2017 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 season. This year survey cards were mailed to 2,759 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.

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 (74) and the highest number of observations (440). Alexander County had only one observation reported. A total of 1,202 individuals participated in the survey in 2017. They recorded a total of 6,513 separate observations (Table 1). Participants reported 1,051 observations via the on-line application and 5,462 observations via the traditional survey cards. It appears that there is increasing awareness and interest in the on-line version of this survey as participants reported only 479 observations on-line in 2016. 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.

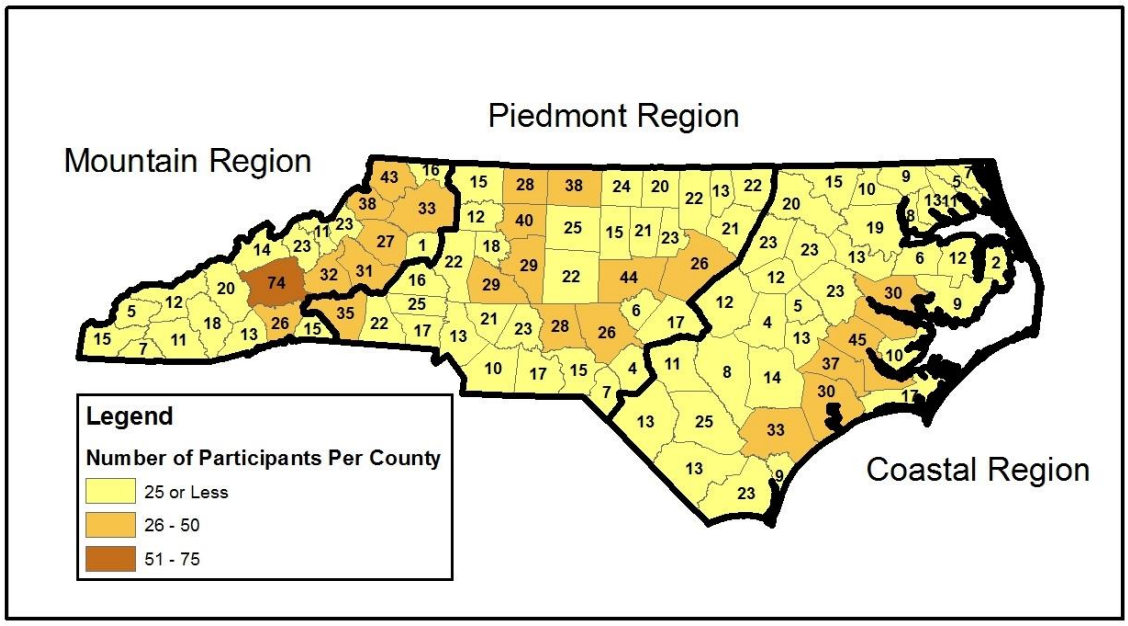

Figure 1. Number of participants reporting turkeys in each county in the 2017 Wild Turkey Summer Observation Survey. Some participants reported turkeys from more than one county.

