hens W/O Poults	Hens W/ Poults	Total Hens	Total Poults	Total Gobblers	Total Unk.
Coastal	2,654	2,485	2,256	4,741	7,057	2,770	3,167
Piedmont	2,769	2,342	1,906	4,248	6,000	2,145	1,926
Mountains	2,112	2,102	1,467	3,569	4,629	1,646	1,559
State	**7,535**	**6,929**	**5,629**	**12,558**	**17,686**	**6,561**	**6,652**

Productivity

Wild turkey productivity can be evaluated by examining the observations of hens and poults in the survey. The percentage of hens observed with poults is an indication of nesting success, while the ratio of poults to hens observed with poults (sometimes called poults/brood) is an indication of poult survival. Overall productivity is indicated by the ratio of poults per hen. As seen in previous summary reports, classifying individual estimates as "poor," "fair," "good," or "excellent" can be problematic and sometimes misleading. These estimates are best considered in a relative fashion, comparing the data among the three regions and also evaluating the trends through time.

Productivity statewide was estimated to be 1.8 poults per hen (Table 2),but was slightly higher in the coastal region than in the piedmont or mountains (2 Sample T-test; $p<0.01$). Productivity was estimated to be 1.9 poults/hen in the coastal region and 1.7 poults/hen in both the piedmont and mountain regions. From a biological standpoint, these estimates are very similar. Poult survival statewide (estimated number of poults for hens with at least one poult) was 3.5 and likewise very similar across the regions.

Our estimates of turkey reproduction this year are relatively low in comparison to what we've observed over the course of the last decade, but generally comparable to estimates during the last 3 years. During the last 10 years, productivity estimates have been as high as 2.7 poults per hen (Figure 4) and estimates of poult survival have been as high as 4.0 poults per hen with poults (Figure 5). It could be that some of this general decline in productivity is due to turkey populations increasing and expanding into marginal habitats where nesting/brood rearing are more difficult. 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, even though the reproductive indices (i.e. average measures per hen) have declined somewhat. Also, while it is important to note that productivity alone does not predict potential changes in the turkey population, the relatively low turkey reproduction observed in 2016, 2017, and 2018 may lead to lower population and harvest levels 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 2018 Wild Turkey Summer Observation Survey. Values in parentheses represent 95% confidence intervals.

Region*	% Hens with Poults (Nesting Success)	Poults/Hens with Poults (Poult Survival)	Poults/Hen Ratio (Productivity)	Gobblers/Hen Ratio
Coastal	48%	3.5 (3.3 – 3.7)	1.9 (1.8 – 2.0)	0.58
Piedmont	45%	3.5 (3.3 – 3.7)	1.7 (1.6 – 1.8)	0.51
Mountain	41%	3.4 (3.2 – 3.6)	1.7 (1.6 – 1.8)	0.46
State	**45%**	**3.5 (3.4 – 3.6)**	**1.8 (1.7 – 1.9)**	**0.52**

**Geographical regions, not NCWRC regions.*

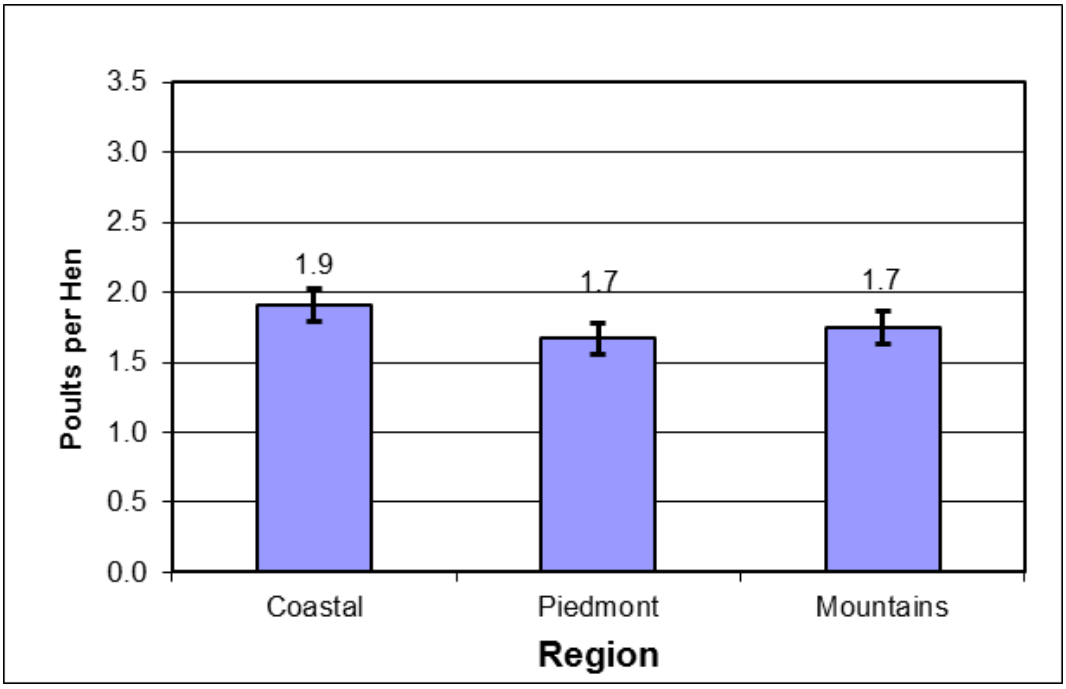

Figure 3. Regional productivity estimates from the 2018 Wild Turkey Summer Observation Survey. Error bars represent 95% confidence intervals.

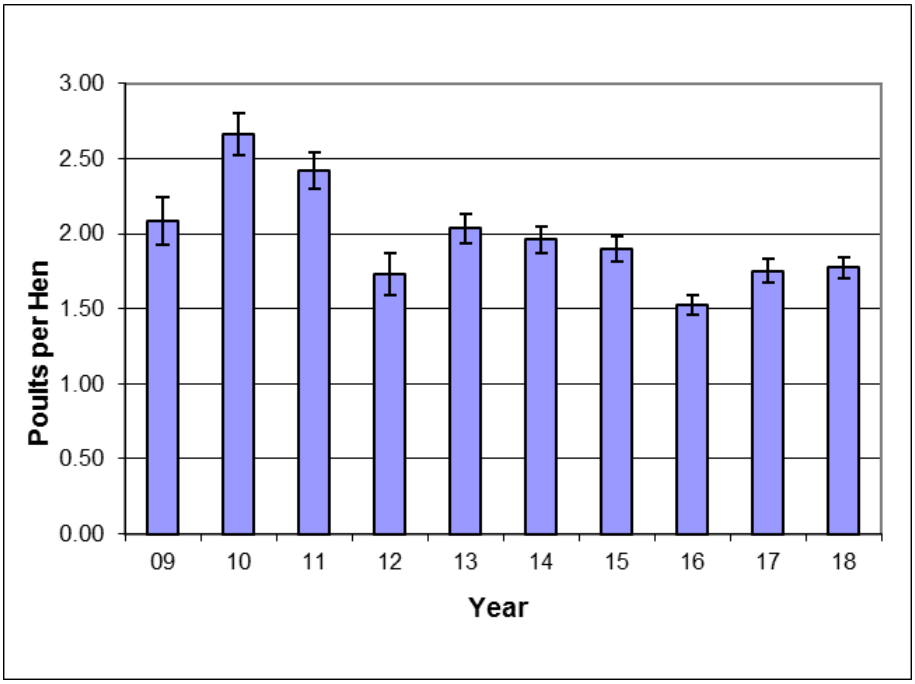

Figure 4. Statewide productivity estimates from Wild Turkey Summer Observation Surveys, 2009-2018. Error bars represent 95% confidence intervals.