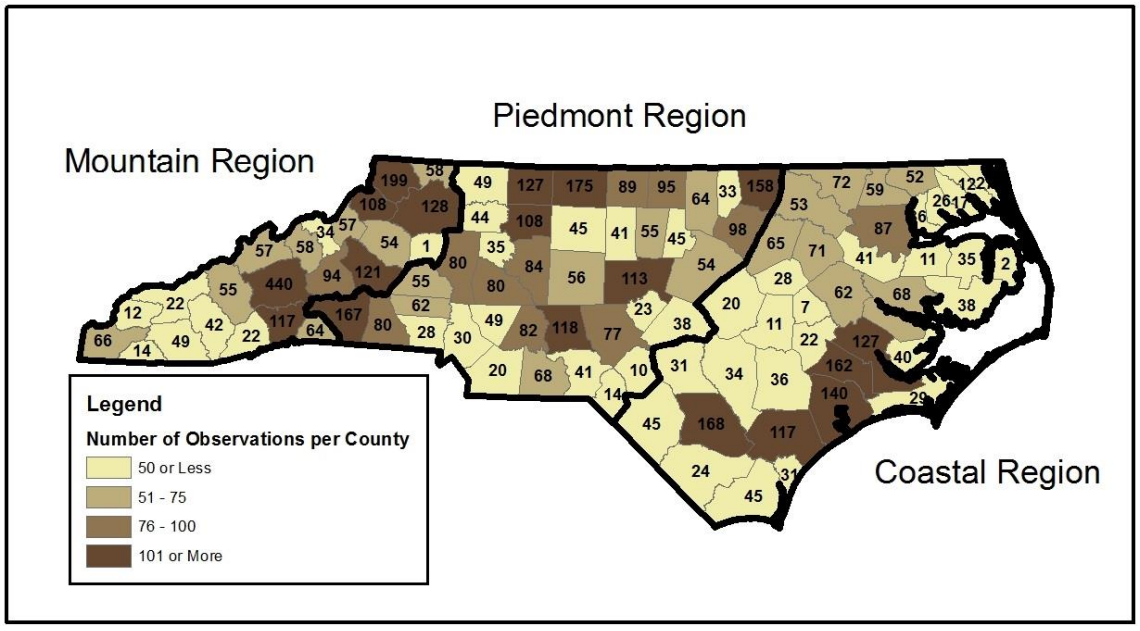

Figure 2. Number of observations reported in each county in the 2017 Wild Turkey Summer Observation Survey.

Table 1. Summary of observations from the 2017 Wild Turkey Summer Observation Survey.

Region	Observations	Hens W/O Poults	Hens W/ Poults	Total Hens	Total Poults	Total Gobblers	Total Unk.
Coastal	1,951	1,540	1,642	3,182	5,529	1,610	2,207
Piedmont	2,690	2,408	1,568	3,976	5,239	1,840	2,213
Mountains	1,872	1,829	1,193	3,022	3,606	1,646	1,416
State	**6,513**	**5,777**	**4,403**	**10,180**	**14,374**	**5,096**	**5,836**

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 (previously 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 significantly higher in the coastal region than in the piedmont or mountains (2 Sample T-test; $p<.001$). Productivity was estimated to be 2.1 poults/hen in the coastal region and 1.6 poults/hen in both the piedmont and mountain regions. Poult survival statewide (estimated number of poults for hens with at least one poult) was 3.7, but also varied significantly among the regions (ANOVA; $p<.01$). Poult survival estimates in the coastal (3.8) and piedmont (3.7) regions were very similar to each other (2 Sample T-test; $p=.21$), but were significantly higher than poult survival in the mountain region (3.4) (2 Sample T-test; $p<.01$).

Our estimates of turkey reproduction this year are relatively low in comparison to what we've observed over the course of the last decade. 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 is somewhat encouraging to see this year's estimates higher than those seen in 2016, since the 2016 survey recorded the lowest estimates during this time period. However, this year's estimates are still relatively low in comparison to most of the previous 10 years. 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 and 2017 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 2017 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	52%	3.8 (3.6 – 4.0)	2.1 (1.9 – 2.3)	0.51
Piedmont	39%	3.7 (3.5 – 3.9)	1.6 (1.5 – 1.7)	0.46
Mountain	39%	3.4 (3.2 – 3.6)	1.6 (1.5 – 1.7)	0.55
State	**43%**	**3.7 (3.6 – 3.8)**	**1.8 (1.7 – 1.9)**	**0.50**

**Geographical regions, not NCWRC regions.*

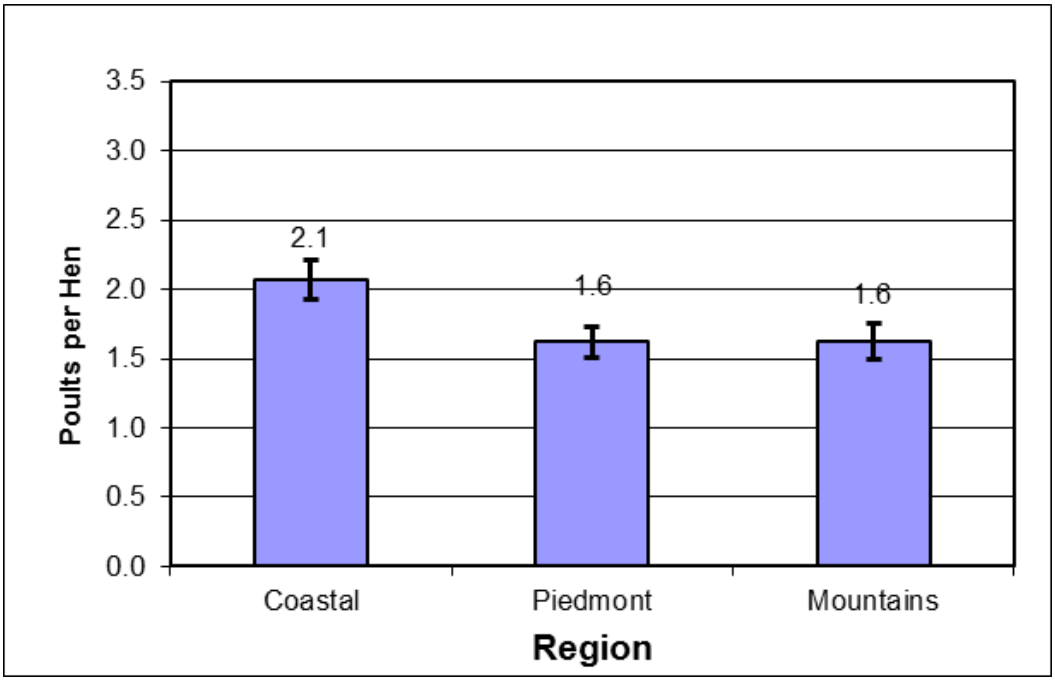

Figure 3. Regional productivity estimates from the 2017 Wild Turkey Summer Observation Survey. Error bars represent 95% confidence intervals.

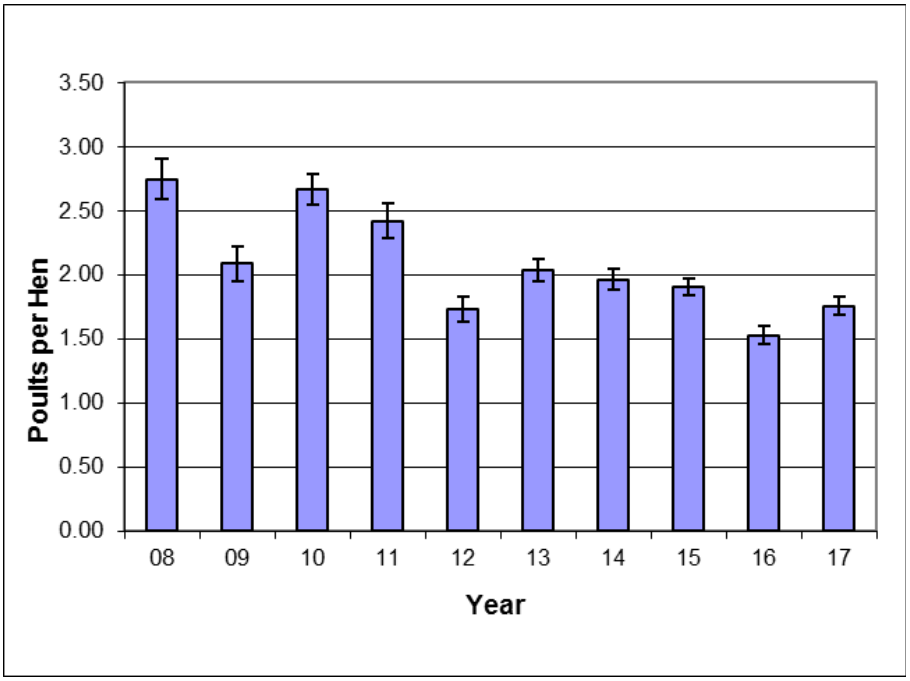

Figure 4. Statewide productivity estimates from Wild Turkey Summer Observation Surveys, 2008-2017. Error bars represent 95% confidence intervals.