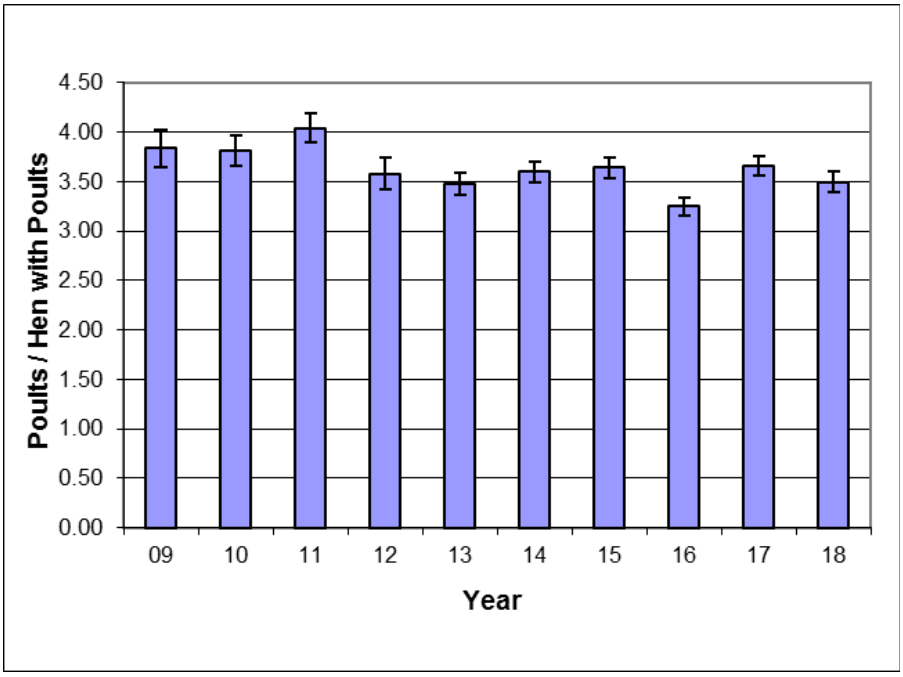

Figure 5. Statewide poult survival estimates from Wild Turkey Summer Observation Surveys, 2009-2018. Error bars represent 95% confidence intervals.

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 0.46 and 0.62 gobblers per hen. The ratio for the 2018summer observation survey was 0.52 gobblers per hen (Figure 6). 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.

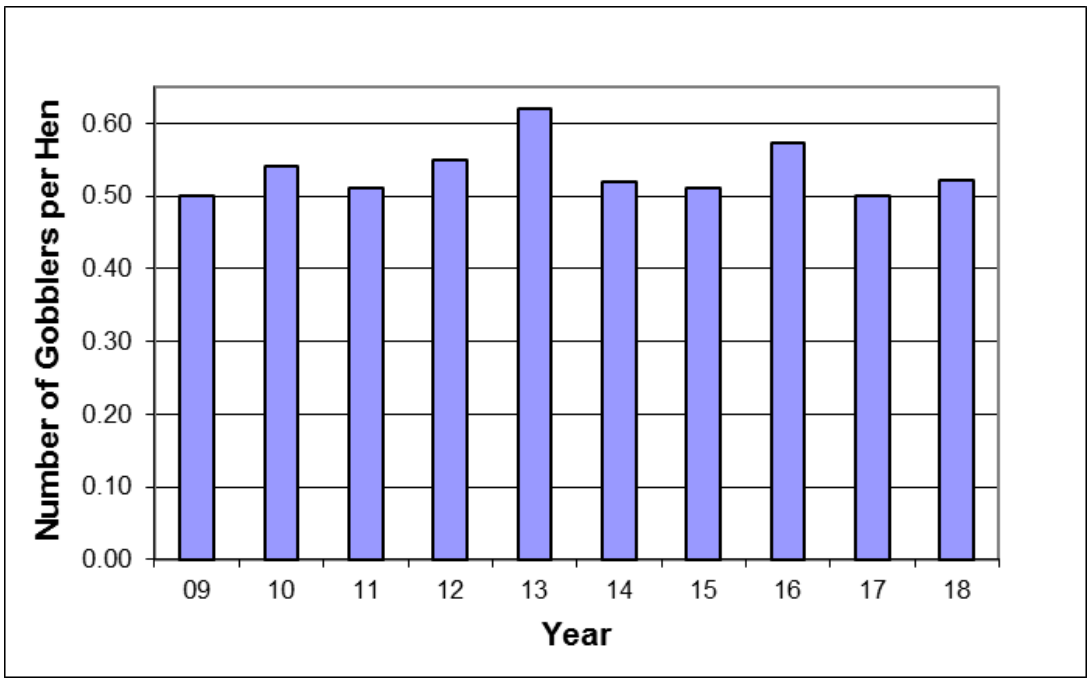

Figure 6. Ratio of gobblers per hen observed in Wild Turkey Summer Observation Surveys, 2009-2018.