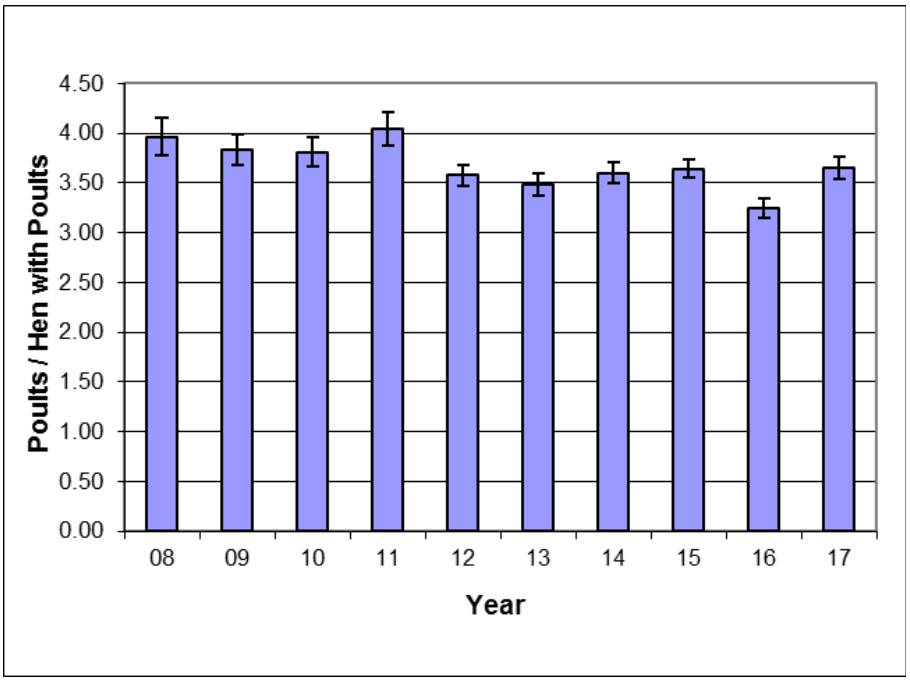

Figure 5. Statewide poult survival estimates from Wild Turkey Summer Observation Surveys, 2008-2017. Error bars represent 95% confidence intervals.

Gobbler Carryover

The observed ratio of gobblers per hen indicates the level of carryover of gobblers from the previous spring turkey season. Higher levels of gobbler harvest 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 2017 summer observation survey was 0.50 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.

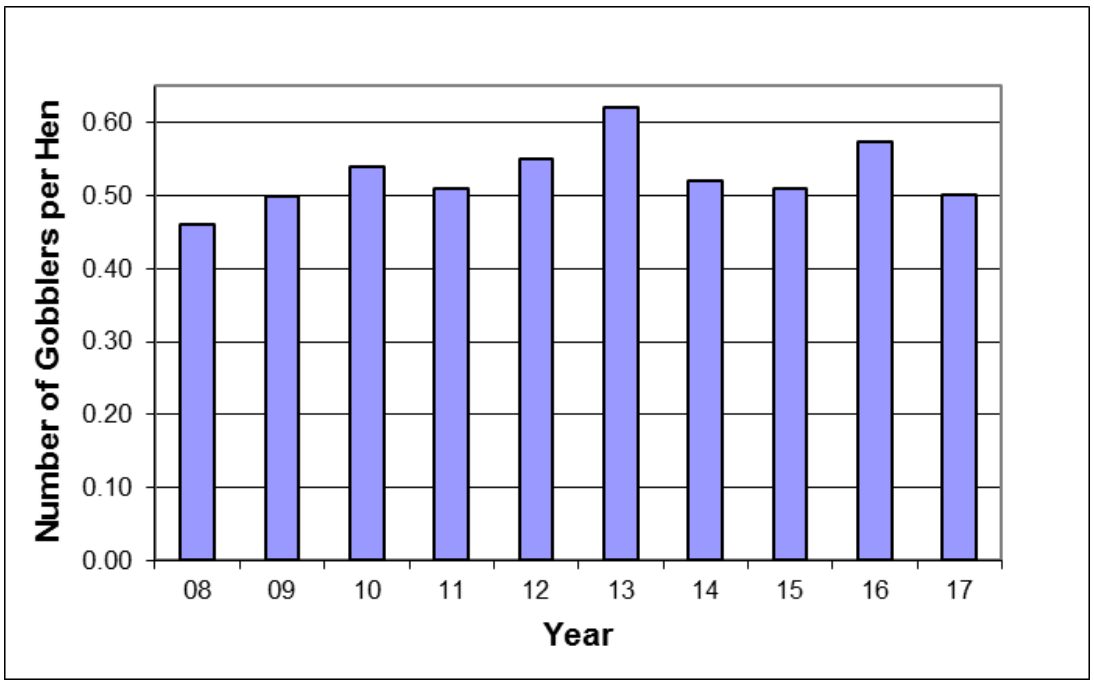

Figure 6. Ratio of gobblers per hen observed in Wild Turkey Summer Observation Surveys, 2008-2017.